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ARCHAEOLOGICAL ASSESSMENT OF THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) GAITHERSBURG CAMPUS, GAITHERSBURG, MARYLAND

PREPARED FOR:

METROPOLITAN ARCHITECTS & PLANNERS ON BEHALF OF THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

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Archaeological Assessment of the National Institute of Standards and Technology (NIST) Gaithersburg Campus, Gaithersburg, Maryland

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for

Metropolitan Architects & Planners

on behalf of the

National Institute of Standards and Technology

Executive Summary

This report provides an assessment of archaeological potential at the 579-acre National Institute of Standards and Technology (NIST) Gaithersburg, Maryland campus. This assessment, based on a desktop review of archival and environmental data and on pedestrian reconnaissance and judgmental shovel test survey, has been completed as part of a baseline archaeological study for the facility in order to identify archeological resources that might be present, and to provide information essential to NIST's future planning. These investigations were not required for any undertakings that were planned at the time of this writing, but were intended to provide baseline information to support facility management and future project planning, in partial satisfaction of Section 110 of the National Historic Preservation Act (NHPA) of 1966, as amended. All work conducted for this project was consistent with the guidelines established in the *Standards and Guidelines for Archaeological Research in Maryland* (Shaffer and Cole 1994).

This archaeological assessment incorporates the results of background research to provide a working context for pre-contact and historic period land-use within the NIST facility and its immediate vicinity. The background review includes historic cartographic resources and historic aerial photographs intended to help to identify changes in land-use over time as well as to provide information on current conditions and ground disturbances. When available, grading plans, historic construction plans and photographs, landscape plans and other data were reviewed. In addition to this data, a detailed review of land tenure at the NIST facility was carried out to determine the potential for, and locations of, historic occupation of the campus. Based on this background information, an assessment of archeological potential and recommendations for field testing to confirm this assessment were completed. The field testing was completed in April, 2019 and included reconnaissance in all recommended areas and the excavation of 62 judgmentally placed shovel tests to confirm disturbance or intact stratigraphy.

This report provides both the supporting data for the initial assessment of archaeological potential and the results of the field reconnaissance and subsurface testing conducted to confirm depositional integrity or disturbance. The assessment determined that although the majority of the 579.5 acre NIST campus had been impacted by the development of the facility in the last half of the twentieth century, there remain several areas that still appear to retain depositionally intact archaeological evidence of both prehistoric and historic occupation of the property. These are within Assessment Areas 3, 5, and 6 and total 46.6 acres. Based on this assessment, it has been recommended that additional Phase I testing be completed in these areas in advance of any future development.

List of Acronyms

DOE	Determination of Eligibility
GSA	General Services Administration
HRA	Historic Research Associates
MAP	Metropolitan Architects and Planners, Inc.
MCLR	Montgomery County Land Records
MHT	Maryland Historical Trust
MIHP	Maryland Inventory of Historic Properties
MO	Montgomery County (site designations)
MSA	Maryland State Archives
MRWR	Maryland Register of Wills Records
NBS	National Bureau of Standards
NETR	Nationwide Environmental Title Research, LLC
NHPA	National Historic Preservation Act
NIST	National Institute of Standards and Technology
NRHP	National Register of Historic Places
SHA	State Highway Administration
USDA	United States Department of Agriculture
USGS	United States Geological Service
WSS	Web Soil Service

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Chapter I

Introduction

This report provides an assessment of archaeological potential at the 579-acre National Institute of Standards and Technology (NIST) Gaithersburg, Maryland campus (Figures 1.1 and 1.2). This assessment, based on a desktop review of archival and environmental data and on limited reconnaissance and judgmental shovel test survey, has been completed as part of a baseline archaeological study for the facility in order to identify archeological resources that might be present, and to provide information essential to NIST's future planning. These investigations are not required for any undertakings that are planned at the time of this writing, but are intended to provide baseline information that will support facility management and future project planning, in partial satisfaction of Section 110 of the National Historic Preservation Act (NHPA) of 1966, as amended. This statute requires identification and National Register of Historic Places (NRHP) eligibility assessment of archeological sites on Federal property. In addition, all work conducted for this project is consistent with the guidelines established in the *Standards and Guidelines for Archaeological Research in Maryland* (Shaffer and Cole 1994).

This archeological assessment incorporates the results of background research and limited field survey to provide a working context for pre-contact and historic period land-use within the NIST facility and its immediate vicinity. The background review includes historic cartographic resources and historic aerial photographs intended to help to identify changes in land-use over time as well as to provide information on current conditions and ground disturbances. When possible, review was completed of grading plans, historic construction plans and photographs, landscape plans and other data. In addition to this data, a detailed review of land tenure at the NIST facility was carried out to determine the potential for, and locations of, historic occupation of the campus. Based on this background information and field data, an assessment was made of archeological potential. Field reconnaissance and limited subsurface testing in areas thought to retain potential was carried out in order to confirm this assessment.

Project Location

The NIST campus is located at 800 Bureau Drive in Gaithersburg, Montgomery County, Maryland, approximately 27 miles northwest of Washington, D.C. (Figure 1.3). Comprising 579 acres and containing 62 buildings and structures, the Gaithersburg campus is bounded on the north by Diamond Avenue West, on the northeast by Interstate 270, on the southeast by Muddy Branch Road, on the west by Quince Orchard Road (Rt. 124), and on the south by private developments and residential areas. The selection of the Gaithersburg site was made in 1956 and funds for site acquisition were appropriated by Congress in 1957 (Peeler and Grandine 2015:23). Construction began in 1961, with groundbreaking ceremonies held on June 14 (*ibid*). Development of the Gaithersburg NIST campus has included comprehensive planning with architectural teams to incorporate the initial recommendations for the campus. These recommendations included multiple buildings within twenty functional groupings or Organizational Units. Landscaped grounds also were planned to create a contemplative environment (MAP 2018:2-1). The Gaithersburg acreage included acquisition of 16 separate land parcels, owned by 14 individual persons or entities. On these parcels were at least seven residential or farm complexes, with dwellings, sheds, barns, and other agricultural support buildings. One cemetery or burial ground containing seven individuals also was noted; these burials were exhumed and relocated prior to construction of

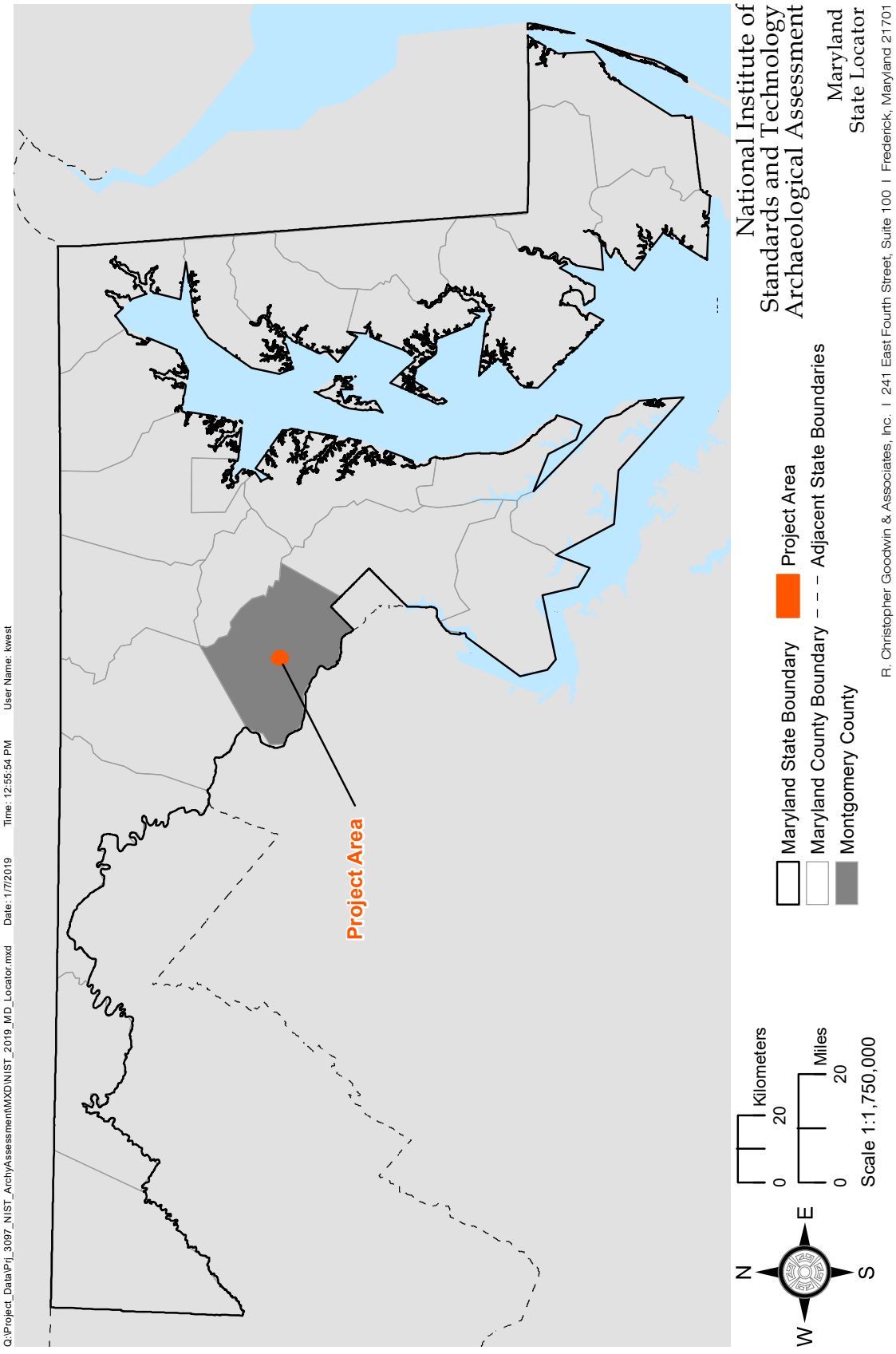


Figure 1.1 Map of Maryland showing the approximate location of the NIST Property in Gaithersburg, Maryland

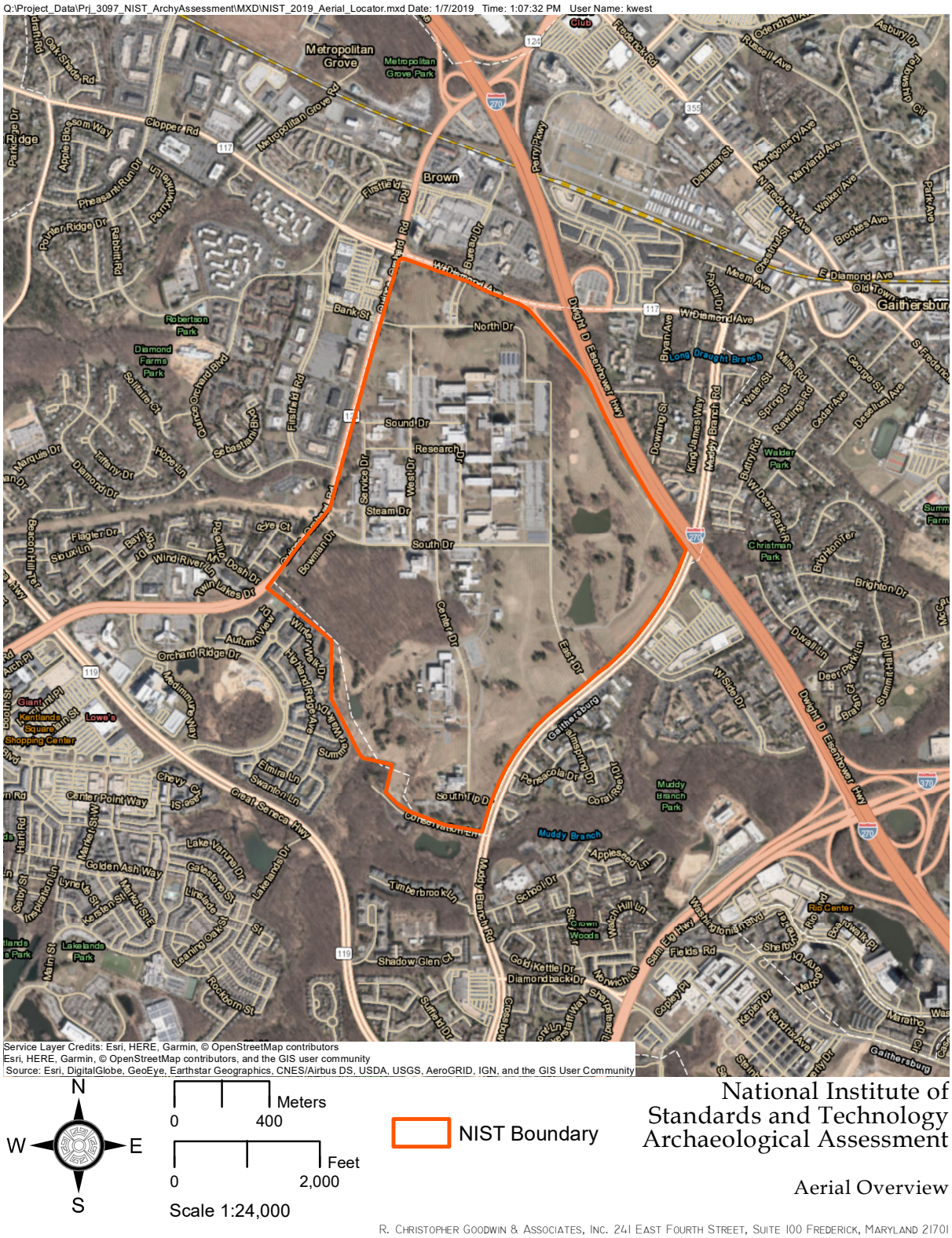


Figure 1.2 Aerial view of the NIST Property in Gaithersburg, Maryland

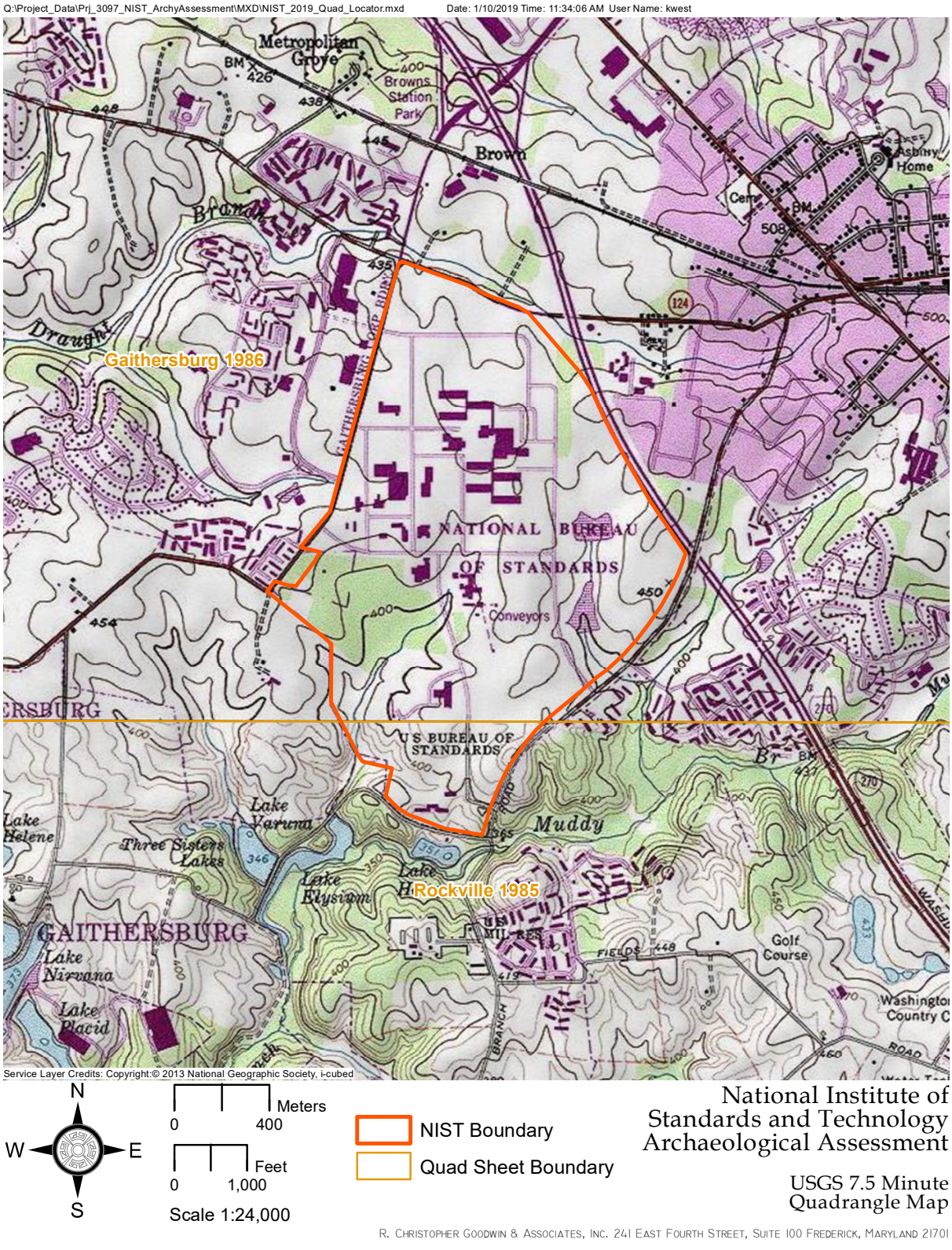


Figure 1.3 Excerpt from the 1985 Rockville, Maryland 7.5' USGS Quadrangle showing the location of the NIST Property

the NIST facility (Walleigh 1991:53-54). Development planning included preparation of detailed demolition plans for removal of the existing structures, as well as specifications for land modification necessary for the planned development and construction of the NIST campus.

Project Objectives and Methods

The objective of this archaeological assessment was to identify areas within the NIST facility that retain the potential for intact cultural deposits related to prior prehistoric or historic period land use. These areas were then assessed through a program of subsurface testing to identify any evidence of prior occupation, and to assess the level of prior disturbance in the area. To this end, background research conducted for this project included on-site review of documents, maps, plans, and other data maintained at the NIST facility in Gaithersburg. This was augmented by research using the Maryland Historical Trust's (MHT) site file database (MEDUSA), aerial photos and historic maps accessed at NETRonline, deeds and other historic data maintained by the Maryland State Archives and available online at Mdlandrec.net. Data from previous archaeological investigations adjacent to the campus was made available by the State Highway Administration (SHA). Background material used to formulate the prehistoric and historic contexts for the report was obtained from a variety of online sources, as well as from sources contained in R. Christopher Goodwin & Associates, Inc.'s extensive in-house reference library. The intent of this research was to identify areas of likely prior occupation, to determine the level of prior disturbance from demolition, grading, construction, and other activities at the facility, and to conduct a field survey to either confirm disturbance or to help in the identification of potential archaeological deposits or sites.

A general discussion of research methods as well as the specific methods and objectives of the archaeological investigations is included in Chapter II of this report.

Organization of the Report

Chapter I of this report is this introduction to the project. Chapter II provides a discussion of the research methods employed for the archival review, specific methods and objectives of the archaeological investigations, a discussion of the organizational framework used for the analysis, and locations of the defined analytic units. Information on the environmental setting within the NIST campus, previous investigations in the project area vicinity, relevant summaries of the prehistoric and historic cultural settings in the region, and a summary of historic period occupation and land acquisition specific to the NIST campus will be presented in Chapter III. Chapter IV is a discussion and analysis of past and current conditions within each of the analytic units, using research into land tenure, review of historic maps and aerial photographs, and review of development data such as plans for construction, grading, utility installation, and landscaping. This analysis includes an assessment of each unit's potential for depositional integrity and intact cultural deposits. Chapter V provides the results of the field investigations and Chapter VI presents a summary of the study results along with recommendations for each area. Appendix I contains the artifact inventory and Appendix II contains resumes of the key personnel.

Chapter II

Methods of Investigation

Objectives

The archaeological assessment of the NIST Gaithersburg campus is being conducted in two stages. The first stage has been the completion of background research sufficient to provide a desktop assessment of archaeological potential and to offer recommendations for further testing. The second stage was the conduct of the recommended testing at the NIST campus, in order to confirm the desktop assessment. The primary intent of the research and analysis has been to provide guidance to NIST regarding the potential for significant archaeological resources to be present within the NIST campus. This assessment did not include a full Phase I identification survey of the NIST campus, but as warranted by the results of the analysis, recommendations for Phase I survey prior to any planned disturbance have been made for selected high probability areas. This assessment and testing was intended to partially satisfy the requirements of Section 110 of the 1966 NHPA, as amended, and to serve as the basis for future campus planning and agreements.

Archival Research Methods

Background research included both primary and secondary sources to gather information about the prehistory and history of this portion of Montgomery County and the NIST campus. The research conducted for this study included research at the Maryland Historical Trust (MHT) library in Crownsville, Maryland, and the use of the MHT Medusa online data system to gather information on previously recorded archaeological sites and built resources in the immediate vicinity, and to review reports on prior investigations. Environmental data was gathered from various online sources, including Maryland's MERLIN and IMap systems, and the US Department of Agriculture's (USDA) Web Soil Service (WSS). A review of current and historic aerial photographs and historic cartographic resources were accessed through various sources, including Nationwide Environmental Title Research, LLC (NETR). NETR also allowed the review and comparison of current and historic USGS Topographic quadrangles. Other historic maps were available digitally through the Library of Congress; these included the circa 1865 Martenet map of the area, which shows named dwelling locations. Data was collected for any previously recorded archaeological resources or studies within a 1.5 mile radius of the NIST campus, although areas beyond that radius were examined for the presence of site concentrations and patterns of land-use or settlement that could inform the current study. Any significant development in the project vicinity was noted during the review of historic maps.

In addition to this data related to the NIST campus prior to its acquisition by the federal government, research also was carried out to review documentation related to the acquisition and development of the NIST campus facility. This research used archival documents available at the NIST Library and NIST's facilities management office. This data included photographs of the construction process, as-built plans for the buildings, grading plans with information on soil types, stockpiling locations, and elevations; utility locations; historic landscaping plans, and the recently completed masterplan for the campus. Also included were documents related to the Federal land acquisition process, including survey plats and a demolition survey (Voorhees, Walker, Smith, Smith & Haines 1961a) showing all buildings that were extant at the time of acquisition.

Field Methods

Prior to field testing, all testing locations were approved and access was coordinated through NIST; utility locations were checked and

marked. Testing methods included pedestrian reconnaissance to assess, when possible, the level of prior disturbance in each area. Following reconnaissance, judgmental placement and excavation of subsurface shovel tests occurred. The intent of this testing primarily was to assess the level of prior subsurface disturbance; the testing did not comprise a full Phase I archaeological survey. All shovel tests measured a minimum of 35 cm (13.8 in) in diameter and were excavated to a minimum depth of 40 cm (15.7 in) below surface, 10 cm (3.9 in) into sterile soil, until ground conditions prevented further excavation, or until excessive stratigraphic disturbance was apparent. Soil was removed in natural stratigraphic levels and screened through 0.635 cm (0.25 in) hardware mesh. Shovel tests were not excavated in areas of significant slope or in areas of standing water. The shovel test results, including soil horizon characteristics and depths, and the presence or absence of cultural materials was recorded on standardized shovel test recordation forms. Each shovel test location was further recorded using a Trimble GPS unit. Soils examined in each shovel test were documented using Munsell Soil Color Chart designations and standard soil nomenclature. Any cultural materials recovered during the investigation were placed in paper bags labeled with the appropriate horizontal and vertical provenience information. The majority of artifacts encountered, however, were not retained unless the find was of particular significance. Methods of recordation will follow the standards established by the Maryland Historical Trust's *Standards and Guidelines for Archeological Investigations in Maryland* (Shaffer and Cole 1994).

Analytic Framework

Assessment Areas

For the purposes of this analysis, the NIST Gaithersburg campus was divided into six assessment areas, the boundaries of which were based roughly on locations buildings, environmental characteristics, locations of roads, or other factors (Figure 2.1). The use of these assessment area designations was intended to facilitate discussion of the physical and environmental attributes, land tenure and acquisition, historical development, and archaeological potential of each area. The assessment areas are:

- Assessment Area 1 comprises the majority of the NIST campus buildings. It is bounded on the north by North Drive, on the north and east by East Drive, on the west by Quince Orchard Road and on the South by South Drive. A small rectangular section of the assessment area is located east of a dogleg formed by East Drive at its intersection with North Drive. That small section abuts an on-ramp to I-270 on its northeastern edge;
- Assessment Area 2 is a triangular area located at the northern edge of the campus, and is bounded by Diamond Ave. on the north, Quince Orchard Road on the west, and North Drive on the south. The area is divided by Bureau Drive and contains the Visitor's Center (Bldg. 103);
- Assessment Area 3 is located to the east of East Drive, to the west of I-270, and is west/northwest of Muddy Branch Road; Assessment Area 4 is located to the south of Assessment Area 1, and is bounded by Center Drive on the west, South Drive on the north, East Drive on the east, and Muddy Branch Road on the south/southwest;
- Assessment Area 4 contains Buildings 245, 421, and 207;
- Assessment Area 5 is the southernmost of the areas. It is bounded by Center Drive on the east, a small section of Muddy Branch Road on the southwest, Conservation Lane on the south, and by the NIST campus limits on the south/southwest. The western boundary follows a stream drainage and the edge of a forest lot. There are two large complexes of buildings within Assessment Area 5;
- Assessment Area 6 comprises the remainder of the NIST campus and is bounded by Assessment Area 5 to the southeast, Area 4 to the east, Area 1 to

Figure 2.1 NIST Master Plan depicting Assessment Area designations

the north, Quince Orchard Road to the northwest, and the NIST campus limits on the southwest. A small section of private land is located along Quince Orchard Road, and is not included in the NIST campus. Buildings 202 and 203 are in the northeastern corner of Assessment Area 6; much of the remainder is wooded.

Parcels

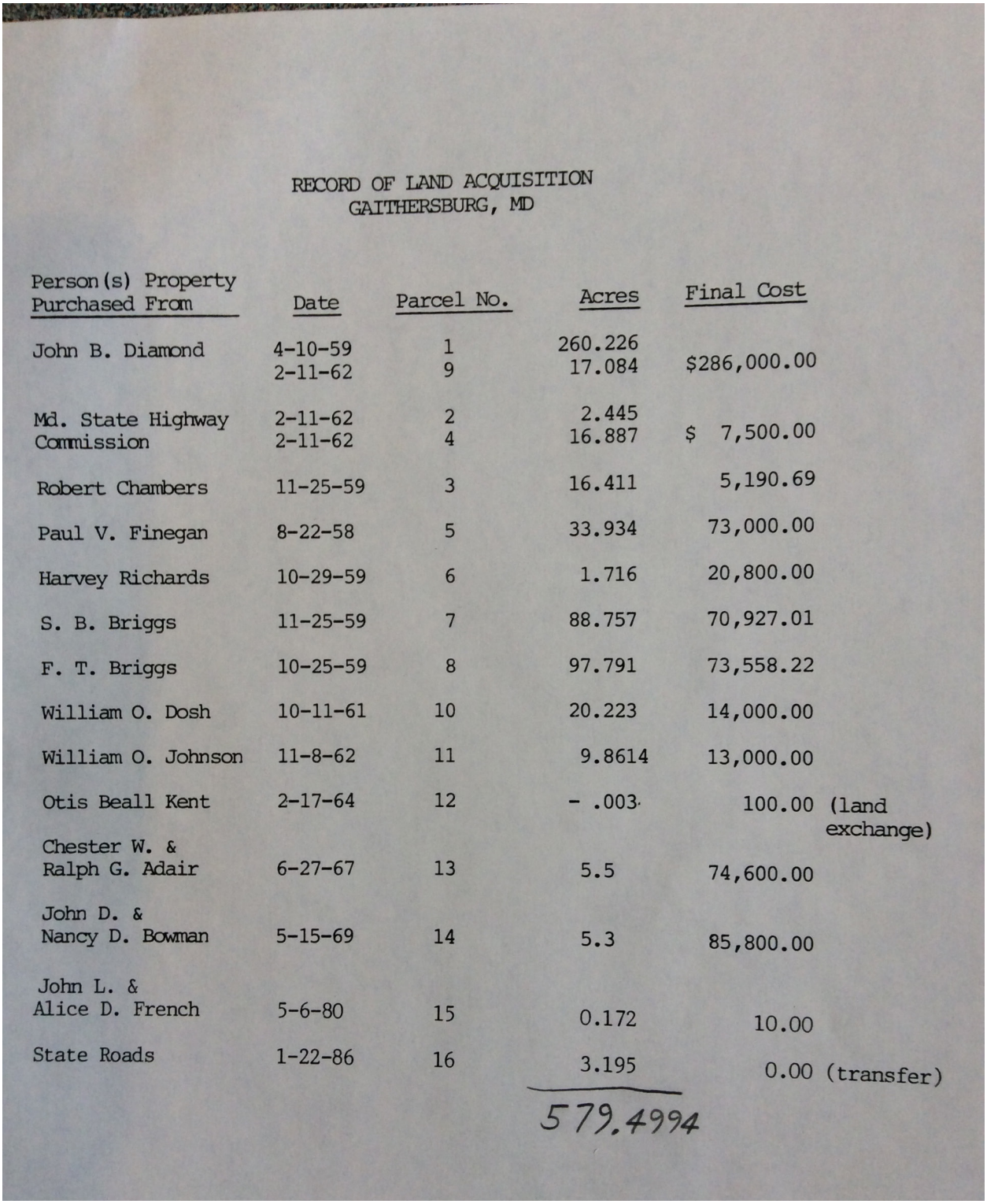
Additional spatial divisions used during analysis were the land parcel designations used at the time of property acquisition. These parcel designations were recorded along with the former owner's name, the date of purchase by the Federal government, the acreage, and the final cost (Figure 2.2). The parcel boundaries, along with owner's names and deed references were included on a 1956 survey plat prepared by Mattox & Hopkins, C.E. A marked-up version of that survey plat was noted in the records reviewed at the facility during this project, and included the same parcel boundaries, with parcel numbers rather than former owner's names (Figure 2.3). The parcels, numbered 1 – 16, included acreage ranging from 260.226 acres in Parcel 1 (Diamond) to a small land exchange of only 0.003 acres (Parcel 12). Research access to the parcel, ownership, and deed data provided information on the historic land tenure of the NIST campus, providing information on settlement and land use as early as the eighteenth century.

