Preservation Plan

African Burying Ground at Langdon Farm
Portsmouth, NH

PRESERVATION
COMPANY

June 2024

This report was completed for the Portsmouth Housing Authority.

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Introduction

Christ Church and its rectory were built in the 1960s on land subdivided from the Langdon-Elwyn Farm, now the Urban Forestry Center. The small burying ground believed to contain the graves of enslaved Africans who lived and worked on the farm in the eighteenth century is also located on the parcel. Identified by oral tradition as an African burial site, it is marked by a stone wall enclosure and has multiple regularly placed fieldstone markers, with undisturbed graves recently confirmed by remote sensing evidence.

The African burying ground of the Langdon farm is a rare, if not unique, resource in New Hampshire. The site was determined eligible for the National Register of Historic places in 2024. It is significant for illustrating broad patterns of history, with importance for its associations with Black ethnic heritage. It is significant in social history for representing the history of slavery in New Hampshire, in which Portsmouth played a major role. The site illustrates burial customs and contributes to an understanding of the treatment of segregated burying places in Colonial New Hampshire. It is one of a very small number of traditionally identified African American cemeteries in the state. This burying ground could contain the graves of at least fourteen individuals. Without disturbing the remains for testing, their ethnicity must be assumed based on tradition.

Photo 1: The small burying ground located south of the Christ Church entrance driveway (view facing south)

Location

The burying ground site was included with the two-acre parcel subdivided in 1964 for construction of Christ Church. The location is south of downtown Portsmouth, on the south side of Sagamore Creek. The Urban Forestry Center land, historically the Langdon-Elwyn farm, is located on three sides of the Christ Church property. It includes salt marsh and reforested farmland. The historic farmhouse is around the corner on Elwyn Road.

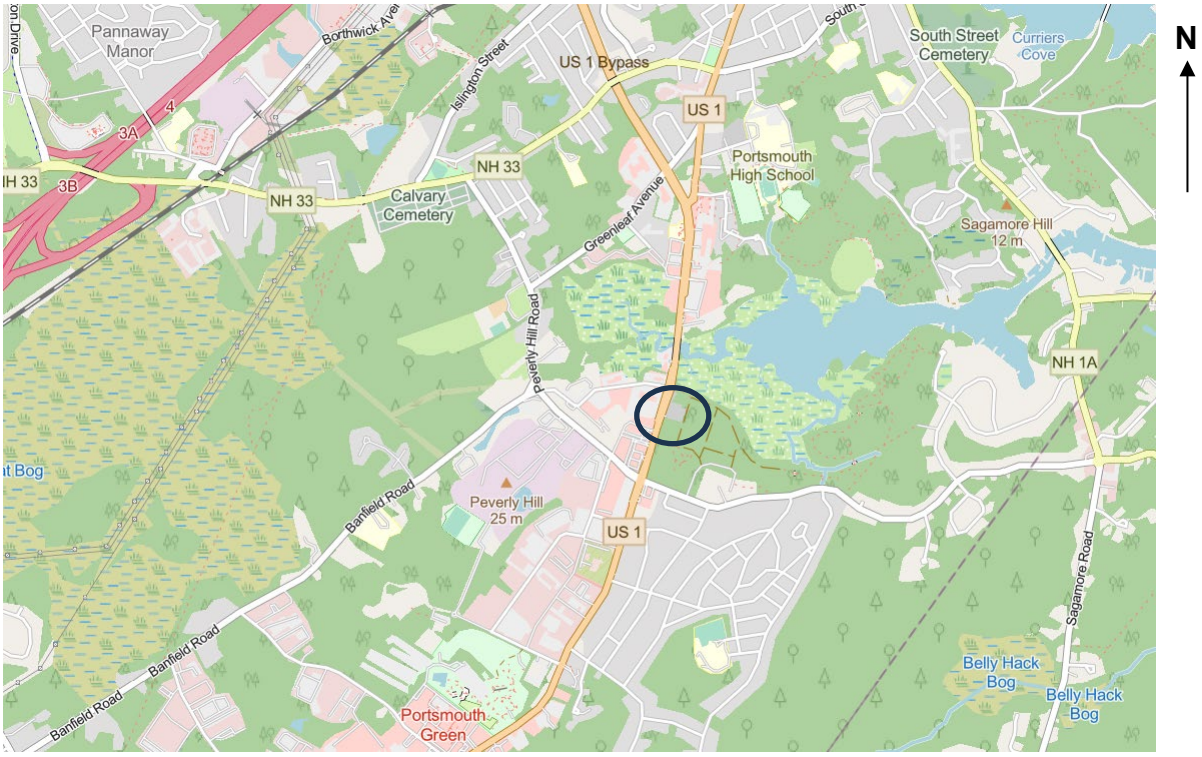

Figure 1: © Open Street Map contributors 2024

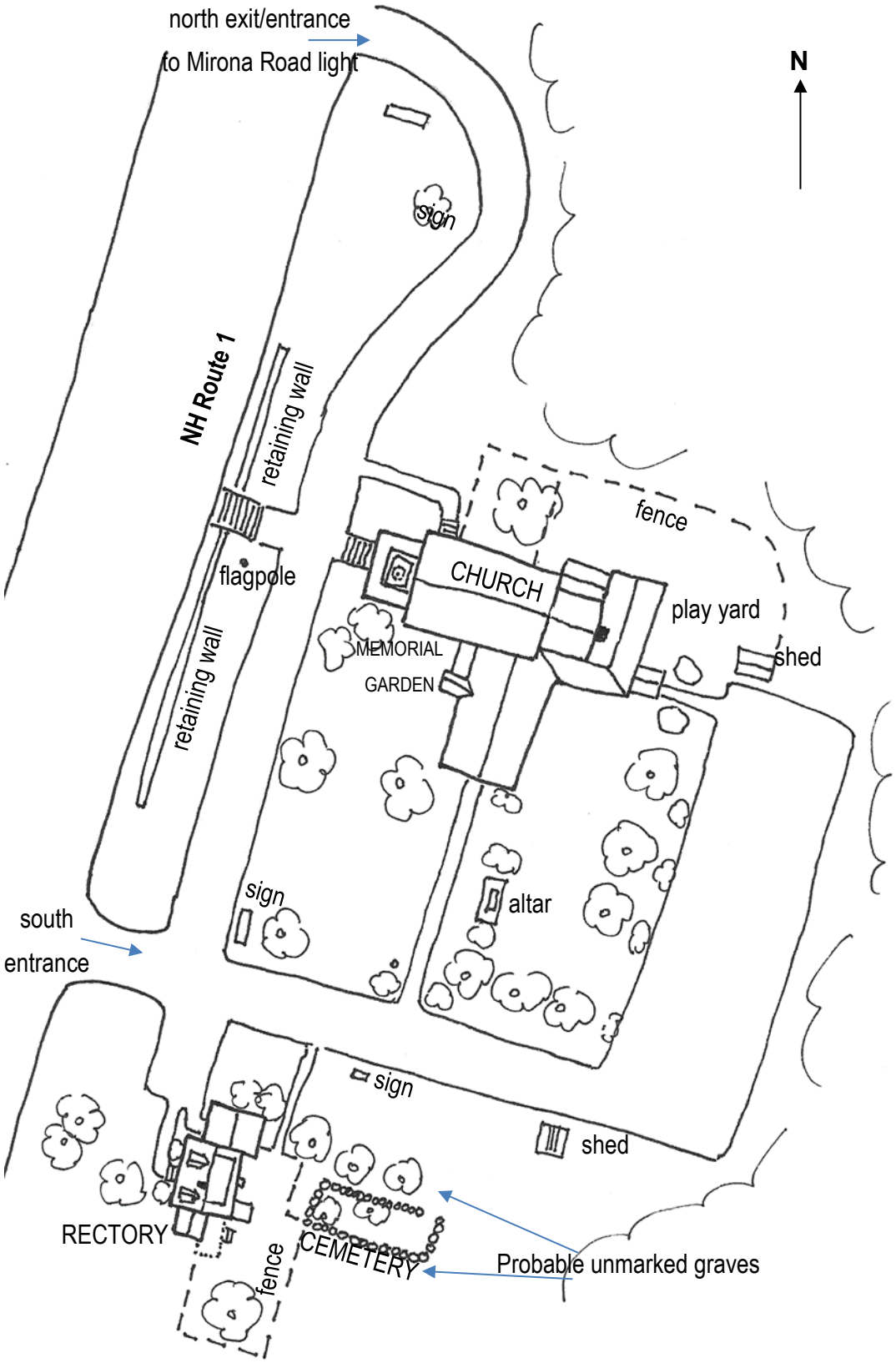

Figure 2: Christ Church property sketch plan (Preservation Company 2024)

Description and Setting Overview

Figure 3: Google Earth 2018 shows cemetery walls, rectory, church and parking lot

The burying ground is located is located behind the former Christ Church rectory, south of the church and the driveway and parking lot. The property is sited on a high point or land on the east side of NH Route 1/Lafayette Road. The church is set back from the road. A modern stone retaining wall defines the edge of the front lawn. A paved driveway parallels the road in front of the building. The main entrance driveway is in the middle of the lot between church and rectory. It wraps around behind the church to a parking lot. The rectory is south of the driveway, facing the road. The back yard is enclosed by a stockade fence in poor condition. The fencing abuts the western cemetery wall. The south and southeast edges of the parcel are wooded. South of the church driveway, an area of lawn shaded by mature trees extends to the stone walled burying ground. Probable unmarked graves are located in the middle of the lawn and in the overgrown yard south of the stone walls.

History and Development of the Property

Langdon-Elwyn Farm, 1650-1964

The Langdon-Elwyn farm was in the same family for 300+ years, about ten generations, until it was bequeathed to the State of New Hampshire in 1974. A series of houses and barns stood on the homesite at 45 Elwyn Road. Other branches of the Langdon family had farms nearby, as well as houses downtown.

The identification of this site as the burial ground of the enslaved African and African Americans associated with the Langon Farm is based on oral history. The source was presumably John Elwyn Stone, the last descendant of the family to live on the property. It was reported in the newspaper in 1964 when he deeded land to the church (*Portsmouth Herald* 06.18.1964). Recently, confirmation of graves within and outside the walls was made by remote archaeological sensing. Whether the burials are of African descent has not been determined but given the common practice of segregated burials there is no reason to doubt that these were slaves or later free Black servants.

The Langdon family's documented history of enslaved African and African American workers is based on a family and legal papers from the 1690s to the 1770s. Four individuals directly associated with this branch of the family were identified by name or age. The record is incomplete, so the number of people involved is unknown. There are fourteen possible burials in and around the stone walls (Heritage Consultants 2024). This suggests a long period of use or use by several branches of the Langdon family (Sammons and Cunningham 2004).

Slavery was practiced in New Hampshire from its settlement. The first known enslaved African arrived in Portsmouth in 1645. Settlement of the Langdon-Elwyn farm happened around that time. Tobias Langdon (1660-1725) inherited the farm when he came of age, and it was his home when he married Mary Hubbard in 1686. They had a large family of nine children. He was a farmer and wheelwright and militia captain. The first document of slave ownership dates to 1699, when Captain Langdon purchased an unnamed teenaged boy. In 1718, he purchased a woman named Hannah. Around that time, New Hampshire's population included seventy enslaved people according to a governor's report. Tobias Langdon's 1724 will referenced "all my slaves," which he bequeathed to his son with his other property. John Langdon (1708-1780) maintained the farm and also had a home in downtown Portsmouth. Some slaves and servants moved seasonally with the family. In 1742/43 John Langdon bought "a Negro Servant Slave named Pomp" about 14 years of age. Pomp is mentioned in papers of the 1750s, and Pomp was still with him in the 1770s according to family papers. His wife, Mary Langdon, bought a woman named Violet in 1773 (Cunningham 1999). At that time, there were 674 African and African American slaves in New Hampshire, including one hundred men and sixty women in Portsmouth (State of New Hampshire 1877).

Langdon family members were buried in a small private cemetery, which was typical of rural property owners. The Langdon Cemetery behind the house on Elwyn Road contains engraved stones and large monuments of several generations. As written on the Black Heritage Trail Marker, it was common practice in slave owning societies to maintain separation but accommodate the enslaved people within the boundaries of the family land. The Langdons provided a site at the far edge of the fields. The slave burial ground is about a quarter mile from the farmhouse and the Langdon family cemetery. It occupies a high point of land in the northwestern corner of the farm, just above the salt marshes along Sagamore Creek. During the eighteenth century when the

cemetery was in use, Lafayette Road and the crossing of Sagamore Creek was not yet built. The site would have offered expansive views to the west and north. The stone walls and layout of the stones suggests an east west orientation that was confirmed by the remote sensing.

Figure 4: 1774 map of Portsmouth detail shows Elwyn and Peverly Hill roads before Lafayette Road was built. Burial ground site was at far edge of the Langdons' fields.

From the 1780s, the farm was the country estate of John Langdon (1741-1819), merchant, shipbuilder, and Revolutionary War patriot, who was the first governor of New Hampshire in 1785. He built a mansion on Pleasant Street in downtown Portsmouth in 1784. The practice of slavery declined sharply when the New Hampshire state constitution was adopted in the 1780s. In 1786 there were forty-six individuals "called slaves" in the state, twenty-one of whom lived in Rockingham County. In Portsmouth, at the time of the census in 1790, twenty-six people were still held in slavery, while there were seventy-six free people of color, mostly still living with and working for white families. An unnamed free Black person, presumably one of the family's former slaves, lived in the John Langdon household in 1790 and was still with the family late as late as 1810 (United States Census 1790-1810).

Elwyn Farm, 1819-1974

Subsequent generations of the Elwyn branch of the family maintained connections with the farm and an interest in history. The property passed from John Langdon's only child, Elizabeth Elwyn, to John Langdon Elwyn (1801-1876), who wrote about history and literature and was an active member of the Portsmouth Athenaeum. After a period of summer home use by the Elwyn family, the homestead was acquired by Elizabeth Elwyn Langdon who owned the Governor John Langdon mansion on Pleasant Street, which was acquired by the Society for the Preservation of New England Antiquities (now Historic New England) after her death. Farming was carried out continuously by hired farmers and caretakers.

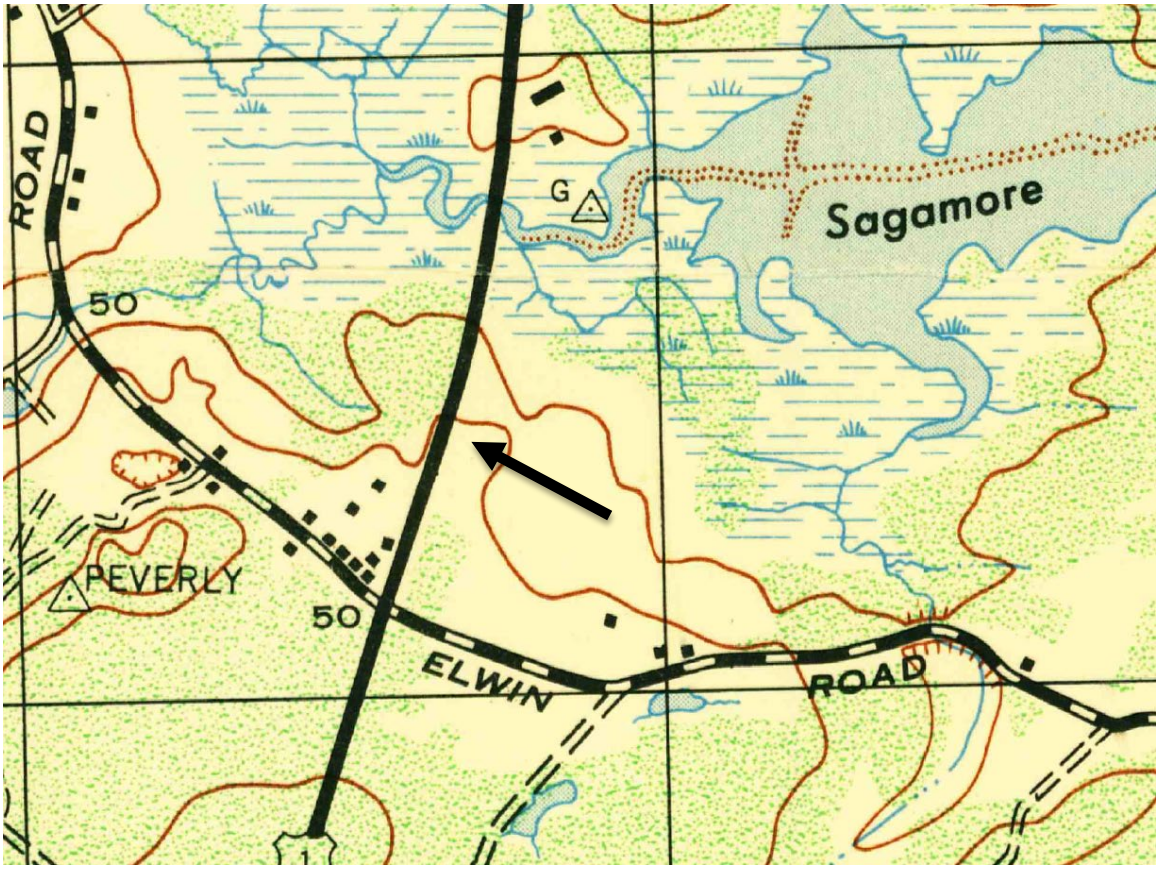

Figure 5: 1944 USGS map shows Route 1 before commercial development. Burying ground site at far edge of property on bluff above the creek

The physical and remote sensing evidence suggests that the burial sites are relatively undisturbed. The persistence of the fieldstone markers shows that any historic plowing of the fields avoided the area. At an unknown date, the marked graves were enclosed by stone walls. Aerial photographs before the church was built show the historic Langdon-Elwyn farm was still mostly cleared land, with the farmstead in the southeast corner, a wood lot in the angle of Lafayette Road and Elwyn Road, and saltmarsh along Sagamore Creek. A small visible anomaly in the location of the current burying ground site suggests a small grove of trees and possibly the walls (Heritage Consultants 2024).

Figure 6: 1952 Aerial photo, with church parcel added, shows visual anomalies in this location (Heritage Consultants 2024)

Around 1950, John Elwyn Stone (1922-1974) inherited the ancestral homestead, which he later bequeathed to the State of New Hampshire to become the Urban Forestry Center in 1976. Stone lived in New York after graduating from Yale with a degree in English literature and serving in the Army Air Corps during WWII. He worked as a freelance writer. The old cape on the Langdon Farm was renovated for his use in the 1950s, and he also maintained a Manhattan apartment. A caretaker farmed the property for Stone, haying the fields and salt marsh.

Figure 7: Early 1960s view looking north shows edge of Langdon-Elwyn property with vegetation in vicinity of burying ground (Portsmouth Athenaeum)

Figure 8: 1962 aerial shows open fields of historic farm, with trees near burial ground (NETROnline)

The fields were reforested beginning in the early 1970s when John Elwyn Stone established tree plantations. The State of New Hampshire opened the Urban Forestry Center in 1976 and the landscape has changed over time.

Figure 9: Portsmouth GIS 2021 aerial shows modern landscape of Urban Forestry Center

1964-2024 Christ Church

In June of 1963, Christ Church Episcopal church on Madison Street in Portsmouth was destroyed in a fire. The Rev. Swanson is credited with identifying the Route 1 site and approaching John Elwyn Stone, who lived on the Langdon homestead on Elwyn Road. Stone agreed to subdivide a lot out of his family land for the church. The 1964 deed from Johnn Elwyn Stone to the Christ Church Parish was for a 600′ x 300′ parcel. There was no mention of a burial ground or other features on the property (Deed 1720:0453). The rectory was built during 1964. John Elwyn Stone is said to have specified that the church be a colonial style brick building. Rev. Swanson secured the services of the prominent Boston architectural firm Hoyle, Doran & Berry, which prepared plans for a Colonial Revival style brick building. An architect's sketch was printed in the newspaper in July (Portsmouth Herald 06.18.1964, 07.03.1964). The building contractor was E.L. Paterson & Son of Portsmouth. The groundbreaking was in the spring of 1965 and the completed church was dedicated in May of 1966. The church has maintained and preserved the burying ground site since that time.

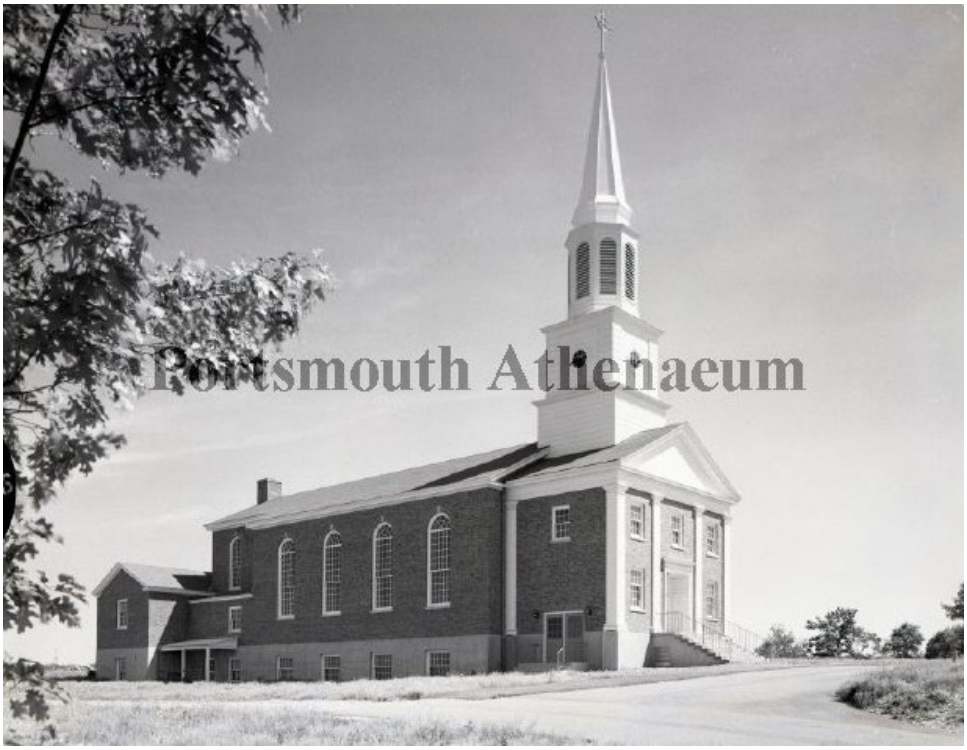

Figure 10: View of newly built church, ca. 1965, shows open site with trees near burial ground at right (Portsmouth Athenaeum)

The burial ground was marked in 1995 by the Black Heritage Trail along with other Portsmouth historic sites reflecting the presence of African people in New Hampshire since 1645.

Photo 2: The current historic marker is located near the church driveway (view facing south)

Due to a decline in the size of the congregation in recent years, Christ Church and the Portsmouth Housing Authority are presently working together to redevelop the site. The burying ground will be preserved and protected by an undeveloped buffer of 25′ around the stone walls.

Physical Description

Photo 3: The rear of the rectory and its fencing abuts the burying ground (view facing west)

Description

The site is relatively undisturbed within the walled area and in the rectory yard nearby. The rectangular stone-walled enclosure is approximately 44' x 14', oriented east-west. The date of the wall has not been identified. It predates the 1960s when the parcel was transferred. The wall is fieldstone. There is an irregular opening in the northeast corner. The markers are small, un-inscribed, locally available stones. There are nine stones visible. They roughly mark the graves located by remote sensing. An open grassy area is maintained. A large tree grows in the middle of one side. The walled enclosure abuts the wooden fence of the rectory yard.

Photo 4: The largest stone is an upright slab (view facing southeast)

Photo 5: Detail of stones with low foliage season (view facing southeast)

Photo 6: Detail showing fieldstone markers in the eastern end (view facing west)

Photo 7: Detail of stone markers (view facing southwest)

Photo 8: Wall opening is in the northeast corner (view facing south)

Photo 9: South side of walled area (view facing north)

Recent remote sensing archaeology indicates the burying ground retains marked and unmarked graves. Heritage Consultants completed a ground penetrating radar (GPR) prospection survey of the Langdon Slave Burial Ground for the Portsmouth Housing Authority in February 2024 (see supplemental report). The survey covered approximately 0.22 acres. Four grids were laid out within a 50′ buffer around the stone walled area. Remote sensing located six probable marked burials and two unmarked graves within the wall and five possible unmarked burials in the yard to the north and one south (Heritage Consultants 2024).

Figure 52: Annotated aerial image of all features identified in Survey Grids 1 – 4.

Figure 11: Heritage Consultants 2024 GPR results with locations of stones (yellow), probable marked burials (green) within the walled area, and probable burials unmarked (red).

Primary Character-Defining Features

The burying ground is marked by a stone wall of unknown date. It encloses the burials that are indicated by stones. Probable unmarked burials are located under the adjacent lawn to either side.

The following are the elements that give this resource its unique and distinctive character and are important to the visual conveyance of the property's historic significance:

Character-Defining Features

- Location
- Rectangular stone wall, irregular, dry laid
- Open site, shaded by trees.
- Open yard around walled area
- Fieldstone markers
- Vinca and other naturalized plantings in the surrounding area

Non-Character-Defining Features

- Paved driveways and parking
- Underbrush and small trees
- Twentieth century buildings

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Existing Conditions Assessment

Site

The site is currently underutilized and has been only lightly maintained for decades. Trees and invasive vegetation have been allowed to grow on and around the site. The low stone wall is a loosely arranged, dry stacked wall but retains a generally straight outline on the exterior. The interior of the walls and small opening in the northeast corner is not dressed in any way but appears to have either collapsed inward or simply piled loosely to buttress the walls from the inside. Trees growing close to the walls, both inside and outside the walled area, have the potential to displace the stone wall as they grow; the trees in the southwest corner have already begun to displace some of the stones.

Photo 10 (left): The north wall, as well as the south, still retains a straight exterior face.
Photo 11 (right): The exterior of the south wall shows that the dressed side of the stones were placed to face the exterior of the wall.

The cedar stockade-style fence for the rectory was constructed immediately abutting the west wall. The fence is likely 20-30 years old and is beginning to show structural instability. Broken sections of the fence have been removed and set aside.

Photo 12: The wood fence bordering the back yard of the rectory, built directly against the stone wall, is in poor condition and is reaching the end of its useful life.

Approximately five stone markers are still visible inside the stone walls, though they are in poor condition. Most are small, broken pieces of slate with no visible markings, though some are half-buried and obscured by earth and grass or leaves. The GPR identified more stone markers than are readily visible at the surface.

Photo 13: Stone markers are obscured by vegetation; two trees in the southwest corner have caused some stone displacement.

The area to the east and south of the burial ground are overgrown with shrubs and low vegetation, much of it invasive. However, vinca and daffodils are present amongst the overgrowth.

Recommendations

Because this site is an archaeological area that includes human remains, it is recommended that very little be done to disturb the site, no more than absolutely necessary. If ground disturbance is planned, it should only be done in consultation with and in the presence of qualified archaeologists.

High Priority

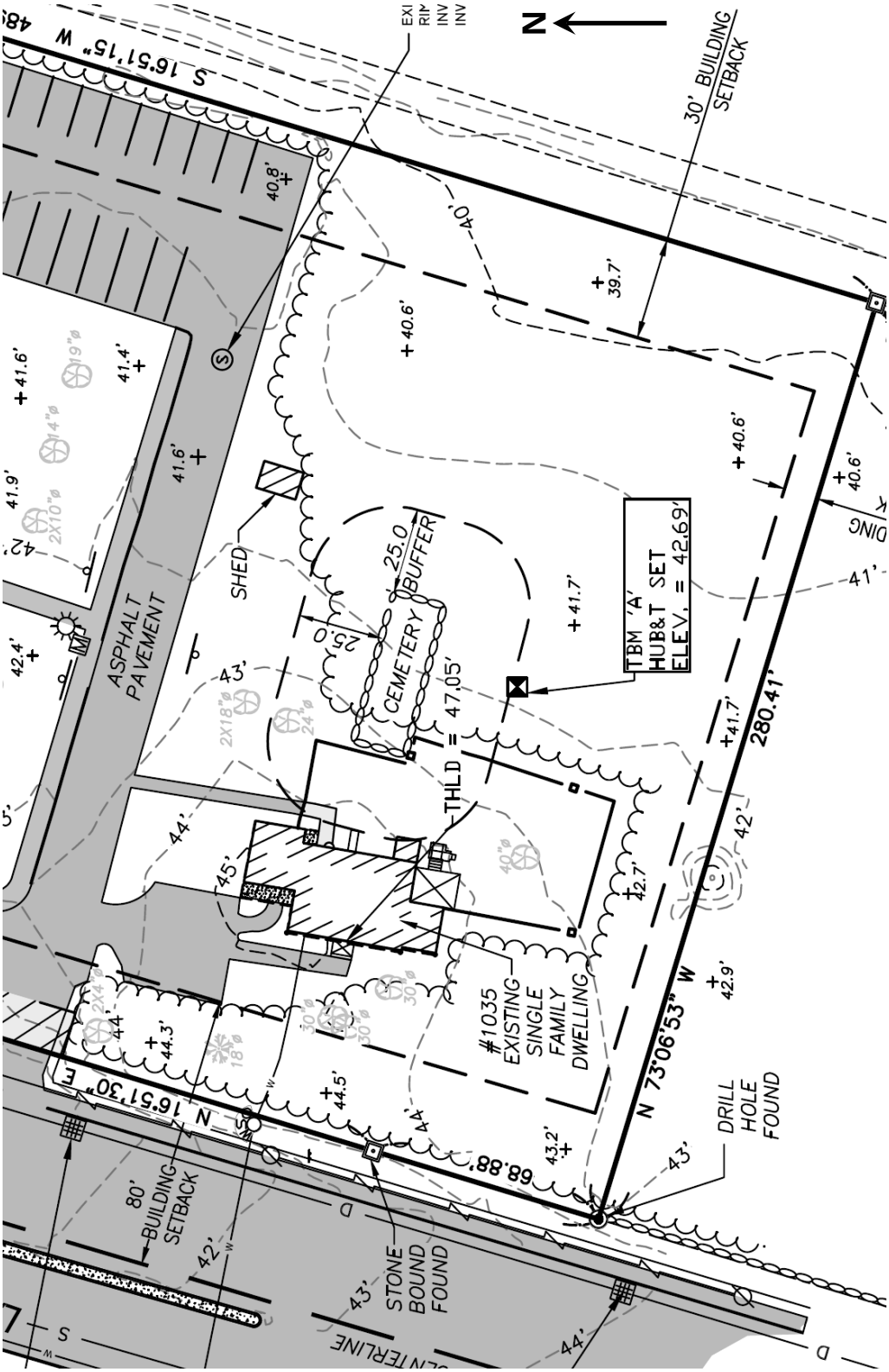
- Delineate the site: Using the information from the GPR survey, delineate a 25′ buffer around the site where probably burials are known. This step is important to protect the area from any disturbance from potential work done on the same parcel, near the church. A fence or other type of physical delineation should be long-lasting and sensitively designed so as to not detract from the stone walls and site.
- Clear and maintain the vegetation: Though disruptive to the burial site and the stone walls, the trees should not be removed due to the potential harm that the ground disturbance would cause. Leaves and other ground debris should be removed from the entire site (both inside and outside the walled area), and invasive plants should be pruned back at ground level, not pulled or dug. Historically planted materials such as vinca and daffodils should be maintained.
- Inspect the stone markers: The stone markers should be inspected for any cracks or weaknesses. Cleaning treatments are likely not necessary for the stones, but if desired, they should be done in a non-abrasive method and using non-toxic cleaning solutions (refer to Preservation Brief 48: Preserving Grave Markers in Historic Cemeteries).

Other Recommendations

- Interpretation of the site: The Black Heritage Trail of New Hampshire currently has a cast iron marker identifying the site. However, more interpretation is recommended for the site to provide more context and history of the burial ground, what is currently known, and the relationship with the Langdon Farm. This is an important step in the promotion of the site in the community and furthering the understanding of black and African burying grounds in the region. The Black Heritage Trail of New Hampshire should be consulted when developing the interpretation for the site.[1] Public access should be made available for visitors to the site, with directional signage.

[1] Recent legislation has been enacted to protect and promote the understanding of African and slave burial grounds. New Hampshire Senate Bill 11, signed into law in 2023, requires that descendants or the descendant community be consulted prior to the excavation or exploration of African American burial grounds. In the absence of identified direct ancestors, the “descendant community” will be people who have ancestral, racial, or cultural ties to the burials.

Drawings



Drawing 1: Detail of existing conditions topographic plan, dated April 2024, by James Verra & Associates

Secretary of the Interior's Standards

All repairs and treatment of the African Burying Ground at Langdon Farm should follow the Secretary of the Interior's Standards for the Treatment of Historic Properties. A full copy of the Standards and Guidelines can be found on the National Park Service's website (https://www.nps.gov/orgs/1739/secretary-standards-treatment-historic-properties.htm).

The guidelines for Preservation as a treatment should be followed for African Burying Ground at Langdon Farm. According to the Secretary of the Interior, Preservation as a treatment is defined as "the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction."

Standards for Preservation

The Standards will be applied taking into consideration the economic and technical feasibility of each project. For this project, the final standard is most appropriate for guidance of a burial ground.

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place and use. Work needed to stabilize, consolidate and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color and texture.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. **Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.**

Preservation Briefs

The National Parks Service has published a series of Briefs to recommend methods for rehabilitation and treatment of historic materials. These briefs should be followed to maintain good standards of preservation and preserve the historic character of the burying ground. Below is the only recommended brief that is applicable for the treatment of African Burying Ground at Langdon Farm. (All Preservation Briefs can be found online at https://www.nps.gov/orgs/1739/preservation-briefs.htm)

48. Preserving Grave Markers in Historic Cemeteries

(https://www.nps.gov/orgs/1739/upload/preservation-brief-48-grave-markers.pdf)

Supplemental

A. “Ground Penetrating Radar Survey of the Langdon Slave Burial Ground, Portsmouth, NH” by Heritage Consultants

B. Christ Church NHDHR Inventory Form (POR0192)

C. Langdon Farm NHDHR Inventory Form (POR1047)

D. Preservation Brief 48: Preserving Grave Markers in Historic Cemeteries

E. NH 2023 Senate Bill 11: relative to African American burial grounds

DRAFT REPORT

FEBRUARY 2024

GROUND PENETRATING RADAR SURVEY OF THE LANGDON SLAVE BURIAL GROUND, PORTSMOUTH, NEW HAMPSHIRE

PREPARED FOR:

PORTSMOUTH HOUSING

PORTSMOUTH HOUSING AUTHORITY

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Introduction

Heritage Consultants, LLC (Heritage), under contract to the City of Portsmouth Housing Authority, completed a Ground Penetrating Radar (GPR) prospection survey of the Langdon Slave Burial Ground (Figure 1). The goal of the work was to identify all marked and unmarked burials within the burying ground through non-invasive GPR survey. The project area totaled approximately 0.22 acres.

Scope of Work

Heritage's work on the GPR prospection survey included the following tasks:

- Task 1. Background research and a detailed review of available primary and secondary sources, maps, and aerial photographs of the property to be surveyed.

- Task 2. Establishing four systematic GPR survey grids within the project area: the beginning and end points of each grid were recorded using a differential global positioning system (GPS) to provide accurate control points for the survey.

- Task 3. A non-invasive GPR prospection survey of the entire study area. No ground disturbance or ground-truthing of anomalies were undertaken as part of the project.

- Task 4. Review the GPR, background, and imagery data to systematically assess the survey area for soil anomalies, and to make informed decision about the nature of these soil anomalies (i.e., grave shafts, landscaping, utilities, etc.)

- Task 5. Produce this comprehensive technical report, inclusive of detailed summaries of all facets of research, methodology, survey results, and recommendations.