Farms

Review of historic maps, aerial photographs, and the demolition survey for the facility, produced in 1961 (Voorhees Walker Smith Smith & Haines 1961a), indicated the presence of seven farms or farm complexes on the NIST campus at the time of acquisition (Figure 2.4). These farm complexes included:

- Farm 1, a complex of structures including dwellings and outbuildings located in Parcel 1, and associated with the Diamond ownership of the property;
- Farm 2, located in Parcel 5 and owned by Paul Finegan at the time of purchase in 1958;
- Farm 3, located in Parcel 6, and owned by Harvey Richards at the time of purchase in 1959;
- Farm 4, located in the eastern portion of Parcel 7, and owned by S.B. Briggs at the time of purchase in 1959;
- Farm 5, located in Parcel 7 just east of the current Center Drive, and also owned by S.B. Briggs in 1959;
- Farm 6, located in Parcel 8, and owned by F.T. Briggs at the time of purchase in 1959; and
- Farm 7, located in Parcel 10, and owned by William O. Dosh at the time of purchase in 1961.

Full descriptions of all of these farm complexes can be found in Chapter IV of this report.



RECORD OF LAND ACQUISITION
GAITHERSBURG, MD

Person(s) Property Purchased From	Date	Parcel No.	Acres	Final Cost	
John B. Diamond	4-10-59 2-11-62	1 9	260.226 17.084	$286,000.00	
Md. State Highway Commission	2-11-62 2-11-62	2 4	2.445 16.887	$ 7,500.00	
Robert Chambers	11-25-59	3	16.411	5,190.69	
Paul V. Finegan	8-22-58	5	33.934	73,000.00	
Harvey Richards	10-29-59	6	1.716	20,800.00	
S. B. Briggs	11-25-59	7	88.757	70,927.01	
F. T. Briggs	10-25-59	8	97.791	73,558.22	
William O. Dosh	10-11-61	10	20.223	14,000.00	
William O. Johnson	11-8-62	11	9.8614	13,000.00	
Otis Beall Kent	2-17-64	12	- .003	100.00	(land exchange)
Chester W. & Ralph G. Adair	6-27-67	13	5.5	74,600.00	
John D. & Nancy D. Bowman	5-15-69	14	5.3	85,800.00	
John L. & Alice D. French	5-6-80	15	0.172	10.00	
State Roads	1-22-86	16	3.195	0.00	(transfer)
			579.4994		

Figure 2.2 Previous parcel owners at time of NIST acquisition

Figure 2.3 1956 Parcel Survey Map depicting parcels acquired for NIST Gaithersburg Campus

Figure 2.4 NIST Master Plan depicting location of farms recorded on Voorhees, Walker, Smith, Smith & Haines 1961 Demolition Map

Chapter III

Environmental and Cultural Setting and Previous Investigations

Environmental Setting

Physiography and Geology

The NIST Gaithersburg campus project area is located within the Piedmont Physiographic Province in Maryland Archeological Research Unit 12, the Potomac Drainage (Figure 3.1). The topography of the Piedmont generally is characterized by a rolling plain landscape with low hills lining major stream valleys. The NIST project area is located in the Hampstead Upland District of the Harford Plateaus and gorges Region which is characterized by steep gorges which interrupt the undulating landscape. The bedrock of the region consists of metamorphosed sedimentary and igneous rock including schist, gneiss, and gabbro. The project area specifically is underlain by Late Precambrian Upper Pelitic Schist of the Glenarm Series. Upper Pelitic Schist is composed of Albite-chlorite- muscovite-quartz schist with sporadic thin beds of laminated micaceous quartzite (Cleaves et al. 1968). Elevations within the project area range from approximately 130.6m above mean sea level (amsl) at the northern end to 141.2m amsl at around the developed area, to 112.6m amsl at the southern end.

The climate of Montgomery County is temperate. The average July high temperature is 87.4° F (30.8° C); the average January high temperature is 42.6° F (5.9° C). Precipitation averages 39.88 inches per year, and varies from 4.34 inches in August to 2.65 inches in February (Brown and Dyer 1995:5).

Vegetation in the Piedmont historically has included sycamore-green ash-box elder-silver maple forest in the bottomlands with the Coastal Plains' tulip poplar association overlapping with moister environments along the southern and eastern Piedmont (Wesler et al. 1981:11). The upland areas of the Piedmont are otherwise characterized by the chestnut oak association (Wesler et al. 1981:11).

Hydrology

The property straddles two watersheds. The northern half of the property is drained by the Seneca Creek watershed via the Long Drought Branch stream which nearly parallels the northern project area boundary. The southern half of the property otherwise is drained by the Potomac River Montgomery County watershed. Both watersheds ultimately drain into the Potomac River which is part of the larger Chesapeake Bay watershed. Within the southwestern corner of the NIST property in the large forest tract is the head of a network of intermittent streams which feed a man-made pond further south and is connected to the Muddy Branch tributary. Another stream, the head of which is north of Building 205, cuts through to an outfall which drains into the same tributary just south of the man-made pond. Along the east edge of the NIST property are two large connected man-made ponds connected to an unnamed tributary of Muddy Branch.

Soils

Information on soils was accessed through the USDA Natural Resources Conservation Service (NRCS) Soil Survey Geographic database (SSURGO) and Web Soil Survey (WSS) (USDA2018). Soils mapped within the NIST project area are predominantly Glenelg silt loam. Other soils represented include Gaila, Baile, and Glenville (USDA 2018). Glenelg and Gailia both are deep, well-drained upland soils developed in residuum. Whereas Glenelg soils are typically encountered on broad ridgetops and side slopes, Gailia soils are found along broad ridgetops (Brown and Dyer 1995). Baile and Glenville

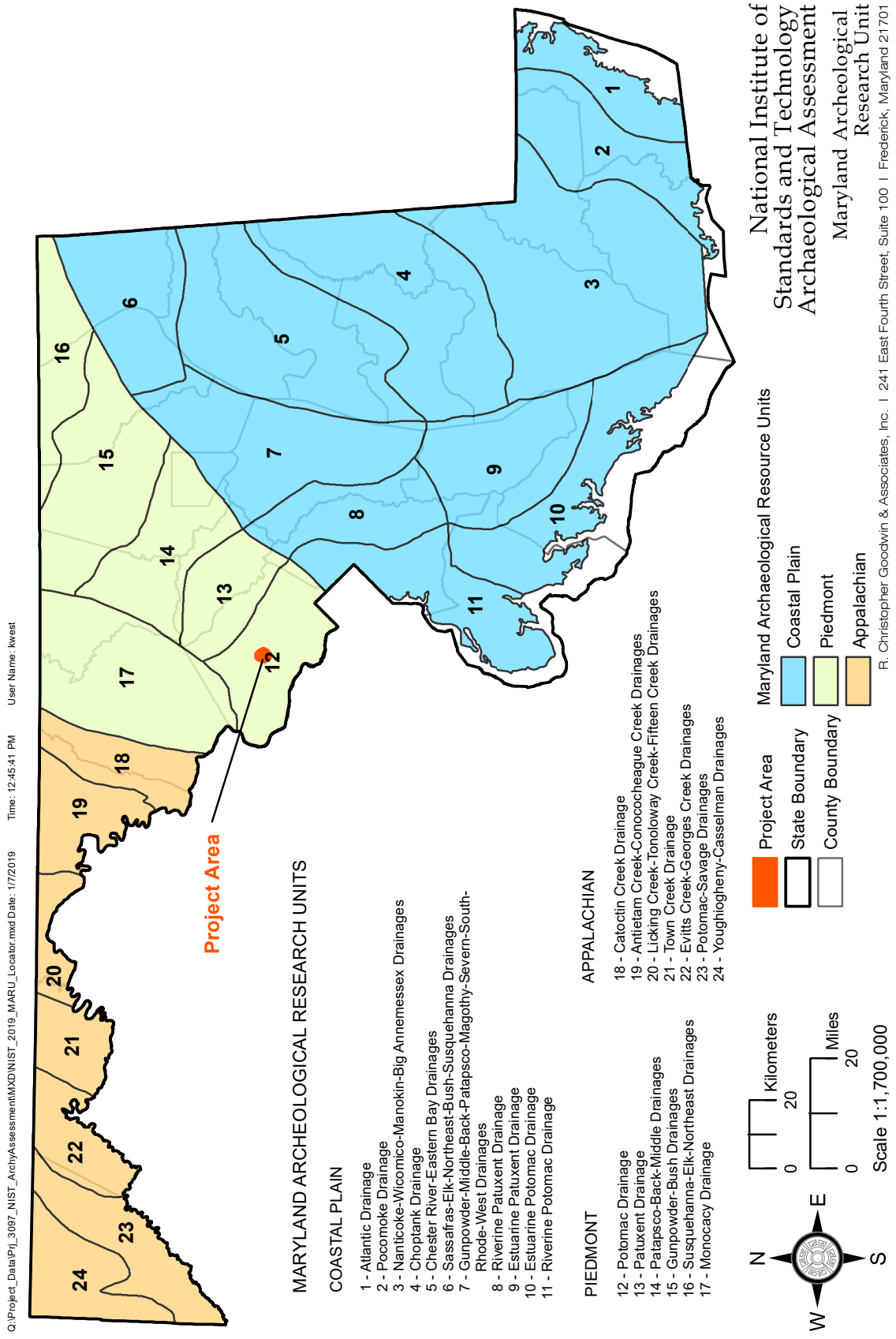


Figure 3.1 Maryland Archaeological Research Unit map showing the approximate location of the project area within Unit 12, Potomac Drainage

soils are mapped within the natural stream drainage systems primarily along the southern portion of the project area as well as along the northeast corner. The Baile series consists of very deep, poorly drained soils associated with upland depressions and foot slopes. These soils developed in alluvial deposits over residuum. The Glenville series consists of very deep and moderately well drained to poorly drained soils along upland flats, foot slopes, or stream heads. These soils formed in residuum affected by soil creep or colluvium. Representative profiles are exhibited in Table 3.1.

Current Environmental Setting

The current environmental settings of the NIST Gaithersburg campus' six assessment areas will be discussed in detail in Chapter IV of this report.

Previous Cultural Resources Investigations

Previous Surveys

A total of thirteen archaeological surveys have taken place within a 1.5 mile radius of the NIST property (Table 3.2). Small portions of five of these investigations took place within the NIST Property; only one of these surveys (MO288/18MO723) resulted in identification of an archaeological site within the NIST campus. The first survey (MO24) that included a portion of the NIST property took place in 1978 during a realignment study of Muddy Branch Road (Marshall 1978). During the study, the eastern edge of the NIST property paralleling Muddy Branch road underwent archaeological reconnaissance. In the project area, the survey involved pedestrian walkover of the extant Muddy Branch Road along three transects spaced three meters apart; the width of the surveyed area along Muddy Branch Road approximated 9 meters (30 ft).

In the following years, proposed improvements to major highway systems and their interchanges led to several large-scale archaeological projects with survey areas that intersected portions of the NIST property, primarily along the property's northern boundary along West Diamond Avenue, western boundary along Quince Orchard Road, and north eastern end along I-270 and its Muddy Branch Road crossing (Barse 1982 [MO39]; Epperson 1980 [MO35]; Kavanagh 1981[MO33]). None of these projects conducted subsurface testing on the NIST property. In the portions of NIST included in these studies, the NIST property was either deemed unsuitable for testing due to apparent disturbance or was determined to have a low potential for resources and was not recommended for survey.

In 2014, Rummel, Klepper & Kahl, LLP conducted a Phase I for the Corridor Cities Transitway project which sought to improve public transportation in Rockville and Gaithersburg, Maryland (Emory and Ross 2014 [MO288]). The survey included a small section of NIST property along Quince Orchard Road. In this area, the field crew noted extensive disturbance attributed to significant cut and fill activities during landscape contouring along most of the surveyed section. One site, located in the southwestern corner of the NIST property, was identified during that survey (18MO723). The site was characterized as the remains of an early twentieth century dwelling and an isolated prehistoric quartz flake. The site was determined not eligible for listing in the NRHP.

Most recently, in 2018, the SHA conducted an archaeological survey for the I-270/I-495 managed lanes study (Steve Archer, Personal communication December 2018). The survey flanked the northeastern edge of the NIST property along I-270. Surveyors again noted significant disturbance and cut and fill episodes along the road. The report of findings still is in progress.

Previously Recorded Archaeological Sites

Review of the MHT Medusa database indicated that eight archaeological sites have been recorded within a 1.5-mile radius of the NIST Gaithersburg campus (Table 3.3). Of these sites, three have been determined not eligible for listing in the NRHP, and five have not been evaluated for their eligibility.

Only one of the sites is located within the NIST campus. Site 18MO723 is a small historic dwelling site dating from the twentieth century that is located at the southwestern corner of the NIST campus. The site was recorded in 2014 and in addition to the early twentieth century domestic component, it also has a small prehistoric component of unknown temporal affiliation (Emory and

Table 3.1. Soil Series Mapped within the NIST Property

Soil Series		Horizon	Depth		Munsell Color	Color Description	Texture	Inclusions
Glenelg	3-8% slope and 8-15% slope	Ap1	0 - 6 in	0-15.2 cm	10YR 4/3	Brown	Loam	5% schist channers
		Ap2	6-10 in	15.2 - 25.4 cm	7.5YR 4/4	Brown	Clay Loam	8% schist channers
		Bt1	10-18 in	25.4 - 45.7 cm	7.5YR 5/8	Strong Brown	Clay Loam	3% schist channers
		Bt2	18-25 in	45.7 - 63.5 cm	7.5YR 5/6	Strong Brown	Clay Loam	8% schist channers
		Bt3	25-30 in	63.5 - 76.2 cm	10YR 5/6	Yellowish Brown	Clay Loam	common prominent yellowish red (5YR 5/8) lithochromic mottles; 5% schist channers;
		BCt	30-42 in	76.2 - 106.7 cm	5YR 5/6 and 10YR 5/6	Yellowish Red and Yellowish Brown	Loam	5% schist channers
		CBt	42-54 in	106.7 - 137.2 cm	5YR 5/6 and 10YR 5/6	Yellowish Red and Yellowish Brown	Loam	2% quartz gravels and 5% schist channers
		C	54-76 in	137.2 - 193 cm	7.5YR 5/8, 10YR 6/8, and 10YR 7/6	Strong Brown, Brownish Yellow, and Yellow	Extremely Channery Sandy Loam	50% schist channers
Gaila	3-8% slope and 8-15% slope	Oi	0-2 in	0 - 5.1 cm	n/a	n/a	n/a	partially decomposed hardwood leaves and twigs
		A	2-9 in	5.1 - 22.9cm	7.5YR 4/4	Brown	Sandy Loam	1% angular quartz gravel; many mica flakes
		Bt	9-17 in	22.9 - 43.2 cm	7.5YR 5/8	Strong Brown	Sandy Clay Loam	1% angular quartz gravel; many mica flakes
		C1	17-45 in	43.2 - 114.3 cm	variable	variegated yellow, brown, red and white	Sandy Loam	1% angular quartz gravel; many mica flakes
		C2	45-74 in	114.3 - 188 cm	variable	variegated yellow, brown, red and white	Loamy Sand	1% angular quartz gravel; very micaceous; 5% weathered mica schist fragments
Baile	0-3% slope	Ap	0-9 in	0 - 22.9 cm	10YR 4/1	Dark Gray	Silty Clay Loam	n/a
		Bg	9-14 in	22.9 - 35.6 cm	10YR 5/1	Gray	Silty Clay Loam	common medium distinct yellowish brown (10YR 5/6) masses of oxidized iron
		Btg1	14-22 in	35.6 - 55.9 cm	5Y 5/1	Gray	Silty Clay Loam	many medium and coarse prominent yellowish red (5YR 4/6) and brown (7.5YR 4/4) masses of oxidized iron; few fine dark concretions;
		3Btg2	22-32 in	55.9 - 81.3 cm	N5/0	Gray	Silty Clay Loam	many medium and coarse prominent brownish yellow (10YR 6/8) and strong brown (7.5YR 5/6) masses of oxidized iron; many mica flakes; higher in sand in lower portion
		2Cg	32-65 in	81.3 - 165.1 cm	5B 6/1	Bluish Gray	Loam	highly micaceous

Soil Series		Horizon	Depth		Munsell Color	Color Description	Texture	Inclusions
Glenville	0-3% and 3-8% slope	Ap	0-9 in	0 - 22.9 cm	10YR 4/4	Dark Yellowish Brown	Silt Loam	n/a
		Bt1	9-16 in	22.9 - 40.6 cm	10YR 5/6	Yellowish Brown	Silt Loam	5% channers
		Bt2	16-19 in	40.6 - 48.3 cm	10YR 5/6	Yellowish Brown	Silt Loam	common light brownish gray (10YR 6/2) iron depletions and common strong brown (7.5YR 5/8) masses of oxidized iron; 5 percent gravel channers;
		Btx	19-25 in	48.3 - 63.5 cm	10YR 5/3	Brown	Silt Loam	many light brownish gray (10YR 6/2) iron depletions and common strong brown (7.5YR 5/8) masses of oxidized iron; 10 percent gravel
		Btgx	25-33 in	63.5 - 83.8 cm	10YR 6/2 and 10YR 5/3	Light Brownish Gray and Brown	Silt Loam	few distinct gray (10YR 6/1) iron depletions and common distinct yellowish brown (10YR 5/4) masses of oxidized iron; 10 percent quartzite channers; common mica flakes
		BC	33-39 in	83.8 - 99.1 cm	10YR 5/4	Yellowish Brown	Silt Loam	many faint pale brown (10YR 6/3) iron depletions; 10 percent quartzite channers common fine mica flakes
		C	39-82 in	99.1 - 208.3 cm	10YR 5/4	Yellowish Brown	Channery Loam	many strong brown (7.5YR 5/8) masses of oxidized iron and common distinct grayish brown (10YR 5/2) iron depletions; many fine mica flakes; 15 percent quartzite channers

Table 3.2. Previous Archeological Resource Surveys Conducted within 1.5miles of the NIST project area.

MHT Library Call #	Author (s)	Year	Report Title	Consultant/Group	Survey Type
MD1V3	Wesler, Kit W., Dennis J. Pogue, Aileen F. Button, Gordon J. Fine, Patricia A. Sternheimer, and E. Glyn Furgurson	1981	The M/DOT Archaeological Resources Survey, Volume 3: Piedmont (for the MDOT, SHA, Federal Highway Administration)	Maryland Historical Trust	Regional Phase 1
MO8	Thomas, Ronald A. (Compiler)	1979	Cultural Resources Reconnaissance Investigations for the Metropolitan Washington Area Water Supply Study Early Action Report, Final Report (for the Corps of Engineers, Planning Division, Baltimore District)	Mid-Atlantic Archaeological Research, Inc., Newark, DE	Phase I/ Compliance
MO24	Marshall, Brad	1978	A Report on a Preliminary Archaeological Reconnaissance Survey of Muddy Branch Road and Its Alternate Alignments, Montgomery County, Maryland (for Greenhorne & Omara, Inc.)	Archaeological Services, Inc.	Phase I/ Compliance
MO32	Epperson, Terrence W.	1980	Archeological Reconnaissance of Proposed Interchange Modifications at I-270/Maryland 124 and 924, Montgomery County, Maryland (for the MD State Highway Administration)	MD Geological Survey, Division of Archaeology	Phase I/ Compliance
MO33	Kavanagh, Maureen	1981	Archeological Reconnaissance of Interstate 270 from Miles Corner North of MD Route 121 to the I-270 Spur, Montgomery County, Maryland (for the MD State Highway Administration)	MD Geological Survey, Division of Archaeology	Phase I/ Compliance
MO34	Curry, Dennis C.	1978	Archeological Reconnaissance of Maryland Route 355 from Brooks Avenue to Shady Grove Road, Montgomery County, Maryland (for the MD State Highway Administration)	MD Geological Survey, Division of Archaeology	Phase I/ Compliance
MO35	Epperson, Terrence W.	1980	Archeological Reconnaissance of Proposed Interstate 370 in the Vicinity of Gaithersburg, Montgomery County, Maryland (for the MD State Highway Administration)	MD Geological Survey, Division of Archaeology	Phase I/ Compliance
MO39	Barse, William P.	1982	A Preliminary Archeological Resources Reconnaissance of Proposed Alternates 2A, 4 and 6 of the Great Seneca Highway, Montgomery County, Maryland (For the Montgomery County Govt. Dept. of Transportation Planning)	Thunderbird Archaeological Associates Inc.	Phase I/ Compliance
MO185	Fiedel, Stuart J., Bryan Corle, and Kerri Culhane	2000	Phase IB Archeological Survey. I-270 at Watkins Mill Road Extended, Montgomery County, Maryland. SHA Archeological Report No. 239	John Milner Associates, Inc.	Phase IB/ Compliance
MO234	Hill, Phillip J., Kathleen Rogers, and Samantha Kuray	2007	A Phase I Archeological Survey of a 70-Acre+/- Portion of the Crown Property: A 177.9-Acre Parcel Located on Fields Road in Gaithersburg, Montgomery County, Maryland (for KB Home/Mid-Atlantic Division)	Archeological Testing and Consulting, Inc.	Phase I/ Compliance
MO282	Regan, Pete and Ralph Koziarski	2014	Phase I Archaeological Investigation of the I-270 Interchange at Watkins Mill Road, Montgomery County, Maryland. SHA Archeological Report No. 475 (for the Maryland State Highway Administration)	URS Corporation	Phase I/ Compliance
MO288	Emory, Scott A. and Drew Ross	2014	Corridor Cities Transitway Phase I Archeological Survey Technical Report. (for the Maryland Transit Administration)	Rummel, Klepper & Kahl, LLP	Phase I/ Compliance
n/a	Archer, Steve	2018/ 2019	Report in Progress - information in 2018 from Personal Communication	MD Department of Transportation, State Highway Administration (SHA)	Phase I/ Compliance

Table 3.3. Previously Recorded Archeological Sites Located within 1.5 miles of the NIST project area.

Site Number	Site Name	Site Type	Temporal Affiliation	Topographic Setting	Level of Investigation	Investigation Method	NRHP Status	Comments/Sources
18MO168	Crown	Log cabin site	19th to early 20th century	Hillslope	Phase I/ Reconnaissance	limited systematic surface collection	Not determined	location of a 10x12ft cabin with at least partial basement, a hand dug well, and a barn (Epperson 1980)
18MO189	Kavanagh X	Historic artifact concentration	Unspecified historic	Ridgetop	Phase I/ Reconnaissance	Non-systematic surface collection	Not determined	Domestic artifact scatter around an old outbuilding; artifacts estimated to date from late 19th and early 20th century (Kavanagh 1981; Epperson 1980)
18MO315	DeSellum Cemetery	Cemetery	Early 19th century	Hilltop/ bluff	Phase III/Excavation	GPR survey, two shallow trenches	Not determined	Cemetery is located on the Summit Hall Farm Park; Four gravestones were visible (Otter 1989)
18MO720	CCT M-4	Historic house site, Prehistoric isolated find	19th-Early 20th century ; unknown prehistoric	Low Terrace	Phase I/ Reconnaissance	Surface collection, shovel testing	Not eligible	concentration of late nineteenth through late twentieth century architectural and domestic artifacts, as well as the remains a brick foundation, a rectangular field stone feature, and a linear field stone feature associated with the Warfield Farmstead ; Isolated quartz flake (Emory and Ross 2014)
18MO721	M-6 Metropolitan Grove	Historic stone foundation and surface scatter	Early 20th century	Terrace	Phase I/ Reconnaissance	Non-systematic surface collection	Not determined	The site contains the remnants of a stone foundation (approx. 5m x 6m) and a historic surface scatter; observed surface materials included glass containers and ceramics. The materials observed included possible early 20th century artifacts as well as more recent modern refuse (Emory and Ross 2014)
18MO722	M-10 OMF	prehistoric lithic scatter	unknown prehistoric; (possible late Middle Archaic or Late Archaic period)	Low Terrace	Phase I/ Reconnaissance	Surface collection, shovel testing	Not eligible	10 quartz and 1 rhyolite debitage in addition to one utilized quartz flake recovered from a plow zone context. Plentiful quartz nodules indicating site possibly associated with the procurement of quartz. An isolated Middle or Late Archaic side-notched quartz projectile point was recovered (Emory and Ross 2014)
18MO723	M-16 NIST	Historic house site; prehistoric isolated find	Early 20th century; unknown prehistoric	Upland Flat	Phase I/ Reconnaissance	Surface collection, shovel testing	Not eligible	domestic historic scatter and contains an isolated prehistoric quartz tertiary flake. Two surface features and a road trace are included within the site boundaries; a brick chimney fall (M-19) and a three-sided wooden pole-lined depression (Emory and Ross 2014)
18MO724	M-41 Rock Shelter	Prehistoric rockshelter	unknown prehistoric	Floodplain and Hillslope	Phase I/ Reconnaissance	Non-systematic surface collection	Not determined	two substantial cavities at location of rock outcropping. No subsurface testing was conducted but one quartz flake was observed on the surface and not retained (Emory and Ross 2014)

Ross 2014). The prehistoric component was represented by a single quartz flake recovered from the subsoil horizon. The twentieth century component was represented by a domestic artifact scatter possibly associated with a collapsed brick chimney. In the vicinity, surveyors also noted an old road depression as well as a depression lined with wooden poles that was speculated to be a crude loading dock. Based on the artifacts recovered from disturbed contexts, the site was determined to have little to no research potential and was determined not eligible for the NRHP.

Seven other archaeological sites have been identified within a 1.5-mile radius of the NIST property (Table 3.3). Of these, four have historic components only, two have prehistoric components only, and one has both prehistoric and historic components. The majority of the historic components consist of nineteenth and twentieth century house sites or suspected house sites positioned on terraces or ridgetops overlooking the drainages of Great Seneca Creek or Muddy Branch. Two of these structures were located along the former B&O Railroad (18MO720, 18MO721) while the other domestic structures were located on or near historic roads. All of these were identified during Phase I reconnaissance or walk-over surveys. One early nineteenth century family cemetery also has been identified and is associated with the Summit Hall Farm. The internments are those of the original patenting family, the DeSellums (Otter 1989).

The sites with prehistoric components within the 1.5-mile radius of the NIST property are mostly characterized as isolated quartz debitage finds, although one low density lithic scatter also has been identified. One of the prehistoric sites is a rockshelter located along an unnamed tributary of Muddy Branch (18MO724; Emory and Ross 2014). No subsurface testing was conducted at the site, but one isolated quartz flake was observed on the surface. The combination of the ideal setting and the presence of at least one artifact led researchers to describe the site as a likely prehistoric campsite. The other isolated finds sites were located either at or near the head of tributary streams (18MO720, 18MO722) or in an upland setting between two stream drainages (18MO723) (Emory and Ross 2014). Only one site, 18MO722, described as a lithic scatter, contained a temporally diagnostic artifact. That quartz projectile point exhibited characteristics of late Middle Archaic to Late Archaic projectile points.

Sites similar to these appear to be present throughout the interior of Montgomery County. During a broad study of sites within the nearby Seneca Creek State Park for example, researchers found the majority of prehistoric sites were concentrated along the Potomac River with fewer sites positioned in the interior (Cleven et al. 2003). Interior prehistoric sites generally flanked the main creek system and consisted of quartz and quartzite lithic scatters. The few diagnostics that were identified at the interior sites consisted almost solely of Late Archaic projectile points.

Previously Recorded Built Resources

Within three-quarters of a mile of the NIST Gaithersburg campus, six built resources or districts, including the NIST Historic District, are included in the Maryland Inventory of Historic Properties (MIHP) (Table 3.4). The NIST Historic District was recorded in the MIHP and was determined eligible for inclusion in the NRHP in 2014/2015 (M: 20-47).

Table 3.4. Previously Recorded Built Resources within 0.75 Mile of the NIST Gaithersburg Campus

MIHP No.	Built Resource Name	Structure Type and Date	NRHP Eligibility
DOE-MO-0305	895 Quince Orchard Road	c. 1948 Dwelling	Not eligible-2014
DOE-MO-0306	899 Quince Orchard Road	c. 1948 Dwelling	Not eligible-2014
M: 19-38	Seneca Creek State Park	District	Not eligible-2003
M: 20-24	Mills House	Early 20th century Colonial Revival House	Not eligible-1996
M: 20-25	Briggs Farm #1	Early 20th century house and farm buildings	Not eligible (Demolished)
M: 20-47	National Institute of Standards and Technology (NIST) Headquarters	District (20th century government facility)	Eligible-2014,2015

The other five MIHP built resources include the Seneca Creek State Park Historic District and four historic dwellings. None of these are located within the NIST property boundaries. All of these properties were determined not eligible for inclusion in the NRHP. Two of the structures are within a reserved private lot along Quince Orchard Road adjacent to Assessment Area 6 (DOE-MO-0305; DOE-MO-0306). Another is located to the east of the NIST property on the opposite side of I-270 (M: 20-24), and the final structure is located to the southwest of the NIST property in the residential development along Orchard Ridge Rd. (M: 20-25). The former two are mid-twentieth century dwelling houses on small land parcels that had been subdivided from the Diamond Farm for John B. Diamond's relatives; the latter two represent early twentieth century four-square farm houses.

The Seneca Creek State Park, located west of the NIST property, was recorded in the MIHP in 2003 (M: 19-38). This 6,290 acre property encompasses dozens of historic and prehistoric archaeological resources and historic standing structures, none of which are in the immediate vicinity of the NIST property.

Cultural Setting

Prehistoric Cultural Sequence

The prehistoric cultural sequence for the Potomac River basin is relatively well known. This sequence traditionally has been subdivided into three broad stages of cultural development: Paleoindian, Archaic, and Woodland. The Paleoindian stage, which at times has been combined with the Early Archaic, spans the transitional period between the close of the Pleistocene and the onset of the Holocene climatic eras. The Archaic stage reflects settlement and subsistence strategies that developed as a response to the expanding deciduous forests that emerged during the Holocene. During the Woodland stage, the indigenous inhabitants of this region adopted a semi-sedentary lifestyle that gradually evolved into the maize-growing societies that the first European settlers encountered during the early seventeenth century. The broad outlines of these stages are presented below.