Project Personnel

All fieldwork and analysis were performed under the direction of David E. Leslie, Ph.D., RPA. GPR prospection fieldwork was conducted by Geophysical Specialists, Cole Peterson and Fiona Jones. Dr. Leslie and Ms. Jones analyzed and interpreted all GPR data and wrote the GPR results section of the report. Ms. Jones also performed the GIS services for the project. The historical background section of the report was written by Kristen Noble Keegan, Ph.D.

Organization of the Report

The natural setting of the region encompassing the study area is presented in Chapter II; it includes a review of the geology, hydrology, and soils, of the project region. The historical background of the project region is outlined in Chapter III. The methods used to complete this investigation are discussed in Chapter IV. The results of the survey are discussed in detail in Chapter V. Finally, management recommendations are contained in Chapter VII.

CHAPTER II
NATURAL SETTING

Introduction

This chapter provides a brief overview of the natural setting of the region containing the study area associated with the Langdon Slave Burial Ground. Previous archaeological research conducted throughout southern New England has resulted in the documentation of a few specific environmental factors which can be associated with both prehistoric and historic period site selection. These include general ecological conditions, as well as types of fresh water sources, soils, and slopes present in the area. The remainder of this section provides a brief overview of the ecology, hydrological resources, and soils present within the vicinity of the study area and the larger region in general.

Ecoregion of the Study Area

The project area is considered part of the Gulf of Maine Coastal Lowland ecoregion, as defined by the United States Environmental Protection Agency (US EPA) in 2009. The Gulf of Maine Coastal Lowland consists of plains and salt marshes with tidal flats, beaches, and bays along the coast that stretches from the Casco Bay region of southern Maine, south towards the northeast coastal region of Massachusetts. It is characterized by a humid climate that is often influenced by the effects of the Atlantic Ocean, though partially protected by Cape Cod. The southern portion of the Gulf of Maine Coastal Lowland vegetation consists of oak-pine forests, swamps, and bogs. Elevations are typically 76.2 meters (250 feet) at its highest, and sea level at its lowest. The bedrock within the Gulf of Maine Coastal Lowland ecoregion is described as mostly "metasedimentary rocks, intruded by Paleozoic and Mesozoic plutonic bodies." Soils in this ecoregion consist of silt, clay, and glacial sands (Griffith 2009).

Soils Comprising the Study Area

The Windsor series consists of very deep, excessively drained soils formed in sandy outwash or eolian deposits. They are nearly level through very steep soils on glaciofluvial landforms. Slope ranges from 0 to 60 percent. A typical profile associated with Windsor soils is as follows: Oe—0 to 3 cm; black (10YR 2/1) moderately decomposed forest plant material; many very fine and fine roots; very strongly acid; abrupt smooth boundary; A—3 to 8 cm; very dark grayish brown (10YR 3/2) loamy sand; weak medium granular structure; very friable; many very fine and fine roots; strongly acid; abrupt wavy boundary; Bw1—8 to 23 cm; strong brown (7.5YR 5/6) loamy sand; very weak fine granular structure; very friable; many fine and medium roots; strongly acid; gradual wavy boundary; Bw2—23 to 53 cm; yellowish brown (10YR 5/6) loamy sand; very weak fine granular structure; very friable; common fine and medium roots; strongly acid; gradual wavy boundary; Bw3—53 to 64 cm; light yellowish brown (10YR 6/4) sand; single grain; loose; few coarse roots; strongly acid; clear wavy boundary; and C—64 to 165 cm; pale brown (10YR 6/3) and light brownish gray (10YR 6/2) sand; single grain; loose; few coarse roots; strongly acid.

Previous Investigation of the Study Area

A previous ground penetrating radar survey was conducted adjacent to and within the stone-walled cemetery at an unknown date. This survey was conducted on behalf of Black Heritage Trail New Hampshire, a nonprofit organization that promotes the African American history of New Hampshire. Heritage requested a copy of this report but was not able to acquire it prior to data analysis and preparation of this report. While the report was not available, a brief synopsis of the report was forwarded to Heritage, indicating the proponents had identified burials within and adjacent to the cemetery,

indicating that the stone walls surrounding the cemetery may have been erected at some point after the interments were commonplace.

Summary

A review of mapping, geological data, ecological conditions, soils, slopes, and proximity to water suggests that portions of the Project area appear to be amenable to conditions generally associated with historical burying grounds. This includes areas of low to moderate slopes with well-drained soil located in close proximity to estuarine and fresh water sources. Moreover, the soils predicted to be within the project area, as well as the results of a previous geophysical survey, indicate that the Project area is amenable to geophysical surveys, such as GPR (Conyers 2004).

CHAPTER III
HISTORIC BACKGROUND

As discussed in Chapter 1 of the document, the project items consist of a 0.22-acre parcel of land in the city of Portsmouth in Rockingham County. Located on the west side of Lafayette Road (Route 1), a route dating to the early nineteenth century, the small parcel is enclosed by stone walls and according to oral tradition and historical documents, is the site of multiple burials of African-American people once held in slavery by members of the Langdon family. The site is situated on generally level ground, a short distance to the south of the tidal marsh associated with Sagamore Creek. The Langdons were a prominent family who lived in Dartmouth well before the year 1700; as is discussed below, Governor John Langdon owned the project area and passed it on to his daughter, Elizabeth Langdon Elwyn, in the early nineteenth century.

Although Portsmouth was the state's only seaport and the leading municipality of the county for most of its history, the large areas of wetlands within its territory hampered its agricultural and residential development. Further, the lack of usable waterpower other than tidal flows limited its early industrial growth. Nonetheless, its harbor and associated shipping and fishing industries encouraged a larger population than most agricultural towns were able to secure during the colonial and nineteenth-century eras. In the modern era, the wetlands areas and the trend of single-family housing development continued to keep the population relatively small, even as the local and regional economies shifted toward modern commercial and service type activities.

Native American History

The Native Americans of this region have been referred to as the Pennacook-Pawtucket group, inhabiting a coastal region bounded roughly by the Saco River valley in Maine and northeastern Massachusetts on the south. Like other groups in the region, they cultivated corn and other plants, in addition to seasonal hunting, fishing, and gathering. Seventeenth-century accounts from colonists refer to disease epidemics in the first decades of the century, which are presumed to have forced the surviving populations into new social and political groupings, all of which are poorly documented. Many groups, due to these colonial pressures, sold their territories to colonists and moved inland to colonist-sponsored "praying towns" or to other Native American communities. Their relations with the colonists deteriorated before and after King Philip's War (1675-1676), leading even more people to relocate. By 1700 there were few Native Americans left in the region, though some of these returned periodically for hunting and fishing; there also are some communities that survive to the present day (Grumet 1995). It should be noted that there is little agreement in the literature about what the original peoples of the region should be called (Johnson 1995).

The lack of specific information Native Americans of this area may be explained by the very early date – 1629 – of a deed that covered the entire coastal area from the Pascataqua River south to the Merrimack River (just over the present New Hampshire – Massachusetts border). According to Belknap, who transcribed the text of the deed in the eighteenth century, the Native American signatories were "Passaconaway Sagamore of Penacook, Runnaawitt of Pantucket, Wahannonawitt of Squamscot, and Rowls of Newichwannock," and they were, according to the document, looking for allies against an enemy group they called the "Tarrateens" (Belknap 1784:10). These "of" designations appear to refer to four separate locations or communities, with no identified, overarching political organization identified in the deed. Interestingly, although Belknap called this a purchase, he went on to report that the terms included an annual mutual exchange of goods between two of the parties and their heirs. These terms seem more like a treaty or a lease than a proper transfer of title, and in addition to the annual exchange, the Native

Americans also reserved a perpetual right to hunt, fish, and plant in the area; but the colonists, as they did throughout North America, proceeded as if an absolute transfer had occurred. Inevitably, conflicts arose as the colonists worked to transform the land to their liking and ignored or overruled Native American protests. In the context of the repeated episodes of violence from 1675 through much of the eighteenth century (many of them actually related to the British wars with the French), the rapid departure of most of the Native Americans from this region is understandable (Morison and Morison 1976). As noted above, the Native American side of the multiple military conflicts after 1677 was not made up of people who lived nearby, but rather of people who had moved away or had always resided further north.

History of Rockingham County

Incorporated in 1771, Rockingham is a coastal county that abuts the state of Massachusetts on the south and also shares a border with the state of Maine and Piscataqua River on part of its northern line. From its coastal wetlands, the county's terrain slopes upward toward the west, with its higher elevations being in the northwestern section. By 1810, the county contained 46 towns and over 50,000 residents, some of whom worked in its seven textile mills and five paper mills, as well as various gristmills, sawmills, and other agricultural processing facilities (Merrill and Merrill 1817:189). The number of municipalities had been reduced to 38 as of the 1880s (Hurd 1882:1). In 1900, the population of Portsmouth was approximately twice that of the next largest municipality (Exeter), and a clear majority of the municipalities had fewer than 1,000 residents. During the twentieth century and into the twenty-first, however, many Rockingham County towns developed substantial suburban populations, and many became rural residential communities as well (Keegan 2022).

History of the Town and City of Portsmouth

As New Hampshire's only seaport, Portsmouth has held a prominent position in the colony's and state's history. It is located on a peninsula defined by the Atlantic Ocean on its east, Piscataqua River on its north, and on its west by Little Bay and Great Bay, bodies of water formed by the inflows of Oyster River, Lamprey River, and Squamscott River. The northeastern end of the town includes a number of islands, the port, and the port's surrounding urban area; the southern end contains a number of large areas of wetlands, some level ground, and areas of commercial and suburban development surrounded by undeveloped land. The project area is near the north end of the southern area, with tidal marsh to its north, intensive post-1970 commercial development to its west, and the state's urban forestry center and associated public trails to its east and south.

The 1629 purchasers of this territory, mentioned in the Native American history section above, were "John Whelewright of the Massachusetts Bay, late of England, minister of the gospel," and several others (Belknap 1784:11). The theoretical land claim based on this document was actually in conflict with a prior grant from the monarch-established Council for New England to Captain John Mason and Sir Ferdinando Gorges in 1621, which ignored the existence of the Native Americans entirely. In 1622, these grantees established the Company of Laconia, which sent an expedition under David Thomson to establish a colony in their territory, and in 1623 he began the first colonial settlement in New Hampshire in the vicinity of Odiorne Point in the present Town of Rye. At some point in the next few years, the Laconia Company was dissolved, and then Mason, who took ownership of the New Hampshire region from the partnership, died suddenly in 1635. In addition to the generations-long legal entanglements caused by the Mason grants, the chief legacy of this episode was the establishment of the 1623 settlement by Thomson and another somewhat further north. Before the company dissolved, Thomson's settlement attempt was reassigned to Walter Neale in 1630; before Neale returned to England in 1633, he helped establish fisheries, a sawmill, and the place that eventually became Strawbery Banke (later Portsmouth). Odiorne Point was left behind

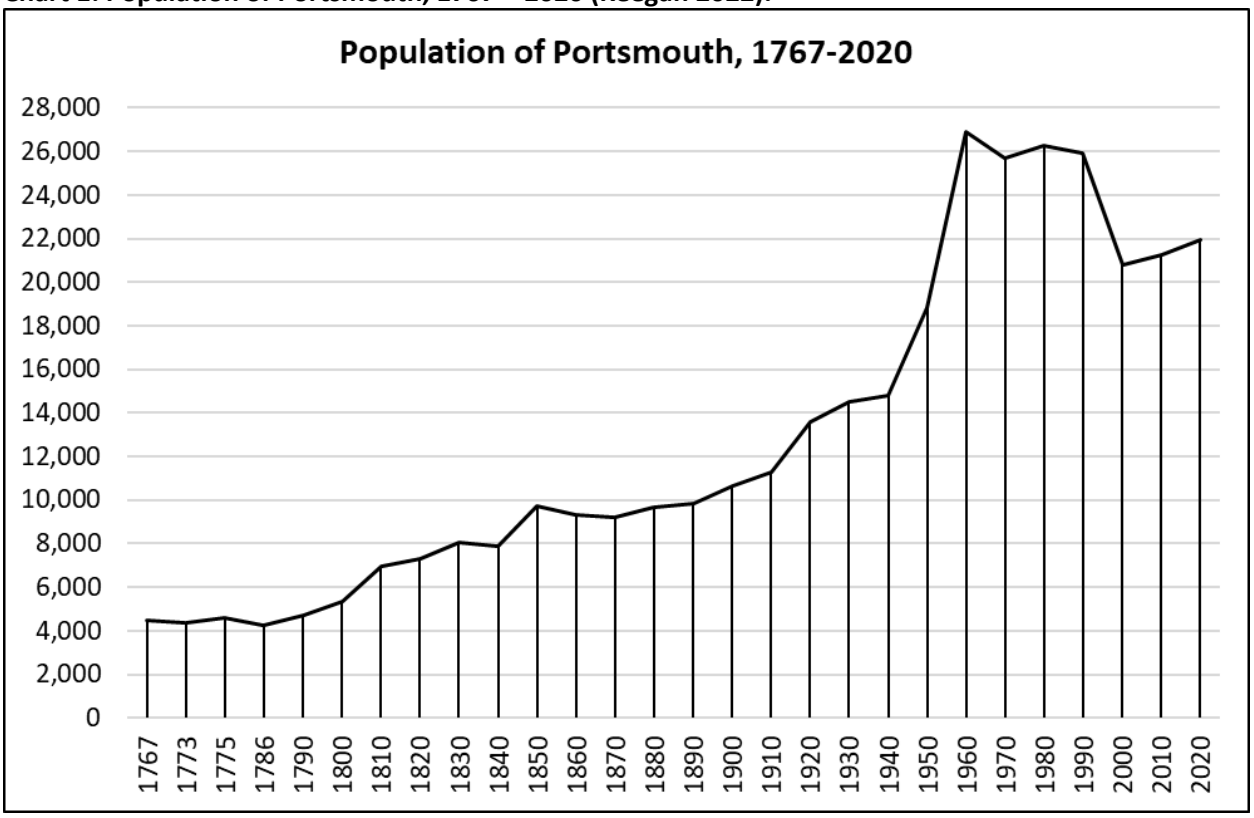
by these developments. In 1641, the approximately 1,000 colonists on the lower Piscataqua River decided to affiliate with the Massachusetts Bay Colony (Mawson et al. 1992; Morison and Morison 1976).

The need for this decision reflects the confusion of claims and new settlements. In the early decades of British colonization of New England, which is often overlooked. In the future New Hampshire, the leading towns in the area were New Castle, on Great Island, and Portsmouth (initially called Strawbery Banke). Between the ongoing claims of John Mason's heirs, the independent tendencies of the settlers, and the wars with the Native Americans, the area's government remained somewhat disordered for many years. Even the British monarch's initial creation of the royal Province of New Hampshire in 1679 did little to quell the conflicts or establish long-term government; it was not until after the Crown's efforts to reorganize the whole region in the 1680s and then the Glorious Revolution that, in 1691, a permanent charter was issued, and even then it was decades before the colony became properly organized (Morison and Morison 1976). Nonetheless, in the interim the Massachusetts Bay government, in 1653, granted Strawbery Banke's petition to be recognized as an official town called Portsmouth. In 1693, the town of New Castle was created out of Portsmouth by the new Province of New Hampshire (Hazlett 1915).

The earliest settlers of Portsmouth adhered to the Church of England and built a church in approximately 1638. This fact displeased the Congregationalist government of the colony of Massachusetts Bay that claimed jurisdiction over the area; as a result, it forced the first minister to leave the colony in 1642 and sent a series of Congregational ministers to serve until one chose to stay permanently beginning in 1658. A Congregational meeting house was built in 1657. Episcopalian worship was formally re-established in the 1730s. Towards the end of the century, religious diversity increased with a Universalist congregation established in 1773, which built its own church building in 1784. The town's first bank was incorporated in 1792, followed by three others in the first two decades of the nineteenth century (De Normandie 1882:49-50, 55, 76; Hayford 1882:95). The first colonial census, in 1767, reported that Portsmouth already had 4,466 residents. This number remained stable through the remainder of the colonial and Revolutionary periods, although the first federal census in 1790 showed a noticeable increase to 4,720 residents. The succeeding decades of the early national period saw a generally rapid increase of population, to 8,026 residents, followed by a slight decline to 7,887 residents as of 1840 (see Chart 1 below; Keegan 2022).

The first known enslaved African arrived in Portsmouth in 1645. Although systematic population statistics were not collected until much later, a governor's report from 1708 stated that all of New Hampshire's population included 70 enslaved people. Although multiple Portsmouth-based ship captains engaged in the slave trade during the eighteenth century, records indicate that most ships calling at the port had offloaded all but a handful of their enslaved people prior to arriving. One exception was the *Exeter*, which was inventoried in 1756 because its owner had died during the voyage and carried a total of 61 enslaved people (Sammon and Cunningham 2004:16-17). After generations of these slave ships arriving in port, the censuses of 1773 and 1786 reported 160 and 89 African-Americans, respectively, enslaved and living in Portsmouth (New Hampshire 1877:10:627, 648). By the time of the 1790 census, the reported number of enslaved people in Portsmouth was 26 individuals, while the number of "all other free persons" was 76 individuals; if these numbers did not include any Native Americans, then that was a total of 102 African-Americans living in Portsmouth in that year, the majority of them free persons (Sammon and Cunningham 2004:82).

Chart 1: Population of Portsmouth, 1767 – 2020 (Keegan 2022).



The Langdon family's documented history with slavery began in 1699, when Captain Tobias Langdon purchased a teenaged African-American youth, followed by his purchase of a woman named Hannah in 1718. His 1724 will bequeathed the multiple, but unspecified, people he held in slavery to his son John Langdon Sr. The names of enslaved people noted in the family's records over the generations also included Pomp (purchased 1743), Nanne (transferred from one Langdon to another in 1763), and Violet (purchased 1773) (Sammon and Cunningham 2004:40-42). This is unlikely to be a full accounting of the number of people held in slavery by this family. By the time of the 1790 census, however, only one of the five Langdon households in Portsmouth reported the presence of a nonwhite person; this was John Langdon's household, which included only one free person. There were, however, 15 households headed by "other free persons" in the town (United States Census 1907:80-82). At the time of the 1790 census, the actions of the New Hampshire's legislature had done nothing directly to abolish slavery there, although its 1789 tax code said that enslaved people were to "cease to be known and held as property." Nonetheless, within a few decades the small number of enslaved people listed in Dartmouth in the 1790 census was zero, and 1840 was the last year in which the census found any enslaved persons in the state. The state formally abolished slavery in 1857, after any written documentation of the practice ceased to exist (Sammon and Cunningham 2004:77).

A map of Portsmouth compiled in 1805 showed a small, dense urban area around the port, flanked by mill ponds to its west and south. The map's depiction of natural features included only bodies of water and swamp areas, along with some notable rocks. The cultural features mainly included roads, farmhouses and other residences, bridges. No attempt was made to label individual buildings within the urban area; outside it, the mapmaker noted taverns, schoolhouses, and a rope walk, along with householders. Although this historic map lacks precision, it can be used as a general indication of locations. To the

southeast of the project area, along Elwyn Road, the map displays two buildings labeled with "Gov. Langdon's Seat" and "Gov. Langdon" (Figure 2; Merrill 1805). The governor elected in that year was John Langdon (1739-1819), whose grandfather was Tobias Langdon. A Revolutionary War veteran, he held a variety of offices in addition to the governorship. The map's identification of his "seat" in rural Portsmouth was in spite of the fact that he had built a mansion in urban Portsmouth in 1784. This extensive farm later became associated with the name of Elwyn because John Langdon's only child, Elizabeth, married one Thomas Elwyn before 1800 and they and their son John eventually settled there (Foster 1896:10-11, 126). In the 1800 census, John Langdon's household continued to include one other free person, and that was also the case for John Langdon Esq.'s household in 1810 (United States Census 1800, 1810). No evidence of African-American household membership for the Elwyns has been found.

A gazetteer published in 1817 called Portsmouth "the metropolis of New-Hampshire." It reported that the town contained 927 houses (some of them three stories high) and a wide array of public buildings, including seven churches, an academy, two markets, and an almshouse, as well as the county courthouse and jail. The churches served congregations of Universalists, Methodists, Baptists, Episcopalians, and Congregationalists. Private enterprises included banks, insurance companies, a museum, and a water company. The largest wharf had been built by private capital in 1795 and was the site of a large market house that also served as the town hall. The millponds shown on the map discussed above were the site of tide mills. The harbor and wharves served national and international trade as well as a fishing fleet (Merrill and Merrill 1817:183, 185). An 1823 gazetteer reported that Portsmouth contained 280 stores (by far the largest number in the county), seven taverns, twelve bark mills, and twelve tanneries (the latter two facilities also being the largest number of each in the county) (Farmer and Moore 1823:51).

After 1840, Portsmouth's population rose to 9,738 residents and then stagnated for four decades, only returning to nearly the same population (9,690 residents) as of 1880 (see Chart 1; Keegan 2022). A topographic map compiled in the early 1840s showed that Lafayette Road, which would have required the construction of expensive causeways and bridges, had been constructed. The name "Elwyn" was one of the few marked on this map, appearing both at several buildings to the southeast of the project area on Elwyn Road, and at a primary triangulation point to its northeast. Near the project area itself, the map indicates that there was some forest along the road and also some cleared areas. It also shows that at that time, Lafayette Road was lined on both sides with stone walls (United States Topographic 1844; Figure 3).

In 1849, a gazetteer reported that Portsmouth's notable agricultural products included only corn, potatoes, and hay. Its industries included a large machine and blacksmith shop making machinery, railroad cars, and other items; an iron foundry; and three steam-powered textile mills. The economy appears to have been more focused on trade and shipping than general manufacturing, however. At that time, the Eastern Railroad (opened in 1840) connected the town to Boston, and the railroad to Concord (incorporated in 1845) was being constructed (Hayward 1849:116-119, 187). The year 1849 was also when the city of Portsmouth was incorporated. A map of Rockingham County published in 1857 showed the dense urban area without many details, and the homes and farmsteads scattered along the roads in the rest of the town. No features other than Lafayette Road were shown near the project area; the site of the former John Langdon homestead was occupied by J. L. Elwyn, his grandson (Figure 4; Chace 1857).

A gazetteer published in 1874 stated that Portsmouth was the second wealthiest city in New Hampshire. In addition to mercantile trade, the town's manufacturing had been increasing for some time. These firms' products included textiles, leather goods, cod liver oil, ships, printing, carriages, furniture, and a wide variety of other items. Nonetheless, only 1,025 people (624 men and 401 women) were reported to be employing in manufacturing. In agriculture, a specialization in apples had developed. The number of

churches had reached 10 congregations, including one for Catholics and one for Unitarians in addition to the older ones. Numerous banks, newspapers, and shipping vessels were based in Portsmouth, and there were five hotels (Fogg 1874:307-310). In the early 1880s, a list of incorporated manufacturing firms included two breweries, a water company, a bridge company, and a gas-fueled light company (Hayford 1882:99).

After 1880, Portsmouth's population began a gradual rising trend that brought it to 11,269 residents as of 1910. A faster growth rate over the next few decades, other than in the 1930s, yielded a population of 14,821 residents as of 1940. Then, suburbanization during the following two decades caused the population to nearly double, so that there were 26,900 residents in Portsmouth as of 1960. The remainder of the century, however, saw a generally downward trend, especially in the 1990s, so that in 2000 there were 20,784 residents. The first two decades of the twenty-first century brought a slight recovery, and in 2020 there were a reported 21,956 residents (see Chart 1; Keegan 2022). A list of corporations in 1915 included breweries, shoes, buttons, coal gas, electric power, and a foundry in the manufacturing sector. Also listed were two corporations in charge of bridges, two fire insurance companies, banks, a business school, and a coal company. The Navy Yard is also listed (Hazlett 1915:207).

In a 1952 aerial photograph, the area corresponding to the historic Langdon/Elwyn farm was still mostly cleared land, with a farmstead in the southeast and a wood lot in the angle of Lafayette Road and Elwyn Road. There were also, in approximately the right location to be the project area, a small grove of trees and a visible anomaly that may indicate that the old African-American cemetery had not been plowed over (Figure 5; USDA 1952). The 1962 aerial photograph showed the newly-built house to the west of the project area and, also, an irregularity (perhaps trees, bushes, or stone walls) amid the still-cleared area that may be the project area (Figure 6; NH GRANIT 1962). By 2021, the aerial photography indicates that no crop-growing agricultural land was still present in the vicinity of the project area, though there were cleared areas in the adjacent state forestry property. Both the project area and the nearby house were surrounded and obscured by heavy tree cover.

The population and economy of twenty-first century Portsmouth was very different from previous eras. As of 2012, manufacturing employed 1,851 workers, while the grouping of agriculture, forestry, fishing, mining, and construction employed 449 workers. The wide range of service industries, in contrast, employed 25,151 people (86 percent of the total), led by the fields of health care and social service, retail trade, and accommodation and food service; an additional 1,823 people worked for various levels of government (Portsmouth 2014:14, 16). The city's planning documents from the period emphasized improving quality of life, including preserving historic buildings, providing non-automobile travel options and recreation opportunities, and encouraging the arts for both community and economic development purposes (Portsmouth 2016).

Conclusions

Although the historians Sammons and Cunningham (2004) cited here have done considerable research in the Langdon family papers, it appears that they either could not find, or did not mention, information about how many people were held in slavery by that family. It seems that only the four named individuals mentioned above have been documented, and no information about their deaths or burials has been found thus far. It also is not clear when the stone wall was built around the cemetery. The persistence of the fieldstone memorials does indicate that any historic plowing of the fields most likely did avoid them. It is also possible, given the historic tendency to engage in postmortem segregation of African-American people, that an unknown number of enslaved or free persons who lived and died in the surrounding area were also buried in this location. Further research might examine additional Langdon family probate

records for more information about the numbers of people they held in slavery; in addition, descriptions of the real estate in those records may have mentioned the cemetery.

CHAPTER IV
METHODS

Research Design

The primary objectives of the current investigation were to confirm the presence of burials associated with the Langdon Slave Burial Ground in Portsmouth, New Hampshire. The methods employed were intended to be non-invasive and to aid in determining the next preservation steps for the cemetery.

The GPR survey area encompassed an approximately 0.22-acre area around and within the known location of the Langdon Slave Burial Ground. While the burial ground preserves several fieldstone markers and extant stone wall boundaries, the lack of records and construction date for the boundary walls indicates that the bounds of the cemetery are currently unknown. The GPR area was intended to encompass as much of the area immediately surrounding the burial ground, excepting the existing trees and modern development. As no archaeological excavations were conducted as part of the current study, all assessments were based on the results of the archival research and GPR survey.

Methods of Investigation

All work for this project was performed in accordance with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716); with the *Standards and Guidelines for Archaeological Investigations in New Hampshire,* promulgated by the New Hampshire Division of Historical Resources Department of Natural and Cultural Resources (NHDHR) in Concord, New Hampshire. All of the work was directed by a professional archaeologist who exceeds the qualifications standards established by the Standards and Guidelines, which adhere to those promulgated by the federal government under the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (36 CFR 61).

Background

Heritage reviewed available information on the project vicinity, including secondary sources such as published articles and books, National Register of Historic Places Nomination Forms, and historical documents for relevant information. The background research also included consultation with individuals and organizations who might have information relevant to understanding the archaeological or cultural sensitivity of the project area.

GPR Prospection Survey

GPR is an active, non-invasive geophysical method that records contrasts in the dielectric properties of subsurface materials (Heimmer and De Vore 1995; Clark 2001; Bristow and Jol 2003; Conyers 2004, 2006; Daniels 2004). A pulse of transmitted electromagnetic energy emitted from the GPR antenna is reflected or absorbed by such contrasts and the resulting reflections are recorded to produce a vertical profile. The majority of reflections are generated at interfaces between materials of differing relative dielectric permittivity; i.e., at the boundary between different stratigraphic layers, where changes in velocity occur. A two-dimensional GPR profile is a representation of vertical and horizontal stratigraphy consisting of individual traces, resulting from a single pulse of energy and the resulting reflections at a given location, that are stitched together to produce an image of dielectric contrasts. In this sense, GPR does not provide a stratigraphic profile; rather, it generates a representation of local dielectric contrasts that provides a proxy for subsurface stratigraphic changes.

GPR is an established prospection method for human graves, as well as for archaeological features such as wells, privies, and other shaft features, buried building foundations, trenches, and other forms of cultural stratigraphy. These features are visible with GPR due to dielectric contrasts that often exist between feature fill and surrounding sediment, visible truncation of internal stratigraphic layers, or high reflection amplitude from intense signal reflection from bricks or stones. Prospection for human burials is a common GPR application due to the subsurface signatures outlined above. A grave shaft itself is a vertical cut through subsurface stratigraphy and should be recognizable as such. The grave fill should contain internal characteristics derived from disturbance of soil layers that should contrast sharply with undisturbed subsoil (Bevan 1991). Unmarked graves in disturbed soil contexts, may be more difficult to discern. Also, the actual interred remains are not generally resolvable in GPR data in the absence of chemical changes derived from decay (Bevan 1991). Well-preserved coffins and both brick and concrete vaults provide an ideal point-source object to generate a characteristic hyperbolic reflector in the GPR data, as well as a high-amplitude reflector that can be traced horizontally in three-dimensional time slices. Profiles are generally collected across marked graves to serve as a comparative data set. Ideal amplitude or plan view maps of grave shafts in a 18th century cemetery in Rexford, New York, and two-dimensional profiles of grave shafts and coffins are displayed in Figure 7, in most unmarked burial investigations GPR results are not as clear as the example in Figure 7.

GPR prospection for historical period features such as cellar holes, piers, or middens is also a common application due to the subsurface signatures outlined above. The cellar hole is a vertical cut through subsurface stratigraphy and should be recognizable. The cellar or midden fill should contain internal characteristics derived from disturbance of soil layers that should contrast sharply with undisturbed subsoil. Cellar holes or middens in disturbed soil contexts, or land that has undergone significant landscaping activities, may be more difficult to discern. Stone-lined cellar holes or features such as wells provide an ideal point-source object to generate a characteristic hyperbolic reflector in the GPR data, as well as a high-amplitude reflector that can be traced horizontally in three-dimensional time slices. An ideal amplitude map and profile transect displaying a stone lined cellar hole and stone lined well from a 17th century farmstead in Glastonbury, Connecticut, are displayed in Figure 8.

Throughout this work, a GSSI Utility Scan GPR system with a 350 MHz HyperStacking antenna was used to conduct the GPR survey. The antenna and UtilityScan are mounted on a custom-built carriage by GSSI and utilized encoder-triggered collection of 50 traces per meter (1 reading every 2 cm or 0.8 in). All GPR data were collected at 25-cm intervals in 10 unidirectional transect grids. In areas where obstructions were encountered that prevented completion of the survey transect, such as a headstone, fence, tree, etc., an additional or continuation transect was collected, beginning at the opposite end of the obstacle. Prior to beginning the continuation, the position of the GPR machine was carefully recorded, manually, to ensure that no data was lost during the survey. This also minimized the potential for errors during the three-dimensional “stitching” of transect lines within each grid. Where possible, obstacles were removed to permit free travel along the collection transects. The collection of field data in uni-directional transects that were tightly spaced was critically important, because it provides more secure data for three-dimensional interpretations of geometric targets. If the transects were spaced farther apart, the post-processing software may aggregate features in three-dimensions, which provide the appearance of “ghost” targets that are not based on two-dimensional data (See TerraSearch Geophysical 2023 for an illustration of this effect).

The GSSI Utility Scan GPR System also includes a tool where the user is able to mark above-ground features while surveying. This is especially useful in cemeteries, where the user can pinpoint exactly when the antenna is directly adjacent to a grave marker. This feature was utilized while surveying within the stone-

walled cemetery and the location of the grave markers are displayed in Figure 9. It should be noted that the parameters for quantifying a headstone were very broad in this context because the stones within the cemetery are mostly large, unaltered fieldstones (Photo 2). It is possible that some of these stones may be footstones or may not be grave markers at all. There is no way to distinguish headstones from footstones in this context due to the absence of inscriptions and a clear cemetery layout, except through the geophysical analyses presented below. Alternatively, it is also possible that there were more grave markers within the burial ground that were removed or used to make the stone wall surrounding the cemetery.

Grid Layout

A total of four grids were collected during the fieldwork effort (Figure 10). These grids were laid out to maximize the surveyable area within and immediately around the stone-walled cemetery.

Grid 1 measured the entire width of the stone-walled cemetery, approximately 12 meters (39.37 feet), with transects running north and continuing east. Grid 1 measured 12 meters (39.37 ft) in the X direction, and 4 meters (13.12 ft) in the Y direction. Data collection began in the southwest corner and included 49 individual transects. Grid 2 was located north of Grid 1, in the grassy area between the church parking lot and the cemetery with transects running south and continuing west. Grid 2 measured 30 meters (98.42 ft) in the X direction, and 15 meters (49.21 ft) in the Y direction. Data collection began in the northeast corner and included 121 individual transects. Grid 3 was located in the fenced-in yard behind the rectory house, with transects running north and continuing east. Grid 3 measured 11.5 meters (37.72 ft) in the X direction and 25 meters (82.02 ft) in the Y direction. Data collection began in the southwest corner and included 47 individual transects. Grid 4 was located in the wooded area south of the cemetery and east of the fenced-in yard, with transects running north and continuing east. Grid 4 measured 8 meters (26.24 ft) in the X direction and 5 meters (16.4 ft) in the Y direction. Data collection began in the southwest corner and included 33 individual transects.

The corners of the GPR grid and start and end points of each transect were mapped with a differential GPS to provide decimeter accurate control grid points, and each transect was recorded with an Emlid Reach RS2+. The Emlid Reach RS2+ is capable of real time kinematic (RTK) corrections and was configured within the Networked Transport of RTCM via Internet Protocol (NTRIP), providing centimeter accurate corrections to the GPS data collected.

Data Analysis and Report Preparation

Data Analysis

All GPR profiles were interpreted and analyzed using GSSI RADAN software, using industry standard techniques (i.e., Conyers 2006; Leach 2019; 2021). These techniques include the following RADAN software adjustments to the raw data collected in the field: Time Zero, Range Gain, Background Removal, Finite Impulse Response (FIR) and Infinite Impulse Response (IIR) Filters, Migration, as well as three-dimensional and two-dimensional exploratory data analysis. Each of these techniques are described in more detail below.

Time Zero is a position correction of the actual ground surface relative to the radar pulse that is transmitted from the machine, which is measured in nanoseconds. For the Utility Scan, the position correction is generally very small, approximately 1 – 3 nanoseconds. Range Gain is a critical analytical technique, because it allows the user to attenuate the radar signal relative to depth from the recording machine. As the signal travels farther from the machine, the signal is weaker, and vice versa. To compensate for this,

and to properly interpret the entire target depth for the GPR analysis, the dataset must be normalized. Heritage used an exponential Range Gain to interpret the data, because this technique most closely follows the loss of signal with depth relative to the machine. Background Removal is another normalization technique that removes horizontal "noise" from the dataset, or those targets that extend the entire length of a GPR transect and are thus not relevant for an archaeological analysis (but may be relevant for geological analyses); noise interference from radio frequencies (cell towers, wi-fi, radio towers, etc.) are also removed using the Background Removal function. FIR and IIR Filters are generally applied as a custom background removal of frequencies that appear spurious after an exploratory analysis. Migration is a transformation that flattens the appearance of a conical shape that is associated with hyperbolic reflectors that are visible at depth and thus farther away from the machine in horizontal space. Because grave shafts are not ideal migration targets (these present large hyperbolic targets), the dataset was viewed closely before and after migration.

Finally, while three-dimensional viewing of the dataset presents a powerful way to visually interpret geometric patterns in any GPR dataset, this is merely an algorithmic way to view two-dimensional data. All GPR transects were explored in two-dimensions in their raw and post-processed formats; these data were then compared and contrasted with three-dimensional geometric targets to appropriately interpret any possible rectangular targets that approximate burial shaft dimensions. These techniques are applied generally to a dataset to "ground" the analysis. There is no "cookie cutter" approach to GPR analysis. Each survey presents unique environmental and soil conditions that require informed choices in both the analysis and the collection of data.

Report Preparation

The data gathered during the survey are synthesized and presented in this report. While Heritage understands that this work is being conducted solely for planning purposes, all work was conducted in compliance with the Secretary of the Interior's Standards for Archeological Documentation and the *Standards and Guidelines for Archaeological Investigations in New Hampshire,* promulgated by the NHDHR.

CHAPTER V
RESULTS

GPR Survey Results

As described in Chapter IV, a total of four grids were collected during the fieldwork effort. These grids were laid out within the 50-foot buffer around the Langdon Slave Burial Ground. A total of 250 individual transects were collected and analyzed during this survey. Figure 11 shows the location of each individual transect in green.

During the analysis, burials identified within the boundaries of the cemetery (Grid 1) were identified as probable marked burials. Burials identified outside of the cemetery were identified as probable unmarked burials. Our identification of these burials as probable, versus potential, indicates a greater degree of certainty in the identification of interments. Potential interments represent identifications that are less certain, and may contain burials, but may also represent taphonomic signatures such as tree throws or rock pulls that are unrelated to interment practices. Probable burials are therefore almost certainly burials where individuals were interred within a coffin, as the wood or metal hardware from a coffin create a highly reflective signal to the GPR antenna. The geophysical signatures of these events cannot always be distinguished from those of burials in which coffins have degraded significantly, but when the surrounding context features minimal disturbances and well-preserved coffins, these can be identified. Finally, care was taken to consider the possibility of non-burial related features including utilities, trenches, tree roots, etc.

While relatively few burials were clear, reflective rectangles in plan view, a portion of the burials displayed several of the qualities associated with coffin burials. Select burials have been annotated to illustrate some of these characteristics. To begin, most potential burials were highly reflective, suggestive of significant soil differences in areas that contained probable coffins from areas of normal subsoil. This intense reflectivity may be a result of air voids contained within portions of semi-decayed coffins, as well as the presence of buried metal coffin hardware that GPR energy cannot penetrate. The high amplitude of these reflectors was generally a unique feature of the anomalies identified as probable burials, as shallower targets interpreted as tree roots tended to display more muted reflections, were dendritically shaped within plan view amplitude maps, and were generally reflective at different depths in successive profiles. Coffins, on the other hand, display as rectangular in plan view and are generally reflective at the same depth. A second characteristic of many of the anomalies interpreted as burials was a broad hyperbola in the radargram or profile view. Hyperbolas form in GPR data as a result of the conical spread of GPR energy through the ground, with the central peak of the hyperbola marking the top of a given target. If the target has a flat top (like many coffins), then it will remain at a constant distance from the antenna, producing a flat band across the top of the target. In practice, since most coffins face some amount of decomposition or collapse, these bands rarely present as being perfectly flat. However, even a semi-decomposed coffin can produce a broader top than targets like tree roots that tend not to have large horizontal expanses.

The maps and other graphic data provided within this section of the Report are intended to illustrate the findings of the GPR survey. Figures 12 through 31 are three-dimensional amplitude maps created to show the results of the GPR survey in each area. In each of these maps, the survey data has been compiled and is presented in successive 10 cm (3.9 in) increments for depths of 0 to 200 cm (0 to 78.74 in) below surface (cmbs). Separate annotation maps in plan view are also included in Figures 32 through 44, which display the locations of identified features. Select relevant profiles of probable marked burials, probable

unmarked burials, and other relevant features are also indicated by separate annotations and shown overlaid onto the amplitude maps in separate figures. These are found in Figures 45 to 51.

Grid 1

Survey Grid 1 measured 12 m x 4 m (39.37 ft x 13.12 ft) and included 49 individual profile transects. Amplitude maps for this survey grid, are displayed in Figures 12 through 31, while individual annotations for Survey Grid 1 are included in Figures 34 through 41. Grid 1 begins in the southwest corner of the burying ground and is characterized by approximately nine small, uninscribed stones placed sporadically throughout the cemetery, as well as two large trees, one in the southwest corner, and one in the center of the grid along the northern edge (Photo 3). These stones are likely the markers for the enslaved individuals buried at the cemetery (Black Heritage Trail New Hampshire 2018).

In total, Grid 1 contained six probable marked burials and two probable unmarked burials. This would support the possibility that at least two of the stones in the cemetery are footstones. The burials in Grid 1 can be seen in plan view from Figures 34 to 41. A selected profile can be seen in Figure 45, where the location of the profile is indicated by the white arrow on the plan view map, and the probable marked burials are indicated by the green arrows on the profile. The burials displayed clear hyperbolas, which likely represents the top of relatively well-preserved coffins. These hyperbolas appear to partially overlap; however, this does not mean that the burials themselves overlap. The overlapping hyperbolas instead indicate that the burials are spaced densely enough that the narrow conical spread of GPR energy can detect more than one coffin in the same scan. Additionally, these burials are visible in the plan view, indicating that both the soils are amenable to GPR analyses, and the coffins are relatively well preserved. In Figure 20, there are clear right angles that are white in color. These angles represent the corner edges of the grave shaft. The coffins/interments themselves appear in lower amplitude reflections, meaning they are a darker grey in plan view as opposed to being white. Finally, each of the probable burials also displayed faint, ninety-degree vertical cuts in the stratigraphy that are indicative of the excavation of and filling in of the grave shaft during burial. Each of the identified burials within the cemetery appear to reflect an east to west alignment, consistent with Judeo-Christian burial practices that were common during the 18th and 19th centuries in New England.

There were no other features identified in Grid 1.

Grid 2

Survey Grid 2 measured 30 m x 15 m (98.42 ft x 49.21 ft) and included 121 individual transects. Amplitude maps for this survey grid are displayed in Figures 12 to 31, and annotations for Grid 2 are displayed in Figures 32 to 43. Grid 2 began in the northeast corner of the grassy area north of the cemetery with transects running south towards the cemetery, and later the fence and rectory house. There were four trees in the grid, two of which were directly adjacent to the stone wall around the cemetery. The asphalt path that leads to the fenced-in yard is visible from the surface and is in the western region of Grid 2.

There is a long trench feature that runs from the northeast corner of Grid 2 to where the fence and stone wall meet, towards the southwest corner. This feature can be seen in plan view from Figures 36 to 43, and in profile view in Figure 46. The location of the selected profile is indicated by the white arrow on the plan view map, and the trench feature is indicated by the blue arrow in the profile. The trench displays clear stratigraphic cuts at the boundaries of the feature, with a highly reflective, dense fill zone that maintains the same width and depth throughout its entire length across Grid 2. This high amplitude banding suggests that this trench is modern.

There are also three small utility lines in Grid 2. Two of these run parallel to each other, running east to west, and are directly adjacent to the rectory house. The third utility is towards the northeast corner of the grid, and also runs east to west. The utilities can be seen in plan view from Figures 33 to 35.

There were also five probable unmarked burials identified within Grid 2. All of the burials are relatively close to the cemetery, and mostly surround the easternmost tree in the grid. These probable burials are also laid out in an east to west alignment, similar to those identified within the confines of the extant cemetery. These burials can be seen in plan view from Figure 37 to 43. The first selected profile can be seen in Figure 47. The location of the selected profile is indicated by the white arrow in the plan view map, and the burial features are indicated by the red arrows in the profile. The burials in Figure 47 display two tight, highly reflective, steep hyperbolas, which indicate well-preserved coffins; as with the interments in the cemetery, there are also faint ninety-degree vertical cuts in the stratigraphy likely indicative of the grave shaft morphology.

The second selected profile can be seen in Figure 48. The location of the selected profile is indicated by the white arrow in the plan view map, and the burial features are indicated by the red arrows in the profile. The leftmost burial feature displays a faint, irregular, and distorted shape within stratigraphic cuts that indicate a probable grave shaft. Stratigraphic cuts are visible in the upper levels of the profile and align with the edges of the higher amplitude reflections that represent the feature itself. Stratigraphic cuts often create a different visible difference in appearance when comparing the inside of their boundaries to the soil outside of the boundaries of the feature. These cuts may also appear similar to a hyperbola tail that will outline the edges of the feature. These characteristics indicate that this burial appears to be a much more degraded coffin burial in comparison to the other burials in the entire survey area. The rightmost burial, oppositely, displays a clearer hyperbola within the stratigraphic cuts of a grave shaft. Although these features are less clearly identifiable compared to other burials in the surveyed area, they display a consistent depth and width, orientation, and overall dimensions similar to marked probable burials within the cemetery, indicating that these are most likely unmarked burials.

It is important to note that the burials identified in Grid 2 are directly adjacent to a large tree. Tree roots can also reflect strong, tight hyperbolas that can be mistaken for cultural features like coffins. However, extra care was taken to ensure that the identified features maintain the correct size, shape, and consistent depth before concluding that the feature is a potential burial. Tree roots will fluctuate in shape, depth, and strength of the reflection, whereas coffins will have a consistent reflection, overall shape, and depth.

There were no other features identified in Grid 2.

Grid 3

Survey Grid 3 measured 11.5 m x 25 m (37.72 ft x 82.02 ft) and included 47 individual transects. Amplitude maps for this survey grid are displayed in Figures 12 to 31, and annotations for Grid 3 are displayed in Figures 32 to 43. Grid 3 began in the southwest corner of the fenced-in yard adjacent to the rectory house, with transects running north. The cemetery was directly east of the northeast region of Grid 3. Grid 3 can be characterized by a mix of sandy soils and gravel, which are visible from the surface. The asphalt path that begins in the parking lot runs into the northern region of Grid 3.

There is a large fill layer in Grid 3, that extends, at its shallowest point, from the northernmost region of the grid down to center of the southern region of the grid, where there is a large tree. At its deepest point, the fill layer is directly adjacent to the house. This feature can be seen in plan view from Figures 34 to 37, and in profile view in Figure 49. The location of the selected profile is indicated by the white arrow in the

plan view map and the fill layer feature is indicated by the dark blue arrow in the profile. The fill layer displays a reflective, consistent, horizontal feature.

There are also two utility lines in Grid 3 that extend on either side of the large tree in the southern portion of the grid and intersect at the easternmost edge of the grid. These utilities can be seen in plan view from Figures 39 to 44, and in profile view in Figure 50. The location of the selected profile is indicated by the white arrow in the plan view map and the utilities are indicated by the magenta arrows in the profile. The utilities display as highly reflective, wider hyperbolas. The stratigraphic cuts are especially clear in the leftmost utility.

There were no burials or additional features identified in Grid 3.

Grid 4

Grid 4 measured 8 m x 5 m (26.24 ft x 16.4 ft) and included 33 individual transects. Amplitude maps of this survey grid are displayed in Figures 12 to 31, and annotations for Grid 4 are displayed in Figures 39 to 43. Grid 4 is located in a small section of the wooded area, directly south of the cemetery, with transects running north. Despite extensive efforts to clear the vegetation in Grid 4, there were four small trees in the grid.

There was only one feature identified in Grid 4, a probable unmarked burial in the western region of the grid. This burial can be seen in plan view from Figures 39 to 43, and in profile view in Figure 51. The location of the profile is indicated by the white arrow in the plan view map, and the burial is indicated by the red arrow in the profile. This burial is the most well-preserved burial compared to the burials in Grids 1 and 2. The burial in Grid 4 also displays clear stratigraphic cuts, indicating the grave shaft. The highly reflective, clear, flat hyperbola is an indication of the top of a nearly intact coffin. Additionally, unlike most of the other burials in Grids 1 and 2, the burial in Grid 4 is visible from plan view as a clear, reflective, rectangular shape. This burial is also laid out in an east to west alignment, similar to the marked burials within the bounds of the extant cemetery.

No other features were identified within Grid 4.

CHAPTER VI
CONCLUSIONS

Heritage Consultants, LLC, under contract to the City of Portsmouth Housing Authority, completed a GPR prospection survey of the Langdon Slave Burial Ground. The goal of the work was to identify all marked and unmarked burials within and adjacent to the burying ground through a non-invasive GPR survey. The project area totaled approximately 0.22 acres. A total of four grids were collected during the fieldwork effort. These grids were laid out within the 50-foot buffer around the Langdon Slave Burial Ground, to ensure that all probable burials were identified as part of this survey. The gridded surveys included a total of 250 individual transects that were collected and analyzed.

Numerous features were identified within the four gridded surveys conducted via GPR. Several of these features are modern and do not relate to the Langdon Slave Burial Ground, but instead represent later, intrusive effects to the property. These features include five separate utility lines, an asphalt pathway, a large trench, and an area of homogenous fill soils. In addition to these modern features, nine individual grave markers were identified within the stone walled bounds of the cemetery (Grid 1), associated with six marked probable graves identified through GPR work, as well as two unmarked probable graves within the cemetery. In addition to the eight identified graves within the cemetery, six additional probable unmarked graves were identified outside the bounds of the cemetery, including five within Grid 2 and one within Grid 4. A total of 14 graves were therefore identified via geophysical survey methods. All features identified in Survey Grids 1 through 4 can be seen over aerial imagery in Figure 52.

Heritage understands that the City of Portsmouth Housing Authority is interested in preserving the Langdon Slave Burial Ground from future demolition or development. Based on the GPR survey and archival research, it is now likely that at least fourteen burials are preserved within and adjacent to the burial ground. While every effort has been made to identify features of interest through GPR, these methods are not foolproof, and have not been ground-truthed to verify the interpretations. If development is planned in areas near the probable burial locations, Heritage recommends that an archaeological protection plan be developed to ensure that no inadvertent impacts to the burial ground and interments occurs. The archaeological protection plan should be developed in conjunction with the NHDHR, any federal agency that may require permits for the work, and potential consulting parties, namely descendants associated the cemetery, if identifiable, or preservation organizations with connections to the cemetery, such as the Black Heritage Trail New Hampshire. This outreach and protection plan will ensure that human remains are not inadvertently disturbed by any planned construction.

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Appendix 1
Figures

Figure 1: General Project area, displayed on satellite imagery background.

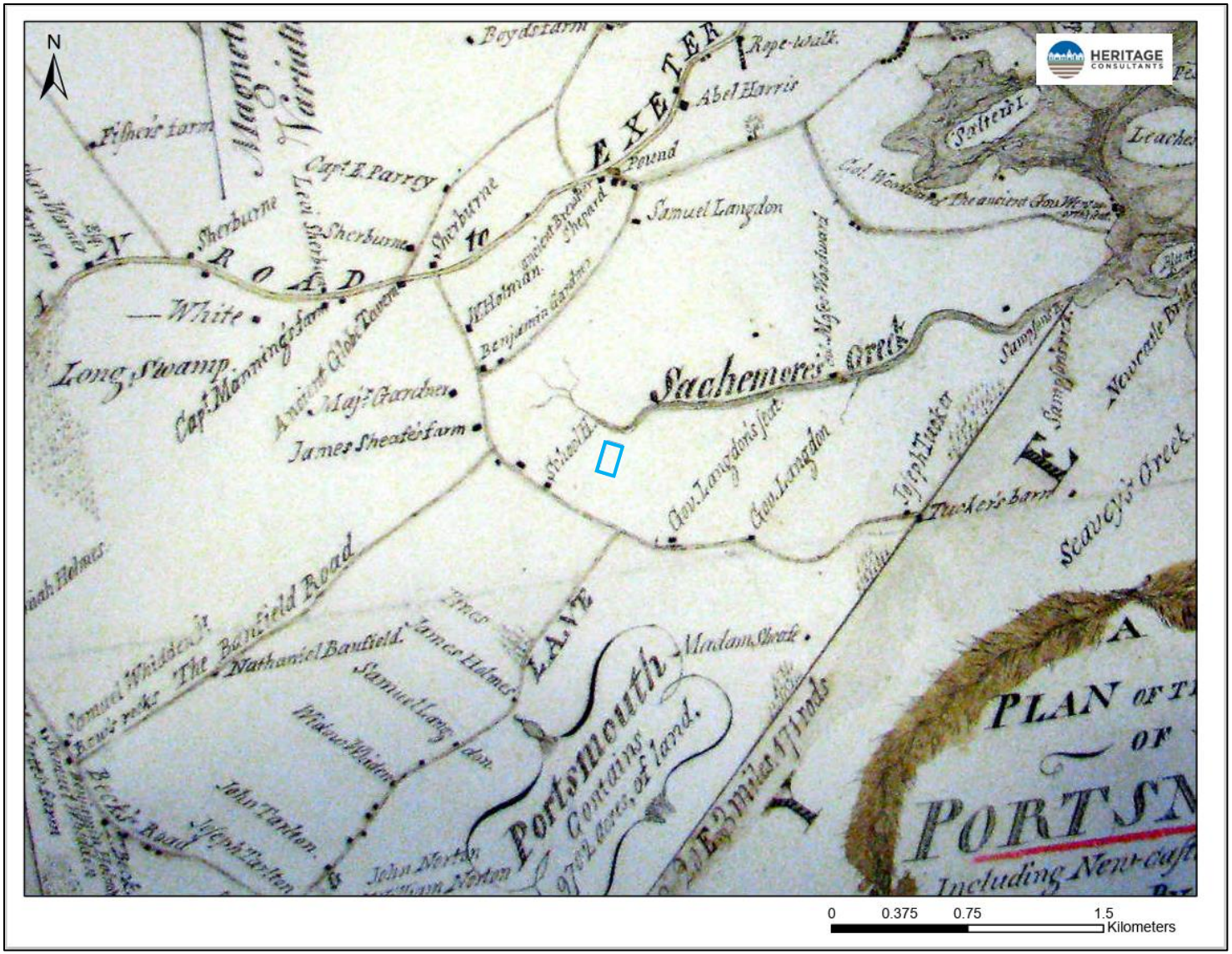

Figure 2: Excerpt from 1805 map of Portsmouth, New Hampshire, and the surrounding towns. Survey area shown in blue.

Figure 3: Excerpt from 1844 Survey of the Harbor of Portsmouth, New Hampshire, made by United States Topographic Engineers. Survey area shown in blue.

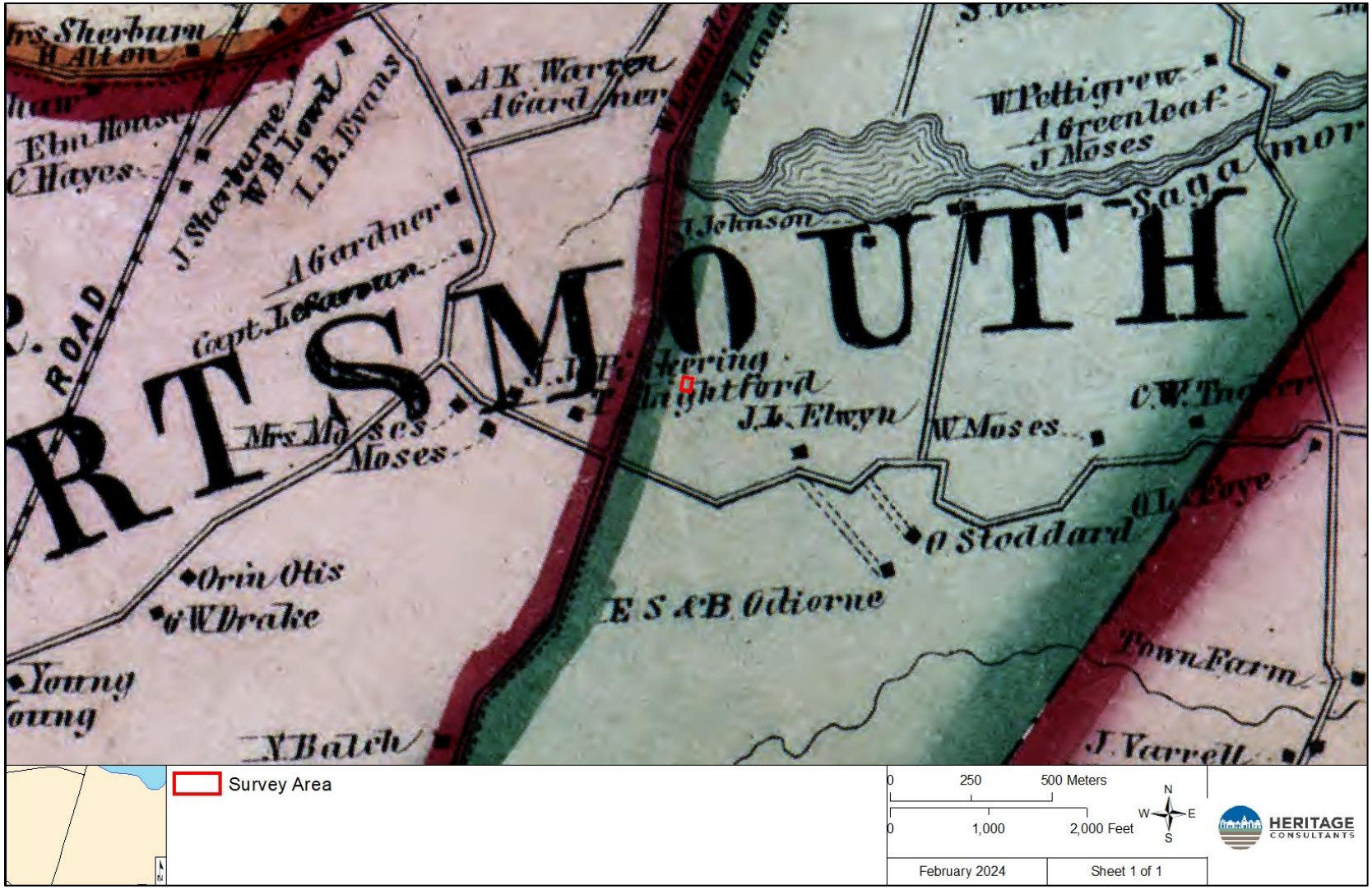

Figure 4: Excerpt from 1857 map of Rockingham County, New Hampshire. Survey area shown in red.

Figure 5: Excerpt from 1952 aerial image of Portsmouth, New Hampshire. Survey area shown in blue.

Figure 6: Excerpt from 1962 aerial image of Portsmouth, New Hampshire. Survey area shown in blue.

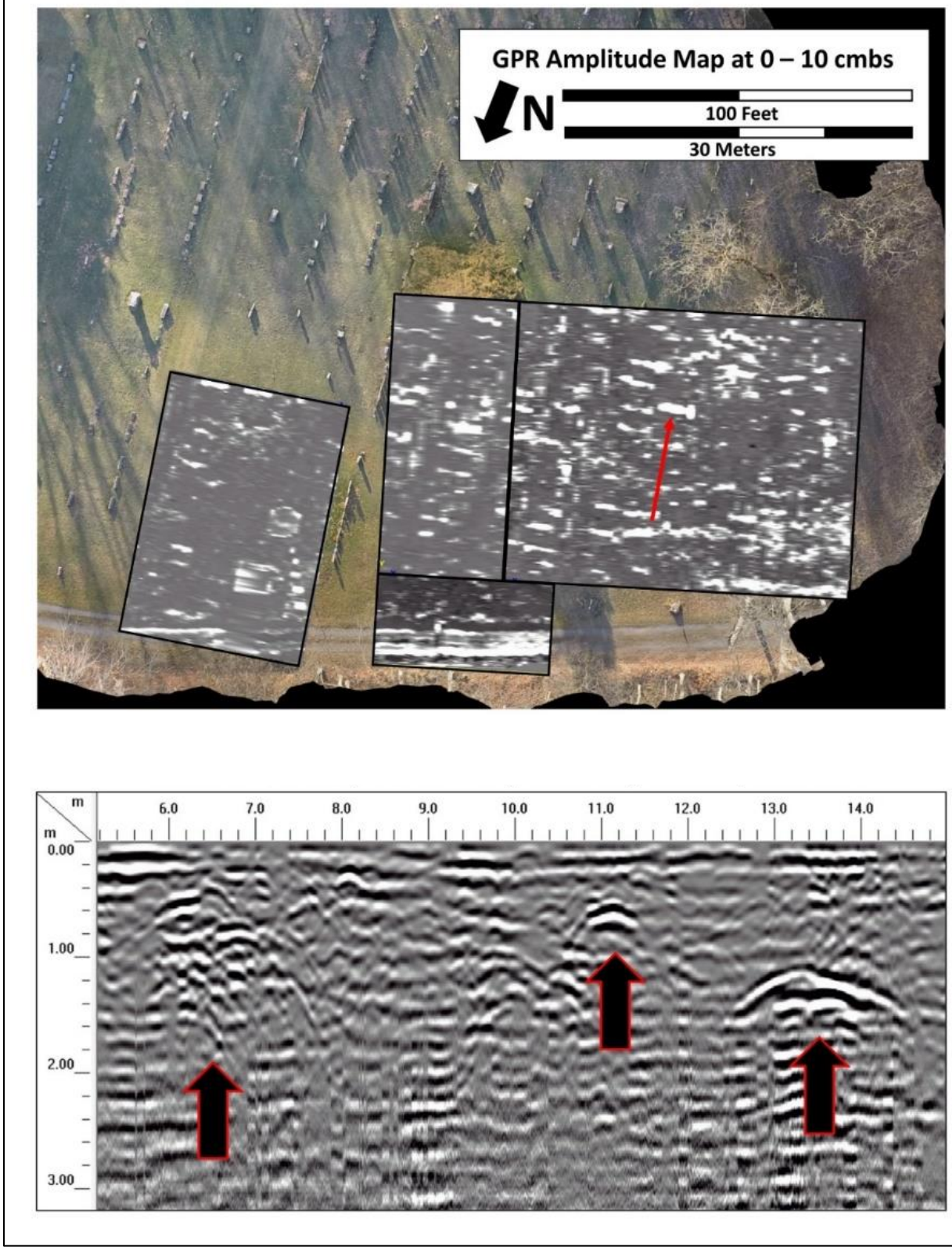

Figure 7: GPR Example Amplitude Map of marked and unmarked graves, Vischer Ferry Cemetery, Rexford, New York.

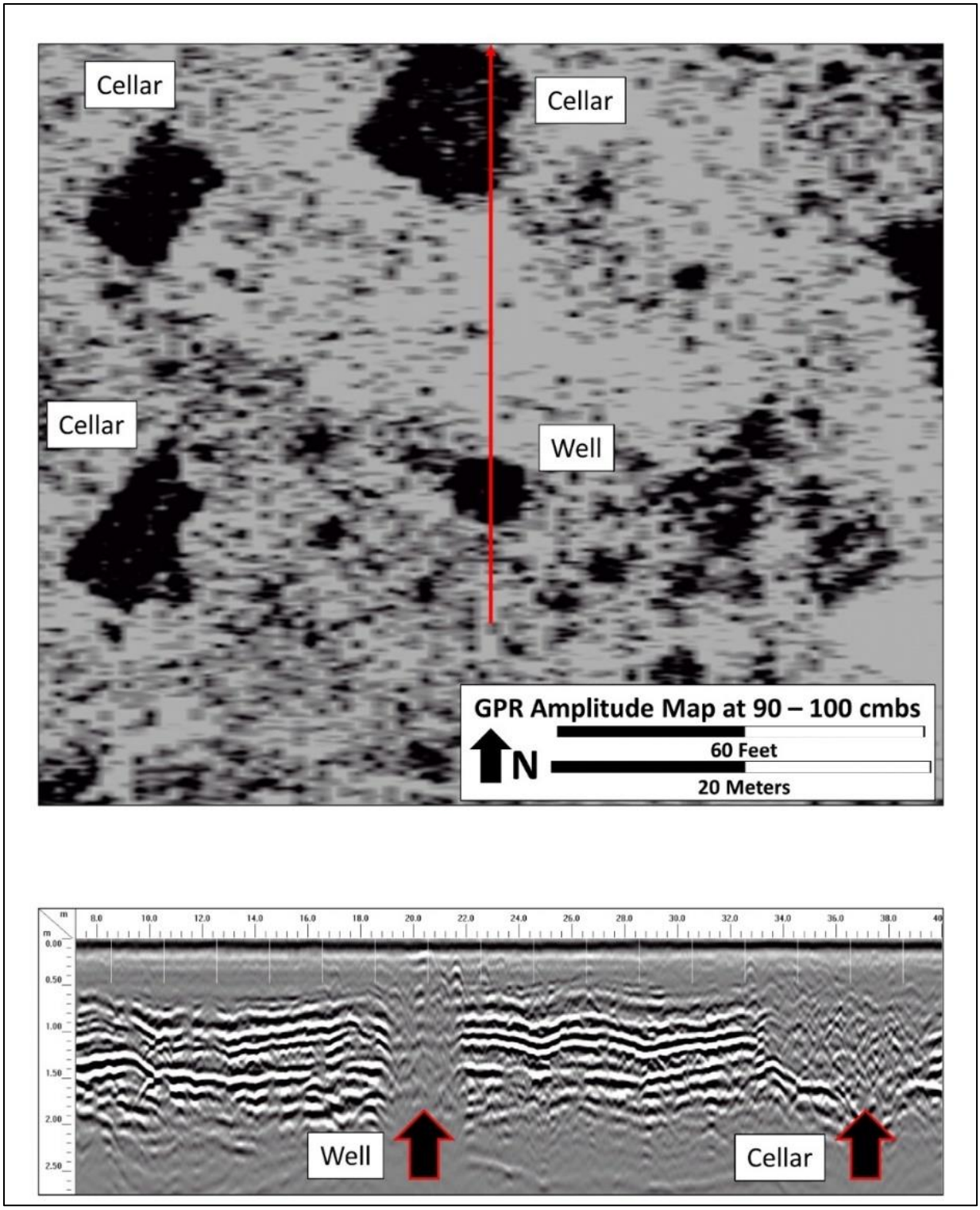

Figure 8: GPR Example Amplitude Map of a 17th century well and cellar hole, Hollister Site, South Glastonbury, Connecticut.

Figure 9: Location of potential grave markers within the stone-walled cemetery at the Langdon Burial Ground.

Figure 10: Location of GPR Survey Grids, displayed on satellite imagery background.

Figure 11: Location of GPR survey transects, displayed on satellite imagery background.

Figure 12: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 13: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 14: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 15: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 16: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 17: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 18: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 19: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 20: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 21: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 22: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 23: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 24: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 25: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 26: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 27: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 28: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 29: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 30: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 31: GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 32: Annotated GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 33: Annotated GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 34: Annotated GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

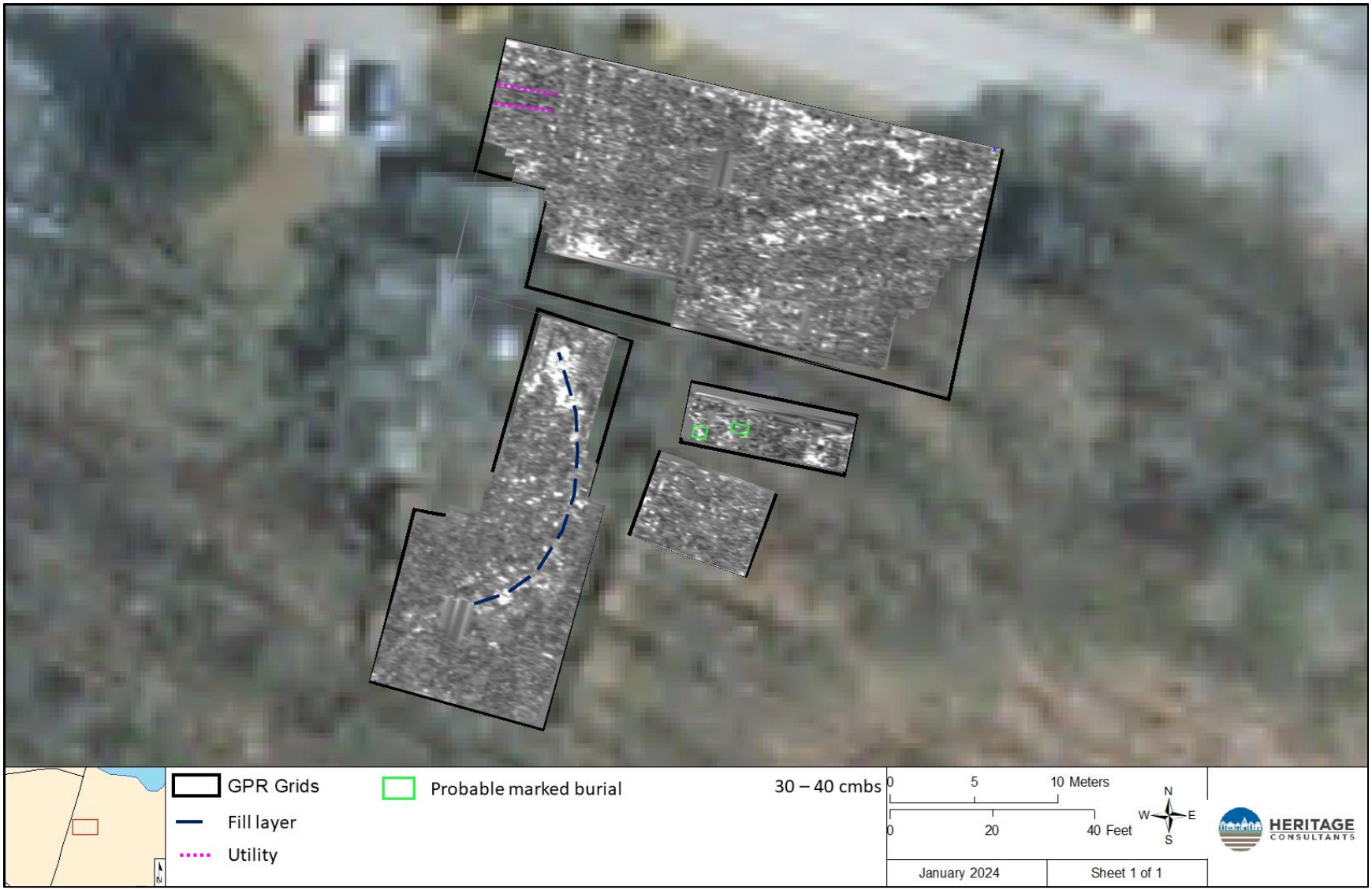

Figure 35: Annotated GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 36: Annotated GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 37: Annotated GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 38: Annotated GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 39: Annotated GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 40: Annotated GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 41: Annotated GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 42: Annotated GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 43: Annotated GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

Figure 44: Annotated GPR amplitude map of Survey Grids 1-4, with approximate depth indicated.