Paleoindian Stage (11,050-10,000 B.P.)

The Paleoindian stage is the earliest occupation that has been documented in the Potomac River Valley. During this stage, human cultural adaptation developed in response to the environmental milieu that characterized the terminal Pleistocene and early Holocene climatic periods. Although the principal diagnostic artifact that traditionally has been used to identify this period is the fluted projectile point, often called "Clovis," more recent research has provided evidence of a pre-Clovis presence in the Mid-Atlantic that potentially extends as far back as 16,000 B.P. (Boyd 2003; Malakoff 2008). In-depth knowledge about this period in the Middle Atlantic region initially was developed through research conducted during the 1970s at the Thunderbird site in the Shenandoah Valley of Virginia (Gardner 1974; Gardner and Verrey 1980). Gardner's work provided the stratigraphic and typological basis for subdividing this stage into three distinct subphases (or periods), each one marked by changes in changes in point typology (Gardner 1974).

As noted before, the Clovis sub-phase is distinguished by the classic fluted Clovis point, a type that is continent-wide in its distribution (see Haynes 2002). The succeeding mid-Paleoindian sub-phase or period is defined by smaller and thinner fluted points that Gardner (1974:15) recovered from strata immediately above the Clovis levels at Thunderbird. Minimally fluted Dalton and Hardaway projectile points that have been recovered beneath Early Archaic corner-notched horizons in many well stratified sites across the Eastern United States are diagnostic indicators of the final Paleoindian sub-phase (Barse and Marston 2006). Various classes of cutting and scraping tools, which in most instances are not in and of themselves diagnostic of Paleoindian occupation, have been found in association with these points.

Gardner (1974) maintained that Paleoindian settlement patterns in the Middle Atlantic region were quarry-centered, with larger base camps situated close to sources of high quality cryptocrystalline lithic raw materials. Smaller sites that focused on the exploitation of various resources, as well as smaller hunting sites, were located at

varying distances from the quarry-centered base camps (Gardner 1980). This settlement model has been applied not only in the Potomac Valley but also more generally throughout the Eastern United States.

Early Archaic Period (10,000-8500 B.P.)

For many researchers, the Early Archaic period represents a technological and adaptive continuum from the earlier Paleoindian period. The shift from an environment characterized by the spruce-pine forests that dominated the region during the Late Pleistocene to one marked by a mixed deciduous forest biome (Carbone 1974) required the adoption of novel adaptive responses. Early Archaic settlement patterns likely were tied to the seasonally available floral and faunal resources that were distributed across an expanding spectrum of environmental zones.

Early Archaic projectile points are characterized by the introduction of basal notching, a trait that Gardner (1980) argued was a reflection of the use of the spear-thrower and detachable-shaft lances. The abrupt shift to notched points at the onset of the Early Archaic period also may represent the adoption of corner-notching as a hafting technique. This change may have signaled the adoption of a throwing (rather than thrusting) technique for bringing down the game species (e.g., deer and elk) that flourished in the drier climate and expanding open grassland settings of the early Holocene.

The diagnostic artifacts for this period are the Palmer and Kirk corner-notched points and their variants, first described by Coe in 1964. These types have been found in strata above Paleoindian components at a number of sites, such as Beech Ridge near Dover, Delaware, where several corner-notched Palmer-Kirk variants were recovered from a stratum directly above a well-weathered B-horizon that yielded a Dalton-Hardaway specimen (Barse and Marston 2006:4.16-4.20). These Early Archaic points initially reflected a continued emphasis on the use of high quality lithic raw materials, implying a continuation of the Paleoindian quarry-based camp settlement model. However, in some areas of the Middle Atlantic, a more diverse range of lithic raw materials apparently came into use during the later Kirk phases. For example, approximately 57 per cent of the Kirk points examined in Wanser's (1982) survey of the materials from Zekiah Swamp in Southern Maryland were manufactured from quartz, a lithic material that was more readily available locally. Similar patterns of raw material usage have been noted within the Washington, D.C. / greater Potomac Valley region. The intensive Early Archaic assemblage recovered at the Indian Creek Site (18PR94) in nearby Prince Georges County, Maryland, also reflected this shift away from "exotic" materials like chert towards more locally available lithic types like quartz and quartzite (LeeDecker et al. 1991:278-279).

Middle Archaic Period (8500-5000 B.P.)

The Middle Archaic period was marked by environmental changes that included the continued expansion of deciduous forests, particularly into upland settings (Gardner 1980, 1989). Concurrently, as gradually rising sea levels diminished stream flows and stream gradients, inland swamps developed in the Potomac Valley. Fresh water swamps offered an ecologically resource-rich niche that the inhabitants of the Potomac Valley could exploit. This trend is perhaps best exemplified by the explosion of Middle Archaic occupations around the Zekiah Swamp in southern Maryland.

The most diagnostic artifacts for the initial phases of the Middle Archaic period are the distinctive bifurcate-based points like LeCroy and its cognate forms (Broyles 1971, Chapman 1975, Gardner 1982). Gardner's placement of these points at the beginning of the Middle Archaic period rather than at the end of the Early Archaic represented a break with the chronological frameworks developed by others for the Eastern U.S. (e.g., Chapman 1975, Steponaitis 1980, Wanser 1982). Gardner (1980) also noted several marked changes that occurred concurrently with the spread of the bifurcate point tradition. Compared to the Early Archaic period, the sheer number of Middle Archaic sites (or points) and the increasing number of environmental zones exploited both suggest an expansion of the population during the latter period. The widespread development of ground stone tools, a new technology used to process vegetable/plant resources

(cf. Chapman 1975); the more pronounced shift to locally available lithic raw material, a pattern that began at the end of the Early Archaic period; and the further uncoupling of base camps and the location of specific lithic sources all occurred during the bifurcate period.

Few well-stratified Middle Archaic sites with good contexts have been documented for the Potomac Valley, and none are known in the immediate Washington metropolitan area. However, in recent years, several bifurcate components with relatively intact contexts have been identified at the Higgins site in Anne Arundel County, Maryland, and at the Beech Ridge site in Delaware (Ebright 1992; Barse and Marston 2006). Two clusters of LeCroy bifurcate points also were documented at the Indian Creek V site; however, stratigraphic separation and associated contexts were not as clear at this site as at Higgins or Beech Ridge, and the Middle Archaic presence at Indian Creek clearly was a minor manifestation (LeeDecker et al. 1991).

Middle Archaic settlement patterns revolved around a subsistence strategy based on general foraging. This pattern emphasized the exploitation of seasonally available plant resources, such as oak and hickory, and included a diverse array of faunal resources.

Later Middle Archaic projectile point types that succeeded the bifurcate varieties in the Potomac Valley include the Stanly, Morrow Mountain I and II, Guilford, and Halifax types. These are the classic projectile points found in Coe's (1964) Carolina Piedmont sequence and they most commonly occur as surface finds in the Potomac Valley region. However, Barse's (1994) excavations in the early 1990's at the Clifton site on Mattawoman Creek in Charles County, Maryland, also demonstrated portions of this projectile point sequence in a shallow levee that bottomed out on basal channel deposits. Lanceolate-shaped Guilford and side-notched Halifax projectile points mark the close of the Middle Archaic period (Coe 1964). Guilford points are not well known outside of North Carolina and are rare in the Potomac Valley. Halifax points are considered to be equivalent to the Vernon point defined in Stephenson et al.'s (1963) typology from the Accokeek Creek site (McNett and Gardner 1975:9). Halifax points have been recovered from strata underlying Savannah River/Holmes points at the Fraser site in Loudon County, Virginia (McNett and Gardner 1975:10), and from a similar context at the Clifton site (Barse 1994). Thus, Halifax/Vernon points can be viewed as part of a late Middle Archaic side-notched horizon that predates the emergence of the widespread Late Archaic phase riverine and estuarine adaptations typified by the Savannah River point and its cognate forms.

Late Archaic Period (5000-3000 B.P.)

The Late Archaic period in the Potomac Valley was characterized by an increase in population, the continuation of a foraging pattern linked to seasonally available plant resources, and the development of an adaptation based on the exploitation of riverine and estuarine resources. In particular, sea level rise pushed the salinity cline upstream in the Potomac River and related tidal environments which resulted in a corresponding upstream movement of various riverine and estuarine species. Anadromous fish traveled further upstream to spawn, producing extensive seasonal fish runs along the upper reaches of tidal rivers like the Potomac. The emergence of brackish water estuaries in the greater Chesapeake region and its associated tidal tributaries also witnessed the spread of massive oyster beds and a variety of crustacean species such as crabs (Gardner 1982, Potter 1993, Dent 1995). Late Archaic settlement in the tidal portions of the Potomac River shifted to embayed stream mouths and similar settings (Gardner and Curry 1977). Indigenous populations continued to use interior sites as smaller hunting and specialized exploitative stations, or to tap locally available lithic sources such as quartz and quartzite cobble beds. [Of particular relevance for the present study are the quartz outcrops that were likely quarried along the upper Great Seneca Creek tributaries; some of which are not far from the project area (see MHT#MO33).

The most prevalent Late Archaic diagnostic projectile point in the Middle Atlantic region is the Savannah River point, which entered the archeological record ca. 4,500 B.P. and subsequently led to the development of such related types as the Susquehanna Broadspear (Witthoft 1953)

and later derivatives that straddle the transition between the close of the Late Archaic period and the onset of the Early Woodland period. A number of well-dated (2,500 – 1,000 B.C.) terminal Late Archaic point types from the Northeast, including Lamoka and Wading River points (Ritchie 1980), also are present in surface collections from the Potomac Valley and in curated late nineteenth century collections housed at the Smithsonian (Barse 1972-1973). The Late Archaic technological repertoire also contained a variety of ground stone tools, a tradition that carried over from the earlier Middle Archaic period. Various Late Archaic assemblages also include steatite net weights and carved steatite bowls.

Early Woodland Period (3000-2750 B.P.)

In the Potomac Valley and Chesapeake Tidewater, the Early Woodland period is marked by the inception of ceramic technology. The earliest ceramic type in this region was a crude flat-bottomed ware known as Marcey Creek that first was identified by Manson (1948) at the Marcey Creek site in Virginia, just north of Washington. This distinctive ware evolved directly out of earlier flat-bottomed steatite or soapstone bowls of the Late Archaic period, and it was stylistically similar to those earlier Late Archaic vessels. However, Marcey Creek ware apparently was short-lived, and it evolved into, or was replaced by, conoidal-shaped, cord-marked ceramics that Stephenson et al. (1963) designated as Accokeek Cord-Marked, after the Accokeek Creek site in Prince George's County.

Accokeek-like wares or cognates spread widely throughout the Middle Atlantic region, from the Shenandoah Valley eastward across the Delmarva Peninsula and northward into southern New Jersey (McLearen 1991, Mounier and Cresson 1988; Barse 1991). Selden Island ceramics, another Early Woodland ware type that sometimes is viewed as the immediate precursor of Accokeek Ware, have been re-assessed by some as a steatite-tempered version of the cord-marked Accokeek ceramics (Barse 1972-73). Moreover, steatite also continued in use as a tempering medium for Middle Woodland period Albemarle ceramics (Barse 2002). The range of other cultural material associated with Accokeek ceramics is not yet well defined. Lobate-based Piscataway points have been recovered from Accokeek contexts at a number of sites in the Potomac Valley and greater Middle Atlantic region, including the Fletcher's Boathouse site (51NW13) in Georgetown, where excavations exposed a small Accokeek hearth feature associated with Piscataway points (Barse 2002).

Early Woodland period settlement patterns generally resembled those described for the Late Archaic period. Base camps were located in riverine-based settings, especially at the junction of fresh and brackish water at the head of embayments like that on Piscataway Creek (Gardner 1976). Smaller Early Woodland sites that focused on the specialized exploitation of various resources were situated within interior drainage areas along Potomac River tributaries. Such sites likely represent single family household clusters similar to those defined at an Early Woodland base camp on the lower Cape Fear River in North Carolina (Barse, Marston, and Brown 2001).

Middle Woodland Period (2500-1000 B.P.)

The application of net-impressed surface treatments and the development of a wider range of vessel forms and size ranges characterize Middle Woodland ceramics in the Potomac Valley and on Maryland's Coastal Plain. Two distinctive ceramic types—Popes Creek and Mockley—emerged during the Middle Woodland period, with Popes Creek Net Impressed pottery being the earlier of the two wares. Popes Creek ceramics first were defined by W.H. Holmes (1903) based on his late nineteenth century excavations at the massive shell deposits at Popes Creek, Maryland, on the lower Potomac River. Popes Creek ceramics entered the archeological record around 490 B.C., based on a date from the Loyola Retreat site located just north of Popes Creek (Gardner and McNett 1971), while a single AMS date on carbon encrustations removed from a Popes Creek sherd from the nearby Chapel Point site returned a date of 2,235 ±100 B.P., or 285 ± 100 B.C. (uncorrected date; Curry and Kavanagh 1993). Other net-impressed wares in the Middle Atlantic region probably appeared at roughly the same time. These regional types form a group of related circum-Chesapeake Bay wares that suggests a close

inter-relationship between the groups responsible for each ware type. All of these groups participated in a Middle Woodland interaction sphere that culminated in the later Mockley phase (Thurman and Barse 1974).

In the Potomac Valley Piedmont and further west in the Blue Ridge, Accokeek ceramics evolved into a steatite-tempered Middle Woodland ware known as Albemarle Cord Marked, defined originally by Evans (1955). The overlapping chronological relationship between Albemarle, Popes Creek and the early stages of the later Mockley ceramics was evident in the large pit features excavated at the Fletcher's Boathouse Site (51NW13)(Barse 2002), where varying percentages of all three wares were found in discrete lenses within each pit. The ceramic associations at this site suggest that Middle Woodland ceramic development exhibited a certain amount of overlap between chronologically defined wares.

Investigators like Dent (1995), Gardner and McNett (1971), and Potter (1993) have argued that Popes Creek ceramics developed into the shell tempered Mockley ware around AD 1300, although the associations at the Fletcher's Boathouse site seem to suggest that there was overlap. Artifacts associated with Mockley ceramics frequently include crudely flaked side notched points and better-flaked parallel stemmed points, both manufactured from rhyolite and argillite. The side-notched types are known locally as Selby Bay or Fox Creek points (Wright 1978; Jefferson-Patterson Park and Museum 2002). The parallel stemmed points once were identified as Steubenville types, a Late Archaic point from the Upper Ohio Valley region (Mayer-Oakes 1955).

A shift in settlement patterning apparently occurred with the Mockley phase, in contrast to preferred site locations for earlier Popes Creek phase occupations. Larger riverine base camps superseded Early Woodland base camps in size and moved onto broader floodplain settings, although smaller specialized exploitative sites still clustered along smaller estuaries and interior drainages similar to settings like that of the project area. Shell middens and non-shell sites containing Mockley ceramics and rhyolite and argillite debitage mark smaller sites (Barse 1978).

Some Mockley phase sites on the Western Shore of Maryland appear to exhibit participation in localized exchange networks that involved the movement of lithic raw materials such as rhyolite out of the Catoctin and South Mountain areas of Maryland, argillite from the New Jersey Fall Line (near Trenton), and sometimes Pennsylvania jasper from the southeastern portion of that state. More distant exchange relationships are manifested in the presence of native copper that has been recovered from several Mockley phase sites in the Maryland region (see Barse 1978). How long the participation in these Middle Woodland exchange networks persisted is unclear. However, they appear to have collapsed by A.D. 800 to 900, since lithic procurement sources changed during the Late Woodland period, likely as a result of an increasingly sedentary lifestyle.

Late Woodland (1000-400 B.P.) and Contact Periods (400-250 BP)

The trends in subsistence strategies, settlement patterns and ceramic technology that had emerged during earlier periods matured during the Late Woodland period. The earlier trends towards sedentism and a subsistence system that emphasized horticulture eventually developed into a settlement pattern of floodplain village communities and dispersed hamlets that were supported by a combination of hunting and planting native cultigens. Ceramic continuity can be demonstrated between the Middle Woodland Mockley ceramics and the Late Woodland Townsend fabric-impressed ceramics, especially in rim form, utilitarian vessel shape, and temper. On the other hand, new vessel shapes, such as collared jars with globular bodies, appeared in the Potomac Valley region, as did a marked proliferation of incised and corded design elements, arranged in panels that encircled the vessels below the rim crest.

The sudden increase of ceramic decoration and the embellishment of the various design motifs may reflect the need to define ethnic boundaries, and perhaps smaller kin groups, among neighboring societies that may have been competing for space on arable riverine floodplains. Ceramic designs also may have served to dis-

tinguish one lineage or kin group from another, for non-competitive reasons, in a region that now sustained the highest population level of the prehistoric sequence. As such, ceramic design elements functioned as a symbolic means of communication amongst groups, serving as badges of ethnic identity or, perhaps, smaller intra-group symbols of identity.

The other major Late Woodland ceramic group that appeared during this period was Potomac Creek Ware (Stephenson et al. 1963). Unlike shell tempered Townsend Ware ceramics, Potomac Creek pottery was tempered with sand and crushed quartz. Distinct from earlier ceramics, Potomac Creek probably originated in the Piedmont or Ridge and Valley area of Maryland-Virginia, and gradually moved into the Potomac Coastal Plain during the thirteenth and fourteenth centuries A.D., although Potter (1993:126-134) presented two alternative hypotheses to this view. Potomac Creek vessels were cord-marked or smoothed-over cord-marked, as opposed to the fabric impressed Townsend series. Sometimes vessel surfaces were completely smoothed on the exterior surface, an attribute shared with Townsend ceramics. Potomac Creek designs also were different, being composed of single rows of cord-wrapping below the rim, or cord-wrapped stick impressed around the vertical vessel collars.

The distribution of Potomac Creek and Townsend ceramics carries significant implications for identifying Coastal Plain ethnic groups. The two wares have nearly mutually exclusive geographic distributions, with Potomac Creek centered in the Potomac Valley and Townsend wares found from the Patuxent River eastward across Maryland's Western Shore. More than likely, the Piscataway and related groups in the Potomac Valley were responsible for Potomac Creek ceramics, while the Patuxent and related groups were responsible for Townsend pottery.

The Contact period, which is poorly understood in the study area, began during the first decade of the seventeenth century when English explorers and traders first entered the Potomac Valley. In June, 1608, John Smith's party proceeded by boat up the Potomac as far as the Little Falls, and then sent groups on foot further upriver as far as Great Falls. English traders like Henry Fleet, Samuel Argyll, and Henry Spelman were active in the Potomac region throughout the ensuing two decades (Potter 1993). Such contacts not only introduced European goods into the indigenous material culture assemblage, but also introduced diseases that led to the eventual disintegration of some aboriginal groups, although various contemporary scholars have questioned the degree to which the disease factor impacted native populations (Potter 1993:165-166). European settlement of the Potomac Valley during the first half of the seventeenth century intensified competition for arable land, as increasing numbers of colonists established homesteads in the region. With the loss of large population aggregates and continued population pressure from European expansion, remnant Indian groups merged into smaller settlements and gradually retreated to more remote interior settings, much like the Maryland Piscataway who temporarily withdrew through Virginia to Heater's (Conoy) Island on the upper Potomac (Curry 2011:345-6; Sanders et al. 2015).

Historic Cultural Sequence

Contact and Settlement Period (1680-1780)

The first European settlement in the colony of Maryland reached the Chesapeake Bay in 1634, under the proprietorship of Cecilius Calvert, Second Lord Baltimore. Early Maryland colonists adopted tobacco as an agricultural focus, which required a large labor force of indentured servants and slaves. For almost a century, settlement remained concentrated along the Chesapeake Bay and its major tributaries (Wilsatch 1931).

The first land grant in what became Montgomery County was issued in 1688 to Henry Darnall, member of a prominent family in then Prince George's County. Many early land grants were issued for land speculation to wealthy men who did not necessarily intend to move to the area (Sween 1984:18-19). Early land grants were issued along Rock Creek, in the vicinity of Great Falls along the Potomac River, and in the vicinity of present day Gaithersburg and Rockville. The earliest settlers who moved into the southern and eastern sections of Montgomery County during the early eighteenth century were primarily of English and Scottish descent (Wesler et al. 1981:165; Sween 1984:18). One of the first prominent landowners

along the Potomac was Ninian Beall. He arrived in Maryland as an indentured servant, and eventually acquired 25,000 acres of land. A portion of his holdings became the site for Darnestown in 1749. The town was named after William Darnes, a prominent citizen and landowner in the community. William Darnes served as a Judge of the Levy Court and the Orphans Court, the Darnestown area Representative to the state legislature, and a director of the C&O Canal (Cavicchi 1995). Following the initial period of English settlement, Pennsylvania Germans and German immigrants were attracted to the region's rich Piedmont soils (Scharf 1882:642).

The gradual increase in population in Maryland's Piedmont region led to the subdivision of Frederick County from Prince George's County in 1748 (Scharf 1882:640); present-day Montgomery County made up the Lower District of the new county. When the colonies declared their independence from England in 1776, the Lower District of Frederick County became an independent political entity. The new county was named for American patriot Richard Montgomery (Hiebert and MacMaster 1976:3).

Early agriculture focused on tobacco plantations, which required slave labor and were located near water routes (Sween 1984:19). In the 1750s, Thomas Lamar and his family owned a string of tobacco plantations near present-day Gaithersburg; in 1769, Gerard Briscoe of Charles County acquired five contiguous tracts, including lands that had been patented by Robert Lamar as *Robert's Delight*, *Orenoke*, *Belt's Desire*, and a portion of *Deer Park*. The NIST Gaithersburg campus is located partially on a portion of *Belt's Desire* (HRA 1987). Briscoe laid out streets and lots in the settlement commonly called Log Town, formed circa 1765 (later renamed Gaithersburg). Logtown centered on the tannery that the Briscoes owned and operated there (City of Gaithersburg 1978:2-3; HRA 1987). In 1777, Gerard Briscoe offered 1,000 acres for sale. Six hundred acres, including Briscoe's dwelling, located at approximately 18 miles north of Georgetown and near the main road to Fredericktown were described as "extremely well adapted to planting and farming; about 250 acres cleared, and in excellent repair; a large apple, peach, and cherry orchard; well wooded and abounds with fine springs and meadow land. The levelness of the land, and the beauty of the situation, is justly admired." The adjoining 400 acres included a 50-acre plantation "in good repair, with buildings sufficient for small family, well wooded and watered, with a considerable quantity of meadow ground, and a young orchard of about 100 apple trees" (*Maryland Journal* 1777). Briscoe's house was on the grant *Belt's Desire*, partly on the current NIST campus (HRA 1987). In 1783, the property was resurveyed at the request of the buyer, Roger Ponsonby. At the time of the resurvey, it was patented as *Zoar*, which totaled 1,238.5 acres (Maryland State Archives Patent Certificate 542).

Agrarian Intensification and Internal Improvement (1780-1860)

After the Revolutionary War, a period of economic instability and agricultural decline occurred as adjustments were made to establish a new country. A market glut of tobacco and soil depletion contributed to this economic decline (Wesler et al. 1981:167). Many tenants lost their rented homes and farms when large tracts of Loyalist land were auctioned to Continental Army officers (Sween 1984:33). In 1790, the population of Montgomery County in 1790 numbered 18,003, including 11,679 white persons, 6,030 enslaved, and 284 free blacks (Wesler et al. 1981:174).

Despite the market glut and soil depletion, tobacco remained the primary crop throughout the first half of the nineteenth century. Tobacco production peaked in 1840 when 1,088,412 pounds of tobacco were produced; tobacco production dropped to 843,300 pounds in 1860. During the same period, the production of corn rose from 398,385 bushels in 1840 to 686,843 bushels in 1860 and wheat production rose from 142,757 bushels in 1840 to 341,087 bushels in 1860. Additional crops included oats, buckwheat, potatoes, hay, and some orchard products (Wesler et al. 1981:176-177). The production of tobacco, wheat, and orchards during the early nineteenth century was documented on the property that be-

came NIST (Maryland Register of Wills Records-administration accounts for Rawlins estate 1821 and Offutt estate in 1842).

Transportation improvements in Montgomery County aided the development of agricultural and towns by providing easier access to markets for area farmers and industrialists. In 1784, the Patowmack Navigation Company sought to establish a transportation route along the Potomac River; this venture failed (Hiebert and MacMaster 1976:95). The road system through the county also was improved. Dennis Griffith's 1794 map of Maryland showed six roads converging at the newly designated county seat at Rockville. One interior road linked Georgetown with Frederick and passed through Rockville and Log Town. This route was improved during the early nineteenth century when the Rockville Turnpike was chartered; construction of the new paved road began in 1817 (Wesler et al 1981:167). The turnpike ran from the District of Columbia to Rockville and continued through Gaithersburg and on to Frederick (Boyd 1880:75). The map also showed River Road along the Potomac River extending from the District of Columbia along the western edge of the county (Griffith 1794).

With the opening of the successful Erie Canal in 1817, local interest in canal construction was renewed and the Chesapeake and Ohio (C&O) Company was formed to provide what the Patowmack Navigation Company had failed to produce: a link to western markets. The C&O Canal was chartered in 1828, and the line from Seneca to Georgetown was completed in 1831. By 1835, the canal extended along the southern border of the county to the Monocacy Aqueduct, at mouth of the Monocacy River. The southern section of the canal was a boon to Montgomery County's farmers who shipped produce to markets in Georgetown and Washington, D.C. In 1859, 83 barges a week used the canal to transport grain, flour, coal, and other farm products from Seneca to Washington, D.C., and Georgetown (Cavicchi 1995).

Seneca Creek was harnessed as a source for waterpower during the early years of settlement. A 1795 advertisement for Middlebrook Mills described Seneca Creek as "the most powerful consistent steam in the county" (Seneca Creek Greenway Trail 2011). Waterpower from area streams powered gristmills, sawmills, bellows for forges, and fulling mills. Montgomery County had 44 mills before 1800, eight were located on Seneca Creek and its tributaries (Seneca Creek Greenway Trail 2011). The town of Seneca, originally called Newport, was laid out along Seneca Creek in 1787 by John Garret (Sween 1968:3).

Merchant mills like Seneca Mill, established in 1780, served farms on a regional basis. The market for the mill included Germantown, Gaithersburg and Damascus. The merchant mills offered comprehensive services from a mill to grind grain, a warehouse to store flour, and a wharf on the canal to ship flour to markets (Cavicchi 1995). In addition to milling operations, the Seneca Mill handled milling supplies, wheat, flour, feed, corn, and fertilizers. They shipped grain, hay, and straw. The company owned its own canal boats to transport products to market in Georgetown. Products were stored in a warehouse located on Seneca Creek prior to shipment. The mill operated until ca. 1918 (Sween 1968:5).

Manufacturing enterprises in the county included sawmills and gristmills, a woolen mill, and a few quarries and mines (Blunt and Blunt 1862; Wesler et al. 1981:169). The presence of a productive sandstone quarry near Seneca and the discovery of gold in 1848 in area streams attracted new settlers and helped to diversify the agriculturally-based economy of the region (Scharf 1882:644). Seneca Sandstone was worked at extensive quarries along the C&O Canal at the mouth of Seneca Creek. It was used in the construction of the canal and in public buildings in Washington D.C., most prominently in the Smithsonian Castle (Scharf 1882:645).

Francis C. Clopper owned two mills, a gristmill known as Clopper Mill and the Francis C. Clopper Woolen Manufactory known as Long-draft mill. The woolen manufactory was worth $8,000 in the 1850 census and included seven cards, three looms, two fulling stocks, two pickers, and two spinning frames (McGrain 1972). Francis Clopper was instrumental in bringing the

Metropolitan line of the B&O Railroad to Montgomery County in 1873 and surveyed much of line.

The Civil War Era (1860-1865)

On the eve of the Civil War, the population of Montgomery County numbered 18,322. Of these, 11,349 were whites, 5,421 were enslaved, and 1,552 were free blacks (Wesler et al. 1981:174; Sween 1984:67). Montgomery County's population contained supporters of both the Union and the Confederate causes and the county's men served in both armies (Sween 1984:69-70).

Military maneuvers overshadowed the everyday life of Montgomery County residents during the Civil War. Although no major battles were fought in the county, Federal troops formed a defensive wall around the District of Columbia to protect the nation's capital; a portion of this circle of forts ran through southern Montgomery County (Hiebert and MacMaster 1976:2171). Approximately 18,000 Union troops were stationed in and around Darnestown in 1861. The Union objectives were to protect the C&O Canal, the fords over the Potomac River, and routes into the city of Washington (Sween 1984:73). Major General Nathaniel P. Banks was in charge of defending the region between Washington and Harper's Ferry and established his headquarters at the Magruder Farm one and one half miles south of Darnestown on the road to Seneca. A signal station was established in a huge chestnut tree located on the farm, connecting communications between Washington D.C. and Harpers Ferry via Sugarloaf Mountain (Cavicchi 1995).

Large movements of Union soldiers through the area occurred in 1862 and 1864 in response to Confederate incursions into the Union territory, which culminated in the battles of Antietam and Gettysburg, respectively. In 1863, Confederate troops under J.E.B. Stuart's Cavalry Corps crossed the Potomac. He dispatched part of his force along Seneca Road to Darnestown and then via Darnestown Road to Rockville and rejoined the remainder of the Corps (Cavicchi 1995). Montgomery County residents suffered from the depredations of both Union and Confederate troops, who confiscated food, draft animals, and money as they marched, camped, and skirmished throughout the region.

Economic Adaptation (1865 - 1930)

In the years following the Civil War and Reconstruction, Montgomery County slowly entered the urban age. Railroads and streetcar lines brought development into sparsely-populated regions. With more efficient means of transportation, new towns and suburban communities prospered. Between 1870 and 1900, Montgomery County's population rose almost 50 per cent, from 20,563 to 30,541, and its economy became increasingly dependent on the growing metropolis of Washington, D.C. (UVA 2004:n.p.; Sween 1984:85, 90; Hiebert and MacMaster 1976:209).

The primary economic focus of Montgomery County remained agricultural during the postbellum years. Wheat and corn, followed by tobacco, were the primary products between 1880 and 1930 (Wesler et al. 1981:176-177). Wheat and corn supported the grist mills that continued to operate until World War I; few mills were in operation after 1925 (Seneca Creek Greenway Trail 2011). The dairy industry grew during the first three decades of the twentieth century. In 1900, the value of dairy products was approximately $450,000; by 1920, the value of dairy products rose to slightly over $1 million. In 1930, the value of dairy products stood at nearly $1.5 million (Wesler et al. 1981:177). The introduction of mandatory pasteurization of milk guaranteed quality and spurred an increase in the consumption of dairy products (Pirtle 1926:130-131).

The arrival of railroads to the county after the war opened up new markets for county farmers. In 1866, construction began on the Metropolitan Branch of the Baltimore & Ohio Railroad; when completed, this branch line connected Washington D.C. to the existing B & O main line at Point of Rocks. With stops at Rockville and Gaithersburg, the Metropolitan Branch provided crucial transport for goods and services in Montgomery County (Stover 1995:142-143). The railroad stop started a period of growth for Gaithersburg, which became an incorporated town in 1878 (City of Gaithersburg 2007:3) According to Hiebert and MacMaster, the opening

of the Metropolitan Branch facilitated a rise in dairying as "dairy farmers [gained] access to Washington markets" (1976:210). Not only did railroads transport people and farm produce efficiently, they also brought farmers an abundant supply of lime for improving soil fertility (Wesler et al. 1981:170).

Established roads still provided access to markets. Post offices frequently were located near the intersection of primary routes, stimulating the development of small hamlets. At the turn of the twentieth century, Montgomery County's road system comprised 790 miles of unimproved roads with only 45 miles of road paved with stone, gravel, or macadam in the county (Hiebert and MacMaster 1976:236).

The C & O Canal remained a regional waterway, but never fulfilled its original goal of linking the Potomac River to the Ohio River (Shaw 1990:106). Canal traffic increased after the Civil War, with the canal's busiest years during the 1870s. The canal was damaged from disastrous floods in 1878 and 1889, and revenues barely covered expenses (Shaw 1990:107). Although repaired after 1889, a great flood in 1924 put the C & O Canal out of business (Sanderlin 1946:285). In 1938, the canal was sold to the Federal Government and was first dedicated as a public park in 1939; the park was abandoned in 1942 when floodwaters further damaged the waterway (Sanderlin 1946:281). The C & O Canal National Historic Park was established in 1971.

While 85 per cent of Montgomery County's land remained agricultural during the first quarter of the twentieth century (Sween 1984:104), subdivisions began to proliferate on the fringes of Washington, D.C. Suburban residents clamored for improved services, such as paved streets, fire and police departments, and garbage collection. Initial attempts at long-range suburban and regional planning were made during this period. The Maryland-National Capital Park and Planning Commission was established in 1927 to "guide and plan for the orderly growth of the suburbs in Montgomery and Prince George's counties" (Sween 1984:121-122).

Rising populations brought associated urban problems. Frequently, water supplies in towns surrounding the District of Columbia either were tainted by pollution or were inadequate to meet the demands of residents. A 1918 report from the Washington Suburban Sanitary Commission indicated that the population in the Montgomery County/Prince George's County belt increased from 20,000 to 32,000 people during an eight-year span, without an accompanying improvement in the sewage system. Montgomery County recognized its close ties with the city of Washington during the early twentieth century, when the sanitary commissions of the District and suburban Maryland joined forces to provide modern sewer systems for the Metropolitan Washington area (Brugger 1988:446).

Modern Era (1930-present)

Montgomery County entered a new era after World War II. Continued growth of the Federal bureaucracy spurred a building boom as governmental agencies grew too large for their Washington, D.C. compounds and relocated to the more open spaces of the suburban communities (Hiebert and MacMaster 1976:352). In addition, a housing shortage developed as more and more workers moved to the region. In 1940, the population of the county was 83,912; by 1950, Montgomery County had 164,401 residents. Sween notes that mid-century development in Montgomery County "laid the groundwork for the more 'planned' communities" of the late twentieth century (Sween 1984:135). Many early developments included commercial buildings in addition to a range of housing types (Sween 1984:135-136; UVA 2004:n.p.).

The history of the relocation of NIST to Montgomery County reflects this pattern (Peeler and Grandine 2015). In mid-1955, Assistant Secretary of Commerce for Administration James Worthy asked A.V. Astin, Director of the National Bureau of Standards (NBS) which became NIST, to consider a new headquarters as part of an effort to disperse Federal agencies away from D.C., which was considered a high potential target for

enemy attack during the Cold War. Astin accepted the offer and initiated the process to find a new headquarters for NBS. In a memo dated 15 July 1955, Astin summarized the reasons for relocation:

1. The age of NBS buildings and facilities, and the concomitant extraordinary costs needed to maintain those structures;
2. The uneconomical and inefficient space arrangements to accommodate the present organization;
3. The urgent requirement to act now in implementing plans for possible emergencies;
4. The need to find an area sufficiently distant from populated communities to improve and expand certain urgent scientific programs (Astin 1955).

Astin had only two weeks to obtain a cost estimate for the relocation before the submission of the President's budget for fiscal year (FY) 1957. He approached the General Services Administration (GSA) to prepare the cost estimate. GSA cost estimators calculated $40 million for the relocation (Passaglia 1999:475-476). As passed, the FY1957 Congressional appropriation included $930,000 for site acquisition and for the preparation of plans and detailed cost estimates for the new NBS headquarters (U.S. Department of Commerce 1961). However, the appropriation was contingent on immediate site selection (Passaglia 1999:477; NIST 1958:2.2). Astin and GSA selected 575 rural acres near Gaithersburg, Maryland, and the GSA began site acquisition in July 1956 (U.S. Department of Commerce 1956).

In FY1961, Congress appropriated $23.5 million to begin construction at the Gaithersburg campus (U.S. Department of Commerce 1961; Peeler and Grandine 2015). Official groundbreaking ceremonies were held at the actual site of the engineering mechanics laboratory on June 14, 1961. Secretary of Commerce Luther H. Hodges commented that "it was typical of the NBS dedication to accuracy to hold the ground breaking on the exact site of the Engineering Mechanics Laboratory in spite of the remote location" (NIST n.d.). Dedication ceremonies occurred in November 1966 (Passaglia 1999:488-489).

During the latter half of the twentieth century, the population of Montgomery County continued to rise while agriculture declined. By 2008, the population of Montgomery County had reached 950,680; the population density in the county was more than three times greater than the average for the State of Maryland. According to the 1950 agricultural census, there were 1,555 farms in the county, accounting for 316,160 acres of land. By 1987, the number of farms had declined to 669 and farmland had been reduced by two thirds. In 2007, only 67,613 acres of farmland remained in Montgomery County (UVA 2004:n.d.; U.S. Department of Agriculture 1950, 1992, 2007).

Land Tenure History

At the time of NIST's acquisition, the property was composed of over a dozen parcels (Figures 2.2 and 2.3). Approximately 80 percent of the approximately 579-acre property, however, was owned by the Diamond and Briggs Families. At least seven farms or farm complexes were located within the newly acquired NIST property when the demolition survey was completed in 1961 (Voorhees, Walker, Smith, Smith & Haines 1961a). The dwellings associated with these farms were located within Parcels 1, 5, 6, 7, 8, and 10. Detailed deed research was conducted on these parcels to assess the land tenure history and potential for earlier structures or other associated features.

Parcel 1: John B. Diamond

The land formerly owned by John B. Diamond in Parcel 1 had been in the Diamond family since 1850 (Table 3.5). In 1850, Maria Diamond, a widow formerly from Philadelphia, Pennsylvania, purchased 360.5 acres of land formerly owned by Aaron Offutt as subdivided by a Court of Commissioners (MCLR JGH 2:219). Maria Diamond died in 1864 and devised 292.75 acres to her son William C. Diamond (MCLR EBP 10:101). In 1926, Grace Diamond, a widow, transferred the property to John B. Diamond (MCLR 412:243). At the time, the Diamond property was operated as a large dairy in Montgomery County.

Prior to Maria Diamond's acquisition of the property, the property was owned by Aaron Offutt, who died in 1842, with no children. In 1840,

Table 3.5. Parcel 1 Deeds

Year	Date	Montgomery County Deed Reference	Grantor	Grantee	Acreage	Notes
1926	14-Oct	L412/F243	Grace R. Diamond, widow of John B. Diamond	John B. Diamond, Jr.	apprx 300+, total not given in deed	These tracts: part of Zoar containing 292.75 acres from a deed from Joseph Thompson and wife to William C. Diamond 1872 (EBP 10/F101), parts of Zoar and Rawling's Rest from Martha A Meem to William C. Diamond 1871 (EBP 8/F483), 65/100ths acre described as lot E in exchange between John B. Diamond and wife and Caroline M. Brown and others May 1895 (JA51/F19), 6.75 acres on east side of the public road leading from Gaithersburg to Quince Orchard being that part of land excepted from the conveyance from Grace R. Diamond to Douglas B. Diamond by deed of even date herewith and intended to be recorded among said land records simultaneously herewith. It is presumed that the property descended to John B. Diamond (1857-1926), husband of Grace (1853-1942), son of William C. Diamond (1828-1873) and Sarah Josephine Diamond (1826-1907).
1872	30-Aug	L EBP10/F101	Joseph Thompson and Roberta B. Thompson	William C. Diamond	292.75	This deed was issued to correct an error in earlier deeds. Aaron Offutt, late of Montgomery County, had possessed real estate that, after his death, was divided by a Court of Equity to partition the property into lots and sell it. Charles Offutt and others complainants vs Horatio Beall and others. The commissioners sold lot 2 to George W. Garrett and lot 1 to Frederick A. Tschiffely. The land sold to Garrett was sold to Maria E. Diamond, ex. of John Diamond by deed 12/7/1850 (L STS5/f145) by deed dated 3/22/1853 in L TGH 2/219 who left it in her will (died 5/17/1864) to (Will book GWT1/F225) to William Diamond. But the commissioners were in error. George Garrett purchased lot 1 and Tschiffely purchased lot 2. Equity judgement record STS (STL or STT?) No. 3/F1. Lot 1 part of tract called Zoar containing 292.75 acres.
1864		Will; Will Book GWT1/F225	Maria Diamond	William C. Diamond and Josephine, wife		Maria died 1864 and devised property to William by will (Will Book GWT1/F225).
1853	22-Mar	JGH2/219	Court of Commissioners	Maria Diamond formerly of Philadelphia, PA	360.5	Court of commissioners sold lot 2 to George Garrett, who assigned, transferred and conveyed his interest to Maria Diamond. Maria paid the court and received the land in fee simple. Lands were part of Zoar and Resurvey of Younger Brother. Part of Zoar may have been been conveyed by Thomas Plater to Zachariah Offutt. Together with all singular buildings improvements, ways, waters, etc.
1850	7-Dec	STS5/F145	Equity Court case betw. Charles Offutt and others vs complainants Horatio Beall	Maria Diamond formerly of Philadelphia, PA		Poor copy that is illegible. Aaron Offutt died in 1842, apparently intestate with no direct heir. Charles Offutt seems to have been a younger brother.
1801	8-Jan	I/F492	Thomas Plater	Zachariah Offutt	587 +70.5	Contains part of Zoar and Resurvey of Younger Brother sold by Edward Burgess to Thomas Plater.
1782		MD Patent Certificate 542 - Zoar		Robert Brisco and Gerard Brisco	1238.5	Resurvey five tracts or parcel of land lying contiguous to each other, Resurvey of Roberts Delight patented May 1768 to Gerard Briscoe (482 acres), Lost Hatchet patented to 9/1725 to James Holmead (192 acres), resurvey on Oronoke patented to Robert Briscoe 10/1761 (387 acres), 12 acres part of Deer Park patented by Ralph Crabb in 1723 (427 acres), Belts Desire originally patented 11/1740 to Tobias Belt (120 acres).

Aaron Offutt was recorded in the census as living in vicinity of Rockville; his household comprised 1 white male between 50 and 59 years old and 5 slaves (Ancestry.com 1840 census). The administrator of Aaron Offutt's estate was his brother, Charles Offutt. The numerous Offutt heirs could not divide the acreage equitably. An appraisal of the estate in 1842 where Aaron Offutt resided provided the following details about the property: a 2-story brick dwelling house with four rooms per floor (40 x 30 ft) with a log kitchen; a one-and-half-story brick building that contained a smokehouse, workshop, hen house, and granary on the first floor and "negro quarter" in the upper story; nearly new log blacksmith shop; 1 log stable; 1 corncrib;1 frame carriage house; 1 tobacco house; an old orchard with approximately 90 apple trees; 12 acres of meadow land; 30 acres of wheat; and, approximately 55 acres of woodland (MRWR administration accounts for Offutt estate 1842). A court of commissioners was appointed to divide the property into four lots, which then were offered for sale.

The property that had been sold to Maria Diamond contained part of the tracts called Zoar and Younger Brother. These tracts had been purchased in 1801 by Zachariah Offutt from Thomas Plater (MCLR JGH 2:219). At that time, the property contained 587 acres of Zoar and 70.5 acres of the tract Younger Brother. Thomas Plater had been tasked to liquidate land formerly owned by Edward Burgess to satisfy Burgess' creditors (MCLR I:492; HRA 1987). Edward Burgess had acquired the land by 1783 as a result of a dispute between its former owners Gerard and Robert Briscoe and a potential buyer, Roger Ponsonby (HRA 1987). Ponsonby likely had responded to Gerard Briscoe's advertisement for the sale of 1,000 acres in Montgomery County. In the ad, 600 acres, including Briscoe's dwelling, were described as "extremely well adapted to planting and farming; about 250 acres cleared, and in excellent repair; a large apple, peach, and cherry orchard; well wooded and abounds with fine springs and meadow land. The levelness of the land, and the beauty of the situation, is justly admired." The adjoining 400 acres included a 50-acre plantation; "in good repair, with buildings sufficient for small family, well wooded and watered, with a considerable quantity of meadow ground, and a young orchard of about 100 apple trees" (*Maryland Journal* 1777). The dispute related to the sale resulted in a resurvey of the Briscoe's five tracts in 1783. The resurveyed tract was named Zoar and encompassed 1,238.5 acres (MSA Patent Certificate 542). The original patent for the land was by the Lamar family, who held a string of tobacco plantations in the area. In 1769, Gerard Briscoe began purchasing five tracts from the Lamar family; included in these tracts were the lands in Parcel 1.

Parcel 5: Paul V. Finnegan

The land formerly belonging to Paul V. Finnegan (Parcel 5) was part of Rawlins Rest [Rawlings Rest] (Table 3.6). In 1788, John Rawlings (1739-1784) paid for a resurvey of land that totaled 668.75 acres (Ancestry.com Rawlings family tree; MSA Patent Certificate 153). This land combined a group of contiguous tracts and parcels assembled by his father John Rawlings between 1748 and 1761 with additional land purchased in 1770 by himself. The resurveyed land was called Final Conclusion (MSA Patent Certificate 153). In 1816, Thomas Rawlins (ca. 1760-1820) had Final Conclusion resurveyed. The acreage totaled 704 acres and was renamed Rawlins Rest (Ancestry.com family tree; MSA Patent Certificate 368). In the 1820 census, Thomas Rawlins was recorded as living in Election District 3, Montgomery County, Maryland. His family included 5 white persons and 23 slaves (Ancestry.com 1820 census). An appraisal of the estate in 1821 provided the following details about improvements to the property: 1 log dwelling house (16 x 20 ft), 2 quarters, 1 smoke house, 1 cider house, 1 corn house, 1 hen house, 1 old dwelling house, 1 old log house, 1 old smoke house, 1 old corn house, 4 old tobacco houses, 3 stables, three apple orchards containing 350 apple trees, meadows, and 150 acres of woodland. The Rawlins estate was reported to contain 900 acres including Rawlins Rest and part of tracts of land called Younger Brother and William and John (MRWR administration accounts for Rawlins estate 1821).

After Thomas Rawlins' death in 1820, the land was divided among his children. The land including Parcel 5 was allotted to his son, Josh-

Table 3.6. Parcel 5 Deeds

Year	Date	Montgomery County Deed Reference	Grantor	Grantee	Acres	Notes
1953	13-Feb	L1766/F600	Ben J. Lanier and Mackie D. Lanier (wife)	Paul V. Finegan and Gladys T. Finegan (wife)	20	Part of Rawlings Rest. Parcel is surrounded by land belonging to Mills and Saffell families.
1948	8-Jan	L1131/F5	George Dudley Ward and Lillian Wells Ward	Ben J. Lanier and Mackie D. Lanier (wife)	20	
1946	1-Jul	L1027/F168	Clarence V. Sparrow, unmarried, and Gladys Mills Duvall	George Dudley Ward and Lillian Wells Ward	20	Formerly owned by Amanda and George Sparrow, both deceased. Amanda Sparrow's will (Wills L OWR6/F404 devised all her estate to Clarence Sparrow subject to a charge for a bequest to Gladys Mills Duvall. This land was conveyed to Amanda Mills Sparrow by Joseph Mills and others, heirs of the late Mary Sophia Mills by 1890 deed L JA19/F253.
1890	27-May	L JA19/F253	Joseph and Emma J. Mills; James A. And Mary E. Mills; John W; Charles R. Mills and Mary E. Mills; Elijah T. Mills; Elizabeth T. and Nathan Snyder, heirs at law of late Mary Sophia Mills	Amanda C. Mills	20	Part of same land conveyed to Mary S. Mills by William O. Saffell and Ary M. Saffell by deed dated 4/18/1876, and called Rawlins Rest
1876	8-Apr	L EBP15/F100	William Olando Saffell and Ary Matilda Saffell, heirs of late Charles Saffell	Mary Sophia Mills	146	Two parcels. One parcel of 133.5 acres that begins at the starting point of Rawlins Rest. The second parcel of 12.5 acres of land of Rawlins Rest. Land was conveyed from Thomas Saffell to Charles Saffell in 1839. No mention of buildings, improvements, etc.
1839	20-May	L BS9/F393	Thomas W. Saffell	Charles Saffell	174	This portion of Rawlings Rest was allotted to Joshua Rawlings by the Commissioners appointed to divide the real estate of Thomas Rawlings that was conveyed to Thomas Saffell by the heirs of Joshua Rawlings in 1836 together with all buildings, improvements, etc. Joshua Rawlings was a son of Thomas Rawlins.

ua Rawlins. After Joshua's death ca. 1836, his heirs sold the land to Thomas W. Saffell (MCLR BS9:393). Three years later, in 1839, Thomas Saffell transferred the land to Charles Saffell (MCLR BS9:393). Charles retained the property until his death after which his heirs conveyed 146 acres in 1876 to Mary Sophia Mills (MCLR EBP15:100). The land remained in the Mills family after Mary Sophia Mills' death. In 1890, the land was divided among Mary Sophia's heirs. One heir, Amanda C. Mills, acquired 20 acres (MCLR JA19:253). In 1946 Amanda, then the wife of George Sparrow, left the 20 acres to their son, Clarence V. Sparrow. Clarence Sparrow and Gladys Mill Duvall sold the 20 acres of land to George D. and William W. Ward (MCLR 1027:168). The land transferred hands again in 1948. Paul V. and Gladys T. Finegan acquired ownership of the 20 acres in 1953 (MCLR 1131:5).

Parcel 6: Harvey Richards

The land formerly belonging to Harvey Richards (Parcel 6) also was part of Rawlins Rest (Table 3.7). Harvey Richards purchased approximately one acre in 1953 and one acre in 1955 (MCLR 1796:220; 2157:27). Both acres were purchased from Samuel B. and Lelia Briggs. The two acres were part of 61 acres that Samuel B. Briggs purchased in 1918 from trustees appointed to sell the land from the estate of Joseph H. Mills in order to obtain equitable distribution among the heirs (Equity case 3397) (MCLR 272:386).

Parcels 7 and 8: F.T. Briggs and Samuel B. Briggs

The land formerly belonging to Frederick T. Briggs (Parcel 8) and the majority of land owned by Samuel B. Briggs (Parcel 7) also was part of Rawlins Rest (Table 3.8 and 3.9). After Thomas Rawlins' death in 1820, Sarah Rawlins Nichols (1798-1867) was allotted 190 acres, which encompassed Parcels 7 and 8, by the commissioners who oversaw the division of the land (Find a Grave n.d.; MCLR] JGH 7:41). In 1858, Sarah Nichols sold the 190 acres to Samuel S. Briggs, but reserved "to the said Sarah Nichols the enclosed Grave Yard" and access rights to it (MCLR JGH 7:41). It is presumed that the grave yard held the remains of previous generations of the Rawlins family.

Samuel and Ellen Briggs divided their property in 1881 prior to their deaths. **Parcel 8** containing 99.25 acres was deeded to son Gideon D. Briggs (MCLR EBP 25:171). In 1933, the acreage was acquired by Frederick T. Briggs, the only son of Gideon Briggs (MCLR 522:227). **Parcel 7** containing 88.7 acres was sold as two tracts to John W. Briggs. One tract contained nearly 50 acres and the other contained 38.75 acres (MCLR EBP 23:83; EBP 25:174). John W. Briggs purchased two additional parcels formerly part of the tract known as Earn Hill to increase his acreage to a total of 116 acres. In 1909, John and Mary Briggs transferred the land to their son and daughter-in-law, Samuel B. and Lelia G. Briggs (MCLR 212:430).

Parcel 10: William O. Dosh

The land formerly belonging to William Dosh appears to be small parts of much larger acreages (Table .10). Dosh purchased the 17-acre parcel in 1927 from John B. Diamond, Jr. (MCLR 428/302). The 1927 deed contains no reference to previous deed, so it is presumed that the acreage came from the approximately 300 acres acquired by John B. Diamond, Jr., from his mother Grace in 1926. The 17-acre parcel originally was part of the tracts Resurvey of Younger Brother and Resurvey of William and John. Dosh acquired the 2-acre portion of land included in the 1961 transfer to the Federal government in 1920. It was part of 201 acres purchased from Forrest Beall, who purchased it the same year from Frederick A. Tschiffely, Jr. The 200 acres contained part of "Rawlings Rest", the "Resurvey of Younger Brothers" and "Resurvey of William and John" (MCLR 249/131).

Table 3.7. Parcel 6 Deeds

Year	Date	Montgomery County Deed Reference	Grantor	Grantee	Acreage	Notes
1956	11-Jun	L2228/F222	Samuel B. Briggs and Lelia G. Briggs	J. Harvey Richard and Eleanor S. Richard	1.01	2 parcels, each 1.01 and 1.06 acres
1953	13-May	L1796/F220	Samuel B. Briggs and Lelia G. Briggs	J. Harvey Richard and Eleanor S. Richard	1 acre more or less	Property obtained by S.B. Briggs on 8/22/1918 L272/F386 from Frank Higgins and William H. Talbott, trustees.
1955	22-Dec	L2157/F27	Samuel B. Briggs and Lelia G. Briggs	J. Harvey Richard and Eleanor S. Richard	1.06	Property obtained by S.B. Briggs on 8/22/1918 L272/F386 from Frank Higgins and William H. Talbott, trustees. Statement that property transferred together with buildings, improvements, etc. is part of printed language.
1918	22-Aug	L272/F386	Frank Higgins and William H. Tallbott, trustees	Samuel B. Briggs and Lelia G. Briggs	3 parcels: 20, 21, and 20 acres	The trustees were appointed in the case of Harry C. Mills and others vs. Clarence E. Mills and others (no. 3397 Equity) to sell the real estate consisting of 3 parcels of Rawling's Rest. Parcel 1 was owned by Joseph H. Mills who acquired it from Richard H. Mills and Mary S. Mills, March 1885 L EBP 34/F303. Parcel 1 seems to be on both sides of road. Parcel 2 was land Joseph H. Mills obtained from Elizabeth Snyder and Nathan R. Snyder in July 1892, L JA 33/F457 on east side of road. Parcel 3 on east and west sides of road that Joseph Mills obtained from John W. Mills and Ida A. Mills 4/29/1901 L TD 17/F94. All parcels appear to be on both sides of the road.

Table 3.8. Parcel 7 Deeds

Year	Date	Montgomery County Deed Reference	Grantor	Grantee	Acreage	Notes
1909	20-Nov	L212/F430	John W. and Mary C. Briggs	Samuel B. and Lelia G. Briggs	116 acres, one rood, and 27 sq perches	"Tracts pieces or parcels of land being called "Rawling Rest," "Earn Hill"…being same land conveyed to John W. Briggs and wife by 4 separate deeds
4 Parcels						
1881	18-Nov	L EBP25/F174	Samuel S. and E.W.S. Briggs	John W. Briggs	38.75 acres	part of a tract of land called Rawlins Rest beginning at a stone planted on the side of the road leading from Gaithersburg to the Darnestown Road. References include "eighth line of deed from Sarah Nichols to S.S. Briggs" and "fifth line of the part alloted heretofore to Joshua Rawlins." Samuel S. Briggs and Ellen W.S. Briggs retained life estate.
1877	16-May	L EBP16/F346	Frederick A. Thompson and Mary Duleif? Thompson wife (nee Hall)	John Briggs and Mary Catherine Briggs wife	6 and 1/8 acres, 7 square perches	part of a tract of land called Rawlins Rest. This is near land descended through the Duleif (Sp?)family.
1880	14-Aug	L EBP23/F83	Samuel S. and Ellen W.S. Briggs	John W. Briggs	49 and 9/16th acres	Part of a tract of land called Rawlins Rest. John paid $900 and Samuel and Ellen reserved life estate and a ROW to a woodlot for their son Gideon and his heirs.
1893	29-Dec	L JA40/F465	William R. Fulks	John W. and Mary C. Briggs	21 and 92/100th acres	part of tract called "Earn Hill." Neighbors Mossburg to Fulks L EBP 5 f 108 1868 76 acres.
TOTAL of 4 parcels above is approximately 115 acres						
1858	29-Jul	L JGH7/F41	Sarah Nichols	Samuel S. Briggs	190 acres	all that land piece or parcel of land called "Rawlings Rest." The part that was allotted to Joshua Rawlins. It being the same land allotted to Jacob Nichols and Sarah Nichols in the division of the estate of Thomas Rawlins Decd by the commissioners appointed in that cause, also two acres of land more or less as purchased by Mrs. Rawlins from Ignatius Fulks and by her devised to Mrs. Sarah Nichols in fee simple. ***Reserving to the said Sarah Nichols the enclosed Grave Yard and the right of ingress and egress to the same.*** Also references a boundary dispute with John Heeter.
1816		Patent Certificate 368-Rawlins Rest	Thomas Rawlins		704 acres	Resurvey of a tract of land called Final Conclusions in Montgomery Co. originally surveyed on 3/6/1788 granted to John Rawlins for 668.75 acres. Neighboring tracts are Resurvey of Sarah's Garden, Lost Hatchett, Addition to Lost Hatchett. Greenwood, 5th line of Zoar, Resurvey of Beginning, 53rd line of Zoar, 2nd line of Belts Desire.
1788		Patent Certificate 153-Final Conclusion	John Rawlings		668.75	Resurvey of the following tracts or parcels of land lying contiguous to each other: The addition to the Resurvey on the Beginning patented 1770, 497 acres to said John Rawlings; Lost Hatchet originally granted in March 1743 to his Father John Rawlings (50 acres), Addition to Lost Hatchet granted in March 1766 (10 acres), Greenwood originally patented in 1761 to John Rawlings for 50 acres, and Hopsons Choice originally patented in Feb 1748 to John Rawlings for 50 acres.

Table 3.9. Parcel 8 Deeds.

Year	Date	Montgomery County Deed Reference	Grantor	Grantee	Acreage	Notes
1933	23-Mar	L552/F227	Lillie M. Stewart (and husband George) of D.C., Maggie V. Duvall (and husband James), Minnie Lee Walker (and husband Marshall) and Mamie B. Phebus (and husband Charles), along with Frederick T. Briggs are only children and heirs of Gideon D. Briggs and Ida V. Briggs	Frederick T. Briggs and wife Nettie M. Briggs	99.25 acres	"all that tract of land called "Rawlins Rest"… in Montgomery County… together will all buildings and improvements. Children of Gideon and Ida were Lille, Maggie, Minnie, Mamie, and Frederick. Acreage included deeds from 1881 and 1906 minus small amount given to Zachariah Briggs.
1881	18-Nov	L EBP 25/F171	Samuel S. Briggs and Ellen W.S. Biggs (wife)	Gideon D. Briggs	99.25 acres	"all those parcels of land called "Rawlin's Rest" and about two acres purchased by Mrs. Rawlins from S. Fulks as conveyed by Mrs. Sarah Nichols to S.S. Briggs…". Samuel S. and Ellen Briggs reserved a life estate. Gideon had to pay an Alonzo Briggs $900 for his interest.
1906	16-Jun	L190/F239	Board of County School Comissioners	Gideon D. Briggs		
1896	1-Jan	L JA 53/F47	Gideon D. Briggs and wife	Zachariah A. Briggs	0.498 acres	
1858	29-Jul	L JGH7/F41	Sarah Nichols	Samuel S. Briggs	190 acres	all that land piece or parcel of land called "Rawlings Rest." The part that was allotted to Joshua Rawlins. It being the same land allotted to Jacob Nichols and Sarah Nichols in the division of the estate of Thomas Rawlins Decd by the commissioners appointed in that cause, also two acres of land more or less as purchased by Mrs. Rawlins from Ignatius Fulks and by her devised to Mrs. Sarah Nichols in fee simple. ***Reserving to the said Sarah Nichols the enclosed Grave Yard and the right of ingress and egress to the same***. Also references a boundary dispute with John Heeter.
1820			Thomas Rawlins died in August 1820. Estate records began in 11/1820.			
1816	11-Jan	Patent Certificate 368-Rawlins Rest	Thomas Rawlins		704 acres	Resurvey of a tract of land called Final Conclusions in Montgomery Co. originally surveyed on 3/6/1788 granted to John Rawlins for 668.75 acres. Neighboring tracts are Resurvey of Sarah's Garden, Lost Hatchett, Addition to Lost Hatchett. Greenwood, 5th line of Zoar, Resurvey of Beginning, 53rd line of Zoar, 2nd line of Belts Desire.

Year	Date	Montgomery County Deed Reference	Grantor	Grantee	Acreage	Notes
1788	6-Mar	Patent Certificate 153-Final Conclusion	John Rawlings		668.75	Resurvey of the following tracts or parcels of land lying contiguous to each other: The addition to the Resurvey on the Beginning patented 1770, 497 acres to said John Rawlings; Lost Hatchet originally granted in March 1743 to his Father John Rawlings (50 acres), Addition to Lost Hatchet granted in March 1766 (10 acres), Greenwood originally patented in 1761 to John Rawlings for 50 acres, and Hopsons Choice originally patented in Feb 1748 to John Rawlings for 50 acres.