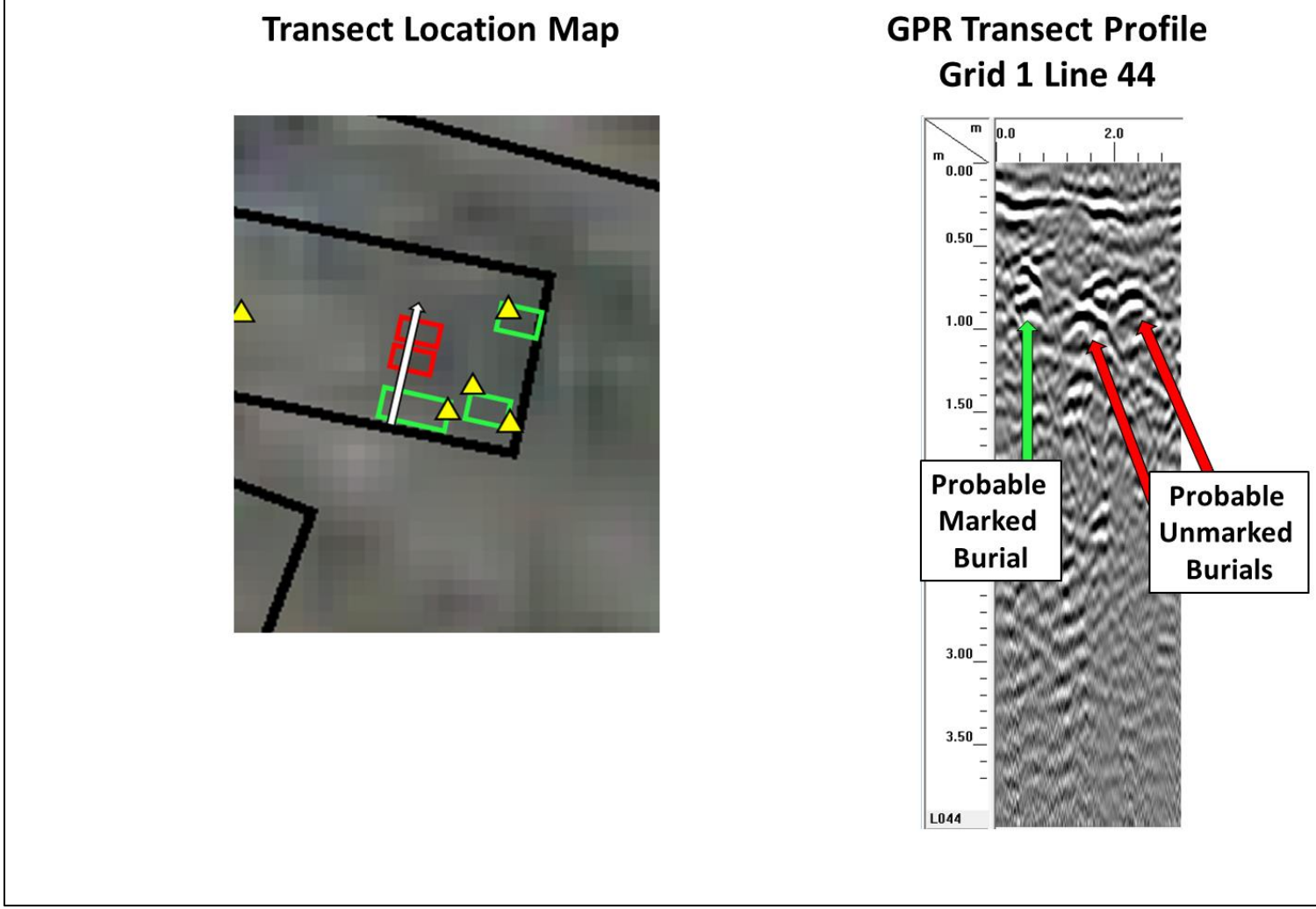

Figure 45: Selected GPR profile of probable marked and unmarked burials located in Grid 1. The position of radar profile is indicated by the white arrow in the left plan view map, and the features are indicated by the green and red arrows in the radargram to the right.

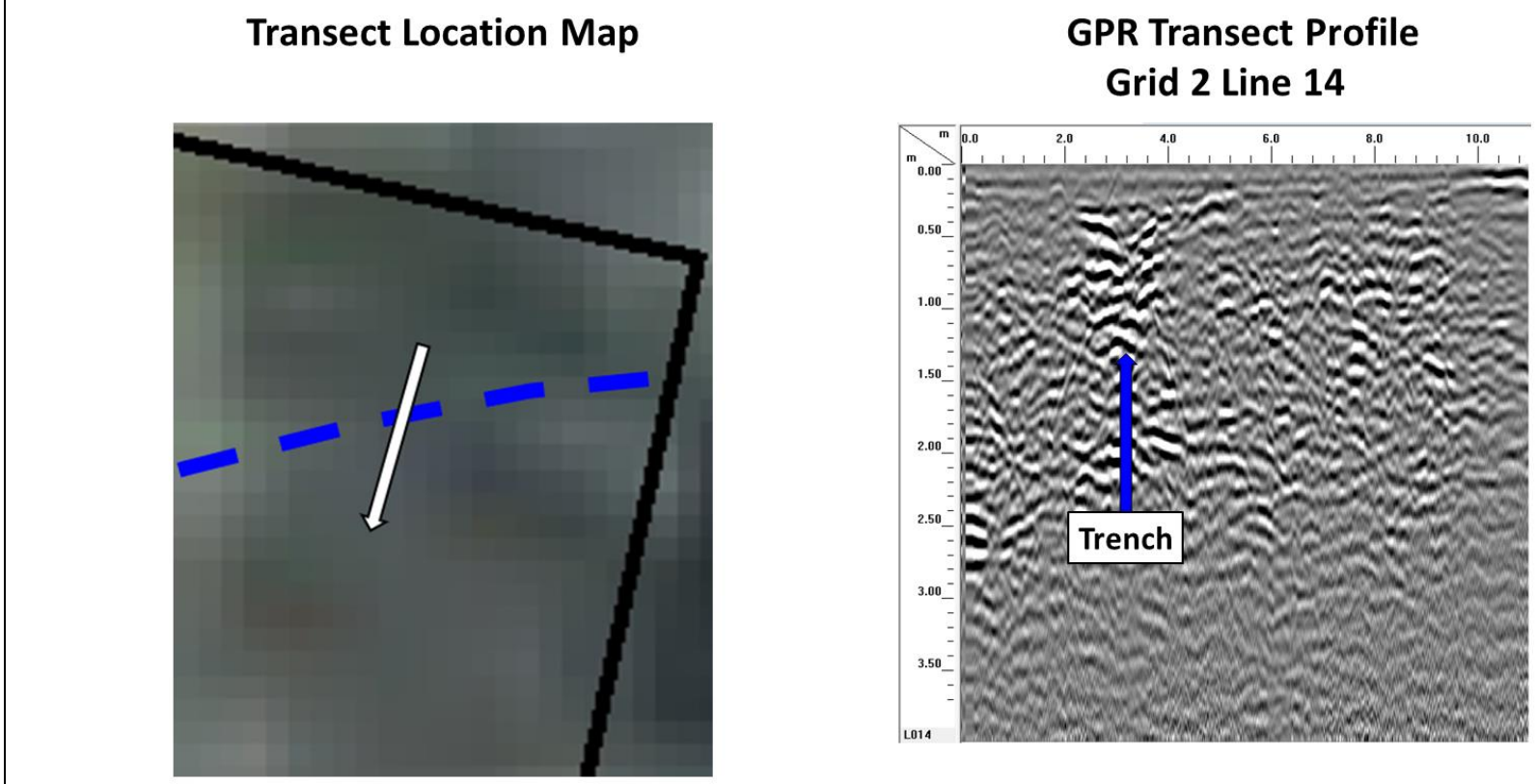

Figure 46: Selected GPR profile of the trench feature located in Grid 2. The position of radar profile is indicated by the white arrow in the left plan view map, and the feature is indicated by the blue arrow in the radargram to the right.

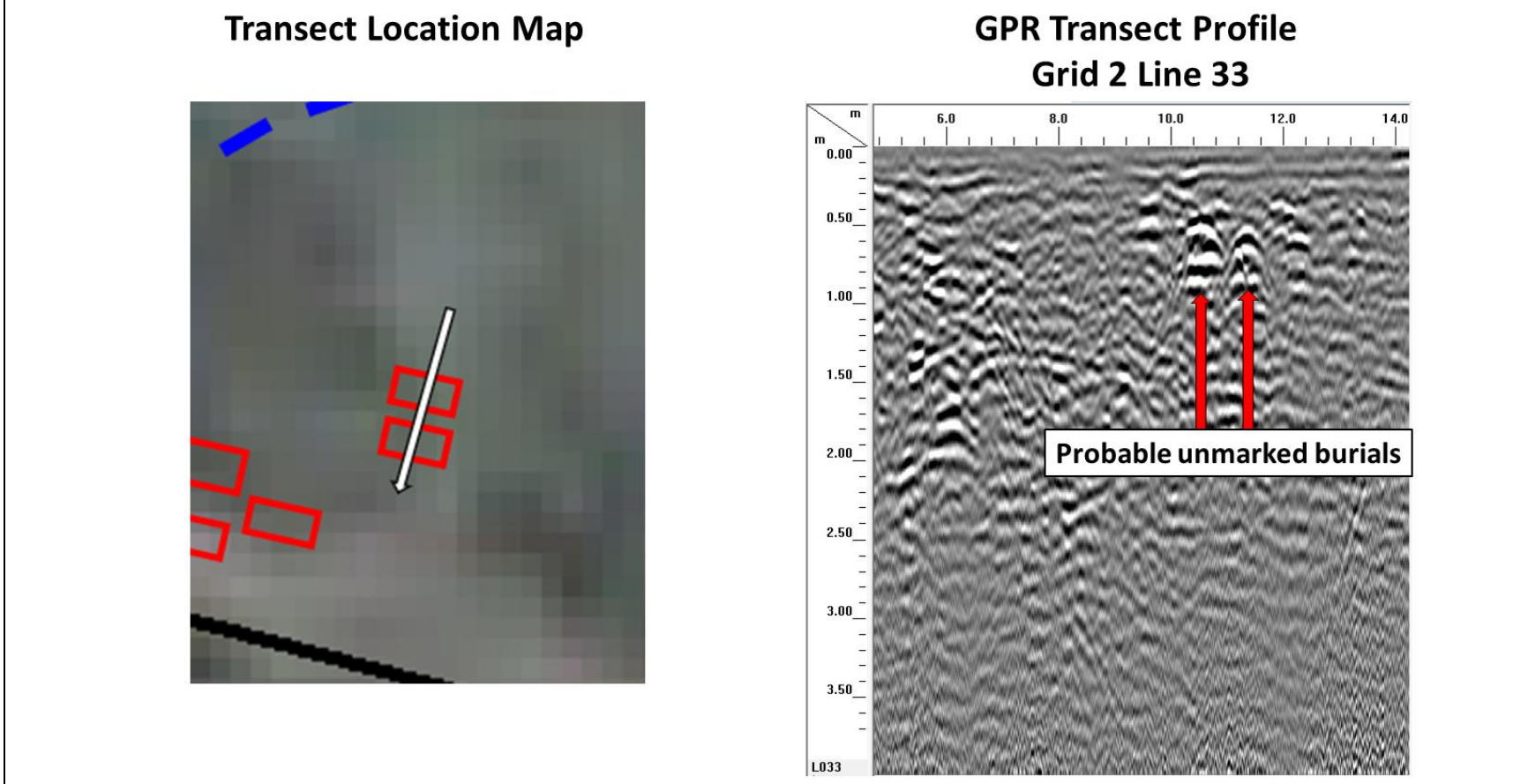

Figure 47: Selected GPR profile of probable unmarked burials located in Grid 2. The position of radar profile is indicated by the white arrow in the left plan view map, and the burials are indicated by the red arrows in the radargram to the right.

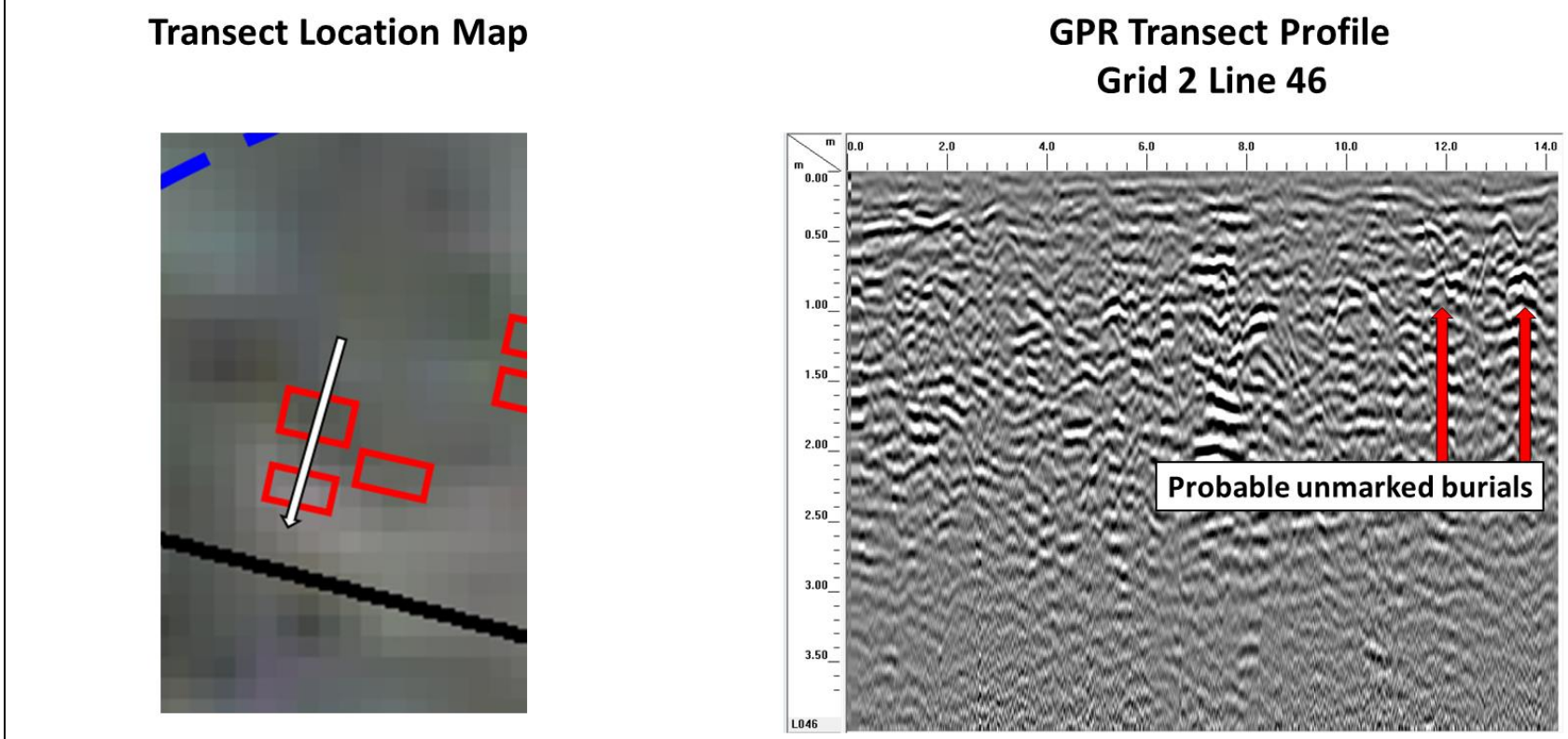

Figure 48: Selected GPR profile of the probable burials located in Grid 2. The position of radar profile is indicated by the white arrow in the left plan view map, and the burials are indicated by the red arrows in the radargram to the right.

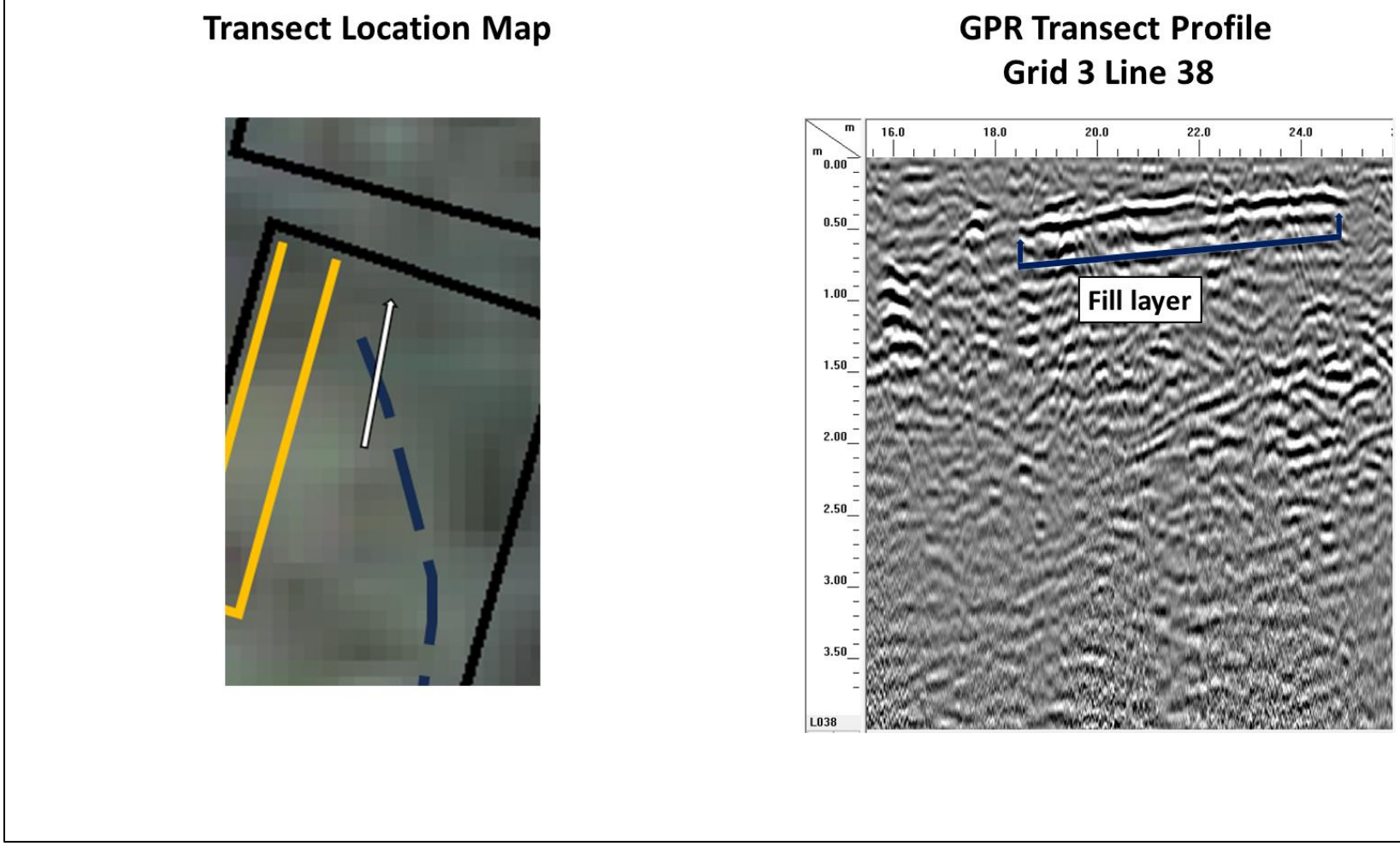

Figure 49: Selected GPR profile of the fill layer feature located in Grid 3. The position of radar profile is indicated by the white arrow in the left plan view map, and the feature is indicated by the dark blue arrow in the radargram to the right.

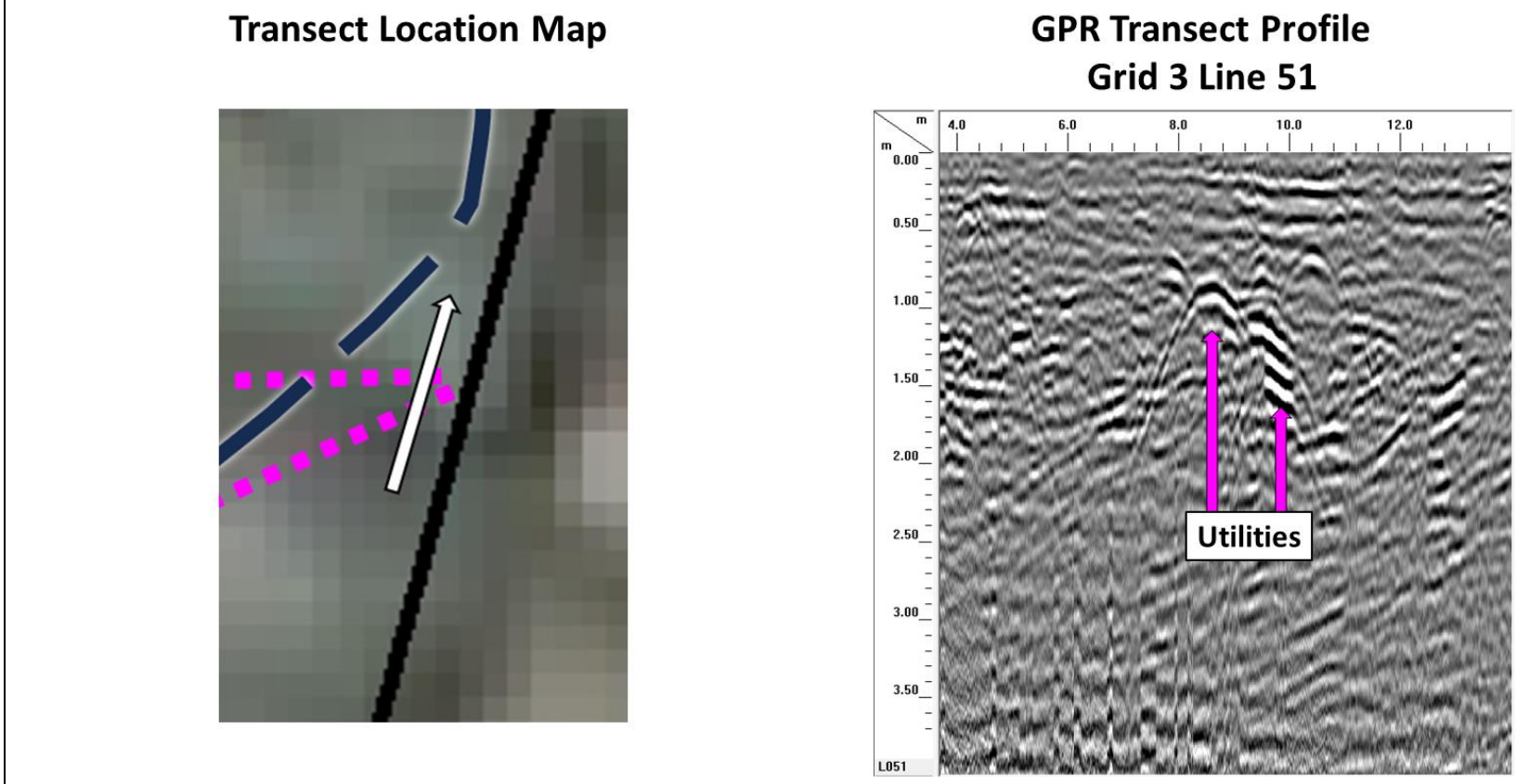

Figure 50: Selected GPR profile of the utilities located in Grid 3. The position of radar profile is indicated by the white arrow in the left plan view map, and the utilities are indicated by the magenta arrows in the radargram to the right.

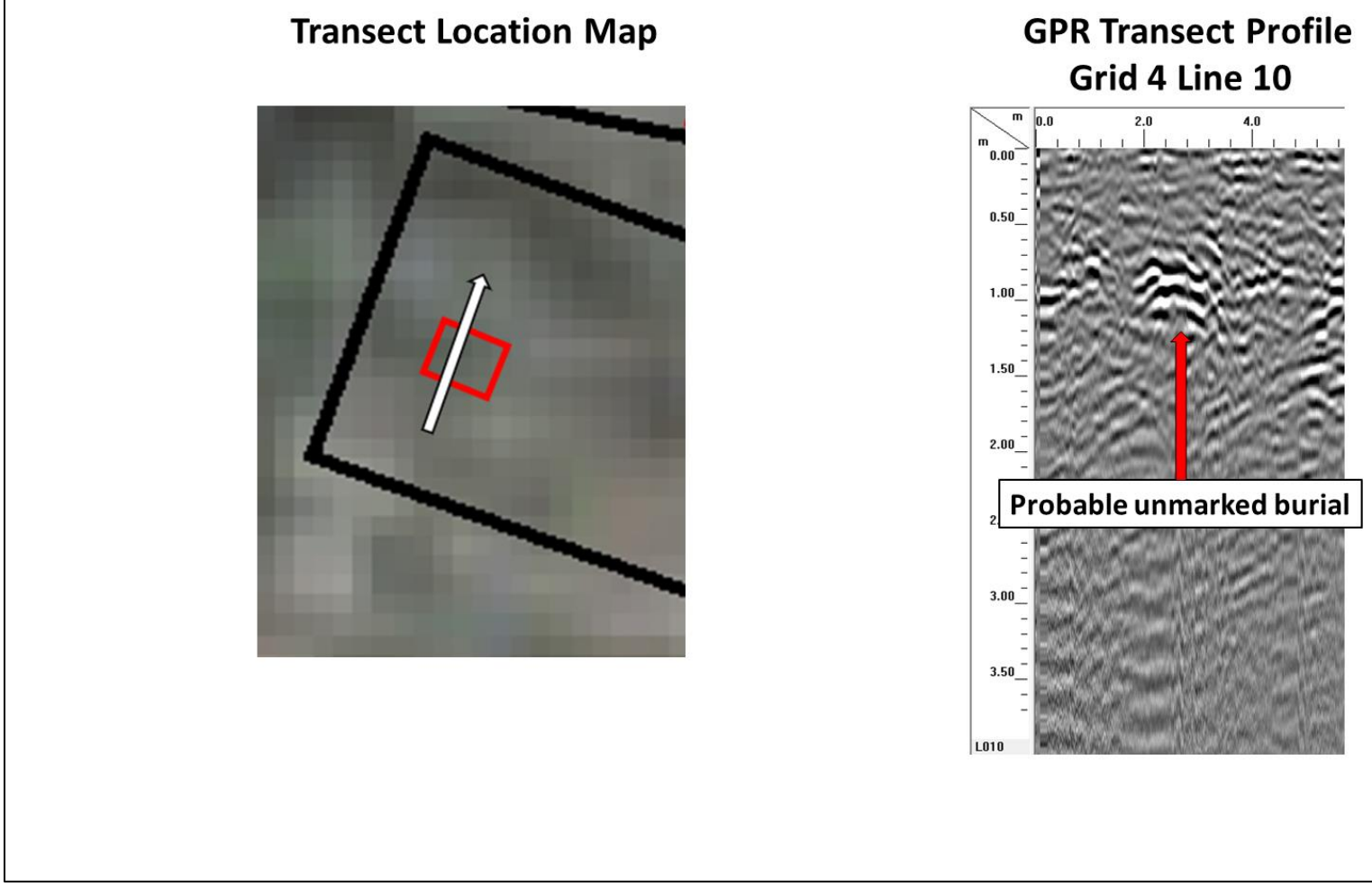

Figure 51: Selected GPR profile of the probable unmarked burial located in Grid 4. The position of radar profile is indicated by the white arrow in the left plan view map, and the burial is indicated by the red arrow in the radargram to the right.

Figure 52: Annotated aerial image of all features identified in Survey Grids 1 – 4.

Appendix 2
Photos

Photo 1: Photograph of GPR Survey Grid 1, the stone-walled cemetery, facing southwest.

Photo 2: Close-up photograph of the potential burial markers on the western side of Survey Grid 1, facing west.

Photo 3: Photograph of GPR Survey Grid 1, inside the stone-walled cemetery, facing west.

Photo 4: Photograph of GPR Survey Grid 2, facing west.

Photo 5: Photograph of GPR Survey Grid 4, facing northwest.

State of New Hampshire
DEPARTMENT OF NATURAL & CULTURAL RESOURCES
DIVISION OF HISTORICAL RESOURCES

172 Pembroke Road Concord, New Hampshire 03301
Phone: 603-271-3483 Fax: 603-271-3433
TDD Access: Relay NH 1-800-735-2964
nhdhr.dncr.nh.gov

April 23, 2024

Kari Laprey
Reagan Ruedig
Preservation Company
5 Hobbs Road
Kensington, NH 03833

Re: POR0192

Dear Kari and Reagan,

Thank you for requesting a determination of National Register eligibility for the property listed below. As requested, the Division of Historical Resources' Determination of Eligibility Committee has reviewed the *DHR Individual Inventory Form* prepared by Preservation Company; based on the information available, the DOE Committee's evaluation of National Register eligibility is:

TOWN/CITY	PROPERTY	DETERMINATION
Portsmouth	Christ Episcopal Church 1035 Lafayette Road, POR0192	NR Eligible Individually

A copy of the DHR evaluation form is attached for your use. The inventory data and the evaluation will also be added to the statewide survey database for historic properties in New Hampshire.

Please contact Megan Rupnik at Megan.R.Rupnik@dncr.nh.gov if you have questions.

Sincerely,

Liz Schneible
Program Specialist

Enclosure

cc: Ben Wilson, Director / SHPO

New Hampshire Division of Historical Resources

Determination of Eligibility (DOE)

Inventory #: POR0192

DOE Review Date: 4/10/2024 **Date Received:** 4/3/2024 **Final DOE Approved:** Yes

Property Name: Christ Episcopal Church

Area:
Address: 1035 Lafayette Road
Town: Portsmouth
County: Rockingham

Reviewed For: R&C **DOE Program(s):**

Determination of Eligibility:

National Register eligible, individually			**Integrity:** Yes		**Level:** Local
Criteria:	**A:** Yes	**B:** No	**C:** Yes	**D:**	**E:**

Areas of Significance(s):
Architecture
Ethnic Heritage, Black

Period of Significance: 1699 to 1965

Boundary:
tax parcel

Statement of Significance:
Christ Episcopal Church is significant under Criterion C for its architectural distinction and therefore meets Criteria Consideration A for religious properties. Langdon Slave Burial Ground on the church property is a rare, if not unique, resource in New Hampshire. Identified by oral tradition as an African American burial site and marked by a walled enclosure with multiple regularly placed stone markers intact, it contains undisturbed graves recently located by remote sensing evidence. The Langdon Slave Burial Ground is eligible for the National Register under Criterion A. The site meets Criterion Consideration D for cemeteries because it is significant for illustrating broad patterns of history. The site is important for its associations with Black ethnic heritage. It is significant in the area of social history for representing the history of slavery in New Hampshire, in which Portsmouth played a major role.

Comments:
Notify appropriate agency.

Follow Up:
Notify appropriate parties

INDIVIDUAL INVENTORY FORM **NHDHR INVENTORY** POR0192

Name, Location, Ownership

Historic name: Christ Episcopal Church
Street and number: 1035 Lafayette Road
City or town: Portsmouth
County: Rockingham
Current owner: Christ Church Parish

Function or Use

Current use(s): Church
Historic use(s): Church

Architectural Information

Style: Colonial Revival
Architect/builder: Hoyle, Doran and Berry
Source: *Portsmouth Herald*, 1964
Construction date: 1966
Source: *Portsmouth Herald*, 1965-66
Alterations, with dates: N/A
Moved? no ☒ yes ☐ date: N/A

Exterior Features

Foundation: Concrete, poured
Cladding: Brick
Roof material: Asphalt shingles
Chimney material: Brick
Type of roof: Gable
Chimney location: One end, single exterior
Number of stories: 2½
Entry location: Façade, center
Windows: Double-hung and round arch, 30/25
Replacement? no ☒ yes ☐ date: N/A

Site Features

Setting: Commercial artery/strip
Outbuildings: House-rectory; sheds, storage
Landscape features: Burial ground; cemetery; mature trees; walkways; stone walls
Tax map/parcel: 0246-0001
Acreage: 3.13 acres
State Plane Feet (NAD83): X: 1223672.671821; Y: 201117.837178

Photo 1: Facade Direction: ESE
Date: March 2024
Image file: DD11047

Form prepared by

Name: Kari Laprey, Reagan Ruedig
Organization: Preservation Company
Date of survey: March 2024