Table 3.10. Parcel 10 Deeds

Year	Date	Montgomery County Deed Reference	Grantor	Grantee	Acres	Notes
17.4 acres						
1927	28-Jun	L428/F302	John B. Jr (1882-1955) and Laure T.B. Diamond (1883-1971)	William O. Dosh	17.23	parts of tracts “Resurvey of Younger Brothers” and “Resurvey of William and John.” No reference to previous deeds. Deed contains no reference to previous deed. It is assumed that this land was part of land from Grace Diamond to John B. Diamond Jr. (L412/F243).
2.78 Acres						
1920	27-May	L 294/F131	Forrest P. and Flora M. Beall	William O. Dosh	201.36	part of “Rawlings Rest”, the “Resurvey of Younger Brothers” and “Resurvey of William and John.” Land originally was sold to Beall by Frederick A. Tschiffely, Jr. and Dolly (wife) March 10, 1920 (L290/F440).

Chapter IV

Results of Archival Assessment

Introduction

The NIST Gaithersburg campus was established by federal agencies in the late 1950's. It has seen steady development throughout the twentieth and twenty first centuries. The original buildings uniquely demonstrated the International Style with "character-defining features of curtain-wall construction, ample use of glass, clean monolithic forms, and minimal ornamentation" (Peeler and Grandine 2015; Peeler 2015 a and b). The design truly set the tone for postwar research campus design. As a result, in 2016 the campus was ultimately determined eligible for inclusion as a historic district in the National Register of Historic Properties.

Even with the addition of building enhancements and new construction, the campus has largely remained the same since its initial development. Because little development has occurred outside of the initial design footprint, the original site construction plans provide pivotal information pertaining to the extent of disturbance in the project area. In order to gain a better perspective of the disturbance footprint, documents related to the initial planning and construction of the facility were reviewed at the NIST library and facilities archives in Gaithersburg, Maryland. Documents reviewed ranged in scope and included construction photographs; construction, landscape, and grading plans; and detailed construction specifications. Although most of the documents are more specific to each Assessment Area and will be discussed more thoroughly within those specific sections, several planning documents offer a more general overview. These documents include:

- Demolition Plan
  A detailed Demolition Plan dated February 7, 1961 was found in the NIST facilities building archives (Figure 4.1) (Voorhees, Walker, Smith, Smith & Haines 1961a). This document accurately surveyed the preexisting built environment of the property, including buildings, fences, above ground utilities, roads, and woodlands extant at the time of property transfer. This map was invaluable in identifying the cultural landscape prior to NIST's development.

- Construction Specifications
  The construction specifications document reviewed for the project was written in 1960 (NIST Library Documents 1960). The specifications detailed methods and procedures for the contractors working on site. Relevant to this assessment's purposes were the guidelines for addressing structures present on the property at the time of acquisition. The document required that

  > "All old foundations including walls of wells, cisterns and pits, cellar and basement walls, and paved flooring shall be removed to a minimum depth of two feet below the finished grades…all paved cellar and basement flooring that is not removed…shall be broken up uniformly" (NIST Library Documents 1960:6-2)

  and that

  > "The spaces enclosed by old cellar and basement walls shall be cleaned out and left completely free of all coarse debris and all interior construction including piers, chimneys, stairs, exposed piping, tanks and all other equipment, before proceeding with the filling of such spaces." (NIST Library Documents 1960:6-2)

  The specifications also stated that any cavities remaining after demolition were to be filled with concrete or compacted gravel (NIST Library Documents 1960:7-9).

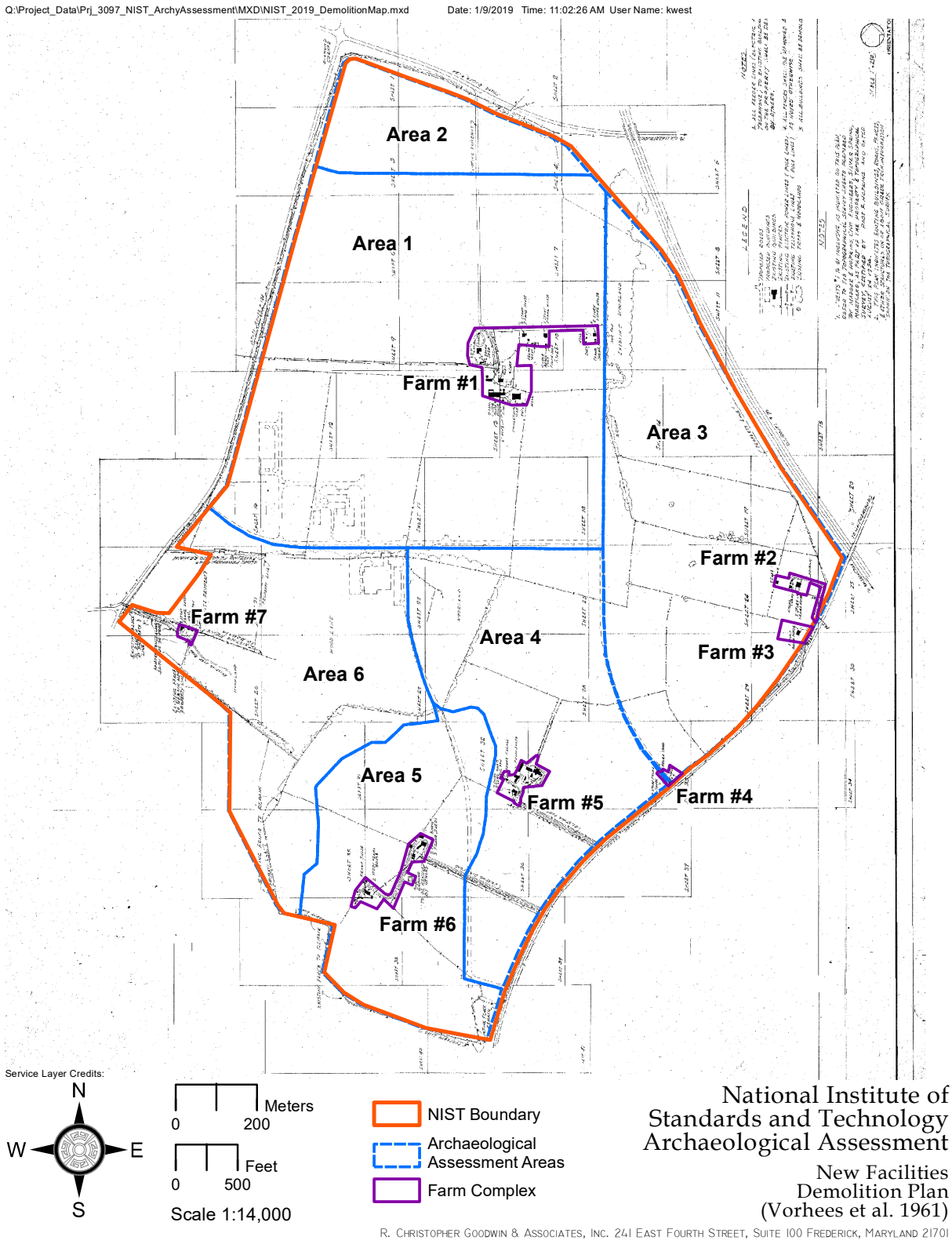


Figure 4.1 1961 Demolition Map (Voorhees, Walker, Smith, Smith & Haines 1961a)

The following sections will present the findings from each Assessment Area.

Assessment Area 1

Current Conditions

Assessment Area 1 consists of the campus's central developed core (see Figure 2.1). It is roughly 190 acres in extent and is bound to the north by North Drive, to the east by East Drive, to the south by South Drive and to the west by Quince Orchard Road. The majority of Assessment Area 1 comprises campus buildings and their infrastructure. Small patches of meadow and mowed lawn are stitched in between and around the buildings. The lawns north of Building 218 and 217 contain underground buildings 218 and 219.

The terrain of Assessment Area 1 is relatively level with slopes increasing around the stream drainages. Stream heads are present along the western edge and at the northeast corner of Assessment Area 1. Notably, the ground conditions and planning documents indicate that these streams have been reworked and restructured (NIST Facilities Documents n.d., 1998). There also are several stormwater management features in Assessment Area 1. A stormwater detention pond is located northwest of Building 320 near Quince Orchard Road, two stormwater outfalls are along Quince Orchard Road, an underground detention area is near Building 318, and multiple bioretention areas are around Building 318, 301, and the parking areas at the southeast and northeast corners of Assessment Area 1. A rain garden and infiltration trench is at the northeastern corner of Assessment Area 1 (MAP 2018a, 2018b).

There are two champion trees in Assessment Area 1. A 'Flower of Kent' apple tree is located in in front of the NIST library. This tree also is known as the 'Newton Apple Tree' because it was grown from an actual sapling of a tree on Sir Isaac Newton's apple farm. This tree was planted during NIST's development and landscaping of the property. A European Weeping Beech tree is located in the courtyard of Building 101. It stands 38 feet tall and has a circumference of 12'1" (MAP 2018a, 2018b). This slow growing tree was planted at the location after NIST's acquisition of the property.

Portions of the western edge of Assessment Area 1 along Quince Orchard Road underwent archaeological survey by SHA in 2014. The survey extended roughly 196.9 ft (60 m) from the road and incorporated a pedestrian survey as well as shovel testing (Emory and Ross 2014). Pedestrian survey occurred between Sound Drive and North Drive where explicit disturbance was observed. Shovel testing otherwise occurred from South Drive to the entrance of Building 306, an area designated in their study as Area 2 of 'Parcel M-16'. These shovel tests revealed evidence of multiple episodes of cut and fill activity associated with contouring of the landscape during construction. Notably, researchers recorded disturbance extending well into the B/C horizon.

Pre-modern Conditions

Prior to NIST's acquisition of the property, Assessment Area 1 was part of a parcel of land owned by John B. Diamond (Parcel 1) who farmed the land and ran a dairy (Figure 4.2). Based on deed research, the Diamond family acquired the property in 1850 (Table 3.5; MCDR STS5:145). The Diamond name also appears on the 1865 Martenet map of Montgomery County and on the 1908 Rockville, Maryland USGS quadrangle (Figures 4.3 and 4.4). The NIST 1961 Demolition Plan (Figure 4.1) indicated that the Diamond Family farm (Farm #1) contained three two-story frame houses, one one-story frame house, over a dozen sheds, numerous barns, a hog pen, and one well; all of which were confined to the northeast quadrant of Assessment Area 1 (Figure 4.5). Although Parcel 1 was a part of a larger landholding (Zoar) that first was patented in the latter half of the eighteenth century, and that reportedly contained a commodious dwelling built by Gerard Briscoe prior to 1777 (*Maryland Journal* 1777), there is no certainty of the actual location of that earlier dwelling. While it may have been located on a different portion of the larger land holding, it also is possible that it was located in the same general area as the Diamond farm.

Archaeological Potential

Disturbance to the original landscape during development in Assessment Area 1 has been extensive. The majority of Assessment Area 1 has

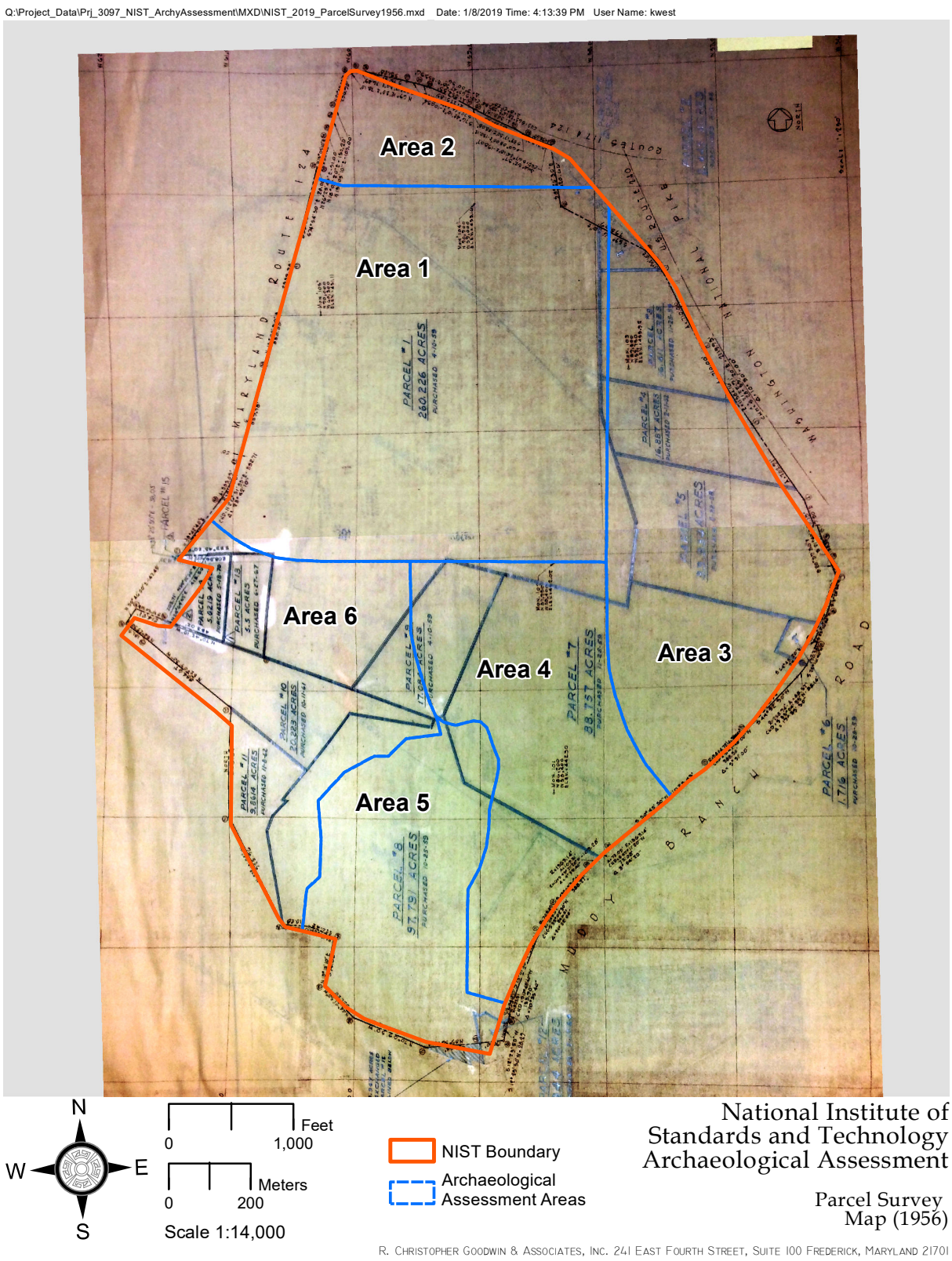


Figure 4.2 1956 Parcel map with Assessment Areas depicted

Figure 4.3 Excerpt from the 1865 Martenet Map showing approximate location of the NIST property

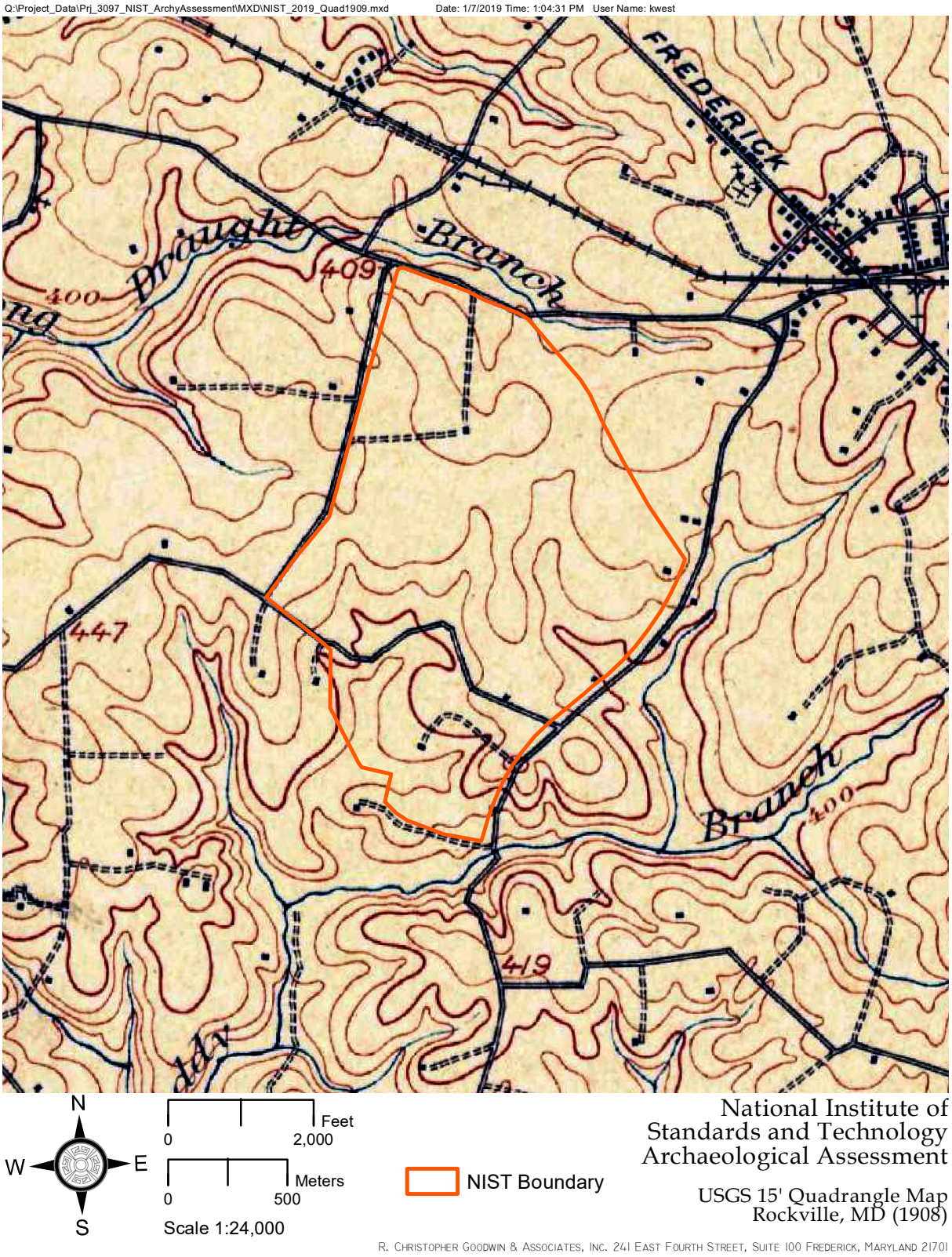


Figure 4.4 Excerpt of the 1908 Rockville, Maryland 7.5' USGS Quadrangle showing the location of the NIST Property

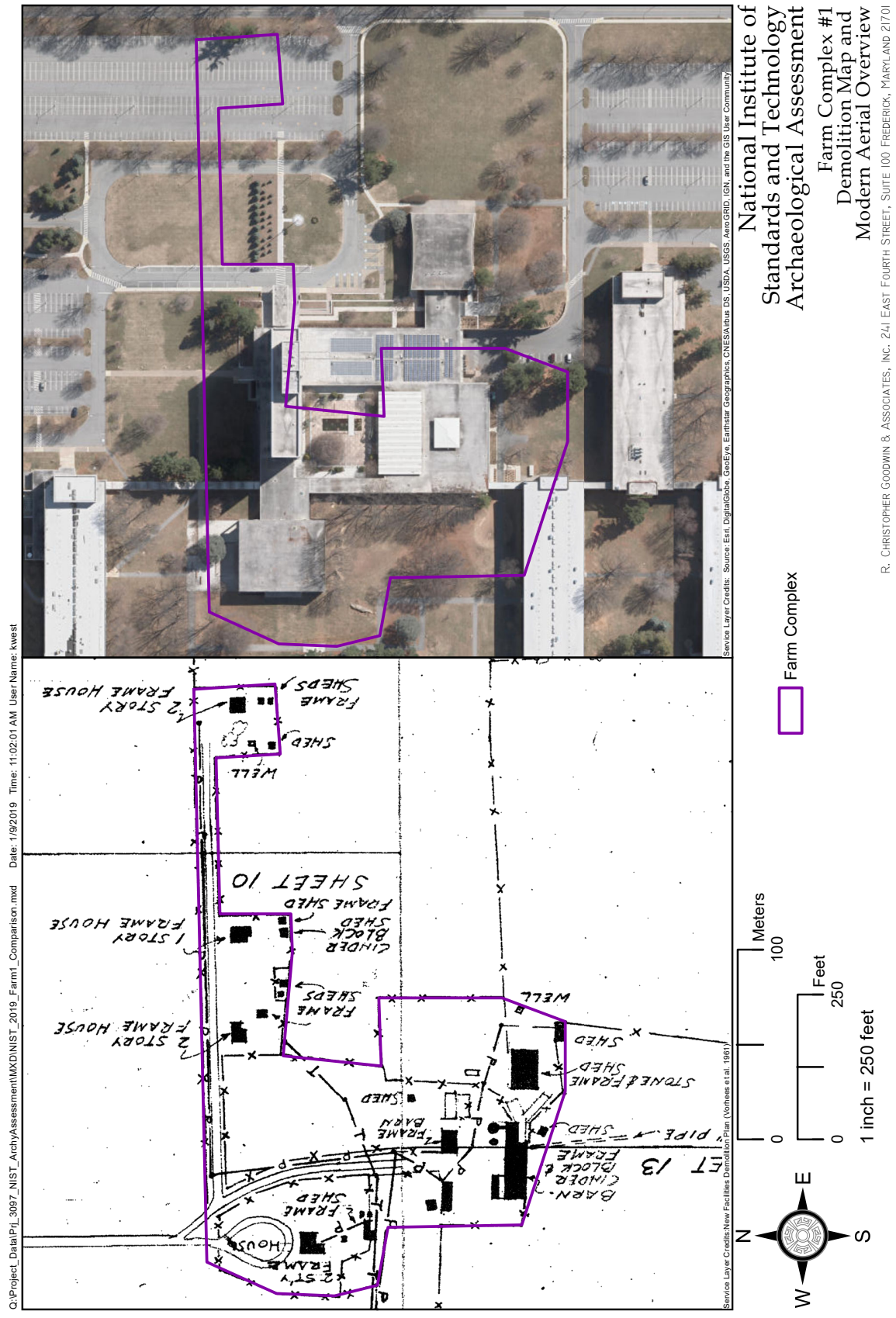


Figure 4.5 Comparison of modern aerial and Farm #1 insert from 1961 Demolition Map (Voorhees, Walker, Smith, Smith & Haines 1961a)

been developed, leaving very few areas with potential for still-intact cultural deposits. Although areas with meadow and lawns are present, evidence from historic aerials (NETRonline 1963 aerial) and construction photographs, indicate that most of the area had been graded to subsoil or otherwise extensively modified. The fact that the 2014 SHA survey in Area 1 (Emory and Ross 2014) found disturbance extending well into the B/C horizon further diminishes the potential for intact archaeological data in most of the area.

Despite the widespread disturbance, a small portion of Assessment Area 1 appeared to have undergone less disturbance. This area was within the western end of the open field between North Drive and the campus buildings, at the northern end of Area 1, north and northwest of Building 226. Although construction plans indicated that this area clearly was utilized for temporary access roads and staging areas, the entire surface area did not appear to have been graded.

In terms of historic site potential, the Diamond farm complex (Farm 1) was likely completely destroyed. Comparing historic aerials to the demolition plan, it appears that the main dwelling was in the location of Building 101 (the Administration building) and its associated ancillary farm structures were in the area of Buildings 222 and 223. The additional house sites depicted on the demolition plan were located in what now is the Administration Building's (Building 101) parking lot. In addition to the extensive grading and other land modification associated with the campus construction, the aforementioned Construction Specifications document (NIST Library Documents 1960) suggests that any subterranean cultural features encountered during site preparation would have been fully mitigated to support future development. The remainder of Assessment Area 1 consisted primarily of agricultural fields prior to NIST acquisition. The potential for other historic resources was relatively low both as a result of the disturbance from the extensive built environment and construction, and because of the prior use of the land for agricultural fields.

Although, based on the presence of relict stream heads in Assessment Area 1, prehistoric activity may have taken place here prior to historic settlement, the later historic development of the area as well as the extent of construction and stream restoration and restructuring suggests little to no potential for intact prehistoric sites.

Because of the wide extent of development in Assessment Area 1, the only archaeological testing that was recommended in Assessment Area 1 was within a small area northwest of Building 226, bounded by North Drive and West Drive. That area, despite some surface disturbance during construction, may have undergone less extensive land modification. Testing within the field primarily was intended to gauge the presence or absence of subsurface disturbance.

Assessment Area 2

Current Conditions

Assessment Area 2 incorporates the main entrance of the NIST property. It is approximately 28 acres in extent and is bound to the north and east by Diamond Avenue, to the south by North Drive, and to the west by Quince Orchard Road (see Figure 2.1). Bureau Drive, which leads to the main entrance, runs north-south through the center of Assessment Area 2. Within this area is the main entrance gate and drive to the visitor's center as well as a security check point. There are meadows on either side of the main drive and a backflow preventer/water meter station (Building 315) in the central-east meadow. The soils mapped in the vicinity of the water meter station are hydric, suggesting wetland conditions.

There is a bioretention feature northwest of the visitor's parking lot and two stormwater outfalls are present along Diamond Avenue (MAP 2018a, 2018b). The terrain of Assessment Area 2 is relatively level to gently sloping.

The western edge of Assessment Area 2 along Quince Orchard Road was included in an archaeological survey in 2014 conducted by SHA (Emory and Ross 2014). The surveyed portion was designated Area 1 of 'Parcel M-16'. During the survey an area extending 196.9 ft (60 m) from the road was shovel tested, except for a small section north of Sound Drive that had visible disturbance and underwent only pedestrian reconnaissance. As noted in the discussion of the 2014 survey results in Assessment Area 1, the shovel tests in Assessment Area 2 also revealed evidence of cut and fill activities.

Pre-modern Conditions

Prior to NIST's acquisition of the property, Assessment Area 2 was part of a large landholding of John B. Diamond (Parcel 1) (Figure 4.2). During Diamond's ownership, Assessment Area 2 was primarily agricultural fields and also contained a driveway to the Diamond home (Farm 1) from Route 124. No structures were evident in the area in historic aerials, on the 1865 Martenet map or historic USGS quadrangles (Figures 4.3 and 4.4), or on the reviewed planning documents.

Archaeological Potential

In Assessment Area 2, historic aerials from the 1960s (NETRonline) and planning documents indicated that moderate grading and landscape modification occurred throughout the area. Additionally, the presence of a water monitoring station in the eastern field suggested that underground utilities have impacted a portion of the area. Potential areas for survey included the field west of Bureau Drive. As in Area 1, this field appeared to have been used for temporary access roads and possible staging areas, but may have escaped widespread landscape modification.

Despite the location adjacent to a small stream, there was low potential for either prehistoric or historic resources in Assessment Area 2. Although the presence of the Diamond Farm (Farm 1) suggested a moderate potential for activity within Assessment Area 2, this area is outside of the main developed farm area and was primarily used for agricultural purposes. The extent of disturbance in the area suggested that if any resources were present, they likely were not depositionally intact. As such, Assessment Area 2 exhibited a low potential for historic resources. Because of the fresh water source, the potential for prehistoric occupations also was present within Assessment Area 2. However, if any prehistoric archaeological remains were present, the potential for depositionally intact prehistoric sites was low.

Because of the extent of prior disturbance and the limited potential for depositionally intact cultural resources, only limited reconnaissance and testing within the western portion of Assessment Area 2 was recommended.

Assessment Area 3

Current Conditions

Assessment Area 3 incorporates an active recreational area and partially wooded lot east of East Drive. It is further bound to the north and east by I-270 and to the south by Muddy Branch Road (Figure 2.1). This area encompasses a total of approximately 114 acres including a large meadow surrounding two manmade ponds (3.7 and 3.8 acres in size), two baseball fields, and several patches of woods. Near East Drive, in between the two ponds, is another backflow preventer/water meter (Building 314). Also present in Assessment Area 3 is a paved trail system and numerous spoil piles stored east of South Pond.

The two ponds were established along an extant stream branch of Muddy Branch. Soils adjacent to the old stream course are mapped as hydric, suggesting a wetland environment undesirable for habitation. The ponds drain into one outfall located along Muddy Branch Road (MAP 2018a, 2018b). Running between the ponds is a water main line that begins at Muddy Branch Road and connects to the Campus' system at the intersection of East and South Drive (Voorhees, Walker, Smith, Smith & Haines 1961b). The area surrounding the ponds exhibits slight to moderate manufactured slopes while the remainder of Assessment Area 3 is only slightly sloped.

Assessment Area 3 contains one of the campus's champion trees. It is an Ohio Buckeye that stands 56 feet tall and has a circumference of 8'3" (MAP 2018a, 2018b). It is located at the NIST State Tree Arboretum east of east drive. This area was designed as a grove of state trees – all states were invited to provide one of their official "state" trees for display. Hence, the Ohio Buckeye is likely one of those planted in the 1960s when the Arboretum was established.

The eastern edge of Assessment Area 3, along I-270, underwent a shovel test survey in 2018 by SHA (Steve Archer, personal communication 2018). Although the report still is in progress, project personnel provided R.C. Goodwin with preliminary findings. In short, SHA found that the majority of the area had been "subjected to artificial modification through infilling and/or compaction" (Steve Archer, personal communi-

cation 2018). Several shovel tests, however, did reveal intact soil stratigraphy, while others exhibited a buried A-horizon that had been impacted prior to deposition of fill. The areas with buried surfaces are largely surrounded by shovel tests with intact soils indicating that the former were likely slight swales that were filled in to level the landscape.

Pre-modern Conditions

Prior to NIST's ownership, the land encompassed by Assessment Area 3 included ownership by the MD State Highway Commission (Parcels 2 and 4); Robert Chambers (Parcel 3); Paul V. Finnegan (Parcel 5); Harvey Richards (Parcel 6), and S.B. Briggs (partial Parcel 7) (Figure 4.2). The NIST 1961 Demolition Plan depicted three house lots in Assessment Area 3, all located along Muddy Branch Road (Figure 4.1). The first (Farm #2) was located on the Finnegan Lot (Parcel 5) and was depicted as a two-story frame house with several frame sheds and a frame barn (Figure 4.6). The second (Farm #3) was located on the Harvey Richards lot (Parcel 6) and was a one-story brick house (Figure 4.6). The third (Farm #4) was located on the S.B. Briggs Lot (Parcel 7) and consisted of a two-story frame house with a well and frame shed (Figure 4.7). Historic aerials indicated that the remainder of the land had been devoted to agriculture.

The 1865 Martenet map did not reveal any residences between the Samuel Briggs farm in Assessment Area 4 and the William Diamond farm in Assessment Area 1. The 1908 Rockville, Maryland USGS quadrangle depicted Farm #4 as well as one dwelling near the location of Farms #2 and 3 (Figure 4.4). Farm #2 also was visible on the 1957 aerial (NETRonline). No other structures were identified during archival review.

Archaeological Potential

While there is minimal built resource development in Assessment Area 3, significant disturbance from the installation of the two multi-acre ponds has dramatically reduced the archaeological potential for the area. Plans reviewed at the NIST archives revealed the area of impact from the pond development extending from the ball fields in the northern portion of the assessment area to the south (NIST Facilities Documents n.d. b, 1998). Topographic plans also indicated unnatural contouring along the southeastern edge of Assessment Area 3 along Muddy Branch Road and along I-270.

Although there were three farms/dwellings located within Assessment Area 3 prior to acquisition by the Federal government, the extent of land modification has severely limited any potential for intact archaeological deposits related to historic occupation. Farm Sites #2 and #3 were along Muddy Branch Road near the crossover of I-270. While this area exhibits minimal disturbance, the Construction Specification documents detailed thorough demolition of the structures, leaving little to no potential for archaeological remains (NIST Library Documents 1960). Farm Site #4 was located at the intersection of East Drive and Muddy Branch Road and was not only fully demolished like the other buildings but any remains are now underneath East Drive and the Muddy Branch Road expansion.

The presence of a relict stream in the area suggested that there was a moderate potential for prehistoric activity prior to land modifications. That potential could have remained in any portions of the area that retained depositional integrity. Minimal reconnaissance and testing in the northern extent of Assessment Area 3 was recommended to clarify the extent of disturbance in the area. This included a small wooded area along the northwestern boundary of Area 3, and a small field to the east of North Pond.

Assessment Area 4

Current Conditions

Assessment Area 4 encompasses the large 90-acre meadow bounded on the north by South Drive, on the east by East Drive, on the south by Muddy Branch Road, and on the west by Center Drive (Figure 2.1). In the northwest corner of the area is the complex of buildings centering on Building 245 and their supporting infrastructure. The south-central portion of the area is covered by a solar array still under construction; that installation covers approximately 15 acres.

The terrain of Assessment Area 4 slopes slightly; the slope increases moderately towards the southern and eastern edges. There are mul-

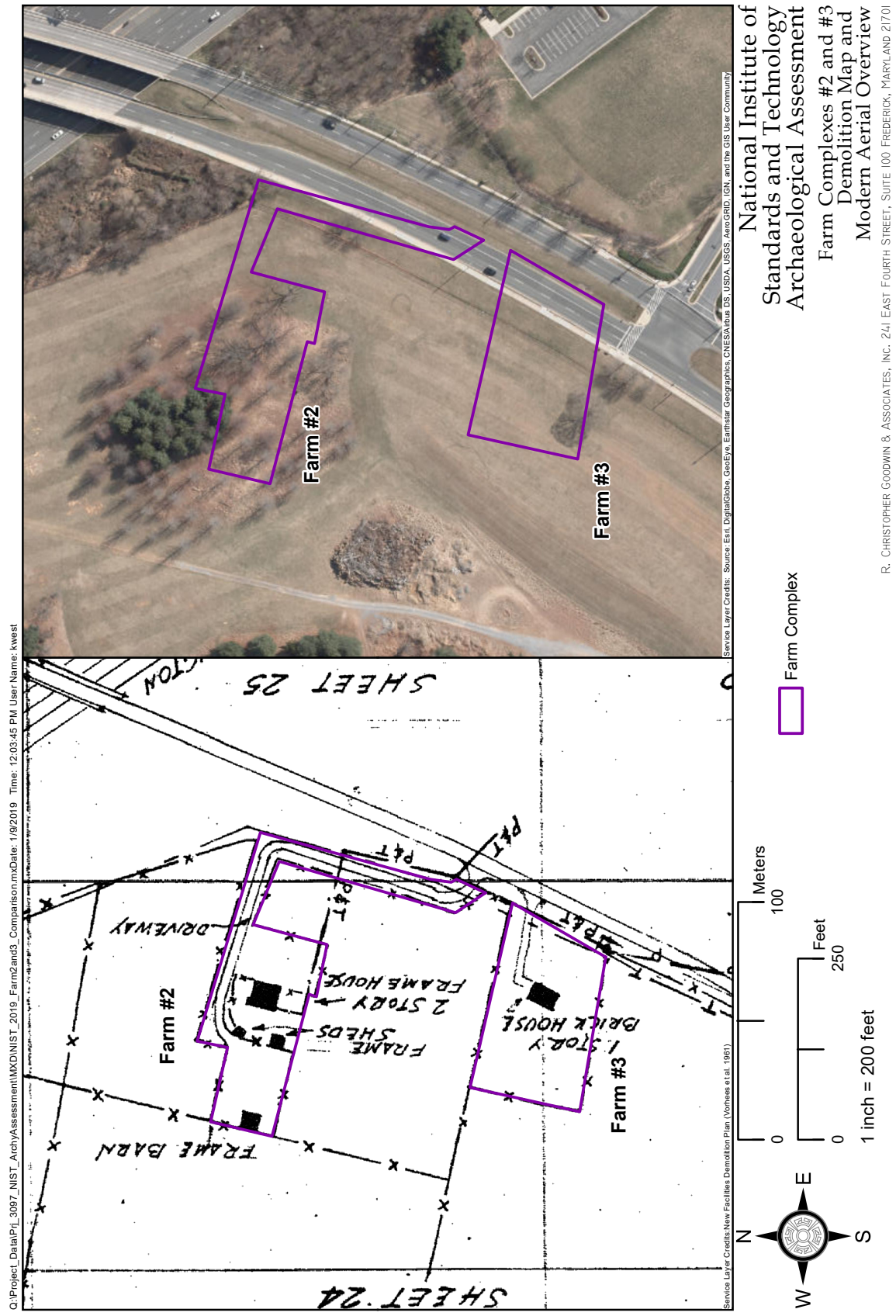


Figure 4.6 Comparison of modern aerial and Farm #2 and 3 insert from 1961 Demolition Map (Voorhees, Walker, Smith, Smith & Haines 1961a)

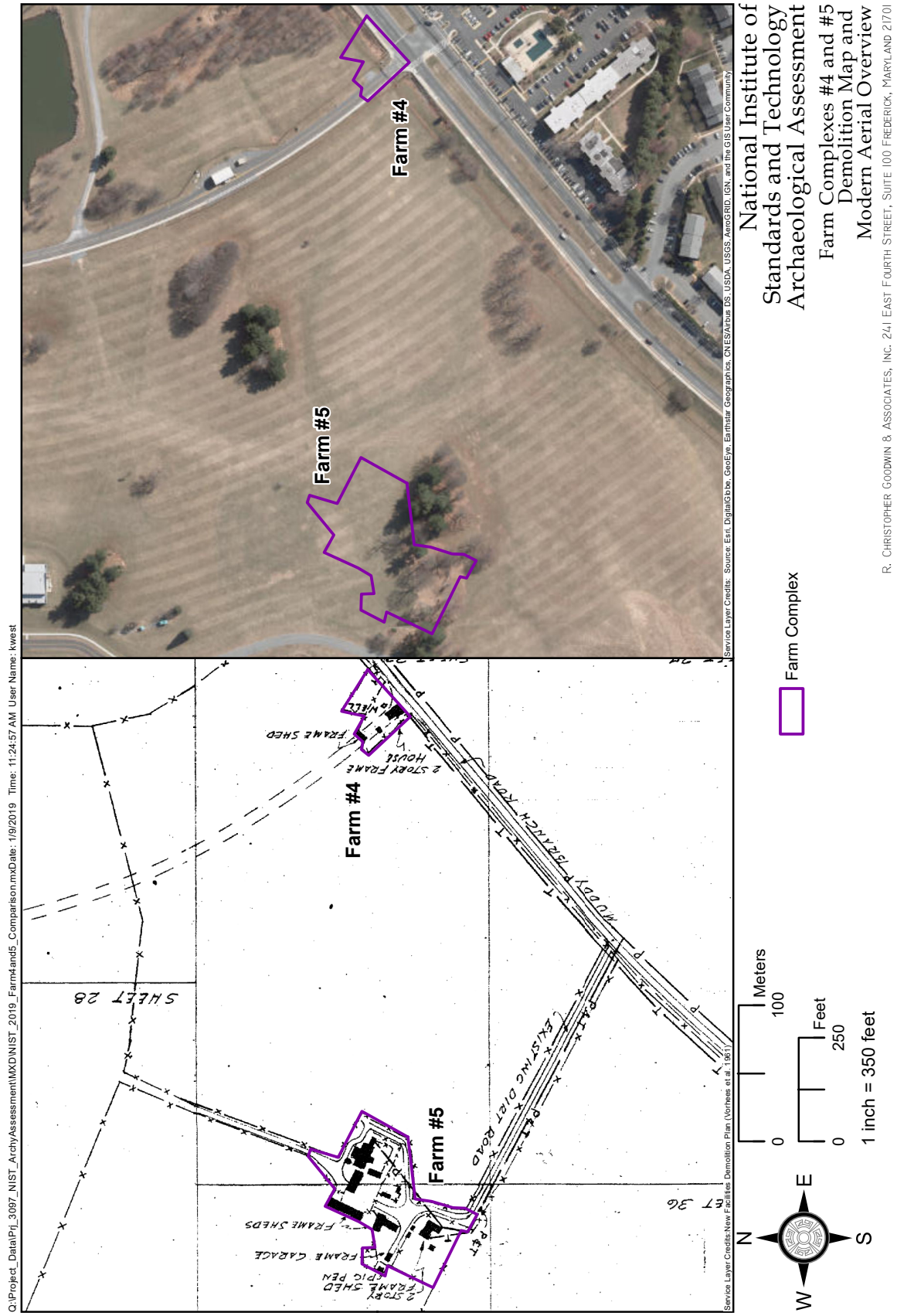


Figure 4.7 Comparison of modern aerial and Farm #4 and #5 insert from 1961 Demolition Map (Voorhees, Walker, Smith, Smith & Haines 1961a)

tiple stormwater management features within Assessment Area 4 including bioretention areas around Building 421, and along South Drive and Center Drive (MAP 2018a, 2018b). An intermittent stream is located in the southern half of Assessment Area 4. Hydric soils also are mapped around Building 245, indicating that the stream to the west may once have extended through the northwestern corner of the area.

Pre-modern Conditions

Prior to NIST's ownership, Assessment Area 4 included portions of the S.B. Briggs lot (Parcel 7), F.T Briggs lot (Parcel 8), and John B. Diamond's lot (Parcel 9) (Figure 4.2). The NIST 1961 Demolition Plan depicted a large farm complex (Farm #5) in the south central portion of this area. This location was in the current location of the solar array and within S.B. Briggs' Parcel 7 (Figure 4.1). The demolition plan indicated that at the time of the demolition survey, the complex had a two-story frame shed, a pig pen, a frame garage, and numerous other frame sheds and unlabeled structures (Figure 4.7); it did not note a dwelling on the plan. Review of the 1957 aerial photograph of the facility (NETRonline) does indicate the presence of another structure that likely was the dwelling house; its location correlates roughly with the dwelling location indicated on the 1908 and 1911 USGS topographic quadrangles (NETRonline). The Samuel Briggs farm is depicted on the 1865 Martenet map (Figure 4.3). Interestingly, the dwelling on the Martenet map is positioned slightly away from the road, corresponding to the locations indicated on the USGS quadrangles.

Archaeological Potential

Assessment Area 4 exhibits development of the built environment, including the Building 245 complex in the northwestern corner, and more recently, the 15-acre solar installation. Historic aerials from the 1960's and early 2000's also depicted extensive disturbance across Assessment Area 4 (Google Earth 1963, 1964; NETRonline 2002, 2007-2009, 2011). During development, grading and landscape plans earmarked the majority of Assessment Area 4 for use as sediment basins, topsoil stockpiles, and waster areas (NIST Facilities Documents n.d. a). Portions of Assessment Area 4 not impacted during these construction initiatives were largely confined to the southern end of the area and along East Drive in an area of moderate slope.

The potential for historic resources in Assessment Area 4 is relatively low as a result of the extensive disturbance and land modification in the area. Farm #5, which had been located in the current footprint of the new solar array, was demolished during the initial construction phases of NIST, and the integrity of any remaining archaeological deposits likely was destroyed by landscape alteration. The installation of the solar array would have further impacted any remaining cultural evidence.

The presence of a relict stream in the area suggests that there had been a moderate potential for prehistoric activity. The extent of disturbance from construction and land modification, however, has seriously diminished any remaining potential for prehistoric occupation evidence. The only remaining potential for intact cultural deposits in Assessment Area 4 would be along any undeveloped knoll tops adjacent to Muddy Branch Road or along East Drive.

Assessment Area 5

Current Conditions

Assessment Area 5 encompasses approximately 66.6 acres in the south-southwestern portion of the NIST campus (Figure 2.1). It is bounded to the east by Center Drive, to the south by Conservation Lane, and to the west and north by a stream drainage and forest lot. Assessment Area 5 contains numerous campus buildings and supporting infrastructure which occupy both the majority of the northern half of the area (Building 235 complex) as well as the southern end (Building 205 complex). The central portion of Assessment Area 5 is covered by meadow, mowed lawn, and stream drainage. Also present is an effluent sewage neutralization station (Building 313) which suggests the presence of underground sewer lines in the area.

The terrain of Assessment Area 5 generally exhibits a moderate slope graduating to a steeper slope to the south, north and west edges. Two stream heads are present. The first is located

northwest of Building 235 and the other is located north of Building 205. In these areas are hydric soils classified as the Baile Soil Series. Several stormwater management features also are scattered across Assessment Area 5. Included are two small stormwater management ponds, numerous bioretention features and a grass swale along center road, a rain garden near Building 235, and one outfall along Conservation Lane (MAP 2018a, 2018b).

Pre-modern Conditions

Prior to NIST's ownership of the property, Assessment Area 5 was part of F.T. Briggs lot (Parcel 8) (Figure 4.2). The NIST 1961 Demolition Plan depicted a small farm complex (Farm #6) in the central portion of Assessment Area 5 (Figure 4.1). The complex included a two-story frame house with multiple frame sheds and two frame barns (Figure 4.8). In addition to the farm buildings, there was a small cemetery located on the property. The Demolition Plan map noted that this cemetery was to be "removed by others". A review of the deeds for Parcel 8 indicated a circa 1858 reservation to Sarah Nichols "the enclosed Grave Yard and the right of ingress and egress to the same" (MCDR LJGH7:F41) when the property was sold. An oral historical account of the development of the NIST campus (Walleigh 1991) recalled the discovery and removal of a cemetery with seven burials. These, according to the account, were exhumed and reburied with the assistance of a Catholic priest, a Protestant minister, and a Jewish rabbi (Walleigh 1991:54). No other information on the grave yard was noted in the records, and the reburial location is unknown. While it is likely that this was the cemetery noted on the demolition plan, it is not certain. Otherwise, historic aerials suggest that this area was largely under agriculture at the time.

A residence on the 1865 Martenet Map in the general vicinity of Farm #6 was recorded as that of Henry Mossburg (Figure 4.3). Mossburg did not appear in the deed chain for the parcel, but may have been a tenant on the property between the death of earlier owner Thomas Rawlins in 1820 and the eventual sale to Samuel Briggs in 1858 (See Table 3.9).

The 1865 Martenet Map depicted another dwelling possibly owned by Henry Mossburg near the southeastern corner of Assessment Area 5 along Muddy Branch Road (Figure 4.3). This structure, which also appeared on the 1908 Rockville, Maryland USGS quadrangle map (Figure 4.4), may have been located between Center Drive and Conservation Lane. The Demolition Map indicated no structures in this area as of 1961.

Archaeological Potential

There has been a moderate level of development of the built environment in Assessment Area 5. Background research also revealed disturbances related to stream restructuring and stabilization just north of the complex of NIST buildings at the southernmost end of Assessment Area 5 (NIST Facilities Documents n.d. b, 1998). Interestingly, most NIST development has occurred away from the residential structures and cemetery associated with Farm #6. The cemetery appears to have been located just south of Building 423 while the dwelling house was located in the meadow further southwest. The cluster of farm barns and sheds north of the dwelling house however, appears to have been in the vicinity of Building 321 and likely is destroyed.

While background research found little to no construction activity in the area of Farm #6's residential structures and cemetery, the Construction Specifications document indicated that all of the preexisting built environment was to be removed (NIST Library Documents 1960). It is unlikely that remains of the features mapped on the Demolition Plan still are extant. However, if demolition concentrated only on known features, the surrounding area still may hold potential for other associated features or for earlier activity. Therefore, Assessment Area #5 was thought to hold moderate potential for historic resources. The presence of a relict stream in the area also indicated a moderate potential for prehistoric activity.

It was recommended that pedestrian reconnaissance and minimal archaeological testing be carried out to assess the level of stratigraphic integrity in the central portion of Assessment

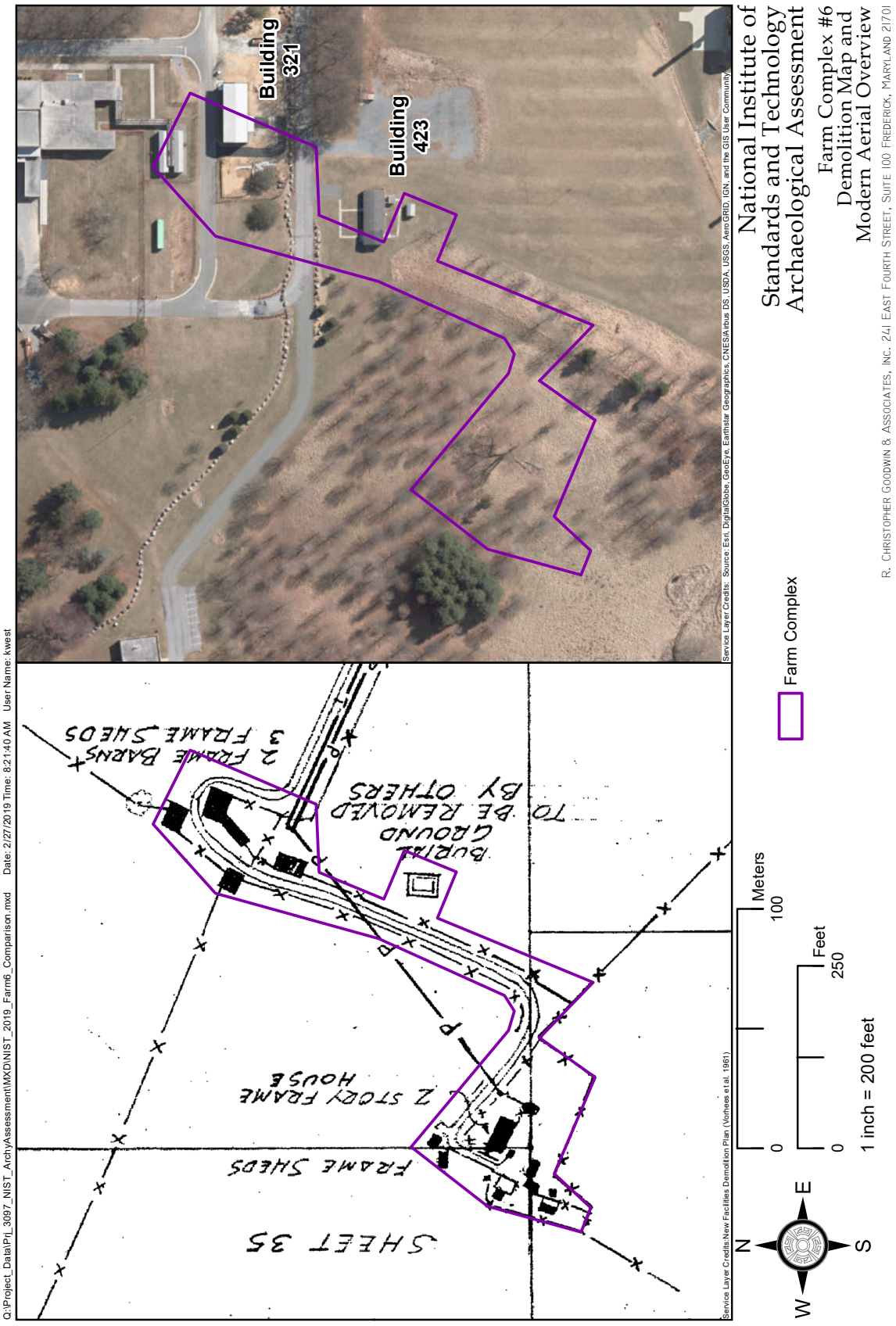


Figure 4.8 Comparison of modern aerial and Farm #6 insert from 1961 Demolition Map (Voorhees, Walker, Smith, Smith & Haines 1961a)

Area 5. In addition, reconnaissance and possible judgmental testing in the possible location of the Mossburg dwelling, as depicted on the 1865 Martenet map, was recommended.

Assessment Area 6

Current Conditions

Assessment Area 6 incorporates the 84.6 acre mostly wooded lot along the southwestern edge of the NIST property (Figure 2.1). It is bounded to the north by South Drive, to the east by Center Drive, to the south by the edge of the wood lot and property boundary, and to the west by Quince Orchard Road. Along the NIST property's side of Quince Orchard Road in Assessment Area 6 are several small private properties that were not conveyed to NIST at the time of their purchase.

Assessment Area 6 contains only two structures (Buildings 202 and 203). The Bowman House (Building 308) and the ancillary Building 419 no longer are extant. Notably, the Bowman House (Building 308) had been present on the property since circa 1954. Assessment Area 6 land is primarily forested and contains two branches of a deeply incised stream drainage with slopes exceeding 15-20% in some areas. There are three stormwater management ponds, one bioretention feature west of Building 202 and one outfall along the southwestern property boundary (MAP 2018a, 2018b). The streams have been reworked over time (NIST Facilities Documents 1998). Hydric soils are mapped along sections of the stream indicating wetland conditions.

Pre-modern Conditions

Assessment Area 6 incorporates portions of the former John B. Diamond lot (Parcel 1 and 9), F.T. Briggs lot (Parcel 8), William O. Dosh lot (Parcel 10), Chester W. and Ralph G. Adair lot (Parcel 13), John D. and Nancy D. Bowman lot (Parcel 14), and John L. and Alice D. French lot (Parcel 15) (Figure 4.2). These parcels, for the most part, were forested at the time of acquisition. The NIST 1961 Demolition Plan did depict several structures (Farm #7) bordering the private lots along Quince Orchard Road (Figure 4.1). The farm structures appeared to be on the William O. Dosh property (Parcel 10, Farm #7), a 17.23 acre parcel that Dosh acquired from Diamond circa 1927 (Table 3.10). The Demolition Plan depicted a two-story frame house, a well, a frame shed, a tin shed, and an outhouse (Figure 4.9). Parcels 13, 14, and 15 had not been acquired at the time of the Demolition Map's creation and no buildings were recorded in those areas. The remainder of the Assessment Area 6 land may have been undeveloped due to the steep terrain associated with the drainage.

The 1865 Martenet Map did not depict any structures within the vicinity of Assessment Area 6, nor did the early 1908 and 1911 USGS quadrangles indicate any structures in the area (NETRonline). The aerial photographs from 1957 did not indicate the presence of any structures within Parcel 10, likely because of the heavy tree canopy and low visibility.

An archaeological survey conducted in 2014 identified an archaeological site (18MO723) extending from private property at 899 Quince Orchard Road (MIHP DOE-MO-0306) onto the NIST property in Assessment Area 6 (Emory and Ross 2014). This site was thought to be associated with the early occupation of the dwelling house located at 899 Quince Orchard Road. The extant structures on that property all appear to have been constructed in the mid-twentieth century. If the site did extend onto NIST property, and if it was associated with the occupation of Farm #7, that would suggest a potential date for the farm. That date would be consistent with Dosh's acquisition of the property in 1927.

Archaeological Potential

Assessment Area 6 appears to be the least developed section of the NIST property, largely due to the steep terrain. While the buildings that were present at the time of NIST's construction (Farm #7) were likely demolished, earlier structures may be present along the stream bluffs where little construction has occurred. As such, Assessment Area 6 exhibits moderate-low potential for historic resources.

In terms of prehistoric potential, areas of stream confluences are known to exhibit moderate-high potential for occupations. Although the terrain is rather steep, prehistoric sites may be present on the bluffs overlooking the drainage.

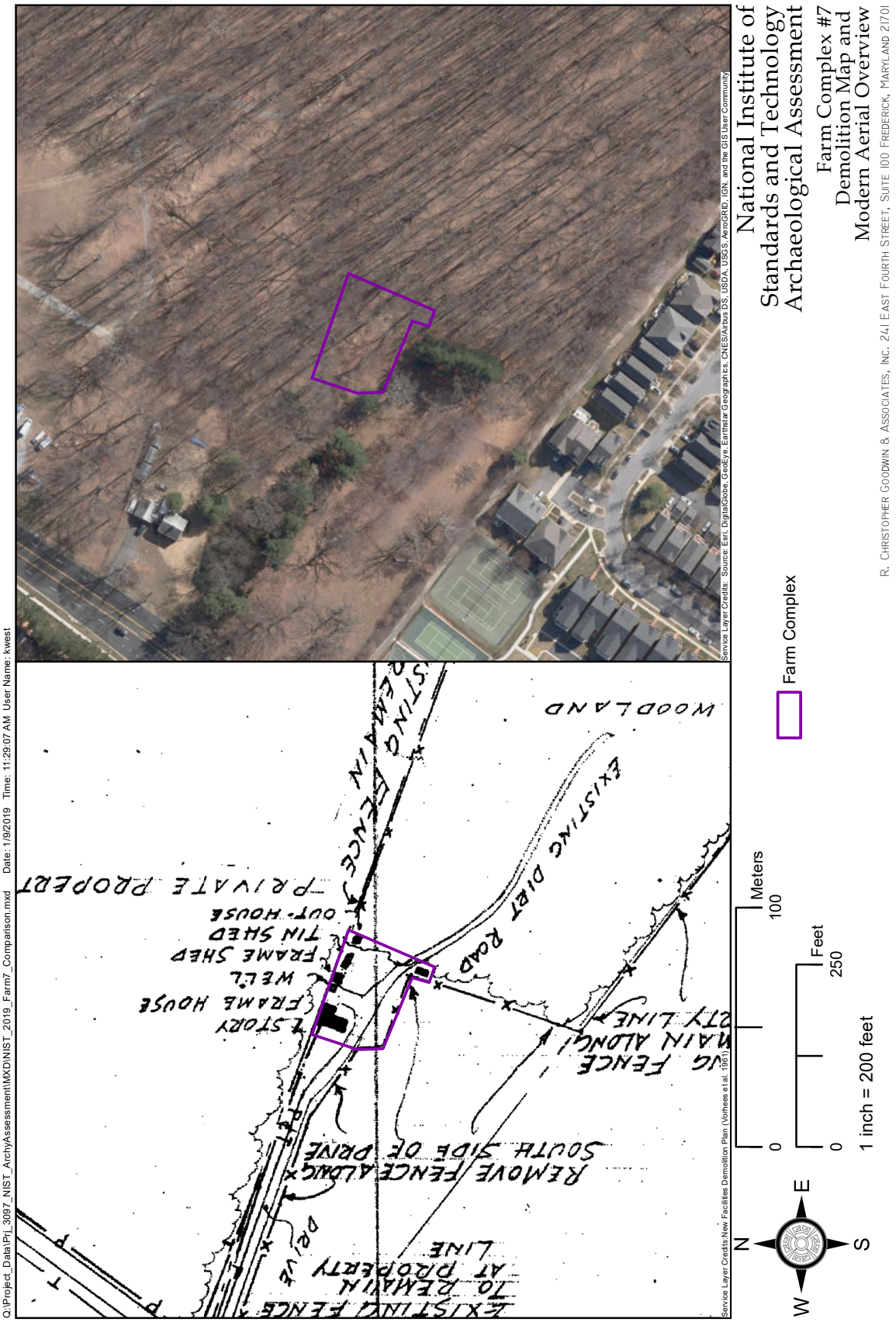


Figure 4.9 Comparison of modern aerial and Farm #7 insert from 1961 Demolition Map (Voorhees, Walker, Smith, Smith & Haines 1961a)

Based on these factors, it was recommended that reconnaissance and judgmental subsurface testing be carried out in Assessment Area 6, particularly along any bluffs or terrace landforms overlooking the stream drainage. It was recommended that investigations also focus on identifying the location of archaeological Site 18MO723 as it extended into the NIST campus, and on the relocation of the former dwellings positioned on the William O. Dosh property (Farm #7).

Summary and Recommendations for Survey

The NIST campus exhibits several concentrations of development separated by open meadows and fields. These heavily developed areas reflect extensive and deep landscape modification associated not only with the buildings themselves, but with the interconnecting roadways, supporting utilities, and landscaping. Such development has the potential to diminish or destroy the depositional integrity of archaeological resources. Background research at the NIST archives aided in locating construction footprints and historic aerials provided further evidence of periodic development across the campus. While the construction impacts generally follow the footprint of the built structures, many areas of the campus were utilized for temporary access roads and staging/dumping areas which had significant subsurface impacts as well.

Other elements of the built environment reflecting moderate to significant disturbance include environmental modifications such as stream restoration and relocation, manmade ponds, stormwater management features (e.g. retention ponds, infiltration trenches, grass swales, etc.), and hydraulic outfalls. Whereas the smaller stormwater management features and outfalls reflect minimal-moderate disturbance, stream relocation and the installation of ponds necessitated significant modification of the original topography and disturbance to the surrounding landforms.