Location Map

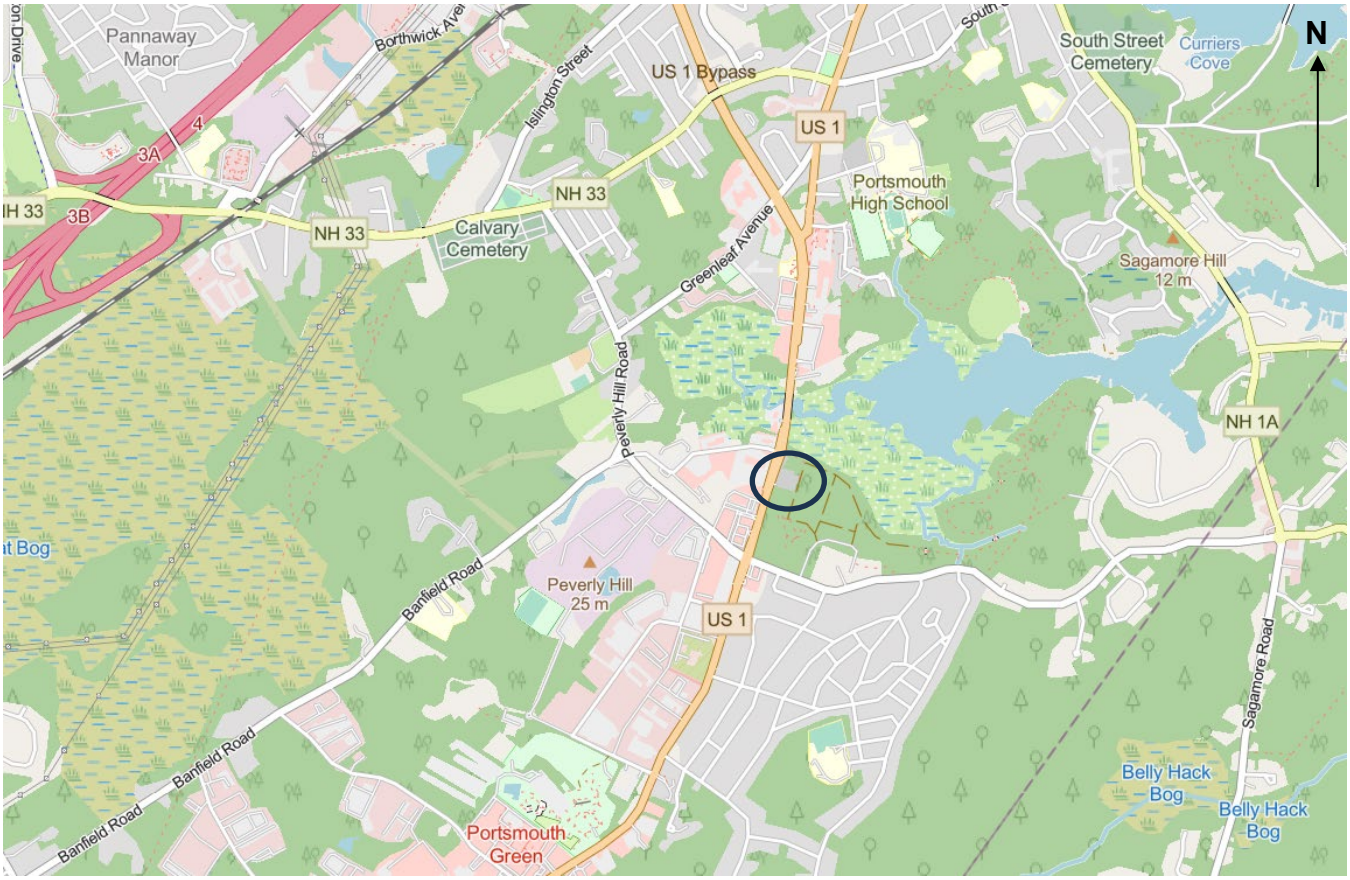

Figure 1:© Open Street Map contributors 2024

Property Map 1

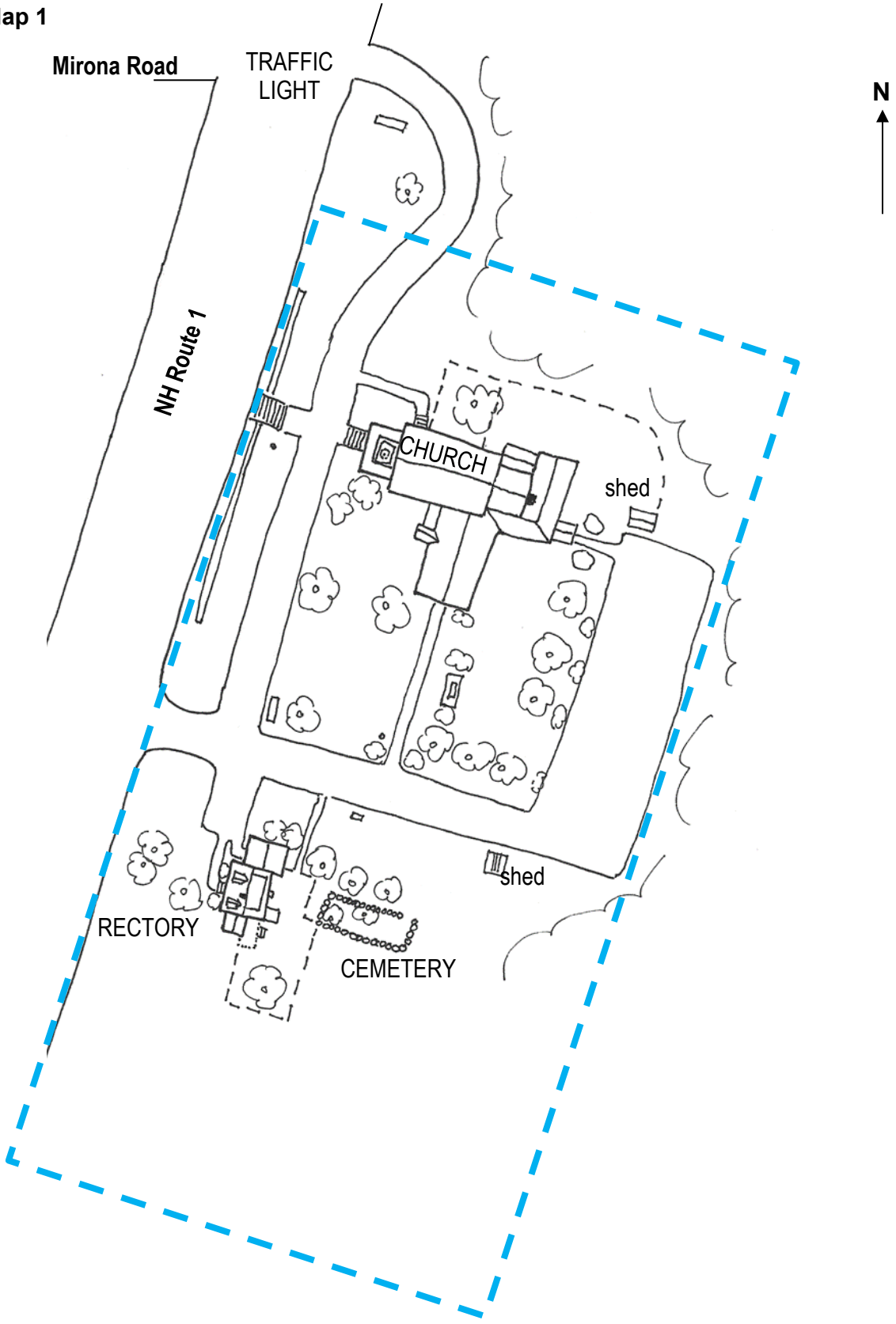

Figure 2: Property Map 1 showing parcel boundary and overview of resources

Property Map 2

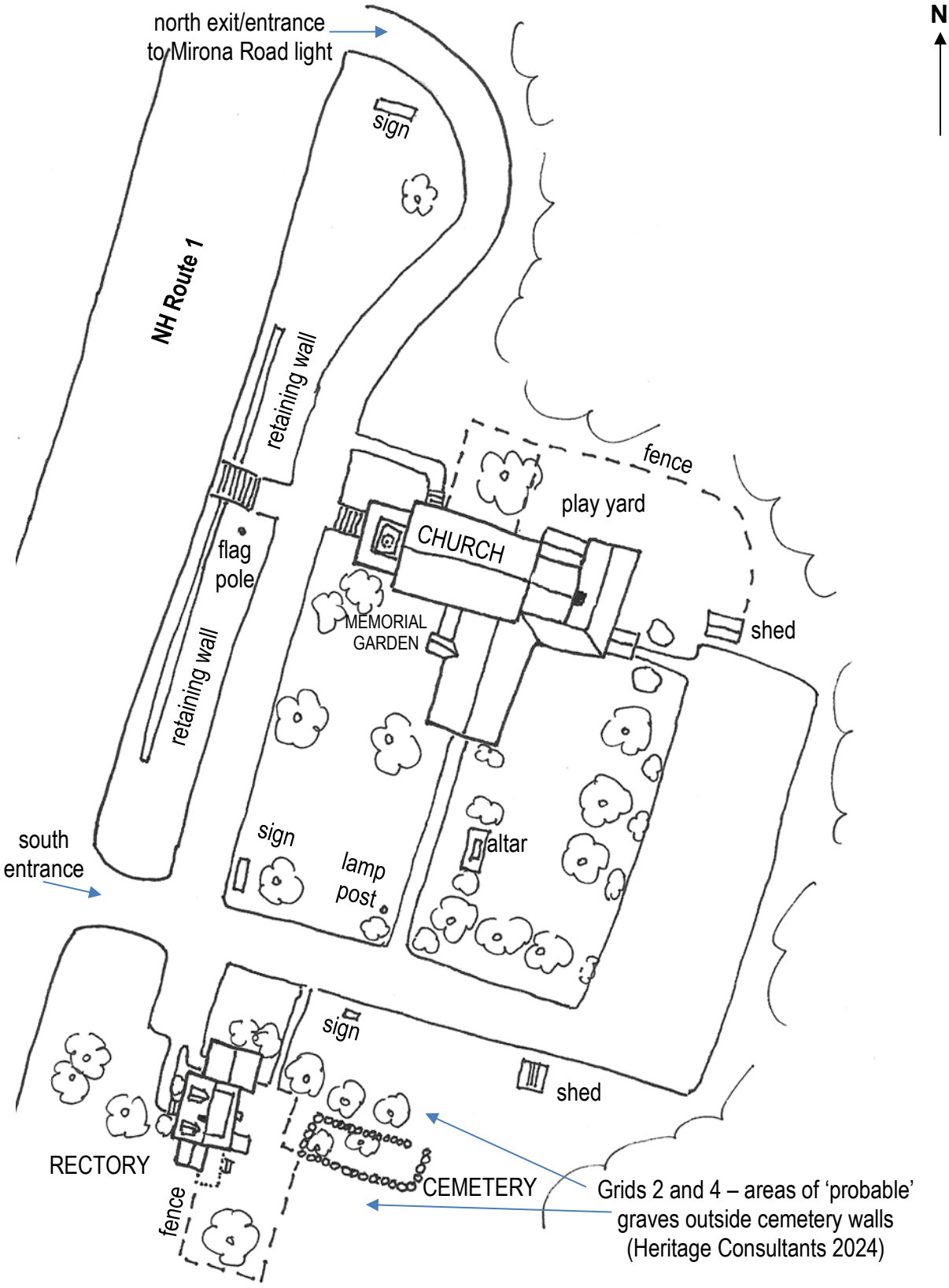

Figure 3:Property Map 2 showing details of property and resources

Historical Background and Role in the Town or City's Development

Christ Episcopal Church and its rectory were built in the mid-1960s on Lafayette Road/US Route 1 south of Portsmouth's downtown. The parish relocated from the West End neighborhood after a fire destroyed its original church in 1963. The previously rural area on Route 1 near Sagamore Creek was developing as a suburban and commercial strip at that time. The land was given to the church by John Elwyn Stone, who owned the adjacent Langdon-Elwyn Farm, now the Urban Forestry Center. The parcel contains a stone walled enclosure and simple stone markers believed to be the burial ground for the enslaved people who lived and worked on the farm in the eighteenth century.

Langdon-Elwyn Farm, 1650-1964

The so-called Langdon Slave Burial Ground has uninscribed fieldstone markers. The identification of this site as the burial ground of the enslaved African and African Americans associated with the Langon Farm is oral history without written documentation. The source was presumably John Elwyn Stone, the last descendant of the family to live on the property. It was reported in the newspaper in 1964 when he deeded land to the church (*Portsmouth Herald* 06.18.1964). Recently, confirmation of graves within and outside the walls was made by remote archaeological sensing. Whether the burials are of African descent has not been determined, but given the common practice of segregated burials there is no reason to doubt that these were slaves or later free Black servants. The Langdon family's documented history of enslaved workers is based on a family and legal papers from the 1690s to the 1770s. Four individuals directly associated with this branch of the family were identified by name or age. The record is incomplete, so the number of people involved is unknown. There are fourteen possible burials in and around the stone walls (Heritage Consultants 2024). This suggests a long period of use or use by several branches of the Langdon family (Sammons and Cunningham 2004).

Slavery was practiced in New Hampshire from its settlement. The first known enslaved African arrived in Portsmouth in 1645. Settlement of the Langdon-Elwyn farm happened around that time. Tobias Langdon (1660-1725) inherited the farm when he came of age, and it was his home when he married Mary Hubbard in 1686. They had a large family of nine children. He was a farmer and wheelwright and militia captain. The first document of slave ownership dates to 1699, when Captain Langdon purchased an unnamed teenaged boy. In 1718, he purchased a woman named Hannah. Around that time, New Hampshire's population included seventy enslaved people according to a governor's report. Tobias Langdon's 1724 will referenced "all my slaves," which he bequeathed to his son with his other property. John Langdon (1708-1780) lived on the farm and in downtown Portsmouth. Slaves and servants probably moved seasonally with the family. In 1742/43 John Langdon bought "a Negro Servant Slave named Pomp" about 14 years of age. Pomp is mentioned in papers of the 1750s and Pomp was still with him in the 1770s according to family papers. His wife, Mary Langdon, bought a woman named Violet in 1773 (Cunningham 1999). At that time, there were 674 African and African American slaves in New Hampshire, including one hundred men and sixty women in Portsmouth (State of New Hampshire 1877).

Langdon family members were buried in a small private cemetery, which was typical of rural property owners. The Langdon Cemetery behind the house on Elwyn Road contains engraved stones and large monuments of several generations. As written on the Black Heritage Trail Marker, it was common practice in slave owning societies to maintain separation but accommodate the enslaved people within the boundaries of the family land. The Langdons provided a site at the far edge of the fields. The slave burial ground is about a quarter mile from the farmhouse and the Langdon family cemetery. It occupies a high point of land in the northwestern corner of the farm, just above the salt marshes along Sagamore Creek. During the eighteenth century when the cemetery was in use, Lafayette Road and the crossing of Sagamore Creek was not yet built. The site would have offered expansive views to the west and north. The stone walls and layout of the stones suggests an east west orientation that was confirmed by the remote sensing.

From the 1780s, the farm was the country estate of John Langdon (1741-1819), merchant, shipbuilder, and Revolutionary War patriot, who was the first governor of New Hampshire in 1785. He built a mansion on Pleasant Street in downtown Portsmouth in 1784. The practice of slavery declined sharply when the New Hampshire state constitution was adopted in the 1780s. In 1786 there were forty-six individuals "called slaves" in the state, twenty-one of whom lived in Rockingham County. In Portsmouth, at the time of the census in 1790, twenty-six people were still held in slavery, while there were seventy-six free people of color, mostly still living with and working for white families. John Langdon had a free Black person, presumably one of the family's former slaves, living in the in 1790 and as late as late as 1810 (United States Census 1790-1810).

Subsequent generations of the family maintained connections with the farm and an interest in history. The property passed from John Langdon's only child, Elizabeth Elwyn, to John Langdon Elwyn (1801-1876), who wrote about history and literature and was an active member of the Portsmouth Athenaeum. After a period of summer home use by the Elwyn family, the homestead was acquired by Elizabeth Elwyn Langdon who owned the Governor John Langdon mansion on Pleasant Street, which was acquired by the Society for the Preservation of New England Antiquities (now Historic New England) after her death.

Farming was carried out continuously by hired farmers and caretakers. The physical and remote sensing evidence suggests that the burial sites are relatively undisturbed. The persistence of the fieldstone markers shows that any historic plowing of the fields avoided the area. At an unknown date, the marked graves were enclosed by stone walls. Aerial photographs before the church was built show the historic Langdon/Elwyn farm was still mostly cleared land, with the farmstead in the southeast corner, a wood lot in the angle of Lafayette Road and Elwyn Road, and saltmarsh along Sagamore Creek. A small visible anomaly in the location of the current burying ground site suggests a small grove of trees and possibly the walls (Heritage Consultants 2024).

Around 1950, John Elwyn Stone (1922-1974) inherited his ancestral homestead, which he later bequeathed to the State of New Hampshire to become the Urban Forestry Center in 1976 (POR1047). Stone lived in New York after graduating from Yale with a degree in English literature and serving in the Army Air Corps during WWII. He worked as a freelance writer. The old cape on the Langdon Farm was renovated for his use in the 1950s and he also maintained a Manhattan apartment. Stone was the last person to be buried in the Langdon family cemetery. A caretaker farmed the property for Stone, haying the fields and salt marsh. The fields remained open until the 1970s when Stone established tree plantations.

Christ Episcopal Church on Madison Street, 1880-1963

Christ Episcopal Church dates to the 1880s when it was funded by a bequest from a longtime Portsmouth resident to serve Portsmouth's growing neighborhoods west of the downtown. Portsmouth had an Episcopal church since it was first settled. St. John's Church, rebuilt in 1807 after the 1806 fire, is located near the waterfront between Bow and Daniel streets. St. John's also had a chapel on State Street east of Pleasant Street built in the 1830s. George Massey Marsh (1805-1878) who lived nearby (now 214 State Street) was a retired merchant without wife or children. His will established a fund to build a stone or brick church for a new Episcopal parish in the west part of the city.

Christ Church served the working class neighborhoods near Portsmouth's factories and breweries, which included many English immigrants. Land was acquired on Madison Street between Middle Street and State Street, which was the westernmost edge of the neighborhood at that time. The corner stone was laid in 1881 and construction continued through 1882, with a formal dedication in 1883. The church was a large stone Gothic Revival style building with a tall bell tower and a slate roof. The church gained national

prominence when services were held there during the 1905 Russo-Japanese War peace treaty negotiations at the Portsmouth Naval Shipyard.

In June of 1963, the 80 year old building was destroyed in a fire. It was started by an electrical failure at the base of tower and fueled by the open tower construction and the interior woodwork encased by the stone and slate exterior. The church was not fully covered by insurance. The priest Rev. John D. Swanson was determined to carry on. Within days of the fire, services were held in the rectory, pledges of funding were made, and the Vestry began plans to rebuild. At the time of the fire, the normal Sunday congregation averaged sixty-five at the early service and eighty-five for the second service (*Portsmouth Herald* 06.20.1963).

The church was under the leadership of the Rev. Swanson from 1960 until 1970. John D. Swanson (1932-2021) came from Wisconsin after graduating from Carleton College in Minnesota and ordination in 1957. While in Portsmouth, Rev. Swanson was active in local affairs. He acted in early productions at the Theatre by the Sea and became involved in the anti-Vietnam War protests. After moving to New York in 1970, he founded Seminary of the Streets, a year-long program of ministerial preparation based in the Lower East Side and focused on social justice and advocacy training. He was later known as the Rev. John-Julian Swanson, OJN, the founder of the Order of St. Julian of Norwich.

Christ Episcopal Church construction, 1963-1966

The Christ Church Disaster Relief Fund held fundraising events during the fall of 1963, including an auction and a radio fund drive. Plans for the new church were discussed at the annual parish meeting held at the Rockingham Hotel in January 1964 (*Portsmouth Herald* 01.17.1964). A temporary chapel was established in a large house on Lafayette Road on the corner of South Street where a professional office complex is now (Dozier 2024).

Rev. Swanson led the effort to find a new location outside the downtown area that would have more room for parking and serve the growing suburban neighborhoods. In the 1960s, Route 1/Lafayette Road was the location of commercial development including Yoken's and the Dinnerhorn restaurants south of Sagamore Creek, and the first shopping plazas. South of Elwyn Road, construction of the large Elwyn Park subdivision began in the 1950s. A new Catholic parish built St. James Catholic Church farther south on Route 1 in 1958. Rev. Swanson is credited with identifying the Route 1 site and approaching John Elwyn Stone, who lived on the Langdon homestead on Elwyn Road. Stone agreed to subdivide a lot out of his family land and donate it to the church.

The 1964 deed from Johnn Elwyn Stone to the Christ Church Parish was for a 600′ x 300′ parcel. There was no mention of a burial ground or other features on the property (Deed 1720:0453). The rectory was built during 1964. John Elwyn Stone is said to have specified that the church be a colonial style brick building. Rev. Swanson secured the services of the prominent Boston architectural firm Hoyle, Doran & Berry, which prepared plans in the summer of 1964 (Dozier 2024). An architect's sketch was printed in the newspaper in July. The red brick building with white spire and trim was designed to be in keeping with Portsmouth's architectural traditions (*Portsmouth Herald* 06.18.1964, 07.03.1964).

The architectural firm of Hoyle, Doran & Berry was the successor to Cram and Ferguson, the partnership of Ralph Adams Cram, Bertram Grosvenor Goodhue, and Frank Ferguson, originally founded in 1889 and known as Cram and Ferguson from 1913. Cram and Ferguson were particularly known for their Gothic Revival style collegiate and ecclesiastical buildings. They also designed in the Colonial Revival and Art Deco styles. Ferguson was a structural engineer, making them one of the earliest architecture and engineering firms. Their work included Modern office buildings and skyscrapers. Alexander E. Hoyle (d. 1969) commenced employment in 1908 and was a partner from 1926. Maurice A. Berry (1900-1981) worked for the firm from 1923 and became a partner in 1954. John T. Doran (1899-1979) joined in 1927.

The firm was renamed and continued as Hoyle, Doran & Berry from 1957. Hoyle, Doran & Berry was one of the most prolific Boston architecture firms of the mid-twentieth century. They designed well-known Boston buildings including the Prudential Center and the original Hynes Convention Center (both in 1965), and the McCormick and Saltonstall State office buildings (1972 and 1965). During the period when Christ Episcopal church was built, Hoyle retired and new partners were Nisso T. Aladjem (1919-2004), an architectural engineer who joined the firm in 1950; Frank De Bruyn (1910-1972), who was employed from 1927; Robert W. Hadley, with the firm from 1945-1964; and Charles P. Harris from 1955. Austin J. Cribben Jr., who became a partner in 1965, was with the firm from 1946. Hoyle, Doran & Berry, Inc., was incorporated in 1968 by Doran, Berry, Aladjem, and De Bruyn. In 1990, Ethan Anthony Associates merged with Hoyle Doran & Berry Inc. Hoyle, Doran & Berry, Inc. was dissolved in 2010 and reincorporated as Cram and Ferguson Architects, LLC, in 2012, specializing in church and academic work.

The builders of the church, E.L. Paterson & Son, was one of Portsmouth's largest contracting companies. Founded by Edward L. Paterson (1869-1956) in 1898, the business was carried on by his son, Frank Paterson (1898-1977), and grandsons, John E. Paterson (1930-2012) and David C. Paterson (1931-2009). It was later called Paterson Construction Company. They also owned Patco, providing wood turning and finish work. E.L Paterson & Son was the contractor for the Middle Street Baptist Church in the 1950s. With Erminio Ricci, E.L. Paterson & Son was involved in development of residential subdivisions, including Hampshire and Sheffield roads and parts of Elwyn Park. They built the former North Church Parish House on Spinney Road in 1964. According to mentions in the *Portsmouth Herald*, other projects included the Portsmouth Hospital Administrative section in 1964, the First National Bank on Lafayette Road, and the restoration of the Chase House and Goodwin Mansion at Strawbery Banke in 1965. Frank E. Paterson was a member of the Portsmouth Housing Authority from 1954.

The ground breaking for the new church was in the spring of 1965. The foundation was built during the summer. In the spring of 1966, the steeple was placed on the roof.

Christ Episcopal Church, 1966-present

The newly finished church was dedicated in May of 1966. The Bishop of New Hampshire presided over the ceremonies, assisted by other area clergymen from Episcopal, Catholic, Lutheran, and Congregational churches. The sanctuary seating capacity was 250. The building included a chapel, meeting space, offices, and Sunday school rooms (*Portsmouth Herald* 05.09.1966). Construction of the education wing was not completed until after the congregation moved into the new building (Dozier 2024). The old Madison Street property, now the site of apartment buildings, was sold in August 1966 (Deed 1831:191).

Rev. Swanson led the church until 1970, when he resigned over his anti-war convictions, when the Episcopal Diocese of New Hampshire failed to adopt a resolution regarding pacifism and conscientious objection as Christian duties (*Portsmouth Herald* 05.11.1970). A plaque was dedicated to Rev. John D. Swanson in 1977, to be installed on an outdoor alter built of stones from the old Christ Church (Portsmouth Herald 08.13.1977). Rev. Canon Gordon Gillette (1911-1986) came from Illinois in 1971 and was the rector for about five years. The next interim priest, Julian Victor Langmead Casserley (1909-1978), was a retired theologian, professor, and author, originally from England. He and his wife were active in Christ Church after they moved to the area in 1975. The stained glass window in the chapel is in his memory. It was made by his daughter, then of California, and is based on an English design from Our Lady of Walsingham (Dozier 2024).

A daycare center and preschool has been located in the basement level of the building since the 1980s. The church took over the business in 1992, and it was named Little Blessings. The board of directors includes the priest and church members. The driveway around the north side of the church was replaced

by a playground area. The Langdon Slave Burial Ground was marked in 1995 by the Black Heritage Trail along with other Portsmouth historic sites reflecting the presence of African people in New Hampshire since 1645. The church has maintained and preserved the site. Trees and flowering shrubs were planted over time in the church yard as gifts or memorials. A labyrinth was designed and built ca. 2005 by church member Gary Dozier. A memorial garden in the front corner of the building contains about forty cremains. A small pet cemetery is located in the back corner of the building. A series of highway projects have impacted the Route 1 frontage. There was an earlier roadside retaining wall, and the first sidewalk installed in the 1970s was on the church lawn on the uphill side of the wall. The road was widened in the 1980s and again ca. 2000. The northern church entrance was shifted onto the state-owned land to intersect with the Mirona Road intersection. A new retaining wall and sidewalks are within an easement on the church parcel.

The rectory has often been vacant when a priest opted for other housing arrangements. It has not housed a rector since 2016. The house was occupied for over a year by a family of refugees from Afghanistan but is again vacant (Dozier 2024). Church membership declined over time and suffered during the Covid pandemic here and elsewhere. Portsmouth also has St. John's Church in the historic downtown, and there are six or seven other Episcopal churches within a fifteen-mile radius. In recent years, Christ Church has shared the services of a part-time priest with another parish.

Applicable NHDHR Historic Contexts

903. Architecture in New Hampshire, 1623-present

1300. Religion in New Hampshire, 1623-present

1401. The African Americans in New Hampshire

1507. Public and private cemeteries and burials

Architectural Description and Comparative Evaluation

Christ Episcopal Church

Christ Episcopal Church is a brick Colonial Revival style church located on the east side of US Route 1/Lafayette Road south of Sagamore Creek. The large, 2½-story, gable front building is brick, with white painted wood trim, and a wooden steeple. The rectory is a small twentieth century Cape that stands south of the church. Behind the rectory, there is a rectangular stone walled enclosure around a grouping of stones that mark burials, as well as unmarked burials under the lawn nearby.

The church has a red brick exterior in a common bond and a Flemish bond header course pattern. The foundation is poured concrete. The main block of the building is 39' x 70', and the front vestibule is 33' x 20', according to the tax assessment. The rear section is 21' deep. The side wing is 53' long. The symmetrical three bay façade has a center entry. The building is seven bays deep overall (Photos 1-4). The façade of the 3 x 1 bay vestibule features four wooden pilasters with molded capitals and a full entablature beneath the pedimented gable. The projecting eaves have molded cornices. There are gable end returns, and a pedimented front gable. The roofs are sheathed in asphalt shingles. The cornices have a variety of bed and crown moldings. The triangular front gable is clad in wide, painted wood boards.

The central front entry is recessed, with paneled reveals (Photo 3). The frontispiece has a molded wooden casing and entablature with a pulvinated frieze. The windows are original, double-hung wooden sash set in molded wooden casings. The sills are cast concrete. The façade and front bays have 6/6 and 9/6 sash windows. The lintels are splayed brick, jack arches. The full-height, double-hung windows on the side

elevations are 30/25 topped by a fanlight. The semi-circular arched openings have brick voussoirs with a concrete keystone. The sanctuary windows are textured glass. The four-stage steeple has a square wooden base, a smaller square lantern with ocular windows, both clad in horizontal flat board siding (Photos 1, 2, 4). The octagonal louvred belfry contains the bell that was relocated from the original church. The tapered octagonal wooden spire is topped by a metal Celtic cross.

The rear of the church is one story with a hip roof. Windows are 6/9 with concrete sills. The back entry, facing the parking lot, is sheltered by a gable roof on square posts. The glass door is new (Photo 8). A large brick chimney is centered on the exterior of the main block. The lower level is exposed on the northern side (Photo 5). The basement level or undercroft has 10/10 windows in the concrete foundation walls on the northern and eastern elevations. The windows have wooden frames. A few of the sashes have been replaced. The double doors on the north side of the vestibule bay are the original wood doors with two panels below and 9 lights above, reached by concrete steps with an iron railing.

The education wing projects south from the main block. It is one story, with a gable roof. The brick walls and finishes are the same as the church, including concrete window sills and molded cornices at the eaves (Photos 2, 6, 7). The wing is five bays long, with 12/12 windows. A gable roofed projection at the front of the chapel contains a stained glass window installed in the late 1970s. The south gable end of the wing is sheathed in clapboards. The entry has molded trim and a transom light. The glass door on the southern gable end is new.

Interior

The church interior has had few changes since construction was complete. The sanctuary walls have paneled wainscotting and molded cornice with dentils (Photos 11, 12). The doors and windows have molded casings (Photo 14). The doors are three- and six-panel, painted wooden doors. The slip pews are original. They were placed on casters for flexibility ca. 2015. Vinyl plank flooring was installed at that time. The rear pews were removed. The ceiling was repaired around the same time and the interior painted. The chandelier light fixtures are original with new LED lights (Dozier 2024). The chancel rail has turned balusters. The altar, pulpit with suspended sounding board, and the lectern are original. The balcony choir loft has a railing of turned balusters. The organ is older than the church, purchased used (Photo 13).

The back rooms include the sacristy, other storage areas, and the kitchen. There is original built in storage and kitchen cabinets. The floors are linoleum tile. The doors are painted 6-panel wooden doors. Doors and windows have wooden casings. The side wing contains meeting/Sunday school rooms, the chapel, and offices. The wing was part of the original design, and the foundation was laid, but construction was not complete until sometime after the sanctuary was occupied. The chapel has box pews, chancel rail, and altar like those in the main sanctuary. The walls are finished with paneling and cornice molding. A stained glass window on the front wall dates to the late 1970s (Photo 15).

Setting

The church is sited on a natural high point, built up with additional fill, above the east side of Route 1. The church is set back about 70' from the road. A modern stone retaining wall defines the edge of the front lawn. A paved driveway parallels the road in front of the building (Photo 9). The main entrance driveway is in the middle of the lot between church and rectory. It wraps around behind the church to the parking lot. The rectangular asphalt parking lot is parallel to the back of the building. There are two small modern, prefabricated storage sheds, one at either end of the lot.

The driveways create a square church yard on the south side of the building. It is divided by a central paved walkway from the side entrance toward the rectory. The open lawn is shaded by mature trees and shrubs (Photos 7, 9). An outdoor altar is mortared stone on a concrete slab and a granite plaque with

inscription to Rev. John D. Swanson. A memorial garden, created in recent decades, has flat stones on the ground marking cremains burials. It is located in the front, southwest corner between the church and chapel (Photo 6). A memorial garden for pets is in the back yard to the left of the back door (Photo 8). The northern side of the church is a playground area enclosed by chain link fencing (Photo 5).

The northern entrance driveway was changed ca. 2000 when the Mirona Road intersection was rebuilt. The northern entrance is located on a separate parcel, acquired by the church at that time from the state-owned Urban Forestry Center land. The driveway curves up to the church, and there is modern signage on the front lawn for both the church and day care (Photo 10). The front stone retaining wall, built ca. 2000, and the sidewalk at the roadside are on an easement within the church parcel. The wall is mortared stone topped by a metal pipe railing. Concrete steps are located in front of the church.

The church parcel is wooded at both ends and surrounded by the Urban Forestry Center land. The salt marsh of Sagamore Creek is about 300' north of the church. Across the road, large buildings include an auto dealership and a series of chain stores and restaurants.

Rectory

The rectory, built in 1964, is a 1½-story cape (Photos 16-18). It is about 150 feet south of the church, on the south side of the driveway. The rectory is set back from the road and the front yard is shaded by mature trees. It is a four-bedroom house with two small wings and second story dormers. The wood-frame building is supported by a concrete foundation. The walls are sheathed in clapboards and trimmed with narrow corner boards and frieze. The gable roof is asphalt shingled and has two gable dormers on the front and a long shed dormer on the back slope. A brick fireplace chimney is centered in front of the ridge. The front entry has an original six-panel wooden door framed by simple pilasters and entablature. The front steps are concrete. The storm door is new. The windows have tall, double-hung, 6/6 vinyl replacement sash. The flat trim and wooden shutters on the front windows are original. The rear elevation has a modern deck and sliding glass doors. The office has a three-part picture window. The wood and glass front and back doors appear to be original. A back yard is surrounded by a modern privacy fence. It backs up to the western wall of the burying ground. The cemetery is located at the edge of the open lawn, shaded by mature trees. The property backs up to the woods of the Urban Forestry Center.

Burial Gound

Behind the rectory is a fieldstone cemetery identified as the burying place for the Langdon slaves of the seventeenth and eighteenth centuries. The rectangular stone-walled enclosure is approximately 44' x 14', oriented east-west (Photos 19-24). The date of the wall has not been identified. It predates the 1960s when the parcel was transferred. The wall is field stone The markers are small, un-inscribed, locally available stones (Tallman 1983). There are nine stones visible. Heritage Consultants completed a ground penetrating radar (GPR) prospection survey of the Langdon Slave Burial Ground for the Portsmouth Housing Authority in February 2024. The survey covered approximately 0.22 acres. Four grids were laid out within a 50′ buffer around the stone walled area. Remote sensing located six probable marked burials and two unmarked graves within the wall and five possible unmarked burials in the yard to the north and one south (Heritage Consultants 2024).

Comparative Evaluations

Christ Church

The Colonial Revival was an important architectural trend in Portsmouth during a period when a number of new churches were constructed. The Colonial Revival style and brick construction was the nearly universal choice for churches in Portsmouth during the twentieth century. The first was the Little Harbor Chapel built in 1902 (POR1017). The only variation was in the two Catholic churches. Immaculate Conception on Summer Street near the downtown is a brick Gothic Revival style building of 1933-34.

St. Catherine's on Woodbury Avenue (1952) has the buff colored brick popular for mid-twentieth century Catholic buildings. Portsmouth had older brick churches including St. John's Episcopal Church building in 1807, the first brick church in New Hampshire. North Church, built in the 1850s, is a brick Italianate style building with originally painted and sanded wood trim. The trim was stripped and painted white ca. 1925 to create a more classical appearance.

The 1941 Advent Christian Church (1941) at 624 State Street was determined eligible for the National Register in 2002 as an example of Colonial Revival in twentieth century Portsmouth (POR0009). Arland A. Dirlam of Marblehead, Massachusetts, was the architect. It has a modern wide gable form, but characteristic red brick exterior, white wooden trim, Georgian entry, large 24/24 windows with fanlights, and a wooden steeple (Howry 2002). The 1955 Middle Street Baptist Church, located in the Portsmouth Downtown Historic District, was designed by local architect Maurice Witmer. It has a pedimented open porch, Georgian entry, ocular windows, and a three stage tower. St. James Catholic Church, demolished in 2018, was a brick Colonial Revival style church built in 1958, south of Christ Church on Lafayette Road. The only comparable church outside of Portsmouth, previously documented for NHDHR, is the Brookside Congregational Church in Manchester (MAN0574), a brick Colonial Revival style church built in 1959. The architect William Levi White was formerly of Cram and Ferguson. There are similar churches in Massachusetts and elsewhere in New England.

The brick Colonial Revival style was considered suitable for Portsmouth, while elsewhere in the state modern church designs were popular. Modern, Art Deco, and International styles were used for churches built in the 1950s-60s, including circular and octagonal buildings, and modern materials like cast concrete an laminated wood. Examples include: the Concord Unitarian Church, (1959); St. James Church in Laconia (1964), St. George's Greek Orthodox Church, Manchester (1964); Our Lady of the Lakes Roman Catholic Church, Lakeport (1965); and Abbey Church, St. Anselm College, Manchester (1965) (Mausolf 2012). Christ Episcopal Church in Exeter, also built in 1965, is a modern octagonal building.

There are relatively few identified examples of the Cram and Ferguson firm's work in New Hampshire. Gothic Revival style buildings included the Phillips Church at Phillips Exeter Academy in Exeter (1893), the Hunt Memorial in Nashua (1903), and All Saint's Episcopal Church in Peterborough (1913). St. Andrew's Church in Hopkinton has a Cram and Ferguson steeple from 1930. Mid-twentieth century New Hampshire projects attributed to Cram and Ferguson are the New Hampshire Fire Insurance Company in Manchester, and the National Grange Mutual Company in Keene, both built in 1950.

No other New Hampshire buildings by Hoyle, Doran & Berry have been recorded on NHDHR inventory forms. Among the Massachusetts Historical Commission survey forms for Hoyle, Doran & Berry buildings, one Colonial Revival style church designed in 1957 is similar to the Portsmouth church. St. Peter's Episcopal Church in Weston is brick with white trim, a temple front and a wooden steeple with octagonal belfry and spire.

Cemetery

The Langdon Slave Burial Ground has few known comparables. A few African Americans have inscribed gravestones in the Old North Cemetery on Maplewood Avenue. Most had burials unmarked by permanent stones. The large public "Negro Burying Ground" in downtown Portsmouth in use from around 1705 until the early1800s was not maintained and was covered over by later development. Its exact location was unknown until ca. 2004 when city workers encountered wooden coffins beneath Chestnut Street. DNA testing proved the remains to be of African descent. The full extent of the Portsmouth African Burying Ground has not been determined, but there may be about 200 burials.

National or State Register Criteria Statement of Significance

Criterion A: Christ Episcopal Church is not significant under Criterion A for representing historic trends and events. It does not meet Criteria Consideration A for religious properties under Criterion A, because it does not represent a particular theme in the history of religion or other contexts. It was part of a trend in new church construction in Portsmouth in the mid-twentieth century, but in this case was built by an existing congregation to replace an earlier building. It relates to the mid-twentieth century development of Route 1 but does not specifically represent that theme.

The so-called Langdon Slave Burial Ground on the church property is a rare, if not unique, resource in New Hampshire. Identified by oral tradition as an African American burial site and marked by a walled enclosure with multiple regularly placed stone markers intact, it contains undisturbed graves recently located by remote sensing evidence. The Langdon Slave Burial Ground is eligible for the National Register under Criterion A. The site meets Criterion Consideration D for cemeteries because it is significant for illustrating broad patterns of history. The site is important for its associations with Black ethnic heritage. It is significant in the area of social history for representing the history of slavery in New Hampshire, in which Portsmouth played a major role. The site illustrates burial customs and contributes to an understanding of the treatment of segregated burying places in Colonial New Hampshire. It is one of a very small number of traditionally identified African American cemeteries. This burying ground could contain the graves of at least fourteen individuals. Without disturbing the remains for testing, their ethnicity must be assumed based on tradition.

Criterion B: The church does not have specific historic associations with individual personages to make it eligible under this criterion.

Criterion C: Christ Episcopal Church is significant under Criterion C for its architectural distinction and therefore meets Criteria Consideration A for religious properties. Christ Episcopal Church is a largely unaltered example of Colonial Revival style architecture, designed by a prominent Boston architectural firm noted for their religious and academic buildings. It represents a significant architectural trend, the continued popularity of Colonial Revival style through the mid-twentieth century in Portsmouth where its brick construction was considered appropriate. This is the only identified example of Hoyle, Doran & Berry working in New Hampshire during the height of the firm. It has strong similarities to other Colonial Revival style churches of the period designed by various architects. The contractor was E.L. Patterson & Son, who built many of Portsmouth's mid-twentieth century houses and public buildings. Character defining features are brick walls on concrete foundation, gable front façade topped by a steeple with pointed spire, white wooden trim, and tall multi-pane windows, topped by arched fanlights. The symmetrical façade and regular fenestration, 3 x 5 bay form, pedimented gable front, center entry with large doors and classical surround are all typical. The Christ Episcopal Church interior has original woodwork including paneled wainscotting, turned railings, pews, altar, and pulpit with sounding board. The rectory is a characteristic feature of the church grounds. It is not separately eligible, but the twentieth century cape contributes to the setting and feeling of the church property.

Criterion D: The Langdon Slave Burial Ground may be eligible under Criterion D. It has the potential, through additional remote sensing and other non-invasive methods, to yield information about demography and burial practices in Portsmouth's Black community. This is important information that is not available in extant documentary evidence.

Periods of Significance

ca. 1699-ca. 1810 The period of significance for the cemetery spans the eighteenth century during which time African Americans were known to be living on the Langdon estate.

ca. 1965 The architectural period of significance is defined by the construction date of the church.

Statement of Integrity

Christ Episcopal Church retains integrity from its construction in the 1960s. The Colonial Revival style building has integrity of design, materials, and workmanship. The walls, windows, doors, and wooden trim are all original. The completion of the wing took place shortly after the original construction. The only exterior changes within the past fifty years were the installation of a stained glass chapel window in the 1970s and new doors in the side and rear entries. The interior has had few alterations. The sanctuary has new flooring. The feeling of the building and its associations as a mid-twentieth century church are unchanged. The rectory retains integrity aside from the new window sash and back deck. The setting of the church yard has not changed substantially. Trees have grown large and small memorial gardens with ground level stones have been added in the past few decades. The front stone retaining wall and steps are recent and the road right of way has encroached on the parcel, but the overall relationship between the church and its surroundings is unchanged. The Urban Forestry Center preserves the land immediately around the church, while the setting elsewhere on Route 1 developed with large commercial buildings.

The Langdon Slave Burial Ground has integrity of location. Recent remote sensing archaeology indicates the burying ground retains marked and unmarked graves. The site is relatively undisturbed within the walled area and in the yard nearby. The rough stones and markers appear to be undisturbed.

Boundary Description and Justification

The inventoried property is the parcel currently owned by Christ Episcopal Church, on which the historic church and its rectory are located. The parcel also contains the small stone wall enclosure and other unmarked graves that are believed to be a cemetery. The rectangular 600' x 300' parcel is listed in the tax assessment as 3.13 acres. The boundary is as shown on current Portsmouth GIS tax maps. There is an easement along the frontage on US Route 1/Lafayette Road and sidewalk and retaining wall within the parcel.

The boundary of the National Register eligible property encompasses the whole parcel on which the historic church and burial ground are located. The parcel contains both resources as well as the rectory. The outer property lines were established when the lot was subdivided for church construction in 1964. The parcel includes the semi-circular front drive, lawn, and parking lot. The burial ground identified by remote sensing lies entirely within the church parcel. The burial ground is marked by a stone wall, but its boundaries are larger, extending north and south of the walled area, according to the 2024 remote sensing results.

Figure 4: 2023 aerial photo overlaid with parcel boundary from City of Portsmouth GIS map

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Historic Maps
NETROnline
1962, 1973, 1978 Historic aerials views, https://www.historicaerials.com/viewer

Historic Photographs
Portsmouth Athenaeum

Interviews
Benge Ambrogi, Episcopal Diocese of New Hampshire, March 2024.
Gary Dozier, Christ Episcopal Church member, March 2024.

Surveyor's Evaluation

NR listed:	individual	☐	NR eligible:		NR Criteria:	A	☒
	within district	☐	individual	☒		B	☐
			within district	☐		C	☒
Integrity:	yes	☒	not eligible	☐		D	☒
	no	☐	more info needed	☐		E	☐

Historic Images

Figure 5: 1952 aerial view appears to show a tree and vegetation or walls in vicinity of burial ground (Heritage Consultants 2024)

Figure 6: 1962 aerial shows trees in vicinity of burial ground (Heritage Consultants 2024)

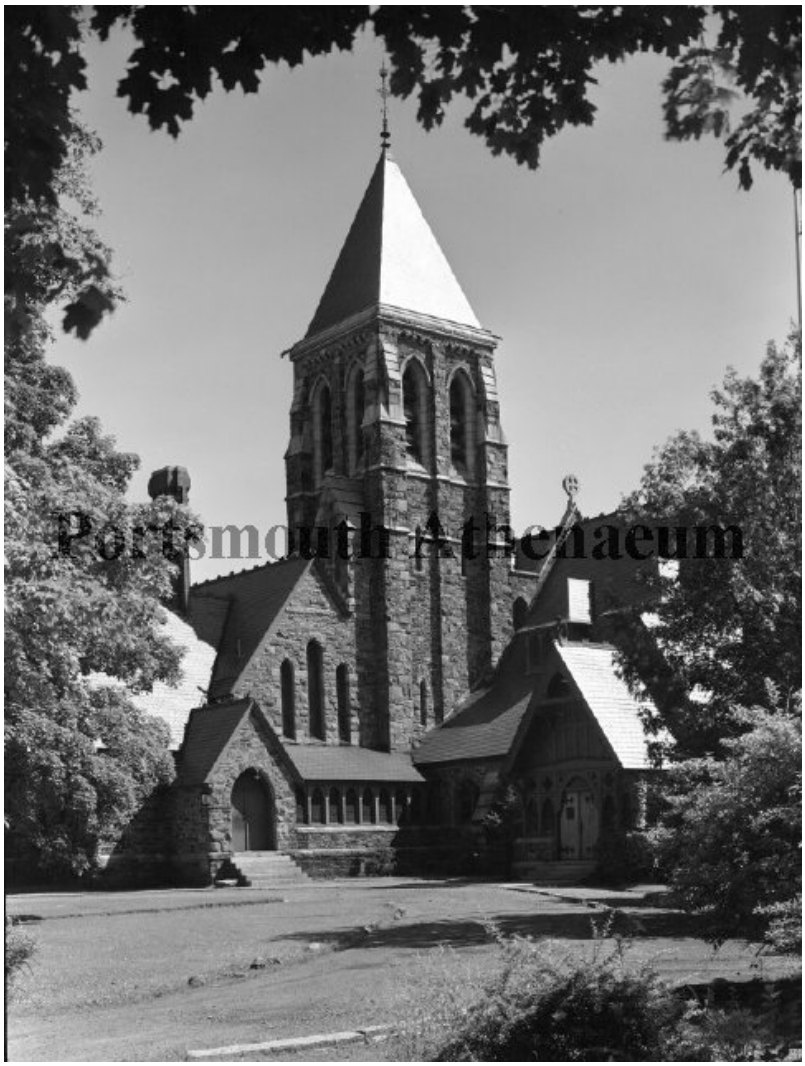


Figure 7: The original Christ Church on Madison Street, ca. 1940 (Portsmouth Athenaeum)

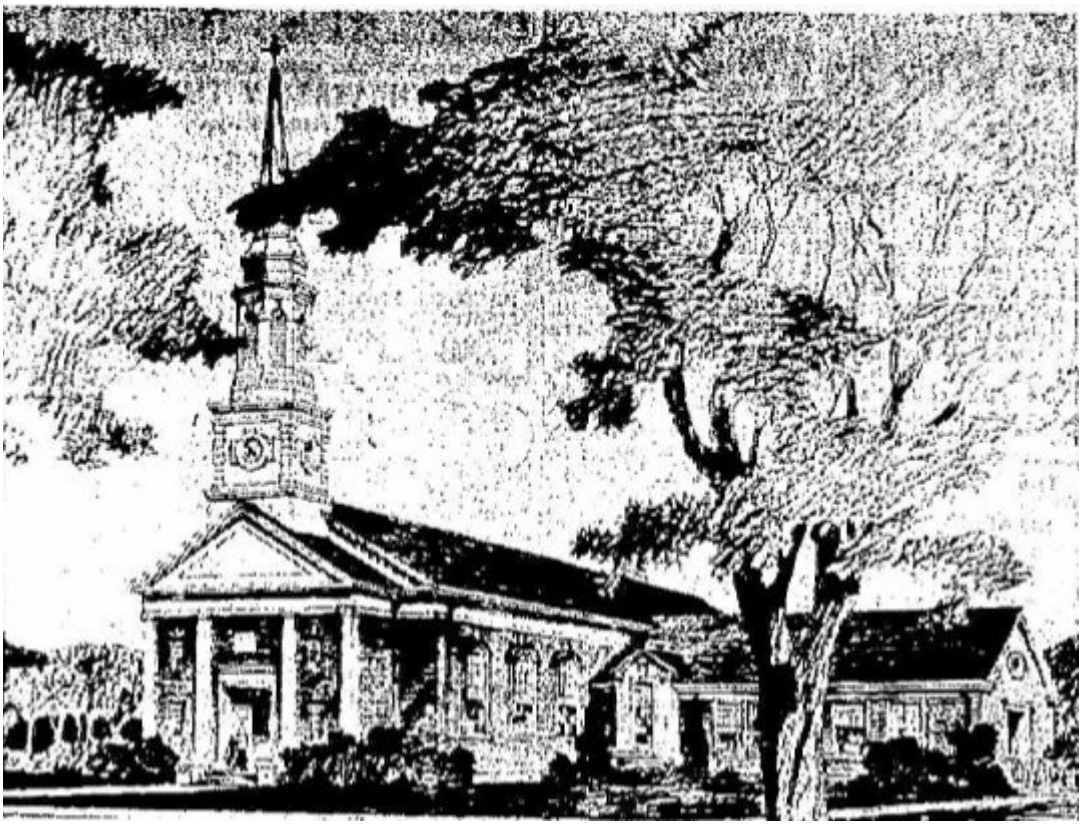


Figure 8: Artist's sketch, Portsmouth Herald, May 29, 1965

Figure 9: Foundation under construction 1965 (Portsmouth Athenaeum)

Figure 10: Steeple assembly, probably spring 1966 (Portsmouth Athenaeum)

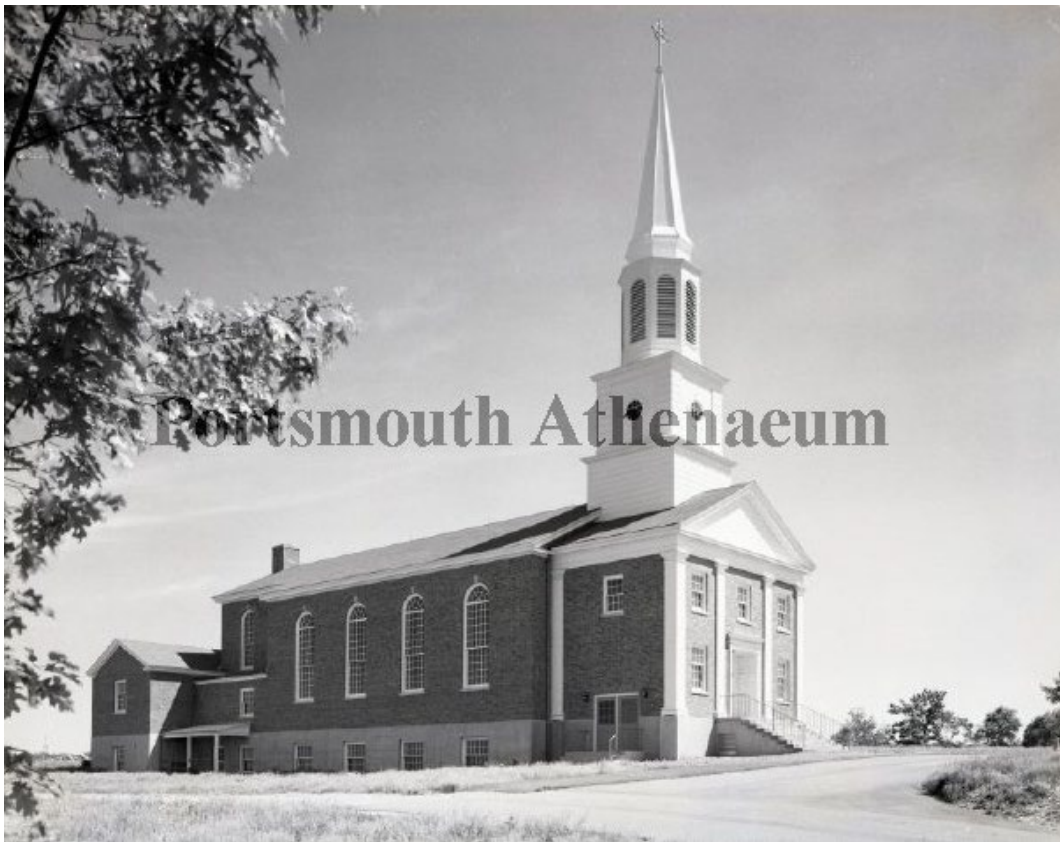


Figure 11: 1967 photo shows the northern elevation (Portsmouth Athenaeum)

Figure 12: 1973 slide shows chapel before stained glass window installed (Portsmouth Athenaeum)

Photo Keys

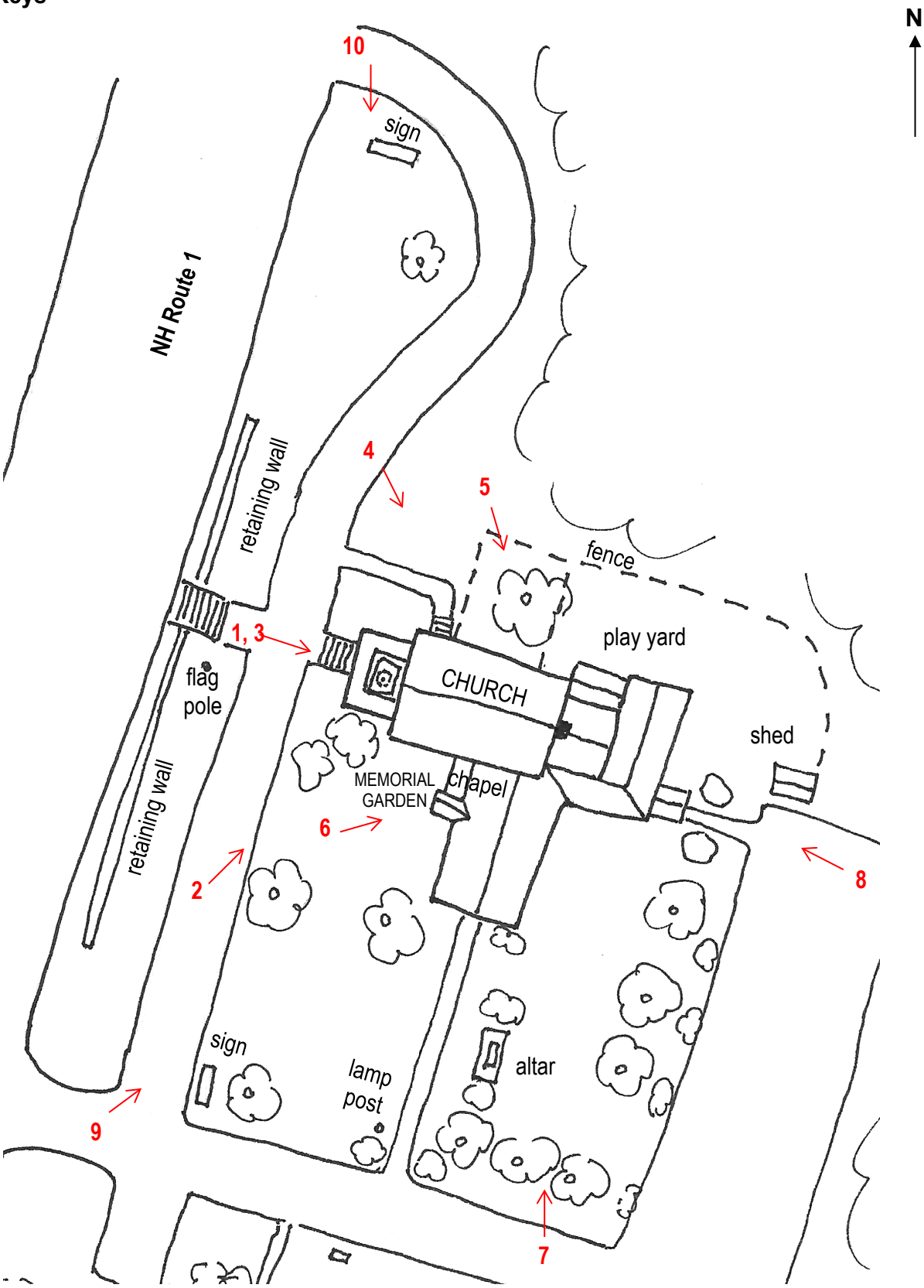


Figure 13: Church exterior, photos 1 – 10

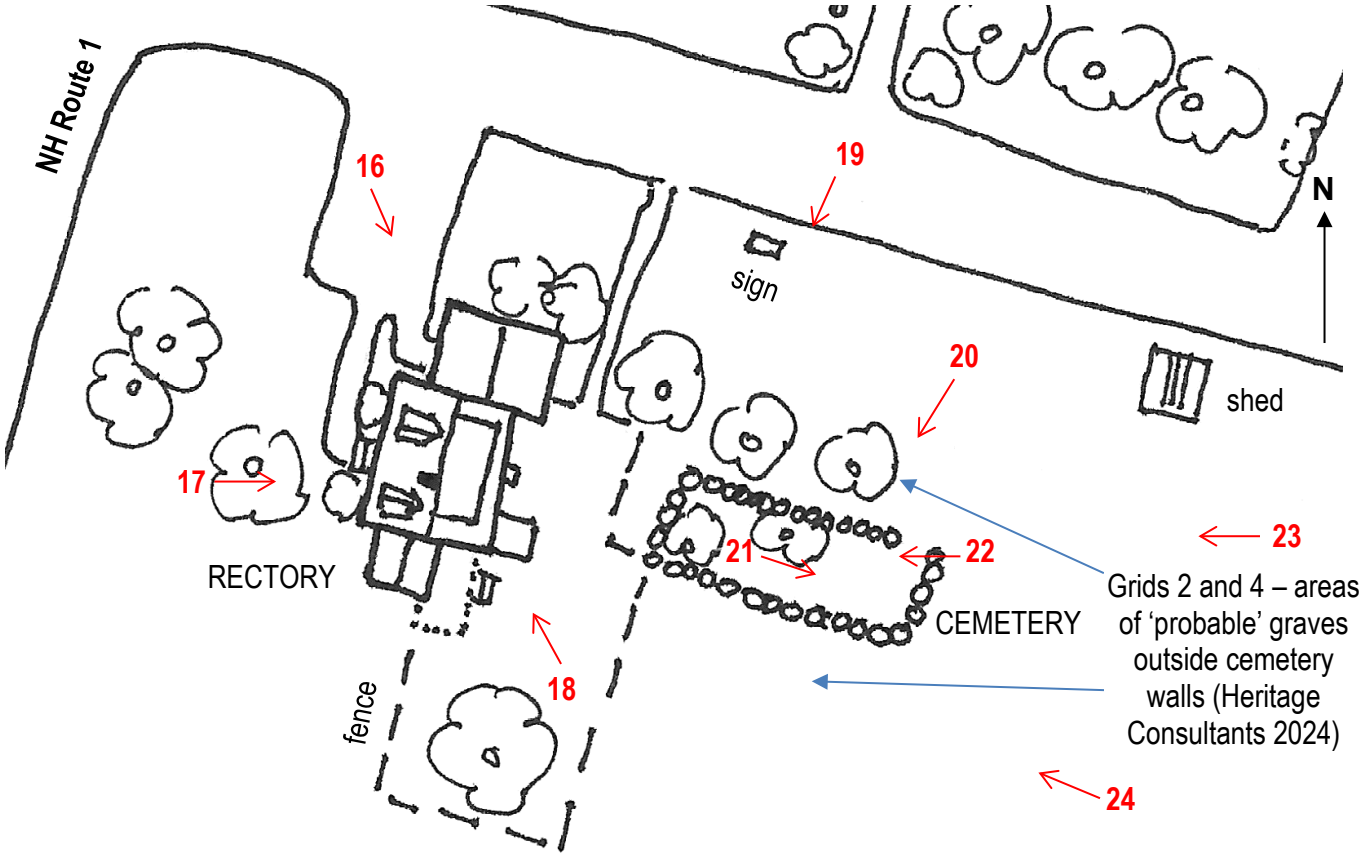


Figure 14: Rectory and cemetery, photos 16 – 24

Current Photographs

Date taken: March 2024

Photo 2) Church and chapel, facing northeast

Photo 3) Façade detail, facing east-southeast

Photo 4) Three-quarter view, facing southeast

Photo 5) North elevation, facing south-southeast

Photo 6) South elevation, chapel detail and memorial garden, facing east-northeast

Photo 7) Rear elevation and back lawn, outdoor stone altar, facing north

Photo 8) Rear elevation from parking lot, shed to right, facing west-northwest

Photo 9) Southern entrance and driveway, sign, flagpole, facing northeast

Photo 10) Northern entrance, sign, facing south

Photo 11) Interior sanctuary, facing southeast

Photo 12) Interior balcony, facing west-northwest

Photo 13) Organ in the loft, facing west

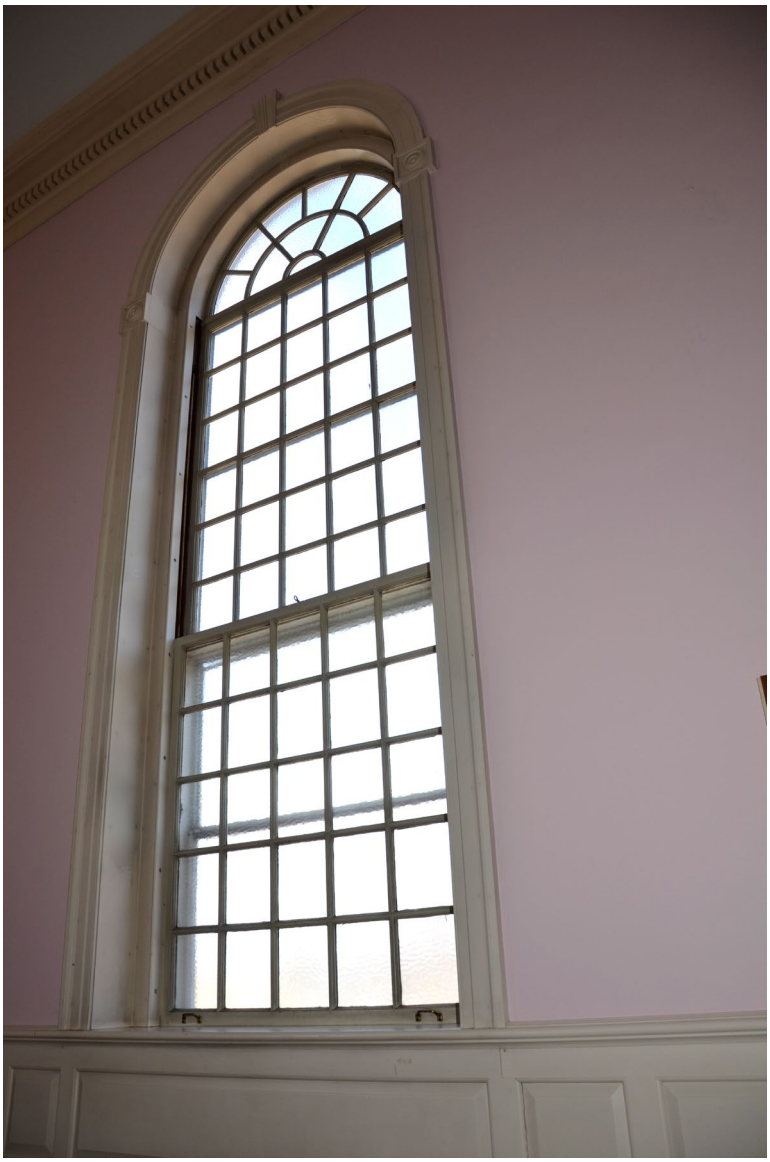


Photo 14) Interior window detail, facing northwest

Photo 15) Interior chapel, facing southeast

Photo 16) Rectory, facing southeast

Photo 17) Rectory façade, facing east

Photo 18) Rectory, rear elevation, facing northwest

Photo 19) Black Heritage Trail marker, facing southwest

Photo 20) Burying ground, facing south-southwest

Photo 21) Burying ground, facing east-southeast

Photo 22) Burying ground, facing west

Photo 23) Photo showing relationship of Grid 2 to rectory and church buildings, facing west (Heritage Consultants 2024)

Photo 24) Photo showing relationship of cemetery to the rectory building and church; flag marks approximate location of Grid 4 from archeology report, facing northwest (Heritage Consultants 2024)

New Hampshire Division of Historical Resources

Determination of Eligibility (DOE) Inventory #: POR1047

DOE Review Date: 9/14/2022 **Date Received:** 9/8/2022 **Final DOE Approved:** Yes

Property Name: Urban Forestry Center/Langdon-Elwyn Farm

Area:
Address: 650 Peverly Hill Road
Town: Portsmouth
County: Rockingham

Reviewed For: R&C

DOE Program(s):
DOT Department of Transportation

Determination of Eligibility:

Not eligible for NR			**Integrity:** No	**Level:**	
Criteria:	**A:** No	**B:** No	**C:** No	**D:**	**E:**

Areas of Significance(s):

Period of Significance:

Boundary:
tax parcels noted in form

Statement of Significance:
The Urban Forestry Center property is important as a large tract of undeveloped land but does not convey its historic associations as the Langdon-Elwyn farm. The landscape does not illustrate agricultural land uses due to the conversion of the fields for forestry uses, construction of new roads and paths, landscaping of the yards around the buildings, and subdivision of a large portion of the land. The location and placement of outbuildings is unchanged, but the buildings are not historic. One barn was entirely rebuilt after a fire in 1969 and again in 2003; the other Additional information was need to be collected to determine if eligible archaeological sites are present on the property. The property is not eligible for listing in the National Register of Historic Places under Criterion A, B, or C.

Comments:

Follow Up:
Notify appropriate parties.

INDIVIDUAL INVENTORY FORM **NHDHR INVENTORY** POR1047

Name, Location, Ownership

Historic name: Urban Forestry Center/ Langdon-Elwyn Farm

Street and number: 45 Elwyn Road

City or town: Portsmouth

County: Rockingham

Current owner: State of New Hampshire

Function or Use

Current use(s): Horticultural facility; conservation area; outdoor recreation; forest

Historic use(s): Single dwelling; farm

Architectural Information

Style: Other

Architect/builder: Unknown

Source: N/A

Construction date: ca. 1840

Source: Research, Inspection

Alterations, with dates: see text

Moved? no ☒ yes ☐ date: N/A

Exterior Features

Foundation: stone

Cladding: clapboards

Roof material: asphalt shingles

Chimney material: brick

Type of roof: gable

Chimney location: ridge center

Number of stories: 1½

Entry location: façade center

Windows: 6/6 double-hung

Replacement? no ☐ yes ☒ date: ca. 2013

Site Features

Setting: mixed use neighborhood

Outbuildings: barn, other; garage; house; spring house; other, education building

Landscape features: burial ground, paths, stone walls, mature trees, cleared open fields, river, garden, wood lot

Photo 1 Forestry Center Buildings Direction: NW

Date: January 2021

Tax map/parcel: 251/01, 226/05, 247/90, 247/91

Acreage: 154 acres, 20.49 acres, 3.85 acres, 1.3 acres

State Plane Feet (NAD83): See aerial map on page 4

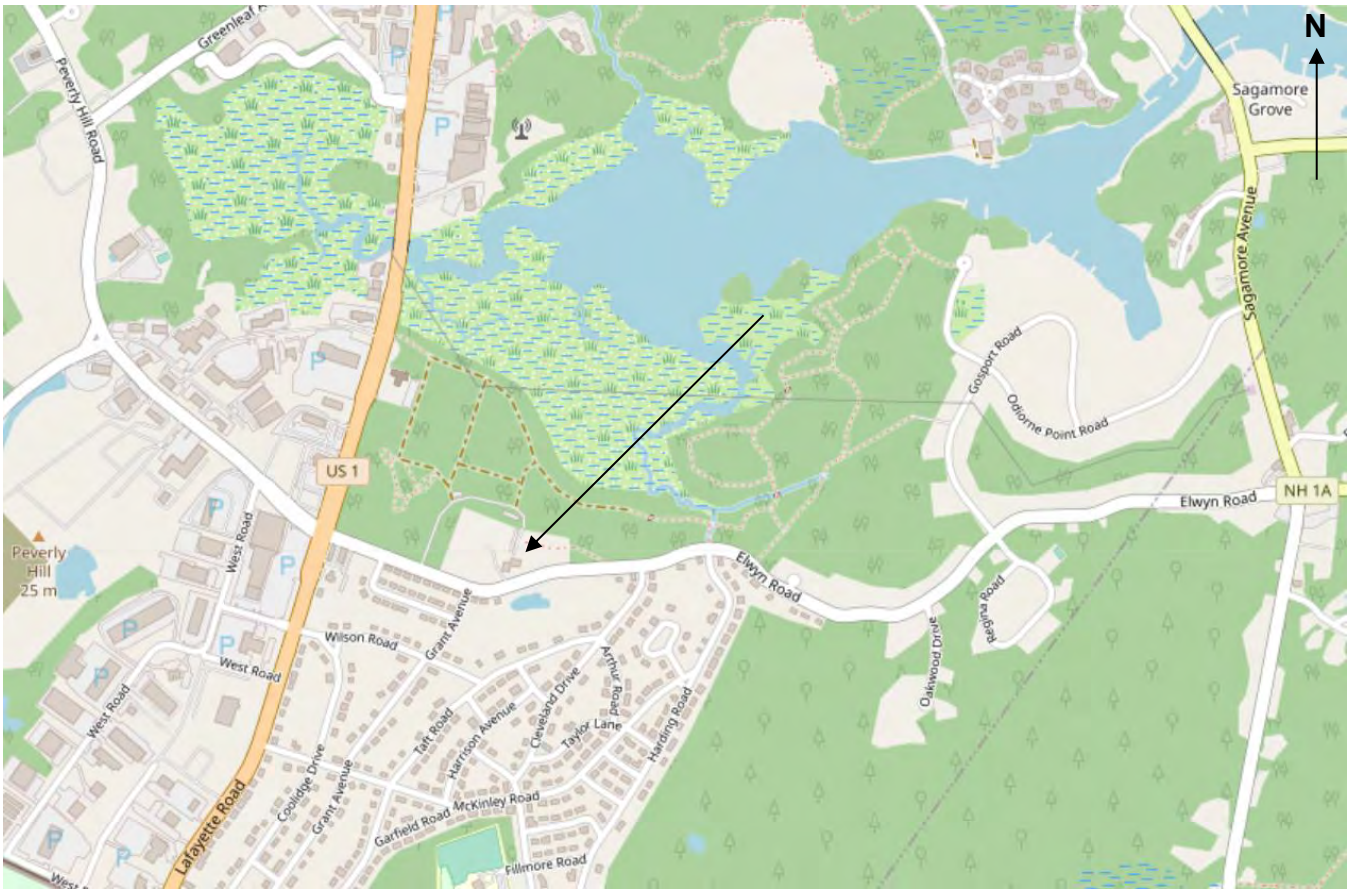
Form prepared by

Name: Kari Laprey, Reagan Ruedig, Lynne Monroe

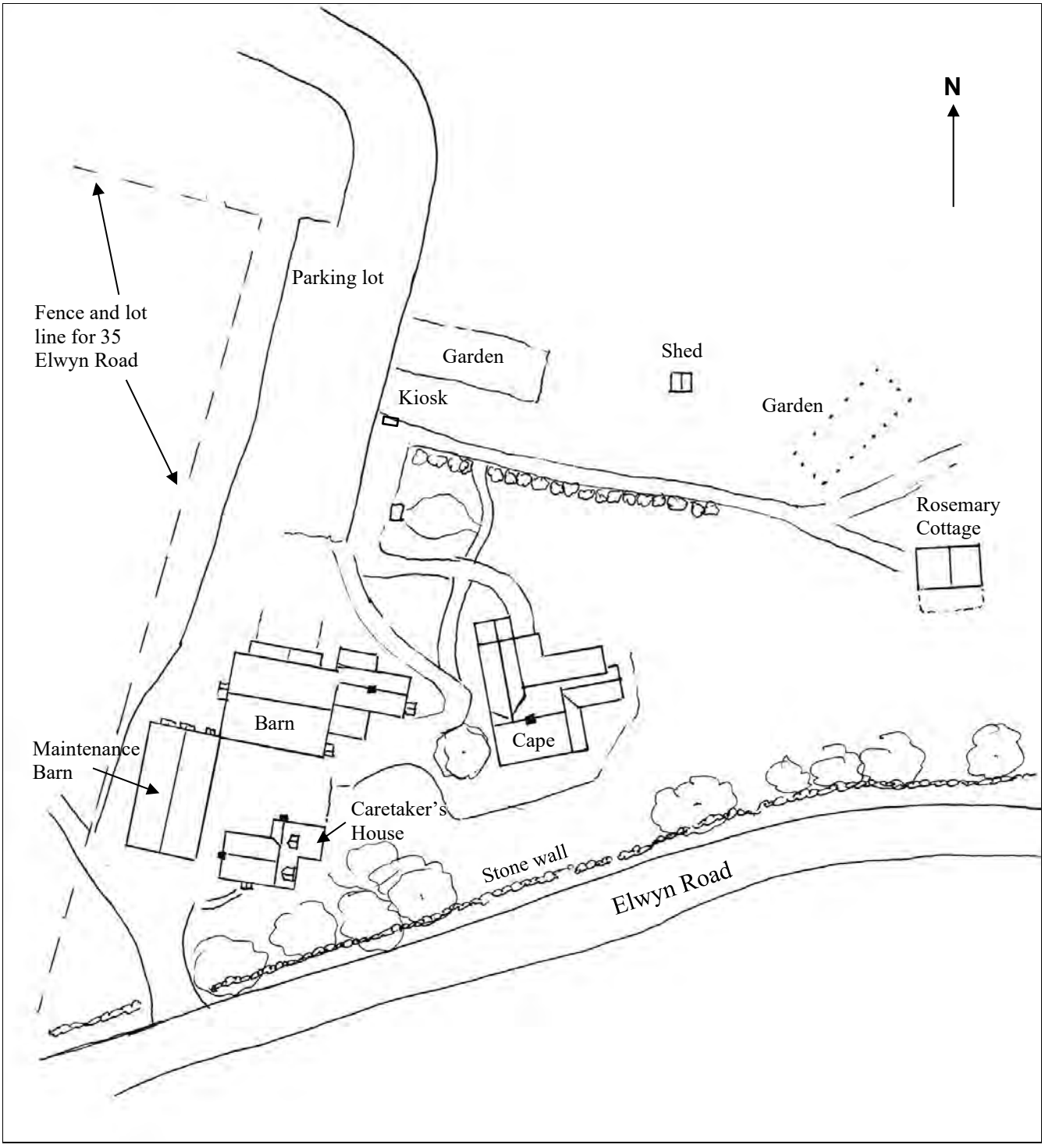
Organization: Preservation Company

Date of survey: December 2019, July 2022

Location Map



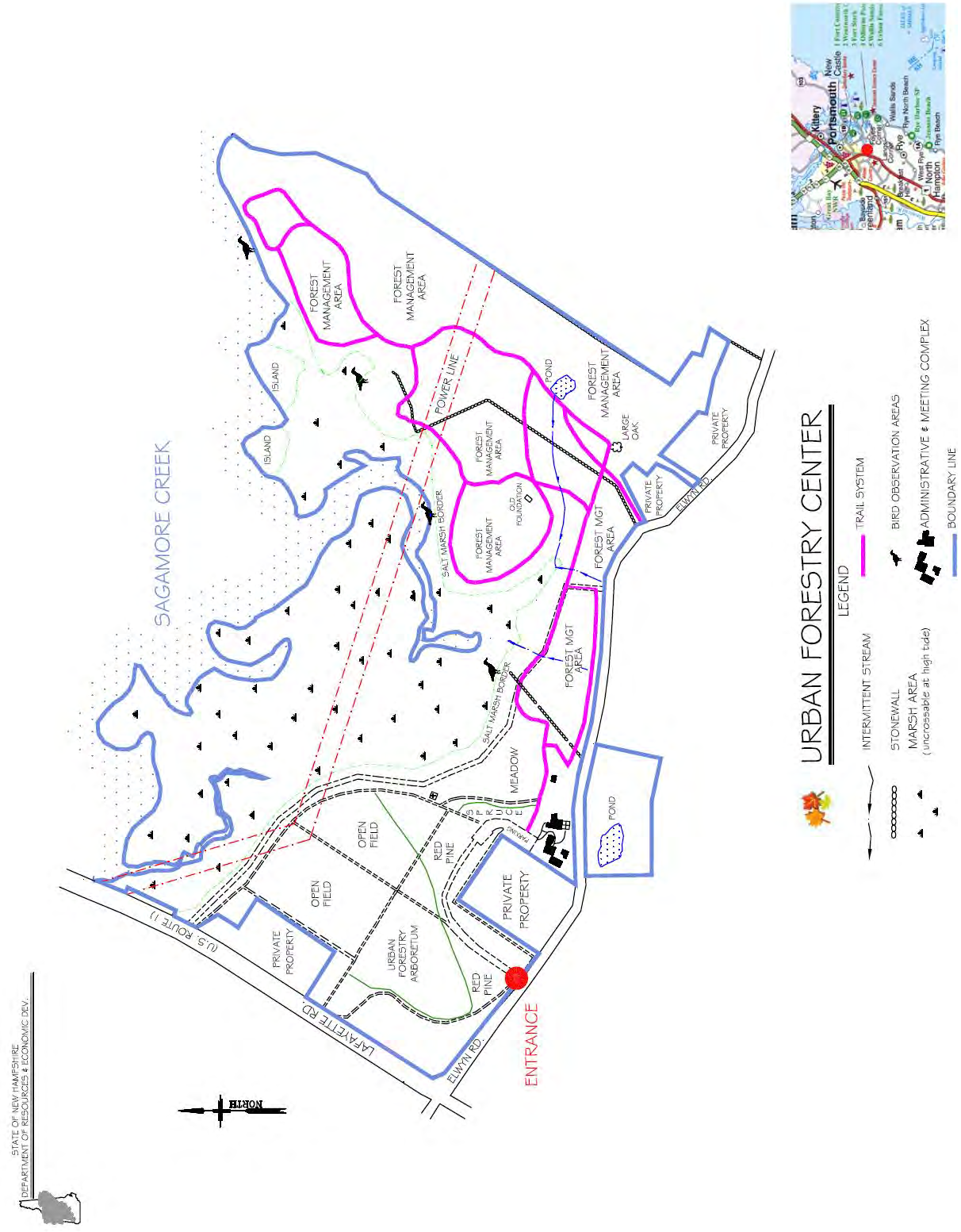
Property Map



Detail property map of the buildings along Elwyn Road

2021 Aerial photograph of the Urban Forestry Center via the City of Portsmouth's GIS mapping (https://portsmouthnh.mapgeo.io/)

1	X 1223315.872604 Y 199980.989910
2	X 1223789.401098 Y 201837.990276
3	X 1227454.966188 Y 202357.542744
4	X 1226804.998047 Y 199869.817388



Map of the Urban Forestry Center from NH Division of Forests and Lands website (https://www.nh.gov/nhdfl/documents/ufc-website.pdf)

Historical Background and Role in the Town or City's Development

Introduction

This Inventory Form for the Portsmouth Urban Forestry Center was prepared in 2022 for the Elwyn Road Side Path Project. The Urban Forestry Center is a state-owned forestry and environmental education center, with roughly 182 acres between Elwyn Road and Sagamore Creek on the east side of Lafayette Road/US Route 1. Historically, this was the Langdon-Elwyn farm, which was owned by the same family for 300+ years before it was given to the State in 1976. Buildings include a cape erected ca. 1835-40 on the site of the original farmhouse, a substantially remodeled nineteenth century barn, a new barn on the site of one that burned, and a second residence used as a caretaker's cottage. Another building moved to the property in 1969 stands east of the other buildings. The Urban Forestry Center offers walking trails, demonstration areas and an arboretum. Although the site is well-known as the birthplace of Revolutionary War patriot and New Hampshire's first governor, John Langdon, the land and buildings lack integrity for his period of ownership. A small family cemetery has gravestones for multiple generations of the Langdon and Elwyn families. On the land transferred to Christ Episcopal Church (parcel 246-01) in the 1960s is a stone walled enclosure with unmarked gravestones, believed to the burying ground of slaves who worked on the Langdon farm in the eighteenth century.