Archival research indicated that at the time of land acquisition in the late 1950s, there were at least seven extant farms or farm complexes on the 16 parcels comprising the total 579.5 acres. Construction specifications required that all of the preexisting above-ground structures be completely demolished and all subgrade features were to be wholly or partially demolished. For the portions only partially demolished the area was to be cleaned out of all structural components and filled with concrete or compacted gravels. As such, none of the buildings that were present at the time of property transfer are likely to retain any archaeological potential. These specifications were to be upheld even if other unknown subterranean cultural features were encountered during construction. As such, anywhere where grading has occurred on site there remains little to no potential for archaeological integrity.

With that being said, because the demolition process only applied to known, extant structures, there remained potential for older archaeological remnants of historic occupations or from prehistoric land use outside of the intensive NIST construction impact area to be present and potentially intact. Therefore, where background research had suggested that no grading occurred, testing was recommended to determine the level of disturbance or stratigraphic integrity. Moreover, an assessment area's proximity to relict streams or springheads suggested moderate potential for both prehistoric and historic resources. Potable water is a pivotal resource for settlement and serves as a key index for determining site potential. These environments additionally supported an array of resources useful for human consumption and utilization. As such, undisturbed areas adjacent to streams were to be a focus of subsurface archaeological testing.

Table 4.1 provides a summary of the areas that were recommended for preliminary field survey.

Table 4.1. Summary of Archaeological Potential and Assessment Recommendations

Analysis Unit	Approx Acreage Total	Associated Historic Parcel Numbers	Farm Number	Known Archaeology Sites	Prehistoric Potential	Historic Potential	Field Assessment Recommended	Justification
Assessment Area 1	190	1	1	0	Low	Low	within a 5-ac field northwest of Building 226	area may have sustained surface disturbance only; proximity to stream
Assessment Area 2	28	1	na	0	Low	Low	within a 5-ac field at intersection of North Drive and Quince Orchard Road	data suggests minimal disturbance; proximity to stream
Assessment Area 3	114	1, 2, 3, 4, 5, 6, and 7	2,3,4	0	Low-Moderate	Low	within a wooded area along the northwestern boundary of the assessment area, and in a field east of North Pond	data suggests minimal disturbance; proximity to stream; wooded area is near Diamond Farm (Farm #1) complex
Assessment Area 4	90	7, 8, and 9	5	0	Low	Low	knoll tops along East Drive and Muddy Branch Road	knoll tops exhibit minimal disturbance from development
Assessment Area 5	66.6	8, 12	6	0	Low-Moderate	Moderate	field in central portion of area; southeast corner of area along Muddy Branch Road	area exhibits minimal disturbance; proximity to stream; Farm #6 complex including cemetery at location; Martenet map suggested former dwelling along Muddy Branch Road
Assessment Area 6	84.6	8, 9, 10, 11, 13, 14, and 15	7; Bowman House	1 (18MO723)	Moderate	Moderate	upland portion of wooded area along stream; former location of Farm 7 structures	area exhibits minimal disturbance; proximity to stream confluence

Chapter V

Results of Field Assessments

Field investigations were undertaken April 2 – 5, 2019 to supplement and ground-truth the archival assessments of archaeological potential provided in Chapter IV of this report. During these investigations, pedestrian reconnaissance and limited shovel testing were conducted in the areas that had been identified as exhibiting archaeological potential. As noted in Chapter IV of this report, the surveyed areas were chosen based on evidence from archival documents, historic maps and aerials, and construction documents. Selection was based on a combination of an assessment of archaeological potential and on review of the extent of disturbance to historic landscapes and to historic structures. The objective of the field investigation ultimately was to clarify whether the soils in areas with moderate or high archaeological potential appeared to be intact or disturbed.

In the areas recommended for testing, shovel tests were positioned to cover the range of landforms suitable for occupation in each recommended survey area. An attempt also was made to cover a sufficient area within the larger landforms to ensure that final recommendations were valid. The results of the field work are presented below.

Assessment Area 1

Assessment Area 1 (Figure 5.1) was deemed to have low potential for historic and prehistoric archaeological sites. The archival assessment concluded that despite the evidence of widespread disturbance, a small portion of the area which had been earmarked for temporary access roads and staging areas during initial construction did not appear to have been completely graded at that time. Archival research had indicated that Farm #1 had been in this area. However, Farm #1 would have been located directly under the extant NIST campus buildings and was considered completely destroyed by that development. Because of the possibility that a small area had not been completely graded, and because it was possible that some portion of Farm #1 could be present there, field reconnaissance and limited subsurface investigation was recommended in this section.

Four shovel tests were excavated in the field northwest of Building 226 and south of North Drive in Assessment Area 1 (Figure 5.1). At the time of field testing, this section had mowed lawn with patches of bare soil exposed (Figure 5.2). Shovel Tests (ST) 1, 2, and 3 were positioned on a knoll while the fourth (ST 4) was positioned at the base of the knoll. All shovel tests revealed a disturbed stratigraphic sequence generally consisting of three strata. Stratum 1 extended from the surface to between 10 and 30 cm below surface (cmbs) and consisted of brown to dark yellowish brown (7.5YR 4/4, 10YR 4/6) silty loam. Stratum 2 was a thick yellowish brown (10YR 5/8) clay loam deposit with occasional gravel inclusions and manganese mottles indicative of the Glenelg soil series Bt3 horizon. The base of Stratum 2 was encountered between 49 and 80 cmbs. This horizon was underlain by brownish yellow (10YR 6/6-6/8) sandy loam corresponding with the C horizon typical for the Glenelg soil series.

Assessment Area 1 Recommendation

The soil profiles encountered during the testing in Assessment Area 1 reflect a truncated soil profile resulting from grading activities during the campus's construction. No cultural artifacts or features were encountered in Assessment Area 1 and no further work is recommended there.

Assessment Area 2

Assessment Area 2 (Figure 5.3) was deemed to have a low potential for historic and prehistoric archaeological resources. The archival assessment concluded that despite the evidence of widespread disturbance, a small field west of Bureau

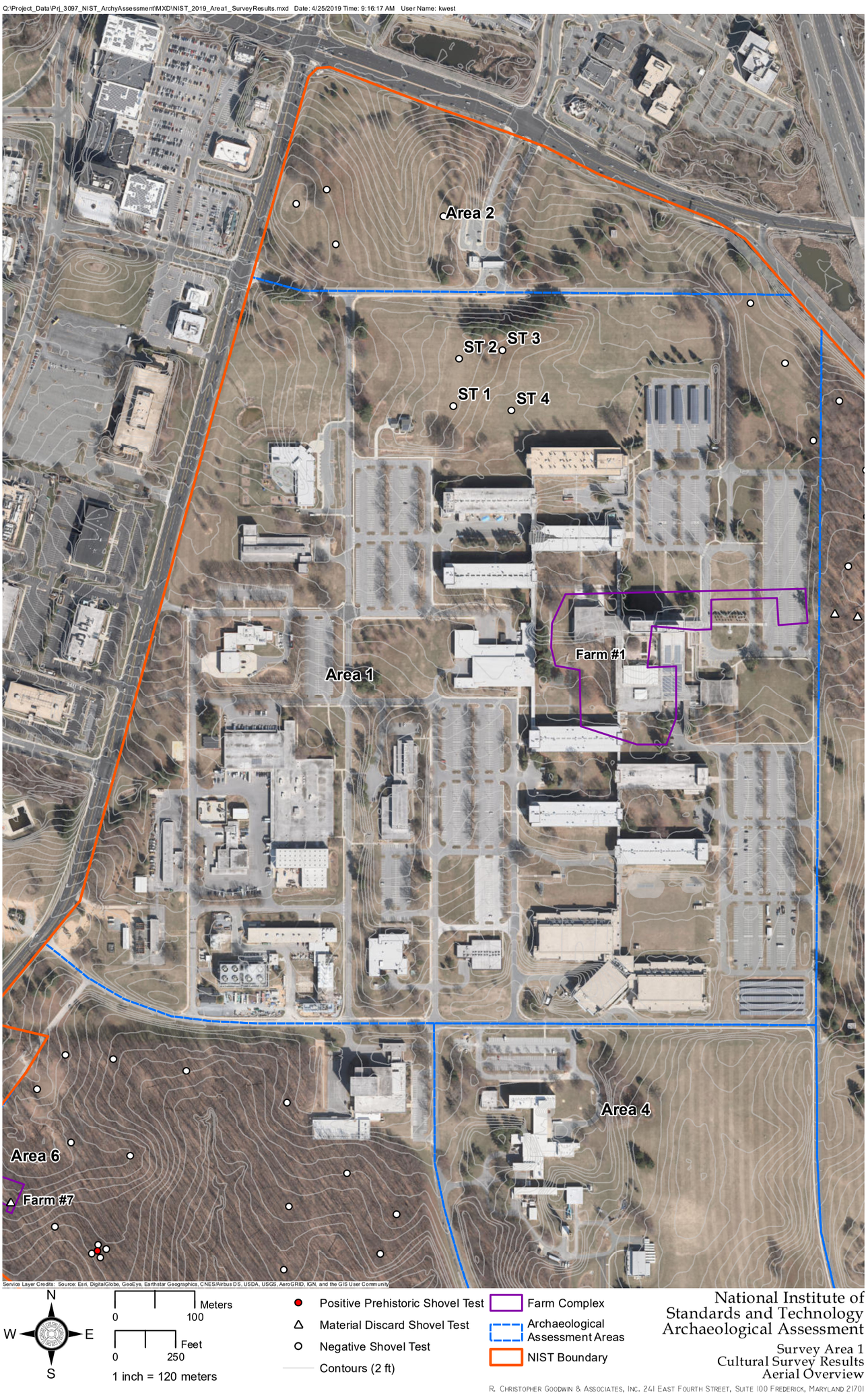


Figure 5.1 Survey Map of Assessment Area 1

Figure 5.2 Overview of Assessment Area 1 (view north)

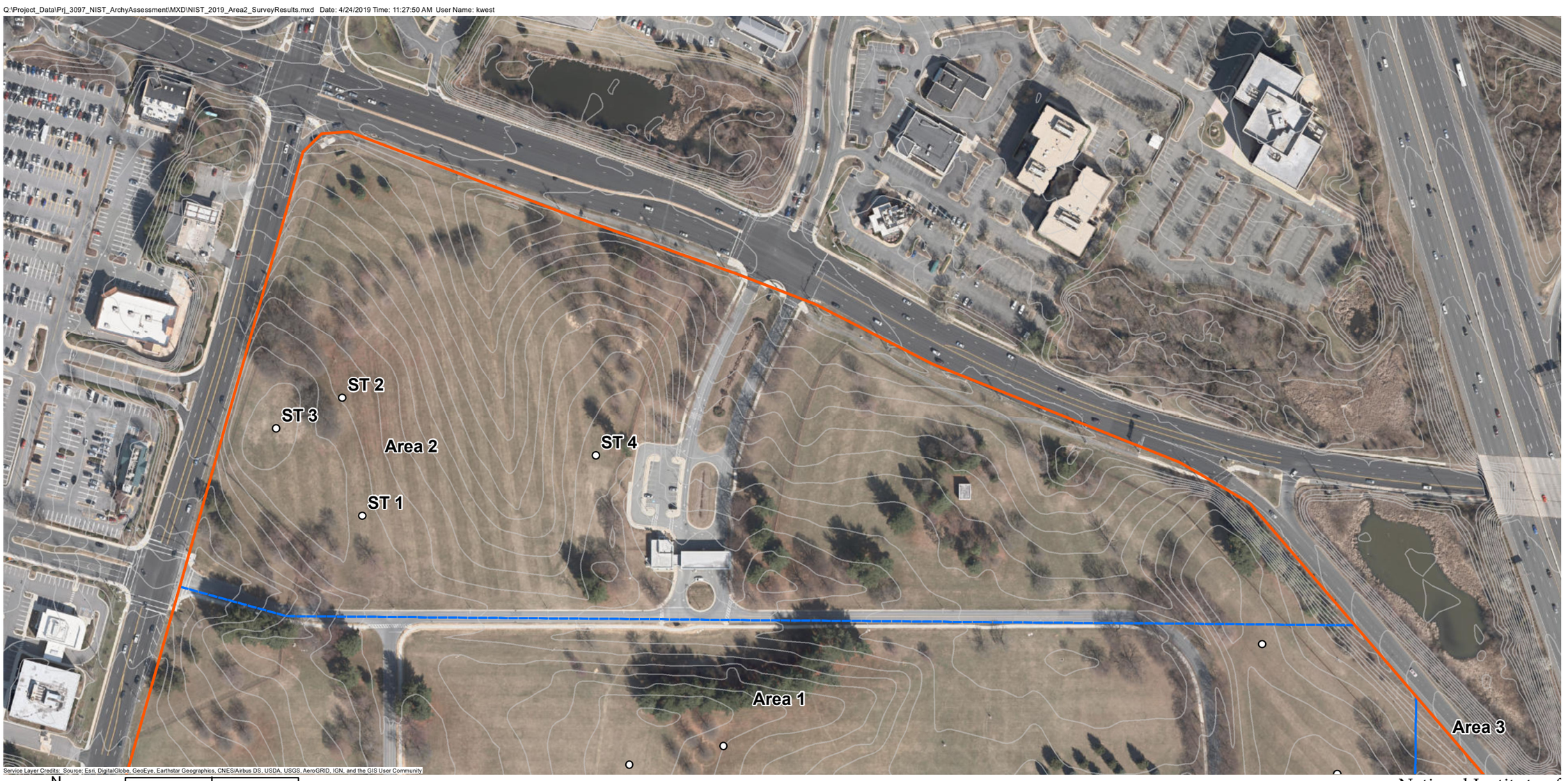


Figure 5.3 Survey Map of Assessment Area 2

Drive which had been earmarked for temporary access roads and staging areas during construction of the campus, did not appear to have been completely graded. The archival research did not indicate the presence of any historic resources within Assessment Area 2. Because of the potential for intact soils, however, field reconnaissance and limited subsurface investigation was recommended in this section.

Four judgmental shovel tests were excavated in Assessment Area 2 to the west of Bureau Drive (Figure 5.3). Three shovel tests (ST 1, 2, 3) were located west of a drainage swale and one (ST 4) was located to the east of the swale near the campus main gate (Figures 5.4, 5.5, 5.6). The eastern shovel test (ST4) exhibited one stratum of disturbed soil to a depth of 85 cmbs. The stratum was very mottled and consisted of 85% yellowish brown (10YR 5/8) silty loam, 10% yellowish red (5YR 5/8) silty loam, and 5% dark yellowish brown (10YR 4/4). Gravel was intermixed throughout the stratum. No artifacts or cultural features were identified in this shovel test.

The western shovel tests (ST 1, 2, and 3) alternatively revealed disturbed and truncated soil profiles. In two of the shovel tests (ST 1 and 2) in this section, the upper soil package appeared to have been redeposited subsoil underlain by the brownish yellow (10YR 6/6-6/8) fine micaceous sandy loam C horizon typical of the Gaila soil series. The upper disturbed horizons in these two shovel tests extended from the surface to roughly 40 cmbs and consisted of mottled strong brown to yellowish brown (7.5YR 5/6, 10YR 5/6) silty loam with yellowish red (5YR 5/8) loam pockets and occasional gravel inclusions. In the third shovel test closest to Quince Orchard Road (ST 3), the disturbed soils extended from the surface to 80 cmbs; subsoil was not encountered.

Assessment Area 2 Recommendation

Throughout the surveyed sections of Assessment Area 2, disturbance extended well into the C horizon. No cultural artifacts or features were encountered in Assessment Area 2 and no further work is recommended there.

Assessment Area 3

Assessment Area 3 (Figure 5.7) was deemed to have low potential for historic archaeological sites and a moderate to low potential for prehistoric archaeological sites. The archival assessment concluded that because of the proximity of a relict stream, the northern portion of the area should undergo further investigation. In addition, examination of the southeastern upland portion of the area, where the archival research indicated minimal disturbance, was recommended. Farm Sites #2 and 3 were identified as having been within the southeastern section of Assessment Area 3, and despite the likelihood of these having been demolished during construction, it was recommended that the vicinity of the structures be field-checked.

A total of 16 shovel tests and three radial shovel tests were excavated in two sections of Assessment Area 3 (Figure 5.7). The southern survey section encompassed the upland field east of the ponds in portions of Area 3. The archival research did not indicate extensive disturbance in this area, aside from the razing of Farms #2, 3, and 4. The northern survey section encompassed the land east and north of East Drive, generally east of the main parking lot for the Administration Building.

Southern Section of Area 3

Six of the judgmental shovel tests (ST 1-6) and all of the radial shovel tests were positioned in the upland landform at the southern half of Assessment Area 3 (Figure 5.8). Testing was conducted in this area to examine the extent of landform disturbance and to investigate the vicinity of Farms #2 and #3. Reconnaissance of the former location of Farm #2 revealed a slight depression where the house likely stood (Figure 5.9). Ground disturbance was evident all around the depression. Farm #3 appeared to have largely been impacted by road expansion. Interestingly, daffodils were present and helped to identify the locations of both farm sites.

Numerous twentieth century artifacts were noted in two of the shovel tests (ST 1 and 2) south

Figure 5.4 Overview of the western surveyed section of Assessment Area 2 (view northwest)

Figure 5.5 Overview of the swale in the surveyed section of Assessment Area 2 (view northeast)

Figure 5.6 Overview of the eastern surveyed section of Assessment Area 2 (view north)

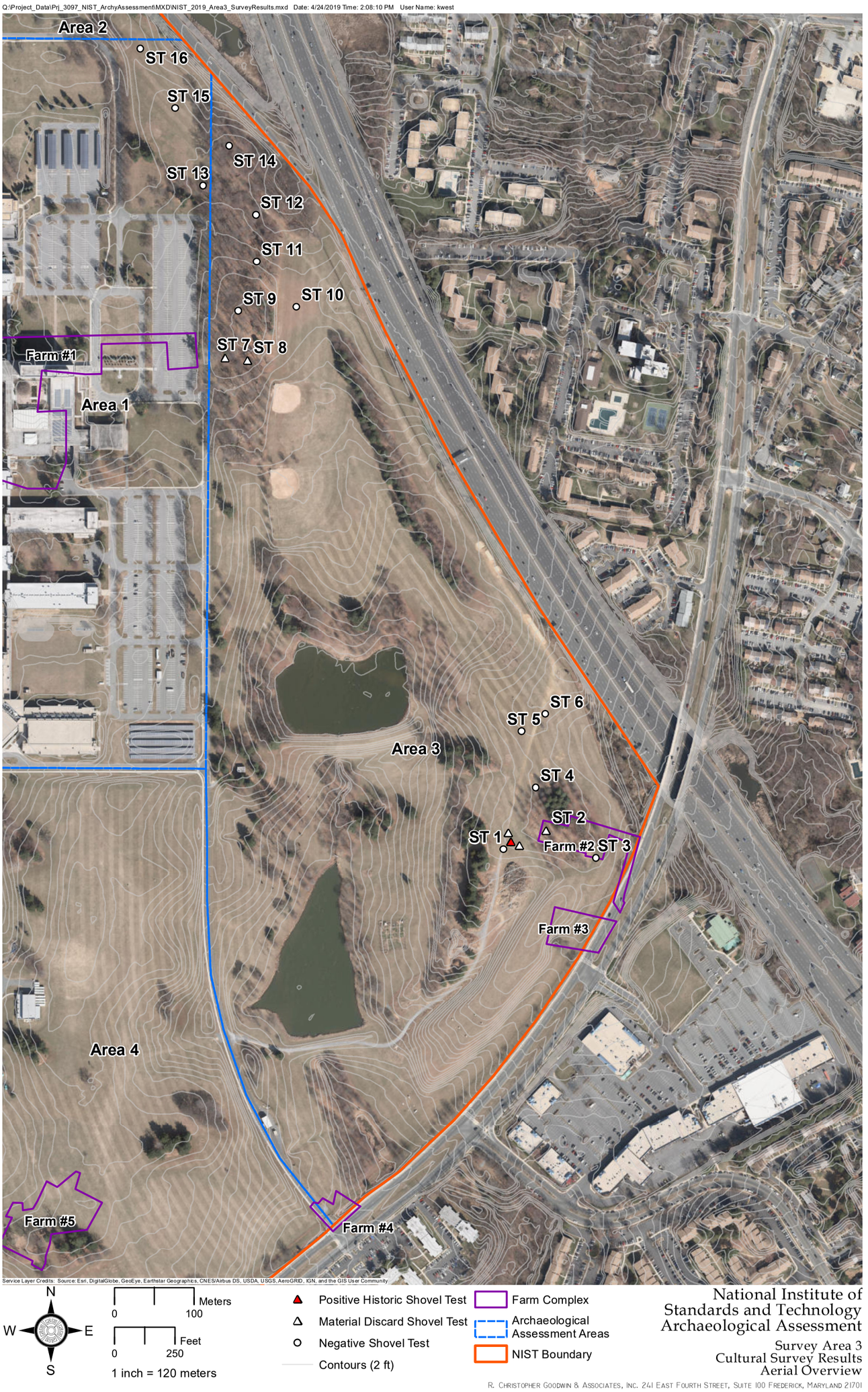


Figure 5.7 Survey Map of Assessment Area 3

Figure 5.8 Overview of the southern survey section of Assessment Area 3 (view north-northwest)

Figure 5.9 Area of depression possibly associated with Farm #2 (view west)

of Farm #2, but because they were noted within disturbed contexts the artifacts were not retained. Remnants of a brick feature were also identified in ST 1 under layers of disturbed soil (Figure 5.10). Radial shovel tests were excavated around this shovel test to confirm that the brick was not part of an intact feature. Two of the radial shovel tests produced additional temporally contemporaneous artifacts within the disturbed horizons however no evidence of an intact brick feature was observed.

Soil profiles in the vicinity of ST 1 consisted of a shallow 10cm thick dark brown to dark yellowish brown (10YR 3/3-4/6) silty loam A-horizon underlain by a roughly 10cm thick fill deposit described as a strong brown (7.5YR 5/6-5/8) clay loam mottled with dark yellowish brown (10YR 4/6) silty clay loam. A dark yellowish brown (10YR 4/6) silty clay loam horizon within which the brick feature was encountered in ST 1 also was observed in the northern and eastern radial shovel tests. Subsoil ultimately was encountered between 23 and 35 cmbs. Twentieth century artifacts noted in this location included fragments of clear glass, hardware, ceramic floor tiles, two whiteware sherds, and nails.

ST 4 was excavated near the depression likely associated with Farm #2 (Figure 5.7). This profile revealed disturbance extending 30cmbs and underlain by red (2.5YR 4/6) clay to a depth of 65 cmbs. This does not correspond to the anticipated Glenelg soil series and may represent deep disturbance associated with the structure's demolition.

Soil profiles elsewhere in the southern section of Assessment Area 3 displayed different stratigraphic sequences. ST 2 and 3 both revealed a shallow brown to dark yellowish brown (7.5YR 4/4-4/6) silty clay loam A-horizon extending from the surface to between 22-30cmbs underlain by yellowish red (5YR 5/8) silty loam subsoil. These profiles reflect a severely truncated Glenelg soil series profile as the subsoil horizon is indicative of the Glenelg C horizon.

ST 5 and 6 otherwise exhibited stratigraphic sequences more akin to the Gaila soil series. These profiles exhibited disturbed soils to a depth of 45-53cmbs underlain by yellowish brown to brownish yellow (10YR 5/6-6/8) fine micaceous sandy loam with occasional gravel and shale inclusions extending to 75cmbs. This contrast with the mapped soils for the area may indicate more deeply disturbed soils towards the northern end of the landform.

Northern Section of Area 3

The remaining ten shovel tests (ST 7-16) were located in the northern end of Assessment Area 3 (Figure 5.7) and extended into the northeastern edges of Assessment Areas 1 and 2 (Figure 5.11). ST 7 and 8 in this section produced modern glass and iron fragments which were noted but not retained. These shovel tests were in the vicinity of an open park area which likely explains the presence of cultural material. The remaining shovel tests were otherwise positioned within the overgrown wood lot and possible drainage field, as well as along the manicured lawn which appeared to be largely unused.

Soil sequences in the wooded lot generally revealed a dark brown (7.5YR 3/2) silty loam to silty clay loam A horizon extending from the surface to between 11-20cmbs underlain by strong brown (7.5YR 5/6-5/8) clay loam subsoil. Several shovel tests towards the north end of the wood lot however exhibited a dark yellowish brown (10YR 4/4) silty clay loam soil horizon between the A horizon and subsoil. This horizon was generally 20-25cm thick and may represent a historic plowzone.

The topography east of the woodlot declined abruptly indicating that the land had been graded (Figure 5.12). This portion was covered with tall grass and appeared to be a drainage/catchbasin. ST 10 was excavated in this section and revealed an 80cm deep disturbed soil package. The soil was heavily mottled with reddish yellow (7.5YR 6/8), yellowish red (5YR 5/8), and very pale brown (10YR 7/4) sandy loam with 20-25% gravel. Subsoil was not encountered in this shovel test.

STs 13, 15, and 16 were located in the open field to the northwest of the woodlot (Figure 5.7 and Figure 5.13) exhibited variable soil sequences likely representative of cut and fill activities in the area. ST 13 and 16, positioned closer to roads, exhibited disturbed soils to a depth of 34-40 cmbs underlain by yellowish red (5YR 5/8) and yellowish brown (10YR 5/8) clay loam subsoil

Figure 5.10 Shovel Test 1 in Assessment Area 3 with brick feature at base

Figure 5.11 Overview of the woodlot in the northern survey section of Assessment Area 3 (view north)

Figure 5.12 Change in topography east of the woodlot in the northern survey section of Assessment Area 3 (view north)

Figure 5.13 Overview of the open field in the northern survey section of Assessment Area 3 (view south)

while ST 15 exhibited a shallow (20 cm thick) brown (10YR 4/4) silty clay loam A-horizon underlain by yellowish brown (10YR 5/8) clay loam subsoil.

Assessment Area 3 Recommendation

The presence of intact and possibly stratified soils in the wood lot of the northern section of Assessment Area 3 suggests the potential for archaeological remains. This section is recommended for additional Phase I survey in the event of future development. The remaining sections of Assessment Area 3, including areas north and east of the wood lot and the entirety of the southern section of Assessment Area 3, exhibit extensive disturbance. Although cultural material likely associated with Farm #2 was identified in the southern section of Assessment Area 3, the documented demolition of all architectural features and the stratigraphic evidence of extensive disturbance negates the potential for intact deposits. Based on these factors, no further testing in the southern portion of Assessment Area 3 is recommended.

Assessment Area 4

Assessment Area 4 (Figure 5.14) was deemed to have low potential for historic and prehistoric archaeological sites due to extensive disturbance from the former use of the area for sediment basins and deposition and storage of construction waste during the campus's construction, as well as the more recent construction of a solar array. The archival assessment concluded that despite the general disturbance in the area, the low knolls in the area may not have undergone as much, if any, disturbance and pedestrian reconnaissance of those areas was recommended. Archival research indicated that Farm #5 was located within Assessment Area 4, however the former location of the associated buildings is under the recently constructed solar array and is likely to have been completely destroyed by both the initial construction of the NIST facility and later by the solar array construction.

Reconnaissance of the knolls in Assessment Area 4 revealed evidence of disturbance in most cases. One shovel test was excavated on a

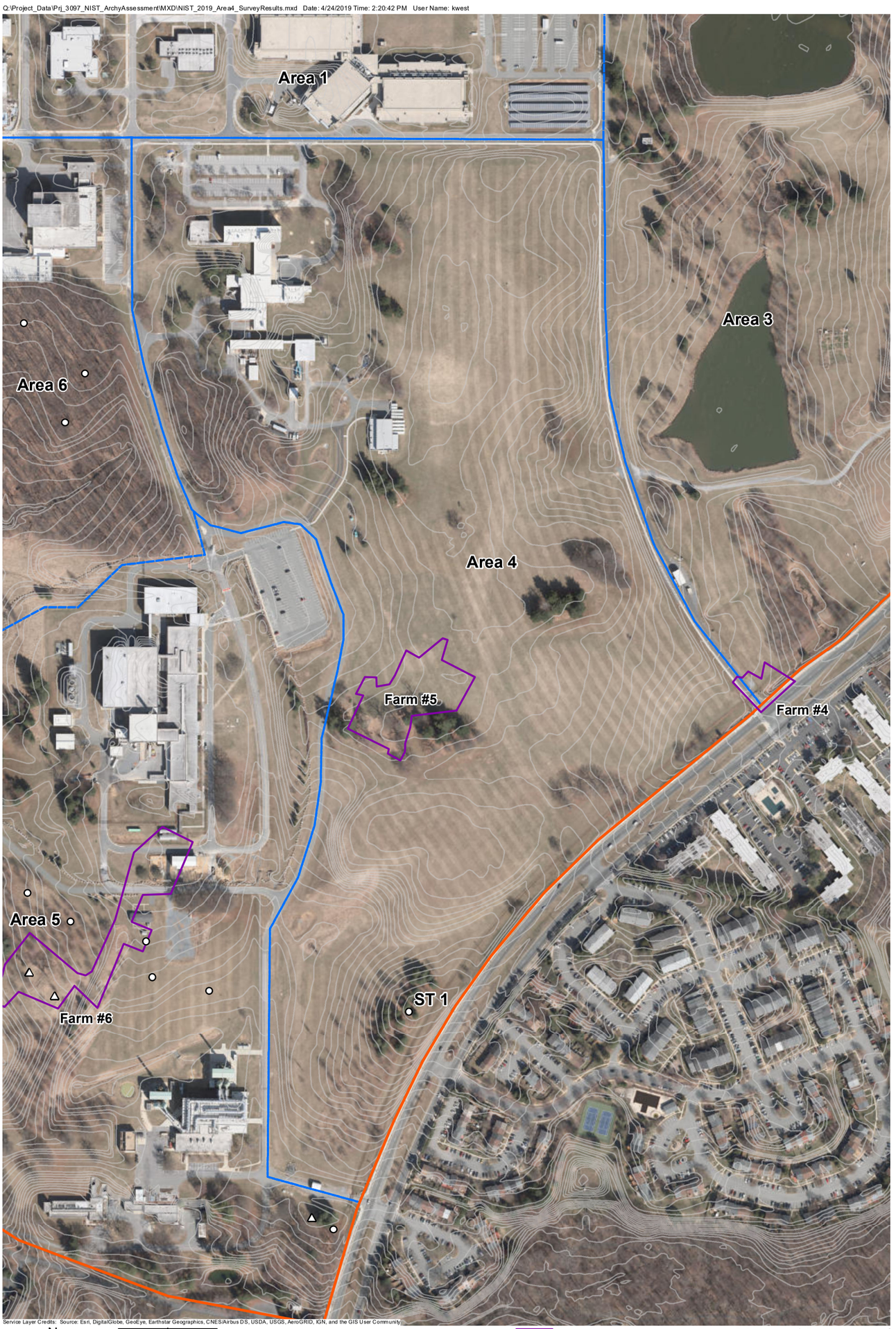


Figure 5.14 Survey Map of Assessment Area 4

knoll along Muddy Branch Road (Figures 5.14 and 5.15). The shovel test soil sequence included a 20cm deep brown (10YR 4/3) silty loam A-horizon with 5% gravel inclusions underlain by red (2.5YR 4/6) sandy clay loam subsoil with 2% shale inclusions. This soil profile generally conforms to the Gaila soil series mapped for the area. No artifacts or features were encountered in the shovel test.