Research sources included local repositories, published histories, city directories, censuses, and deeds. NHDHR town files and archaeological reports were consulted. The 1996 evaluation of the property by James L. Garvin was the basis for the architectural description. Much has been written about the Langdon family, and the family papers in the collections of the Portsmouth Athenaeum, Historic New England and the New Hampshire Historical Society would provide additional information.

US Route 1/Lafayette Road is a busy commercial strip with large shopping plazas and other businesses on the main road south of downtown Portsmouth. Elwyn Road, formerly Rye Road, runs west-east toward the coast. West of Lafayette Road, Peverly Hill Road continues to intersect Middle Road. Once a rural road on the south side of Sagamore Creek, Elwyn Road was developed with residential subdivisions in the mid- to late twentieth century. The creek is a tidal inlet reaching several miles inland from the Atlantic and the mouth of the Piscataqua River. Saltmarshes border the creek on both sides.

1650-1725 Tobias Langdon I and II

Sagamore Creek was a focus of early colonial settlement in Portsmouth. The original house on the property was built ca. 1650 by Henry Sherburne (1611-1680) who received a grant of land here. Tobias Langdon (1631-1664) came to live here when he married Elizabeth Sherburne (1638-1691) in 1656. After she was widowed with four young children, she married her second husband Tobias Lear (1629-1680) who owned the neighboring property to the east that later became part of the Langdon farm. Tobias Langdon (1660-1725) inherited when he came of age, and it was his home when he married Mary Hubbard in 1686. They had a large family of nine children. He was a militia captain, farmer and wheelwright (Brewster 1859:362-366). A family cemetery was established in the field behind the farmhouse. Lafayette Road/US Route 1 wasn't built until the nineteenth century, so this was a somewhat isolated neighborhood. The route south from downtown Portsmouth was via Middle Road. Peverly Hill Road skirted the upper reaches of Sagamore Creek and Elwyn Road continued east toward the coast as Rye Road. Small boats were also used to cross and navigate Sagamore Creek. The farms included tidal saltmarsh that provided hay for livestock. The Langdon land extended along the creek to the west of where Lafayette Road was later built. Another branch of the Langdon family settled on farms on the north side of the Sagamore Creek.

There were enslaved African workers on the Langdon farm for at least a century. Family papers record purchases of slaves by Captain Tobias Langdon, including in 1699 an un-named black man about sixteen

or seventeen years of age for £30, and in 1718, a "Negro Slave Named Hannah" for £36 (Cunningham 1999). The 1724 will of Tobias Langdon bequeathed to his youngest son John Langdon all his livestock, goods and chattels and his slaves. Oral tradition says the Langdon slaves were buried at the edge of the farm in a small stone walled area behind the Christ Church parsonage.

1725-1780 John Langdon

John Langdon (1707-1780) married Mary Dudley Hall from Exeter. They had three daughters and two sons, Woodbury and John, who both became wealthy and prominent Portsmouth citizens. Future governor John Langdon was born in the seventeenth century house shortly before it burned down in 1741, when he was thrown out the window into a snowbank according to tradition. The family built a new two-story house that stood until the 1830s (Brewster 1859:362-366).

John and Mary lived on the farm throughout their lives and were buried in the family cemetery. They continued to own slaves through most of that time. John Langdon bought "a Negro Servant Slave named Pomp" about fourteen years of age for £150 in 1742/43, and a slave named Pomp was still with him in the 1770s. Mary Langdon bought a woman named Violet from Elizabeth Lear for £25 in 1773 (Cunningham 1999).

1780-1835 Governor John Langdon, Elizabeth Langdon and Thomas Elwyn

In the 1780s, the farm became the country estate of John Langdon (1741-1819), merchant, shipbuilder, and Revolutionary War patriot. The farm was run by hired hands and provided food for their in-town residences. John Langdon and Elizabeth Sherburne, who were married in the 1770s, owned other property downtown before their mansion was built on Pleasant Street in 1784. In 1785, John Langdon became the first governor of New Hampshire. He was a state legislator and then US Senator in the 1790s, followed by several more terms as Governor in the early 1800s.

The Langdons' only daughter, Elizabeth Langdon (1777-1860) and her husband, British intellectual and lawyer Thomas Elwyn (1775-1816), spent time on the farm. Elwyn built a new "summer kind of house" at the west end of the old house. This annex was used for parties by the family. Elwyn lived on the farm a good deal, even in winters (Brewster 1859:363; Gurney 1902). He also spent time in Philadelphia. After Elwyn died at age 41 in 1816, Elizabeth Elwyn and her children moved into her parents' Pleasant Street mansion. In the 1820s she moved to Philadelphia to join some of her grown children, and the Langdon mansion passed out of the family. She sold the Langdon farm of 580 acres to her oldest son John Langdon Elwyn for $20,000 in 1835 (Deed 278:337). The construction of Lafayette Road in 1825 separated the western edge of the property. Traffic increased with improved roads, and stagecoaches provided faster travel to Boston and elsewhere.

1835-1876 John Langdon Elwyn

John Langdon Elwyn (1801-1876) was 34 years old when he acquired the farm. He had spent most of his life in Portsmouth, leaving to attend Harvard at an early age and graduating at 17. After travel in Europe, he studied law in Portsmouth and was admitted to the bar but chose not to practice. He studied and wrote about history and philology, the analysis of ancient literary texts, and privately published books of essays and poems. He was an active member of the Portsmouth Athenaeum. He enjoyed reading, and solitary walking and was said to walk from Portsmouth to Boston in a single day (Robinson 2019).

In about 1835 Elwyn built a new house, with a larger and better cellar. This is the cape on the property today, which was the third house on the site. The 2½-story eighteenth century house was taken down, but the newer addition was salvaged and moved into town to an unspecified location on State Street (Gurney 1902; Brewster 1859:363). The fact that he was both eccentric and an antiquarian may explain Elwyn's use of an older, traditional house form, with low eaves and a central fireplace chimney, at a time when fully-developed Greek Revival style dwellings with stove chimneys were popular. The cape may have

been a deliberate attempt to recreate the house that had been John Langdon's birthplace (Garvin 1996). The Langdon-Elwyn farm was well known for its earlier historic connections and was listed in early Portsmouth histories and guidebooks. The 1850 Sagamore Bridge opened a more direct route to the downtown railroad station and brought summer tourists and summer home owners to the area.

Elwyn had hired help, and possibly relatives, living with him. In 1840, he was head of a household of seven: himself, one older man and one young man, two young women and two boys (Census 1840). Employees apparently maintained the farm, while Elwyn moved back and forth to downtown Portsmouth (Census 1850, 1870). In town, he lived at the Franklin House hotel, site of the Franklin Block on Congress Street, and at the end of his life in the Rockingham Hotel on State Street (Directory 1869, 1875). The Langdon-Elwyn family owned a large area of land on the southern edge of downtown Portsmouth. In 1867 John Langdon Elwyn gave the City of Portsmouth a parcel of land for Langdon Park.

John Langdon Elwyn died in January 1876 and was buried in the cemetery on the old homestead. He left all of his Portsmouth property to the family of his younger brother Dr. Alfred Landon Elwyn (1804-1884), a physician and philanthropist of Philadelphia. John Elwyn's will stipulated that the property was to go to his nephew Rev. Alfred L. Elwyn of Philadelphia and then to his grandnephew, who he requested be named Thomas Elwyn. Elwyn declared he would "rather they would not sell any of these lands in Portsmouth not only not our old little homestead that of herself is worth very little but none of these lands - to keep the whole if any - if my heir well can do let him live on them – it is a good way in the end this keeping of your fathers' lands, it roots you deep in your own folk and where you rightest belong…" (NH Wills and Probate).

Rev. Alfred L. Elwyn 1876-1924

A house that had been built off Lafayette Road on the south edge of the farm, about where the entrance to Elwyn Park is now (Beers 1876), became the family summer cottage (Directory 1878, Census 1880; Hurd 1892). It was a "modern cottage out of sight in the woods" according to the 1902 Portsmouth guide (Gurney 1902:172). Rev. Alfred L. Elwyn Jr. (1832-1924) was an Episcopal clergyman, a graduate of the University of Pennsylvania. He and his wife Helen Maria Dyer had their five children, including son Thomas Langdon Elwyn. They summered in Portsmouth for several decades.

Rev. Elwyn travelled back and forth from Philadelphia year round to oversee his properties. They occupied the cottage on Lafayette Road (US Census 1880; City Directory 1878). The old farmhouse on the homestead was painted red for many years and was known as the Red House. Rye Road became known as Elwyn Road. Elwyn also inherited a separate farm on Peverly Hill Road near The Plains (not extant) (Beers 1876). Owned by the Langdon family since the early 1800s, it was known as the Whipple place and was leased to an area farmer. In 1876, improvements were made there, including construction of a large barn (not extant) by local builder Supply Foss Trefethen (1833-1907), who lived nearby in Rye. At the Red House, Trefethen built a new privy and a sink for the kitchen in 1876. He enclosed the pump and the spring, built an ice house and worked on the wood house. Trefethen did work for Rev. Elwyn on his various properties over several years. In 1881-82 he built a barn for Elwyn but its location was not specified (Trefethen diary).

In the spring of 1878, Trefethen noted Elwyn had leased his farm to Joseph Stoddard and his brother who grew up on a nearby farm off Elwyn Road. Before that, he had another coat of paint put on the Red House. Joseph Stoddard (1830-1897) lived there with several farm laborers (US Census 1880). The Elwyn farm was 750 acres, with 200 acres in cultivation. The downtown land near the South Mill Pond became the location of the Cottage Hospital in 1895. In 1899, Alfred and Thomas Elwyn subdivided house lots on Elwyn Avenue and the surrounding streets which they sold over a period of about a dozen years (Plan 00176). In the early 1900s, John H. Wright (1856-1939) was the farmer on the Elwyn farm. Prior to that,

Wright worked on the large Mark H. Wentworth farm on the Piscataqua off Woodbury Avenue (Hazlett 1915:847). The 1910 census recorded Wright and his wife and children had three farm hands living with them (Census 1910).

Alfred and Helen Elwyn spent their later years with their daughters in Portsmouth and New York (Census 1910, 1920). Elizabeth Elwyn (1871-1945) became the wife of dry goods merchant Woodbury Langdon (1836-1921), who owned the Governor Langdon Mansion on Pleasant Street downtown and a large summer estate and farm on Fox Point in Newington. The family line was continued by Frances Elwyn (1865–1929), who married Gordon Wendell (1859-1910) of Manhattan and York Harbor, Maine. Their daughter Frances Gordon Wendell (1892–1948) married John Gilbert Marshall Stone (1894–1983) of New York and had two children. They summered in Portsmouth, and in York Harbor.

1924-1945 Thomas Langdon Elwyn then Elizabeth Elwyn Langdon

Following the will of John Langdon Elwyn, the farm passed from Alfred Elwyn to his son Thomas Langdon Elwyn (1868-1937), who was a banker in Philadelphia. When Thomas Elwyn died, his widow Natalie Elwyn (1874-1962) inherited the entire estate: the buildings and land north of Elwyn Road, the large area of land south of Elwyn Road where the 1870s cottage set back from Lafayette Road stood an undermined length of time, and some land west of Lafayette Road on either side of Peverly Hill Road. Natalie Elwyn sold off all the other Langdon-Elwyn land on both sides of Lafayette Road in the 1940s (Deed 988:94; Deed 997:32; Deed 1035:25; Deed 1035:115; Deed 1367:278). The Elwyn Park subdivision was laid out on the land south of Elwyn Road in the late 1940s on tracts of 127+ and 210 acres. McKinley Road was built about where the Elwyn cottage had been, and the old farm road became part of Grant Avenue (USGS 1952).

Elizabeth Elwyn Langdon of Pleasant Street purchased the historic farmstead and 130 acres of land north of Elwyn Road from her sister-in-law in 1937 (Deed 934:10). She also acquired a 17.1-acre parcel along the south side of Elwyn Road (Deed 988:372). The property was still farmed, and historic USGS maps and aerial views show open fields stretched from the road to the edge of the saltmarsh (NETROnline). The farm caretaker Herbert Wortman and his family, who immigrated from New Brunswick, Canada, lived on the property from the 1910s into the early 1950s (US Census; City Directories). A second dwelling was built at 35 Elwyn Road (USGS 1941), apparently used as a summer residence by the family. When Elizabeth Elwyn Langdon died in 1945, the downtown Langdon Mansion was acquired by the Society for the Preservation of New England Antiquities (now Historic New England). Her long-time Pleasant Street caretaker, Charles Elmer Starkey (1913-1995), was willed the "summer home" and its furnishings (now 35 Elwyn Road). The rest of the farm went to her Stone great nephew and niece (*Portsmouth Herald* 08.30.1945). She was buried in the family cemetery.

John Elwyn Stone 1945-1976

John Gilbert Marshall Stone Jr., who changed his name to John Elwyn Stone (1922-1974), became the owner of the historic farmstead. His sister, Frances Wendell Stone Warrick (1921-2009) of New York and York Harbor, deeded her share to him in 1950 (Deed 1184:135). Stone lived in New York after graduating from Yale with a degree in English literature and serving in the Army Air Corps during WWII. The 1950 census reported him as a free-lance writer. He moved to the Portsmouth farm in the 1950s, according to city directories, but retained a residence in Manhattan at 125 East 72nd Street. The old cape was renovated for his use. Changes included exposing interior rafters and framing and installation of new reproduction mantelpieces (Garvin 1996). Additions were built on the rear. The barn floor was poured with concrete. Stone collected Langdon family papers and signatures and displayed them in his home. US Route 1/Lafayette Road along the west side of the property began to develop as a commercial strip with businesses like Yoken's Restaurant. The municipal dump was on the far side of the road and a large gravel pit was established on Peverly Hill Road.

Charles Starkey (1913-1995) became the farm caretaker and lived at 35 Elwyn Road from the late 1940s until about 1960. His wife, Kathleen Starkey (1918-1979) who was the owner of the house until the time of her death, purchased the land south of Elwyn Road from the Stones and built a store and gas station in the southeast corner of the intersection with Lafayette Road that she owned until 1966 (Deed 1117:498; Deed 1825:433). She sold some of the land for residential subdivision. Stone bought back the pond and land directly across Elwyn Road from his house (Deed 1669:171; Deed 1500:443). The two small parcels south of the road are part of the now state-owned land. The pond is on 1.3 acres (tax parcel 247/91) and the surrounding wooded land (247/90) is 3.85 acres. The power line easement across the property dates to 1954 (Deed 1309:3). Stone purchased an additional 32+ acres in the northeast corner of the property in 1960 (Deed 1559:228). He built a shelter with fireplace overlooking Sagamore Creek. In 1964, Stone gave a parcel of land on Lafayette Road for construction of Christ Episcopal Church, completed in 1967 to replace a downtown building that burned in 1963. The slave cemetery is on that parcel, and the walled site has been maintained.

The two historic barns burned in the spring of 1969 (*Portsmouth Herald* 04.24.1969). A new garage and maintenance shop was built and stood until another fire in 2002. The basement level of the northern barn remained, and a new building was erected on top (Dupere 2022). A brick outbuilding was enlarged to serve as a caretaker's cottage. Stone had a building from Chapel Street, opposite Sheafe Street, in downtown Portsmouth moved onto the property and reconstructed as what he named Rosemary Cottage (Garvin 1996). Farming on the property ended and Stone had pine planation planted in a grid pattern on the historic fields in the early 1970s (NETROnline).

John Elwyn Stone died on May 26, 1974. He left the property to the people of New Hampshire to be used as a tree farm, bird sanctuary or wildlife preserve, or for other socio-ecological use. The gift included farm buildings, 150 or alternately 154 acres of fields, forest, and saltmarsh, and the annual interest income from a ($1.7 million) trust fund. The Governor and Council accepted it in December 1975, to be managed by the Division of Forests and Lands of the Department of Resources and Economic Development (*Portsmouth Herald* 12.22.1975).

Urban Forestry Center, 1976-present

The property was deeded to the State of New Hampshire in 1976 (Deed 2260:1484). Income from the bank-held trust funds maintenance and management by the NH Division of Forests and Lands. An Ad hoc committee was formed to develop a plan for the property. The Urban Forestry Center opened to the public in 1977. Its purpose is education and research relative to urban aspects of forestry and vegetation management, wildlife habitat and recreation. The center works to increase public awareness about trees and forestry through conferences, lectures, continuing education programs, workshops, demonstrations, exhibits, and regular events like the holiday Festival of Trees begun in the 1980s.

When it was established, the Urban Forestry Center consisted of 60 acres of wetlands and 90 acres of upland forests. About half the pine plantation burned in 1976 (*Portsmouth Herald* 11.29.1976). In the 1970s, major vegetational types were identified as wetland-marsh (60 acres), red pine plantation (24 acres), Colorado blue spruce and white spruce plantation (4 acres), evergreen woodland (37 acres), mainly deciduous woodland (18 acres), and scrub land (7 acres) (Reynolds 1979). Woodland and saltmarsh to the northeast of the Langdon-Elwyn farm was purchased by the Elwyn estate in 1978 and transferred to the State of NH in 1980. The 20.49 acres (tax parcel 226-5) were historically part of the farm associated with the house at 71 Elwyn Road (Deed 2380:5790; Deed 2314:675; Deed 12135:249).

The caretaker's cottage was enlarged and remodeled in 1977 (*Portsmouth Herald* 10.28.1977). A new public entrance, driveway and parking lot were created. The back of the historic cape was remodeled to contain offices. The front of the cape is maintained as John Elwyn Stone left it. The backyard of the

house was landscaped into a courtyard and became the front yard of the Urban Forestry Center complex when entering from the parking lot. The old barn was remodeled into the Meeting Barn, dedicated as the John Elwyn Stone Forestry Learning Center, containing a large 100-person conference room/classroom, a kitchenette, meeting room, and restrooms. The maintenance barn was rebuilt after the 1969 barn was destroyed by fire in December 2002. Rosemary Cottage was used as a classroom with an attached greenhouse, but it is now vacant and slated for removal. An arboretum for tree identification was developed in the southwest corner of what was once open field. The 1970s pine plantations were mostly cut down in recent years. The land has been restored to an open and semi open habitat. The eastern part of the Urban Forestry Center is a 95-acre forest management demonstration area with trees common to New Hampshire.

Applicable NHDHR Historic Contexts (please list names from appendix C)

101. First settlements on the NH seacoast, 1623-1660.

201. Revolutionary New Hampshire.

500. Mixed agriculture and the family farm, 1630-present.

502. Salt marsh farming in New Hampshire, 1630-present.

603. Summer and vacation home tourism, 1880-present.

608. Outdoor recreation in New Hampshire.

610. Museums and historical sites in New Hampshire.

611. New Hampshire State Parks, Sites and Forests.

1200. Philanthropy, 1850-present

1401. The African Americans in New Hampshire.

1506. The land conservation movement in New Hampshire.

1507. Public and private cemeteries and burials.

Architectural Description and Comparative Evaluation

The State of New Hampshire Urban Forestry Center is a large tract of land to the east of Lafayette Road/US Route 1 on the south side of Sagamore Creek, with historic and modern buildings fronting on the north side of Elwyn Road. The property includes about 130 acres of the Langdon-Elwyn farm, plus additional land to the east that was acquired in the 1960s-70s totaling about 180 acres. The buildings are near the road with open landscaped yards around them. The surrounding semi-open land was once fields, planted with trees beginning in the 1970s and now partially restored to field and meadow. About a third of the land is tidal saltmarsh along the south shore of Sagamore Creek. The eastern third of the property is wooded. Prior to residential development that began in the late 1940s, the farm included several hundred acres south of Elwyn Road on the east side of Lafayette Road.

The main entrance to the Urban Forestry Center is at about 27 Elwyn Road toward the western end of the property, just over a tenth of a mile east of Lafayette Road. The driveway wraps around 35 Elwyn Road to a parking lot behind the buildings at 45 Elwyn Road. The main complex is four buildings, and a fifth nearby is slated for demolition. The historic farmhouse is a 1½-story cape, built ca. 1835-40 and remodeled in the 1960s. The caretaker's living quarters is an enlarged outbuilding built around a brick

structure in the yard west of the house. The educational building is a large, rebuilt and remodeled nineteenth century barn set roughly parallel to the road and accessed through the east gable end. The maintenance barn was built ca. 2003, in place of a 1969 building that replaced the nineteenth century barn. There are several small modern outbuildings. The family cemetery is north of the house near the edge of the marsh. Several foundations and small cemeteries in the woods on the eastern part of the property were recorded by archaeologists in 2003.

The ***Historic Cape***, also known as the Elwyn House, is 1½ stories with a side gable roof, center chimney and center entry on the three-bay façade (Photos 2-5). The house faces south-southeast nearly parallel to the road. The building has its original form and fenestration, with all new windows and doors installed ca. 2013. The wooden front steps are new. The historic side porch on the east elevation was rebuilt in the 1960s. A historic wing on a mortared stone foundation projects from the northeast corner of the cape. The ells on the north elevation were added in the 1960s and remodeled ca. 1979. The walls are clad in clapboards with flat trim. The windows have 6/6 sash. The east gable ends have octagonal and lunette windows installed ca. 2013 in place of similar 1960s windows. There are three brick chimneys, with others removed above the roofline. The central brick chimney is original. An exterior fireplace chimney was added to the west elevation of the ell in the 1960s. A stove chimney rises from the wing. A series of additions on the back of the house date to the twentieth century. The back of the house was remodeled with the enclosure of decks and porches in the late 1970s (Dupere 2022). There is basement access on the back of the house where there was historically a stone bulkhead. The buildings were painted a reddish brown in the 1960s and then a dark maroon red, before the grey and white color scheme was adopted more recently (Dupere 2022).

As described by James L. Garvin in 1996, the cape stands over a full basement on a foundation of split and mortared stone. The first floor is framed with a series of rounded tree boles or sleepers, hewn flat on the top. The framing is hewn. The roof structure visible on the eastern end of the house is composed of common rafters, hewn to a square cross-section, and placed two feet on centers. This type of common rafter roof was built in eastern New Hampshire beginning in the 1830s (Garvin 1996). The central chimney is supported in the cellar on two piers of split and mortared stone. The brick stack rises from a platform of heavy timbers in a manner reminiscent of eighteenth-century construction. The timbers appear to be remnants of bridging joists (summer beams) salvaged from an older house; where exposed to view in the 1960s, their upper edges reveal notches for floor joists. The chimney is characteristic of federal-period chimney stacks, having a kitchen fireplace on its rear (north) face, and fireplaces on each side in the two front rooms. The kitchen fireplace has a crane, and an oven at its left side, and appears to represent the cooking arrangements preferred by its builder at a time when stoves were being adopted. Surviving doors and other paneled work in the house have square-edged stiles and rails and a square shoulder (rather than a feather-edge) on the fields of the panels, a style of paneling characteristic of the Greek Revival period, appearing around 1830. Several doors retain Norfolk thumb latches, common from the 1830s. The Elwyn house was greatly altered by work carried out during the 1960s by John Elwyn Stone. New conveniences were added throughout the house. In an attempt at restoration, ceiling plaster was removed to expose hewn framing members and woodwork was stripped of paint. Reproduction features, like a mantelpiece added to the fireplace in the southwestern parlor, were not designed to resemble to historic work of any era. Part of the second story was opened to the ridge by removal of collar ties and a loft surrounded by a modern balustrade was installed (Garvin 1996).

The yard in front of the cape is landscaped with brick paths, gardens and shrubs. A covered well is a mid- to late twentieth century feature with brick sides and a wood shingled roof. There are modern light posts and a flagpole. A New Hampshire Historical Marker about Governor John Langdon stands the road. The roadside in front of the buildings is lined by modern split rail fence and a row of deciduous trees.

Historically, a semi-circular dirt driveway passed in front of the house and connected to the dooryard in front of the barns. The front yard had several large shade trees (Figure 14). The back yard was formerly open field with scattered fruit trees (Figure 17). Brick paths and gardens now fill the area behind the cape and connect to the parking lot and other buildings.

The main Urban Forestry Center building is the ***John Elwyn Stone Forestry Learning Center***, which has meeting hall and classrooms in a remodeled barn (Photos 6, 7). The foundation dates to the nineteenth century, but most of the walls and the roof were rebuilt after a fire in 1969 (Dupere 2022). The stone foundation is visible on the north side where the ground slopes down. There is basement access with modern doors. In the late 1970s, the rebuilt barn was remodeled into meeting rooms. The building is roughly parallel to the road. The pre-1969 historic barn was a typical New England barn with gable end barn doors topped by transom lights, 6/6 windows in the gable ends and small stall windows on the side elevations (Figures 15, 16). The long, one-story extension off the northeast corner of the barn was once a vehicle shed with a row of doors and knee wall windows above. There are entrances on the eastern gable end of the barn, the end of the shed and in a small shed-roofed extension. The entries are sheltered by gable door hoods on curved wooden brackets. The modern doors are metal with nine lights above. The same treatment is used throughout the complex. The back door on the west elevation is sheltered by a modern door hood with gable roof and has modern wooden steps. Like all buildings, the roof is sheathed in tan asphalt shingles.

The ***maintenance barn*** (Photos 8, 11) dates to 2003 (Dupere 2022). The 2+ story, gable front barn with its gable end toward the road is on the site of a historic building. It replaced a barn built in 1969 that was erected in place of a nineteenth century barn. The footprint is the same, but the roofline is slightly higher. The clapboard siding with flat trim and the projecting eaves and gable end returns reflect the original building. The foundation is poured concrete. Windows have 1/1 sash. The two garage bays on the front end have overhead doors. The north gable end has a central garage bay with a loft door above and doors to the ground floor and basement, sheltered by gable-roofed hoods.

The ***caretaker's house*** (Photos 9-11) is a small residence in the yard west of the old cape, south of the barns. It was built around an old brick outbuilding, reportedly once used as a butcher shop. It was enlarged in the mid-twentieth century for residential use, remodeled ca. 1977, and again ca. 2003 following fire and water damage (Dupere 2022). The front door faces Elwyn Road with access from the driveway in front of the maintenance barn. The brick portion of the building near the road has a gable roof. The windows have brick trim and 6/6 and 6 x 6 casement sash. Openings on the east wall are bricked in. A two story extension on a brick foundation project to the west and a smaller addition with dormers to the north. The walls are clapboarded, and the windows have modern 1/1 sash. The yard north of the house is enclosed by privacy fencing connecting to the corners of the barns.

Rosemary Cottage (Photos 12-14) is a two-story building set back northeast of the other buildings. It was vacant at the time of survey and is slated for removal. The structure was moved from Chapel Street in downtown Portsmouth ca. 1969 and reconstructed. As originally built in the early 1800s, it was a 2½-story, 3 x 2 bay, "half house" with a fireplace chimney and pedimented front entry (Figure 19). On the new site, the walls were sided with half logs that remain on three elevations. In the 1970s, there was a stockade fence around the building. In the 1980s-90s, the building was used as classroom space. The west elevation has newer wood shingles and 1/1 windows. Other windows are boarded up. Two filled-in bays on the front (south) side of the building opened into attached greenhouses installed in the late 1970s and recently removed.

There are several small outbuildings and structures, all of which are modern. A small garden ***shed*** has a gable roof and clapboard siding (Photos 20, 21). A sign ***kiosk*** near the parking lot is sheltered by an

overhanging wood shingled hip roof (Photo 19). Another kiosk is located by the garden near Rosemary Cottage. A ***pump house*** stands near the spring at the edge of the saltmarsh behind the house (Photo 23). The building is new, with concrete foundation, clapboarded walls, and gable roof. The spring house is a small concrete block structure. This has always been a source of fresh water for this property, and neighbors who reportedly came by boat at high tide. There was a pump here by the 1870s when a shelter was built and the spring enclosed (Trefethen diary).

The ***Langdon Cemetery*** is a square fenced area with about ten marked graves (Photos 25, 26). It is north of the buildings in a lightly wooded area that was once open field (Figure 6). A fence of granite posts, five on each side, and three metal rails surrounds the flat mossy site. There is no gate or opening. Large mature trees grow on the perimeter. The graves are arranged in two rows. The headstones face west and there are some footstones. The earliest deaths, Tobias Langdon in 1668 and Elizabeth Langdon in 1693, are marked by a replacement stone. The gravestone of Captain Tobias Langdon who died in 1724 is carved with a death's head and floral border. Mary Langdon who died in 1789 has a slate stone with winged cherub carving. The stone for John Langdon who died in 1780 is a later memorial stone or replacement. In the front row, a central obelisk is the marker for John Langdon Elwyn who died in 1876. Two similar two-part granite headstones mark the graves of Elizabeth Elwyn Langdon, 1945, and her nephew John Elwyn Stone, 1974.

Stone walls define the edges of the historic farm. The Elwyn Road frontage, except in front of the buildings, is lined by tumbled fieldstone wall of irregular, angular stones (Photos 15-17). Mature trees grow along the inside of the wall. The wall in the southwest corner of the property was moved and rebuilt in the late 1970s when the right of way was moved back twenty feet (NHDOT 1978). The Urban Forestry Center public entrance is marked by a wooden sign, typical of New Hampshire state parks (Photo 17). The west edge of the property along Lafayette Road/US 1 is mixed woods, reforested since the 1970s. Sone wall runs along the inside of the sidewalk as far as the Christ Church property. The wall was rebuilt in 1999 when the Route 1 right-of-way was widened. To the east on Elwyn Road, the roadside is lined by nearly continuous stone wall. In the woods, a stone wall running north-south through the middle of the Forest Management Area is the eastern bound of historic Langdon-Elwyn Farm (Photo 33). Another north-south wall marks the eastern edge of the Urban Forestry Center property, land formerly associated with the house at 71 Elwyn Road and purchased in 1960 and 1978 from the adjacent farm.

The basic historic ***landscape*** is evident in the placement of the buildings near the road, surrounding semi-open land, and adjoining saltmarsh and woodlot. The former agricultural land occupies a flat terrace above the tidal marsh at an elevation of 49 feet. Historically, continuous open fields extended around the buildings, west to Lafayette Road and north to the edge of the saltmarsh (Figures 4, 5). Paths in a grid pattern dividing the land into sections were created in the early 1970s when pine plantations were established, and reforestation began (NETROnline 1973). The northern two areas were cleared of pine and then regrew as demonstration areas. The paved entrance driveway and parking lot installed in the late 1970s shifted access the historic buildings to the rear rather than the front yard. The area along the driveway and immediately north of the parking lot was cleared of red pine trees ca. 2014 and field restored. Some red pines remain near Elwyn Road west of the entrance. The arboretum was developed in the late 1970s on the southwest part of the historic fields, where pine trees had been planted in the early 1970s and burned in 1976. Winding paths were installed in the 1980s. The corner of the property on Lafayette Road reforested in the mid-twentieth century (NETROnline 1962) coinciding with commercial development across the road.