Assessment Area 4 Recommendation

In the tested portion of Assessment Area 4, the landform did not appear to be disturbed, but the topography exhibited more of a slope than anticipated which is more conducive to erosion. This was further evidenced in the shallow profile of ST 1. Based on the lack of cultural material and the documented disturbance throughout the area, no further work is recommended in Assessment Area 4.

Assessment Area 5

Assessment Area 5 (Figure 5.16) was deemed to have moderate potential for historic archaeological sites and low to moderate potential for prehistoric sites. The archival assessment concluded that because the area incorporates open spaces suspected of having undergone minimal disturbance, coupled with the presence of Farm #6 and possibly the Henry Mossburg house, additional investigation was recommended to assess the level of disturbance and the area's potential.

A total of 11 shovel tests were excavated in three sections of Assessment Area 5 (Figure 5.16). The first section encompassed a small area of manicured lawn and woodland in the southeastern portion of the area, south of the campus entrance at Muddy Branch Rd (Figure 5.17). This section is in the vicinity of the potential Henry Mossburg house location. Two shovel tests (ST 1 and 2) were excavated in this location. ST 2 in this area revealed a stratigraphic sequence consisting of a 10cm brown (7.5YR 4/4) silty loam A-horizon underlain by a 5cm thick layer of strong brown (7.5YR 5/8) clay loam mottled with Stratum 1 soil which was interpreted as a lens of fill soil. The underlying stratum was described as dark yellowish brown (10YR 4/6) silty clay loam with 2-5% gravel and extended 62 cmbs. This stratum was underlain by strong brown (7.5YR 5/6) silty clay with 2-5% gravel inclusions which was interpreted as subsoil. Three wire nails and one cut nail were recorded near the interface of Strata 2 and 3 in this shovel test. The presence of artifacts in a deeper stratum may indicate archaeological potential in this area if the fill soil is capping an older horizon. ST1 in this area was excavated to a depth of 50 cmbs and exhibited a similar profile except there was no 'fill' horizon observed. No artifacts were noted in ST 1.

The second section investigated in Assessment Area 5 was in the vicinity of the former cemetery associated with Farm #6 (Figure 5.18). Three shovel tests (ST 3, 4, 11) were excavated in this section, none of which revealed any cultural features or artifacts. This section was mostly covered with tall grass although ST 11 was positioned in the manicured lawn south of a shed. Soil profiles in this section correlated with the Glenelg soil series mapped for the location. Stratum 1 (A-horizon) generally extended 0-10 cmbs and consisted of dark brown to dark yellowish brown (10YR 3/3-4/4) silty loam. Stratum 2 (B horizon) extended 10-25cmbs and consisted of strong brown (7.5YR 4/6) silty clay loam. Stratum 3 (B/C horizon) extended 25-35cmbs and consisted of yellowish red (5YR 5/8) clay loam.

The third section investigated in Assessment Area 5 was to the west of the artificial earthen berm also in the vicinity of Farm #6 (Figure 5.19). This section was mostly forested and exhibited a swale between two relatively level landforms. Six shovel tests (ST 5-10) were excavated in this section. Most shovel tests revealed homogenous soil profiles consisting of a dark yellowish brown (7.5YR 4/6) silty loam Stratum 1 that extended from the surface to 20-28 cmbs. Stratum 2 consisted of yellowish red (5YR 5/6-5/8) silty clay loam subsoil. ST 9 and 10, however, located very close to the structures associated with Farm #6, exhibited anomalous profiles and were also the only positive shovel tests. These shovel tests revealed a dark brown-dark yellowish brown (10YR 3/3-4/4) silty clay loam Stratum 1 which extended from the surface to 10-15 cmbs. This was underlain by a mottled disturbed silty clay loam horizon ranging in color from strong brown (7.5YR 5/8) to dark brown (10YR 3/3) to yellow

Figure 5.15 Overview of surveyed section of Assessment Area 4 (view northeast)

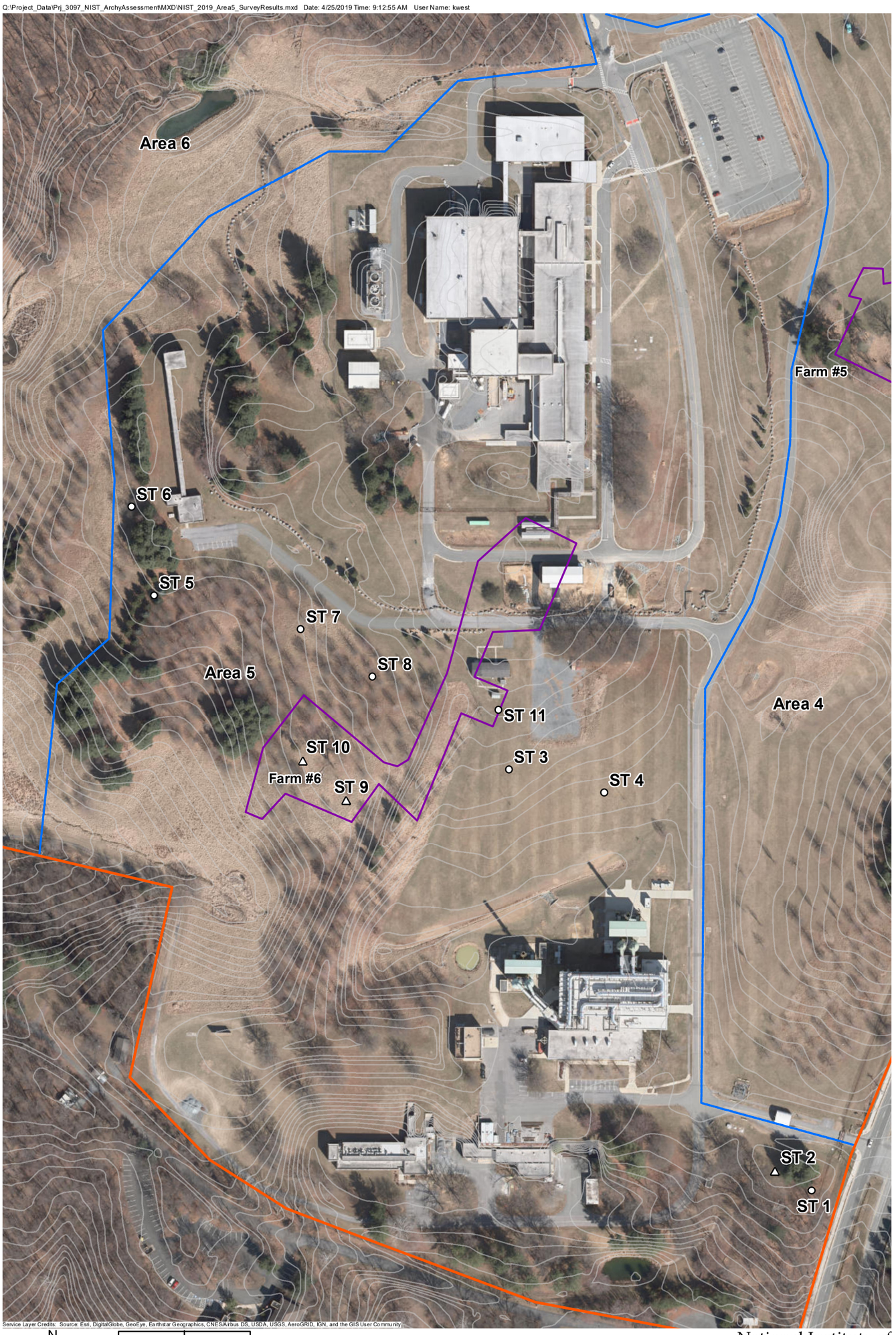


Figure 5.16 Survey Map of Assessment Area 5

Figure 5.17 Overview of the first survey section of Assessment Area 5 (view west)

Figure 5.18 Overview of the second survey section of Assessment Area 5 (view south-southwest) (note berm along horizon)

Figure 5.19 Overview of the third survey section of Assessment Area 5 (view south) (note swale at center)

(10YR 7/8) that extended an additional 29 and 50cmbs, respectively. This layer was underlain by a dark brown (10YR 3/3) silty clay loam horizon with a dense limestone impasse at 37 cmbs in ST 10 and 60cmbs in ST 9. Artifacts recorded in these shovel tests included a small miscellaneous sheet iron fragment from Stratum 2 in ST 9 and two green glass fragments and four transfer print whiteware sherds from Stratum 3 in ST 10. It was unclear whether the dark terminal strata which contained artifacts was intact or indicative of disturbance. Additional work would be necessary to clarify.

Assessment Area 5 Recommendation

The presence of possibly intact soils associated with artifacts in the first and third sections of Assessment Area 5 suggests that they retain the potential for archaeological deposits. Both of these sections are recommended for additional Phase I survey in the event of future development.

Assessment Area 6

Assessment Area 6 (Figure 5.20) was deemed to have moderate potential for historic and prehistoric archaeological sites. The archival assessment had concluded that because little development has occurred in the area there is a high potential for intact stratigraphy. Furthermore, the identification of structures associated with Farm #7 as well as the area's close vicinity to a relict stream suggests a high potential for archaeological resources.

A total of 19 shovel tests and four radial shovel tests were excavated in Assessment Area 6 (Figure 5.20). Shovel tests were positioned throughout the area on distinct landforms and to ensure sufficient coverage on the upland level surface. The entire survey area was forested and was heavily dissected by relict streams (Figure 5.21, Figure 5.22). Numerous late nineteenth-early twentieth century bottle dumps were observed along the west-northwest edge of Assessment Area 6 (Figure 5.23). Several architectural remnants including a chimney base made with fire bricks embossed with "Maryland" on one side and "W.W. Co." on the other, brick debris, and push piles also were present in this area (Figure 5.24, Figure 5.25). A moderate amount of disturbance surrounding the location of the recently razed Bowman house also was evident during the investigation.

Soil profiles in Assessment Area 6 exhibited relatively homogenous soil sequences. Stratum 1 extended from the surface to 4-29 cmbs and was generally described as dark brown silty loam. This horizon was underlain by yellowish brown (10YR 5/6) clay loam subsoil. Several shovel tests were excavated into a third stratum which was encountered between 25 and 40 cmbs and was described as reddish yellow (7.5YR 6/8, 5YR 6/8) or yellowish red (5YR 5/8) clay loam. These soil profiles correlate with the Glenelg soil series mapped for the majority of Assessment Area 6.

ST 14 and ST 18 in Assessment Area 6 were positive for cultural material. ST 14 produced 30 clear glass fragments and one whiteware sherd, all of which were noted but not retained. This shovel test was in the vicinity of several twentieth century bottle dumps and the recovered material is likely associated with the trash dumps. ST 18 otherwise produced one quartzite biface (Figure 5.26). Radial shovel tests were conducted around the positive ST 18; all were negative for cultural material.

No subsurface features were encountered in Assessment Area 6.

Assessment Area 6 Recommendation

Due to the evidence for intact soil stratigraphy, the presence of both historic and prehistoric subsurface cultural material, the evidence of historic refuse deposits on the surface, and the archival data indicating a farmstead, Phase I survey of Assessment Area 6 is recommended in advance of any planned development.

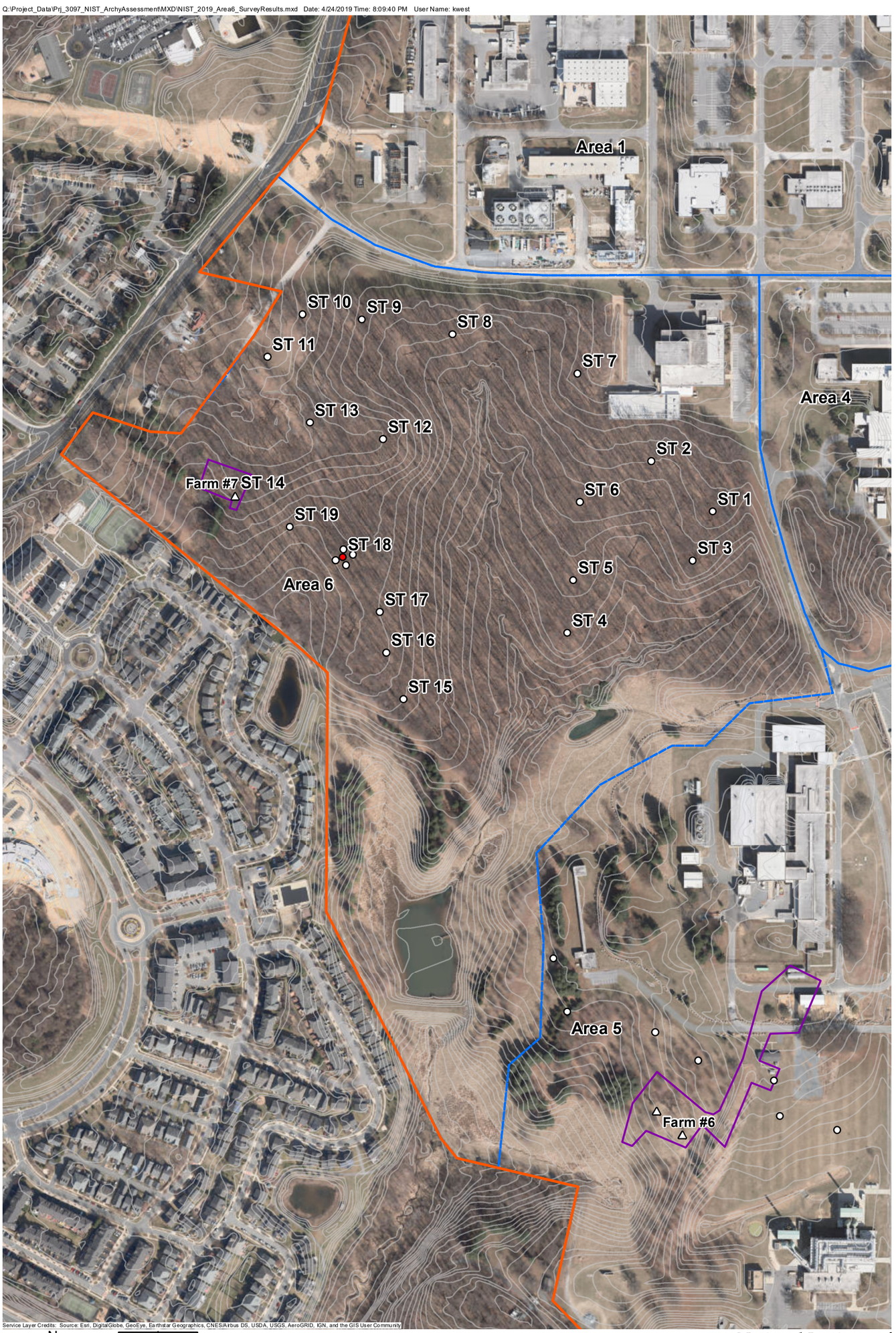


Figure 5.20 Survey Map of Assessment Area 6

Figure 5.21 Overview of Assessment Area 6 (view southwest)

Figure 5.22 Stream running through Assessment Area 6 (view east)

Figure 5.23 Example of bottle dump in Assessment Area 6

Figure 5.24 Collapsed brick chimney in Assessment Area 6

Figure 5.25 Push pile in Assessment Area 6

Figure 5.26 Quartzite projectile point recovered from Assessment Area 6

Chapter VI

Summary and Recommendations

Introduction

This report has provided an assessment of the archaeological potential of the NIST Gaithersburg campus. This study is part of a review that has included field investigations as well as archival and environmental data. These investigations are not required for any planned undertakings, but are intended to provide baseline information that will support facility management and future project planning, in partial satisfaction of Section 110 of the National Historic Preservation Act (NHPA) of 1966, as amended.

Data that was incorporated into the desktop study included historic cartographic sources, aerial photographs, review of previous archaeological investigations in the NIST vicinity, and review of property history, deeds, and land tenure. Historic construction plans and photographs, landscape plans and surveys, oral historical accounts of the NIST facility development, and other pertinent records from the NIST library and the facilities management office also were reviewed. Field reconnaissance and limited subsurface survey further assisted in characterizing the archaeological potential in those areas that were identified during the archival review as needing field review. Discussion of findings from the field reconnaissance and recommendations of areas with archaeological potential have been included in Chapter V. The assessment's results and recommendations are further summarized in this chapter.

Summary and Recommendations

In general, the archaeological assessment has revealed extensive disturbance throughout much of the NIST campus property. Although several of the Assessment Areas encompass large swaths of open fields with limited development, archival research coupled with subsurface survey indicated that most of these areas have been heavily modified. As a result, it has been determined that Assessment Areas 1, 2, and 4 appear to lack archaeological potential and no further work is required there.

Sections of Assessment Areas 3 and 5, and all of Assessment Area 6 still retain intact stratigraphy and archaeological potential. It has been recommended that Phase I archaeological survey be carried out in portions of those areas prior to any future development (Table 6.1; Figure 6.1). In Assessment Area 3 it has been determined that the woodlot adjacent to the Administration Building parking lot is relatively intact and thus exhibits archaeological potential. In Assessment Area 5 subsurface testing encountered a buried dark horizon with artifacts in two sections of the area. The first is located in the field and wood lot south of the southern entrance gate at Muddy Branch Road and is possibly associated with the Henry Mossburg residence. The second is located in the field and wood lot southwest of Building 423 and is likely associated with Farm #6. Phase I survey in these areas is recommended to more fully investigate the potential in these areas. Finally, the testing and reconnaissance in Assessment Area 6 revealed intact stratigraphy, subsurface artifacts, and remnants of historic surface features throughout the woodlot. As a result, additional Phase I survey is recommended for all of Assessment Area 6.

Table 6.1. Recommendations for Additional Archaeological Testing in Assessment Areas 1 - 6.

Analysis Unit	Approx Acreage Total	Shovel Tests Excavated	Recommendations	Approximate Acreage Recommended for Future Survey
Assessment Area 1	190	4	No further work	0
Assessment Area 2	28	4	No further work	0
Assessment Area 3	114	19	If area will be impacted by development, Phase I survey recommended in wooded area	5.76
Assessment Area 4	90	1	No further work	0
Assessment Area 5	66.6	11	If area will be impacted by development, Phase I survey recommended in two areas.	1 (Southeastern section)
				3.85 (Central section)
Assessment Area 6	84.6	23	If area will be impacted by development, Phase I survey recommended.	36

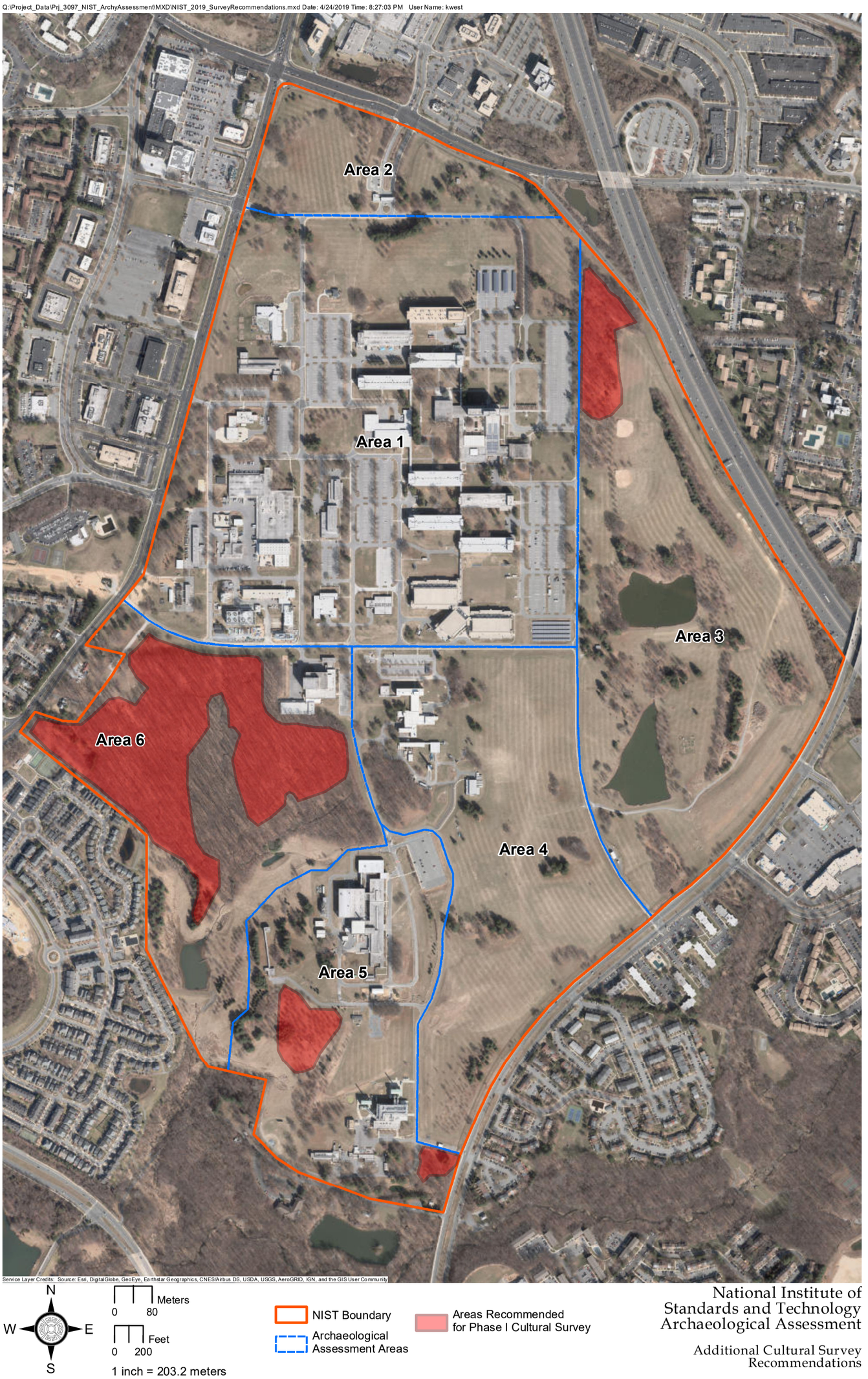


Figure 6.1 **Map of areas recommended for additional survey prior to future development.**

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APPENDIX I

ARTIFACT INVENTORY

Artifact Inventory

4/19/2019

Category	Group	Class	Type	Sub-Type	Heat	Count	Weight (g)	Comments
-								
	FS 1	Area Area 6		Shovel Test ST 18	Strat II	Level 2	20 to 40 cmbs	ZEK 03 April 2019
LITHICS	Biface	Quartzite	Finished biface	Projectile point/knife, Indeterminate	N	1	7.13	Missing tip, Possible Guilford
					Total Count= 1		**Total Weight= 7.13**	
Site Number Totals					**Total Count= 1**		**Total Weight= 7.13**	

Artifact Inventory

4/19/2019

Category	Group	Class	Type	Sub-Type	Heat	Count	Weight (g)	Comments
-								
Project Totals						**Total Count= 1**	**Total Weight= 7.13**	

APPENDIX II

RESUMES OF KEY PROJECT PERSONNEL

ANN B. MARKELL, PH.D., R.P.A

SENIOR PROJECT MANAGER

Dr. Ann B. Markell received her Ph.D. in Anthropology/Historical Archaeology from the University of California, Berkeley in 1990, working with Dr. James Deetz. Since 1993, she has been a Senior Project Manager with R. Christopher Goodwin & Associates, Inc. She has been resident in the New Orleans and Frederick, Maryland offices, has managed the former Hampton, Virginia office, and assisted in starting the Lawrence, Kansas office. Dr. Markell has authored more than 100 technical reports on surveys, evaluations and mitigations carried out throughout the United States. She also has prepared brochures, papers, and exhibits for public interpretation. Her special expertise in plantation archeology, colonial settlement, and vernacular architecture has led to her publications in the journal *Historical Archaeology* and the edited volume *Chesapeake Archaeology.*

While in New Orleans, Dr. Markell directed a major archeological data recovery at Nina Plantation, a nineteenth century Louisiana sugar plantation near New Roads, Louisiana. That project was completed for the U.S. Army Corps of Engineers, as were Phase I and Phase II excavations at the historic Cook's Landing Site in Point Coupee Parish and for the Comite River Diversion Project. She has prosecuted numerous other Phase I and II projects throughout Louisiana and Mississippi. In Florida, Dr. Markell completed data recovery excavations at Site 8JE102, a contact period site in Jefferson County. She also was the principal investigator for data recovery excavations at Etna, a late nineteenth and twentieth century turpentine town in Citrus County, Florida. For these two Federal Energy Regulatory Commission (FERC) regulated projects, Dr. Markell supervised the field investigations and the analyses, and was the principal author of the technical reports. She also designed and authored the public interpretation brochure completed for the Etna data recovery.

Projects in Virginia have included the development of a detailed archeological predictive model for the Norfolk Naval Base in Norfolk, Virginia; Phase I identification and Phase II evaluation projects for the Navy at NSGA Northwest, Cheatham Annex, and the Norfolk Naval Air Station; a predictive model for the Defense Supply Center in Richmond, Virginia; and archeological investigations at NASA Langley Research Center in Hampton, Virginia. Other Phase I and Phase II projects were completed for Virginia Department of Transportation (VDOT) projects and for private development. Dr. Markell was the Principal Investigator for Phase I, II, and III investigations at the site of the Tappahannock Regional Airport in Tappahannock, Virginia; that project included the identification and mitigation of two unmarked eighteenth century cemeteries. Dr. Markell coordinated mitigation efforts for those cemeteries and for an associated National Register eligible eighteenth century plantation site with the client and the Virginia Department of Historic Resources (VDHR).

Since joining the Maryland office, in addition to numerous projects carried out for private, state, and local governments throughout the Mid-Atlantic region, Dr. Markell has supported federal clients through the development of Integrated Cultural Resources Management Plans (ICRMPs) for Dover Air Force Base in Delaware and for White Sands Missile Range in New Mexico. She has been the Principal Investigator for extensive cultural resources survey and evaluation projects at Smoky Hill Air National Guard (ANG) Range in Salina, Kansas, and at Fort Riley, Kansas and for survey and evaluation work at a number of ANG facilities in Virginia, Vermont, Washington, and Delaware. Recently, Dr. Markell coordinated the cultural resources requirements of a major electrical transmission line project extending across southern Maryland, the Chesapeake Bay, and Maryland's Eastern Shore. She continues to work on numerous solar and electrical transmission line projects in the Mid-Atlantic region, as well as on a variety of Phase I, II, and III projects throughout the region. Recently she completed oversight as Principal Investigator of the removal and reinterment of 40 eighteenth and nineteenth century burials in Prince George's County, Maryland.

MANDY MELTON, M.A.

ASSISTANT PROJECT MANAGER

Mandy Melton, M.A., is an Assistant Project Manager and terrestrial archaeologist at R. Christopher Goodwin & Associates, Inc. She has received her M.A. in Archaeology and Heritage from the University of Leicester and holds a B.S. in Sociology and Anthropology from Towson University.

Ms. Melton has extensive experience in prehistoric and historic archaeological site identification, evaluation, and data recovery in the Mid-Atlantic region. As a former independent archaeological consultant, she has piloted and contributed to research projects funded by numerous local, state and federal organizations including the Maryland State Highway Administration, the National Park Service, and the Maryland Historical Trust. Her work has involved, in addition to archaeological surveys, public engagement, mentoring volunteers and interns, architectural documentation and survey, magnetometer surveys, and managing/coordinating small-medium scale projects. In the compliance sector, Ms. Melton has been involved in numerous monitoring, field surveys, and mitigation projects for pipelines and superfund sites across the Mid-Atlantic and portions of the northeast region.

KATHERINE E. GRANDINE, M.A. — SENIOR PROJECT MANAGER / SENIOR HISTORIAN

Ms. Katherine Grandine, Senior Project Manager/Senior Historian, received a Master of Arts degree in American Civilization with Emphasis on Historic Preservation in 1983 from the George Washington University, Washington, D.C. She has been professionally active in the field of historic preservation since 1981. Ms. Grandine has extensive experience in conducting historical research for a wide variety of projects and applications. Her project experience includes historic research for nationwide context studies and for local history, architectural surveys in numerous states, Historic American Buildings Survey documentation, National Register of Historic Places nominations, local landmark and historic district nominations, historic property mitigation documentation, and cultural resources planning documents.

Ms. Grandine is especially proud of her contributions to the development of nationwide military historic contexts, including the National Historic Context for Department of Defense (DoD) Installations from 1790 to 1940, support and utility structures from 1917 to 1946, and Air Force and Navy Wherry and Capehart housing. She also conducted research and managed cultural resource investigations for 36 state parks and wildlife management areas for the Maryland Department of Natural Resources. She has performed numerous reconnaissance-level and intensive-level architectural surveys in a variety of urban and rural settings in Maryland, Virginia, Pennsylvania, Ohio, West Virginia, North Carolina, New Jersey, and at numerous DoD installations nationwide. She has conducted literature searches for Phase I archeological surveys and undertaken in-depth archival research for Phase II and Phase III archeological studies in the Mid-Atlantic region. She has extensive experience in researching in local primary documents including land records, deeds, wills, inventories, and tax records to support archeological and architectural documentation projects. She has managed numerous architectural survey and evaluation projects and written National Register nominations for individual properties and large historic districts. She has co-authored integrated cultural resources management plans and numerous technical reports, and provided technical support for a variety of cultural resources projects.