There are approximately sixty acres of ***saltmarsh*** (Photos 27, 28,). Historically it was valuable land that provided hay for livestock. The upland edge of the marsh is defined by an embankment. The open water of Sagamore Creek that defines the northern edge of the property has an irregular shoreline. Inlets and

points of land, and two small islands, are surrounded by mudflats at low tide. The saltmarsh just above the ordinary high tide line, is interspersed with manmade parallel drainage ditches (Figures 6, 10). A utility line crosses the property through the marsh and then in a 100' wide cleared corridor through the woods (Photo 27).

The eastern part of the property is wooded, with saltmarsh along the creek. It is maintained as a ***forest management area***. The trail network of dirt paths includes some old farm roads, 1970s tracks and more recent walking paths. Some trails have been rerouted over time to avoid erosion. The main trail runs from the parking lot east along the south side of the saltmarsh to the forest, then north to the northeast point where it circles around. There are two gates into the forest from Elwyn Road with typical state park type timber gates and posts (Photo 31). The eastern gate, Gate 3, is a farm road running north toward the point where a house was once located (Photo 32).

Archaeological sites on the property were identified by intensive walkover in 2003, and site forms and a report are on file with NHDHR. There is a foundation, later used as a stone dump site, at the edge of the woods east of Rosemary Cottage. A building stood on this location as late as 1844 according to a historic map (Dadalt et. al. 2003). Two stone boulder quarry sites have been identified with stones marked by the plug and feathers method of splitting used beginning the 1830s. There is a house site at the bend in Elwyn Road between Gates 2 and 3 that was owned by Langdon and has been gone since the mid-1800s. In the woods to the north, a rectangular stone walled area is identified as an old foundation but may be a graveyard associated with that property (Dadalt et. al. 2003). On the point of land in the northeast corner of the Urban Forestry Center that was purchased by Stone in 1960, a brick and concrete block fireplace and hearth are the ruin of a 1960s building known as the ***Gazebo*** (Photo 34). The roof burned in the 1990s. Nearby, there are house and barn sites associated with the Beck homestead where Henry Beck was granted land in the 1600s and the Beck garrison stood until the early nineteenth century. The burying ground of the Beck family was also located by archaeologists (Dadalt et. al. 2003). In the nineteenth century, the farm was owned by the Johnson family who lived at 71 Elwyn Road.

The south and west edges of the Urban Forestry Center on Elwyn and Lafayette roads are interrupted by subdivided parcels that were once part of the historic Langdon-Elwyn farm. East of the Urban Forestry Center entrance and the service driveway to 45 Elwyn Road, ***35 Elwyn Road*** is a privately owned residential property separated from the farm in the 1940s (See POR1046). The rectangular parcel is surrounded by fence and vegetation and the house and outbuildings are set back from the road in a cluster of trees. The driveway is accessed from 45 Elwyn Road near the maintenance barn.

The ***Christ Episcopal Church*** property at 1035 Lafayette Road was subdivided from the farm by John Elwyn Stone in the 1960s. The Colonial Revival style church faces the commercial strip south of the bridge over Sagamore Creek. Behind the rectory is a fieldstone cemetery identified as the burying place for the Langdon slaves of the seventeenth and eighteenth centuries. The rectangular stone-walled enclosure is 44' x 14', oriented east-west. The markers are small, un-inscribed, locally available stones (Tallman 1983). Across Route 1 from the Urban Forestry Center, Lafayette Road is heavily developed with large commercial buildings and parking lots.

South of Elwyn Road, ***Elwyn Park*** and other residential streets of 1950s-60s fill the area on the east side of Lafayette Road that was once part of the Langdon-Elwyn farm. A buffer between the historic Elwyn house and the surrounding tract houses is formed by about five acres of wooded land and a small pond on the south side of Elwyn Road that remains part of the Urban Forestry Center property (tax parcels 247/90 and 247/91) (Photo 29). Rows of closely-spaced small ranch houses on Elwyn Road and Edgewood Road across from the Urban Forestry Center entrance were built in 1959. To the south, the streets of Elwyn Park were laid out in a series of subdivisions beginning in the late 1940s and continuing into the early

1970s, resulting in a range of mid-century house types from capes and ranches to split-levels. Taft and Harding roads intersect Elwyn Road across from the Forest Management Area.

National or State Register Criteria Statement of Significance

The significance of the Urban Forestry Center has been previously evaluated, but no official determination of eligibility was made. James L. Garvin prepared a draft inventory form in 1996, updated in 2010, and a memorandum with a more detailed description of the Elwyn House in 1996. He noted that the buildings and the land lacked integrity and did not have National Register level significance (NHDHR Portsmouth town files; Garvin 1996).

The Urban Forestry Center property is important as a large tract of undeveloped land but does not convey its historic associations as the Langdon-Elwyn farm. The landscape does not illustrate agricultural land uses due to the conversion of the fields for forestry uses, construction of new roads and paths, landscaping of the yards around the buildings, and subdivision of a large portion of the land. The location and placement of outbuildings is unchanged, but the buildings are not historic. One barn was entirely rebuilt after a fire in 1969 and again in 2003; the other was rebuilt from the basement up in 1969 and remodeled in the 1970s. The saltmarsh itself has significance for representing an important historic land use. It is one of the larger pieces of marsh in the area and has the characteristic drainage ditches and other evidence of cultivation.

The Urban Forestry Center is widely recognized as the birthplace of Governor John Langdon (1741-1819), but it is not eligible for the National Register under Criterion B for that association. The mansion John Langdon built on Pleasant Street at the height of his career is a National Historic Landmark. Because of the loss of historic buildings and development of the agricultural landscape, the Elwyn Road property retains little integrity for the period when John Langdon lived on the farm as a child in the 1740s-50s and owned it as a country estate in the 1780s-1810s.

The historic cape built by John Langdon Elwyn in the 1830s is not eligible for the National Register under Criterion C. It is interesting for the use of an antiquated house form, apparently to recreate the Governor Langdon birthplace, which would make it a very early instance of the Colonial Revival. However, the cape has little architectural integrity due to the extensive renovations in the 1960s, as well as more recent window and door replacements.

The Urban Forestry Center has several archaeological sites, including foundations and burying grounds that have been identified, but National Register eligibility under Criterion D for the property has not been determined. The slave cemetery on the Christ Church property is an important resource related to New Hampshire's Black history, but it is now on a separate parcel, incorporated into the church grounds.

The Urban Forestry Center is notable for its formation in the 1970s as a new type of state forest property focused on the study and practice of urban forestry. It is potentially eligible for the National Register in the areas of conservation and education when it reaches the National Register cutoff date in 2026, but at this time, the historical importance of the state-owned property is not of exceptional significance for events within the past fifty years.

Period of Significance

N/A

Statement of Integrity

The Urban Forestry Center occupies a distinctive location, on the south side of the tidal creek and east of Lafayette Road/US Route 1. The overall setting of saltmarsh and wooded shoreline conveys some sense of the historic setting of the Langdon-Elwyn farm, but Urban Forestry Center plantings and trails occupy the formerly cultivated fields. The grounds around the buildings have no integrity as a farmyard. They are characterized by modern parking lots, driveway, plantings, and brick paths.

The integrity of the property was previously addressed in 1996 by James L. Garvin whose opinion was that the Elwyn house has lost integrity for its construction date of ca. 1835 and for every pre-1960s historical period thereafter (Garvin 1996). The overall form and plan of the cape is evident, but there have been several additions. The 1960s changes to the property by John Elwyn Stone are now fifty years old and could have significance for that period, if there had been no other renovations since that time. The windows and doors are modern replacements from 2012-13 and the clapboard siding has been replaced over time. The outbuildings have integrity of location, but were rebuilt and remodeled in 1969, in the 1970s, and ca 2002. Rosemary Cottage lost architectural integrity as an old building as well as integrity of location when it was moved to the property and reconstructed in 1969 (Garvin 1996).

The property has limited integrity for its associations with Governor John Langdon. Only the location on Sagamore Creek is recognizable from his period of ownership. The farmhouse in which he was born and the one in which he was raised are both gone. None of the historic outbuildings remain and the property no longer has a farm landscape. Even the connection of the property with downtown Portsmouth was changed after Langdon's death when Lafayette Road was built.

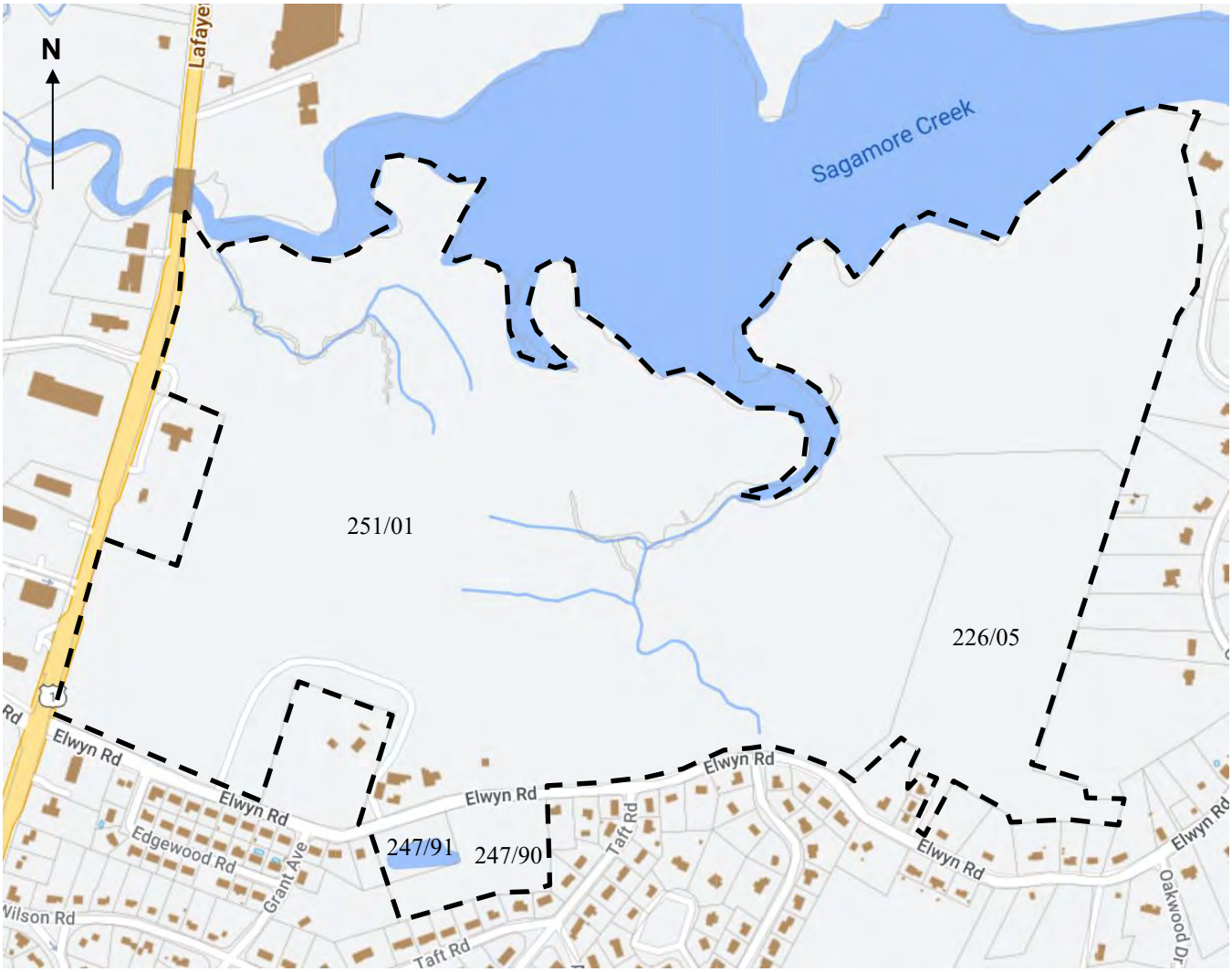
The feeling of the Urban Forestry Center is more park than agricultural landscape. Its primary use is as public outdoor recreational space and environmental education center. The associations with historic farming are most evident in the large area of saltmarsh. Elsewhere the property does not have the characteristics of a historic farm. The historic barns are no longer extant or much remodeled. The dooryard and farmyard have modern landscaping. The relationship between buildings and lands was changed by the late twentieth century plantings on historic fields. While the lands between the Elwyn House and the saltmarsh along the creek were traditionally kept open as hay fields, they were transformed when John Elwyn Stone established a plantation of pine and spruce trees in the early 1970s, altering the appearance of the landscape, though not the topography (Garvin 1996). In recent years, most of the trees were removed and fields and meadow restored on parts of the property. Plantings around the historic buildings and in the arboretum are continuously evolving.

Changes to the buildings that accompanied the establishment of the Urban Forestry Center in 1976-77 included adaptation of a barn for a conference center, alterations to the rear of the historic cape for use as administrative offices, and adaptation of the Rosemary Cottage as a classroom building with an added greenhouse, later removed. The landscape was altered by construction of a new access road that circles behind the house and barns to provide parking in the rear of the buildings (Garvin 1996). The land associated with the Elwyn house no longer retains the boundaries of the historic farm. In addition to the subdivision of the hundreds of acres south of Elwyn Road, the property was also diminished by the subdivision of the Christ Church parcel with the slave cemetery on it in the 1960s, and the separation of the parcel adjacent to the historic farmhouse for private ownership from the 1940s (Garvin 1996).

Boundary Description and Justification

The New Hampshire Urban Forestry Center is bordered on the north by the shoreline and saltmarsh of Sagamore Creek. Lafayette Road/US Route 1 is to the west and Elwyn Road to the south. The boundary

of the inventoried property encompasses all land now owned by the State of New Hampshire on several contiguous parcels. The existing boundaries of the Urban Forestry Center were established in the late 1970s. The main tract is tax map/parcel 251/01, which is 154 acres according to the tax record. This was nearly all of the historic Langdon-Elwyn farm north of Elwyn Road and east of Lafayette Road, plus land to the east along Sagamore Creek that was purchased by John Elwyn Stone in 1960. Another 20.49 acres on 226/05 was acquired by Stone's estate in 1978-80. South of Elwyn Road two small parcels, 247/90 and 247/91, contain 3.85 and 1.3 acres. Outside the Urban Forestry Center boundary, a rectangular parcel with buildings at 35 Elwyn Road (251/02) was separated from the farm in the 1940s and occupied by the caretaker. On the west edge of the property, a rectangular parcel on Lafayette Road (246/01) was subdivided in the 1960s for church construction.



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Portsmouth Public Library

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A.J. Dupere, NH Division of Forests and Lands, July 2022.

Surveyor's Evaluation

NR listed:	individual	☐	NR eligible:		NR Criteria:	A	☐
	within district	☐	individual	☐		B	☐
			within district	☐		C	☐
Integrity:	yes	☐	not eligible	☒		D	☐
	no	☒	more info needed	☐		E	☐

Historic Maps

Figure 1. Grant 1774 plan before Lafayette Road/Route 1 was built shows Mr. Langdon's near site of present Cape and another house now gone on land that became part of the Langdon-Elwyn farm. The route to downtown Portsmouth was via Peverly Hill Road and South and Middle streets.

Figure 2. 1857 Rockingham County map shows the J.L. Langdon house now 45 Elwyn Road. J. Johnson house on creek shoreline is now northeast corner of UFC land. The driveways south to Odiorne and Stoddard and north to J. Moses to seem to be misplaced compared to later and current maps. (Library of Congress)

Figure 3. Beers 1876 map shows old farmhouse on Rye (Elwyn) Road with small pond across the road and J.L. Elwyn house to the south on Lafayette Road. J. Johnson House is now 71 Elwyn Road. J. Johnson on Sagamore Creek is now northeast corner of UFC property. (Norman B. Leventhal Map Center Collection, Boston Public Library)

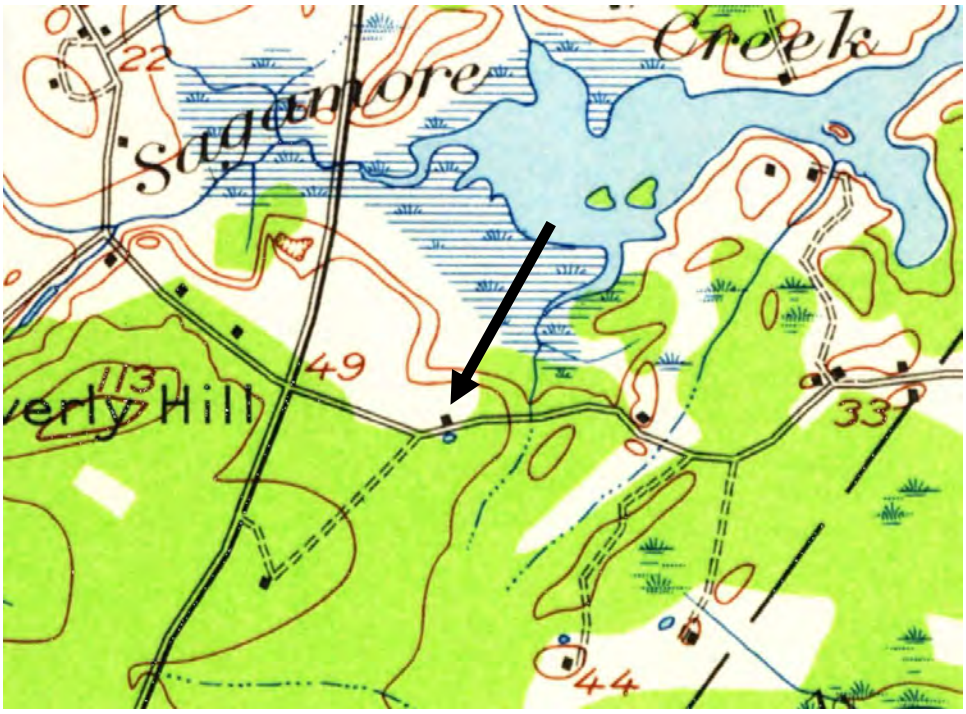

Figure 4. 1916 USGS map shows old house on Elwyn Road. Lafayette Road house set back on wooded land south of Elwyn Road that would be later developed as Elwyn Park, connected by a driveway. Building still extant on point of Johnson property, now northeast corner of UFC.

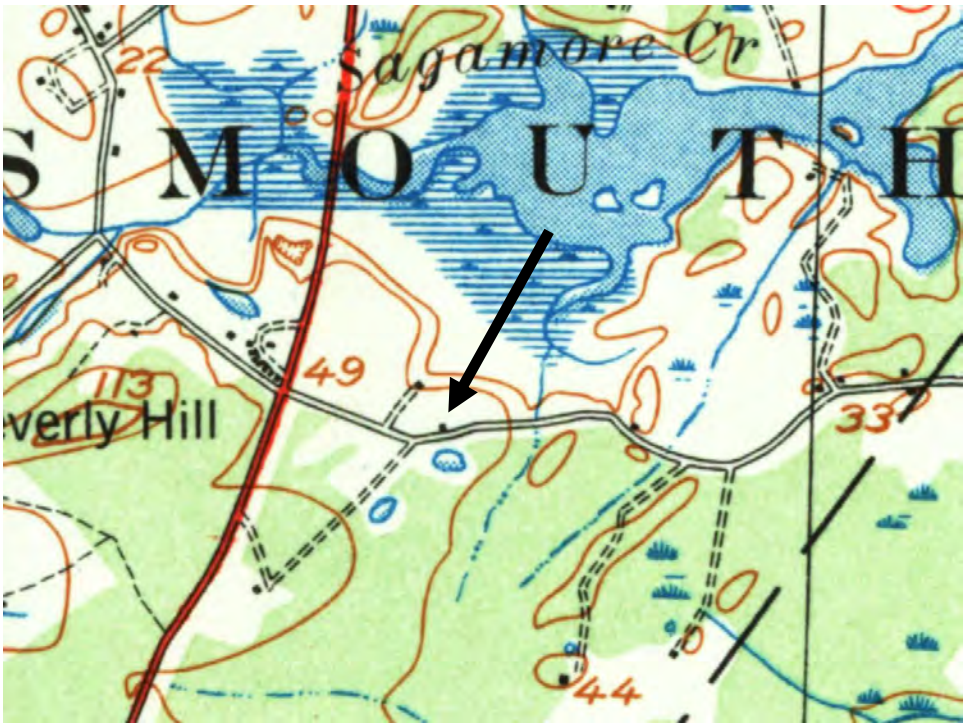

Figure 5. 1941 USGS map shows house at site of 35 Elwyn Road, old Elwyn house, farm road to Lafayette Road house where Elwyn Park would soon be built. Johnson house gone from northeast point.

Figure 6. 1962 historic aerial shows open fields (before pine plantations), saltmarsh, woods to east, and Elwyn Park subdivision south of Elwyn Road (NETROnline)

Figure 7. 1962 aerial detail of buildings and fields (NETROnline)

Figure 8. 1960's aerial photo, looking north, at the buildings and fields with Sagamore Creek in the background (Courtesy of the Armsden Collection, Portsmouth Athenaeum)

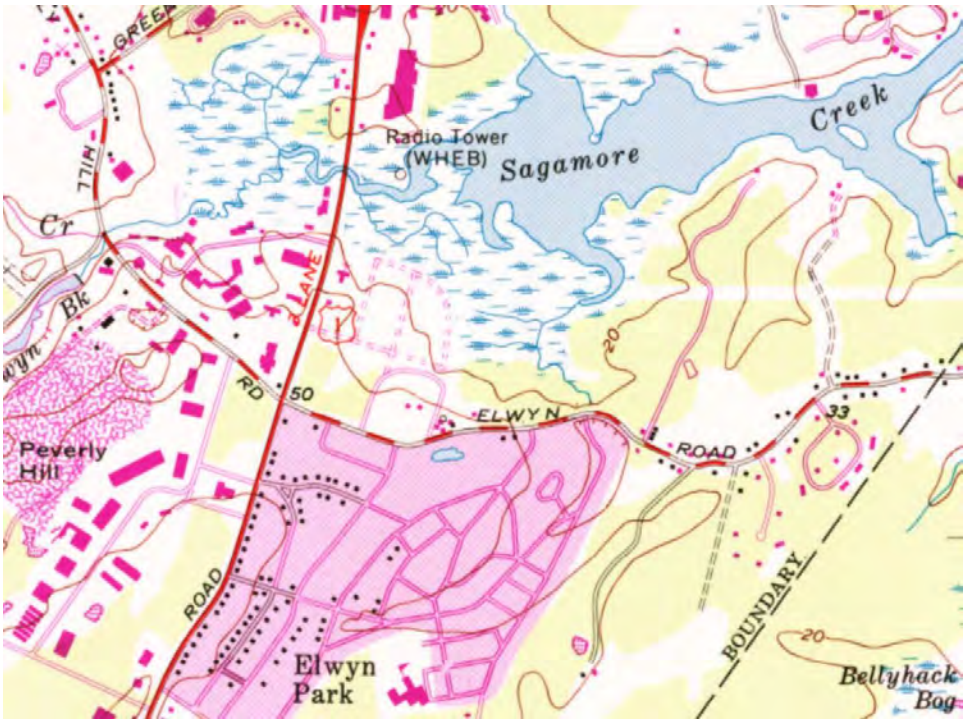

Figure 9. 1956 USGS map with developments up to 1993 in pink shows Urban Forestry Center driveway and paths.

Figure 10. 2020 aerial shows the current landscape of open and forested areas, with the marsh and Sagamore Creek to the north (Google Earth).

Figure 11. 2021 aerial shows buildings and grounds (Portsmouth GIS)

Historic Photos

Figure 12. Sarah Haven Foster painting of the late nineteenth century is an artistic rendering (Portsmouth Public Library)

Figure 13. 1899 view of cape west elevation and facade, facing northeast (Courtesy of the Vincent D. Coyle Memorial Collection, Portsmouth Athenaeum)

Figure 14. Cape and barns, facing northwest, early twentieth century (Courtesy of Alexander B. Warwick, Portsmouth Athenaeum)

Figure 15. Rear (north) elevation of cape and barns, facing south from the field (Courtesy of Alexander B. Warwick, Portsmouth Athenaeum)

Figure 16. Outbuildings viewed from the back yard, facing west. Barn on site of John Elwyn Stone Forestry Learning Center at right, barn on site of maintenance barn at left (Courtesy of Alexander B. Warwick, Portsmouth Athenaeum)

Figure 17. Rear of the cape, mid-twentieth century, facing southeast from the back yard (Courtesy of Alexander B. Warwick, Portsmouth Athenaeum)

Figure 18. Urban Forestry Center cape and barns, ca. 1990, facing northwest (Courtesy of the Portsmouth Athenaeum)

Figure 19. "Rosemary Cottage" on its original site on Chapel Street in downtown Portsmouth, before it was moved in ca. 1969 (Courtesy of the Portsmouth Athenaeum)

Photo Methodology

Photographs from December 2020 and January 2021 show the property without foliage or snow cover. There have been no changes to buildings or grounds since that time. Representative current views from July 2022 are included.

Photo Key

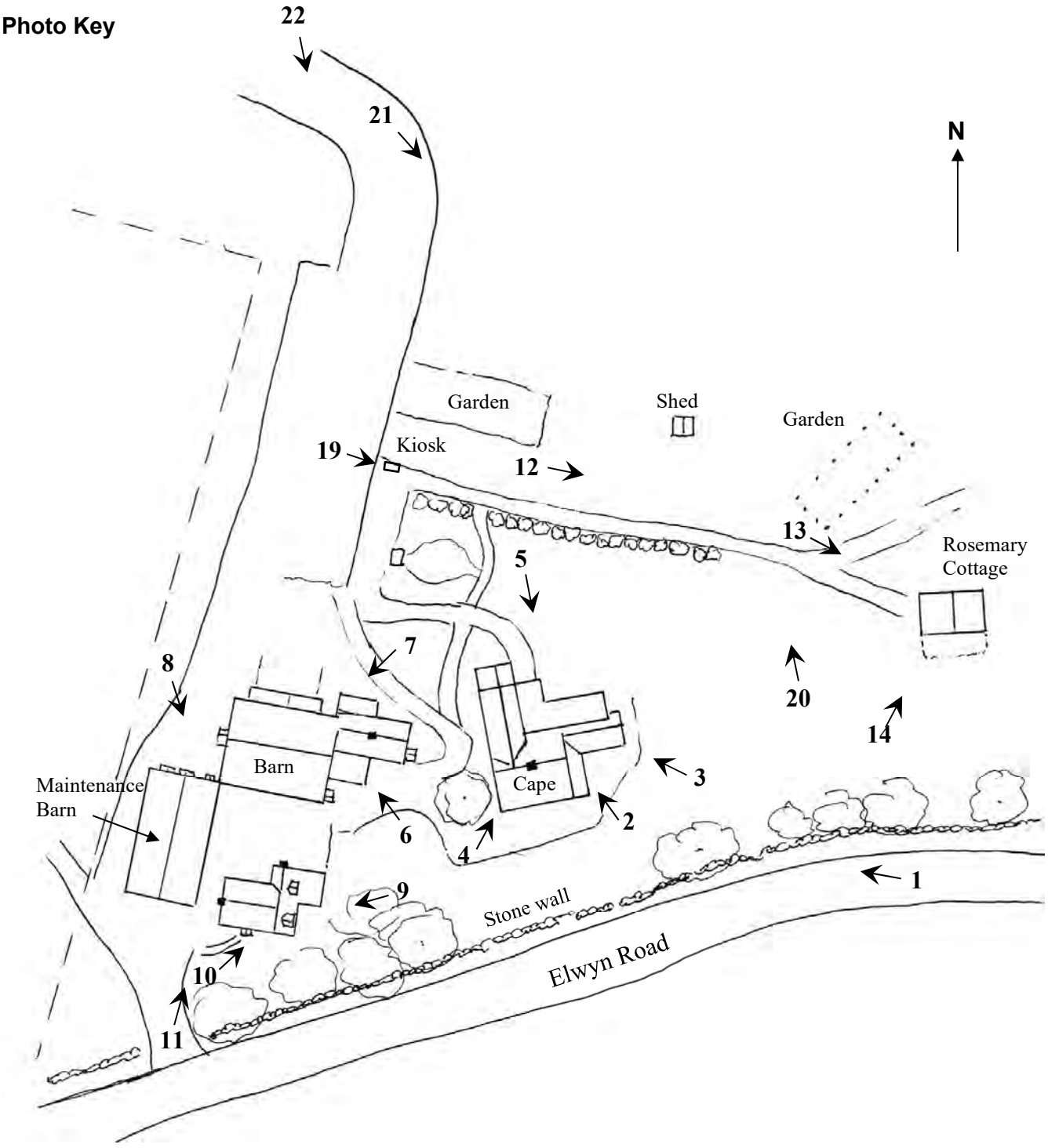

Photo Key for Photos 1-14, 19-22


N
27
28
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23
25, 26
32
18
16
17
15
29
30
31
Elwyn Rd
Elwyn Rd
Elwyn Rd
Elwyn Rd
Taft Rd

Current Photographs

Photo 2) Historic cape or Elwyn House, façade — Direction: NNW
Reference (file name): PIC_9331 — Date taken: December 2020

Photo 3) Cape east elevation and wing — Direction: NW
Reference (file name): PIC_9337 — Date taken: December 2020

Photo 4) Cape west elevation and façade Direction: NE
Reference (file name): PIC_9330 Date taken: December 2020

Photo 5) Cape rear (north) elevation Direction: SSE
Reference (file name): IMG_9301 Date taken: July 2022

Photo 6) Barn, now John Elwyn Stone Forestry Education Center Direction: NW
Reference (file name): PIC_9343 Date taken: December 2020

Photo 7) Barn north elevation from garden paths Direction: SW
Reference (file name): PIC_9328 Date taken: December 2020

Photo 8) Barn and maintenance barn west and north elevations Direction: S
Reference (file name): IMG_9320 Date taken: July 2022

Photo 9) Caretaker's house and barn east elevations from front yard Direction: NW
Reference (file name): PIC_9345 Date taken: December 2020

Photo 10) Caretaker's house south elevation from driveway Direction: NNE
Reference (file name): PIC_9348 Date taken: December 2020

Photo 11) Maintenance barn and caretaker's house from driveway Direction: NNE
Reference (file name): PIC_9350 Date taken: December 2020

Photo 12) Gardens, shed, and Rosemary Cottage Direction: ESE
Reference (file name): PIC_9325 Date taken: December 2020

Photo 13) Rosemary Cottage Direction: SE
Reference (file name): IMG_9300 Date taken: July 2020

Photo 14) Rosemary Cottage, looking toward saltmarsh and Sagamore Creek Direction: NNE
Reference (file name): PIC_9336 Date taken: December 2020

Photo 15) Roadside stone wall near Urban Forestry Center entrance Direction: WNW
Reference (file name): PIC_9360 Date taken: December 2020

Photo 16) Roadside wall west of entrance, looking toward Lafayette Rd Direction: WSW
Reference (file name): PIC_9365 Date taken: December 2020

Photo 17) Urban Forestry Center entrance Direction: SE
Reference (file name): PIC_9366 Date taken: December 2020

Photo 18) Driveway and parking lot Direction: NE
Reference (file name): PIC_9370 Date taken: December 2020

Photo 19) Kiosk at entrance from parking lot Direction: NE
Reference (file name): PIC_9323 Date taken: December 2020

Photo 20) Fields behind buildings, looking toward parking lot Direction: NW
Reference (file name): PIC_9338 Date taken: December 2020

Photo 21) Gardens from parking lot looking toward Elwyn Road Direction: SE
Reference (file name): IMG_9299 Date taken: July 2022

Photo 22) Rear of buildings and parking lot from trails Direction: SSW
Reference (file name): PIC_9388 Date taken: December 2020

Photo 23) Saltmarsh spring house and pump house Direction: NE
Reference (file name): PIC_9389 Date taken: December 2020

Photo 24) Historic fields looking toward cemetery and parking lot Direction: SSE
Reference (file name): PIC_9380 Date taken: December 2020

Photo 25) Langdon cemetery looking toward saltmarsh Direction: NE
Reference (file name): PIC_9382 Date taken: December 2020

Photo 26) Headstones of Mary Langdon, John Langdon, Tobias Langdon Direction: ENE
Reference (file name): PIC_9384 Date taken: December 2020

Photo 27) Saltmarsh and Sagamore Creek, Forestry Management Area in back Direction: E
Reference (file name): PIC_9375 Date taken: December 2020

Photo 28) Saltmarsh looking across Sagamore Creek Direction: NE
Reference (file name): PIC_9390 Date taken: December 2020

Photo 29) State-owned land with pond south of Elwyn Rd Direction: SW
Reference (file name): PIC_9341 Date taken: December 2020

Photo 30) Forest Management Area west of Gate 3 Direction: W
Reference (file name): PIC_9405 Date taken: December 2020

Photo 31) Forest Management Area Gate 3 trail entrance Direction: NE
Reference (file name): PIC_9406 Date taken: December 2020

Photo 32) Forest Management Area trails Direction: ESE
Reference (file name): PIC_9391 Date taken: December 2020

Photo 33) Forestry Management Area trails, crossing a stone wall Direction: NW
Reference (file name): PIC_9396 Date taken: December 2020

Photo 34) Forest Management Area 1960s "gazebo" ruin Direction: N
Reference (file name): PIC_9400 Date taken: December 2020

48 PRESERVATION BRIEFS

Preserving Grave Markers in Historic Cemeteries

Mary F. Striegel, Frances Gale, Jason Church, &
Debbie Dietrich-Smith

National Park Service
U.S. Department of the Interior

Technical Preservation Services

Cemeteries found across the country are not only places of burial, but they also provide a vivid record of community history. Whether large or small, well maintained or neglected, historic cemeteries are an important part of our cultural landscape. The vast richness of expression through form, decoration and materials informs our understanding of the individuals buried in historic cemeteries and their cultural significance.

While cemeteries are often considered to be perpetual, their most prominent feature—the grave markers—are not. They weather, naturally decay, often are poorly maintained and repaired and, on occasion, are vandalized (Fig. 1). Grave markers are usually noteworthy not only for their inscriptions but also for their craftsmanship. Exceptional markers are considered works of art.

This Preservation Brief focuses on a single aspect of historic cemetery preservation—providing guidance for owners, property managers, administrators, in-house maintenance staff, volunteers, and others who are responsible for or are interested in preserving and protecting grave markers. Besides describing grave marker materials and the risk factors that contribute to their decay, the Brief provides guidance for assessing their conditions and discusses maintenance programs and various preservation treatments.

Figure 1. Sandstone and slate grave markers in the Ancient Burying Ground in New London, CT, display a variety of weathering conditions. Markers in the cemetery date from the mid-17th to the early 19th centuries. Photo: Jason Church.

Also identified are a number of excellent references that address materials used in all grave markers, including several other Preservation Briefs (listed in Additional Reading). This Brief highlights particular issues that should be considered with historic grave markers.

Types of Traditional Grave Markers

The great variety in the types of grave markers is a fascinating aspect of the study and appreciation of historic cemeteries. Three broad categories can be used to describe grave markers—(1) single-element, (2) multiple-element, and (3) structures. Single-element grave markers are stone, cast iron, or wood elements that are set in a vertical position or placed as a horizontal slab on the ground (Fig. 2). Early examples of this simplest type of grave markers are field stone and basic wooden or wrought iron crosses, with the name of the deceased person scratched into or engraved on the marker. Often, these rudimentary grave markers are overlooked, significantly deteriorated, or lost. Vertical stone slabs and large stone ledgers laid horizontally over the gravesite are more sophisticated examples of this type.

Multiple-element grave markers are found in a number of different forms. In the most typical form, a grave marker would consist of two stones—an upper headstone placed on top of a base stone. The upper headstone may be secured in a number of different ways to the base. In the simplest of forms, the upper stone was placed on the base, set in a bed of mortar on top of the base, or joined with pins and mortar. With a "tab-and-

Figure 2. These mid-19th century, single-element stone grave markers in the Grove Cemetery in Bath, NY, are set in a vertical position. Photo: Jason Church.

slot" grave marker, the tabbed upper stone was set in a slotted base (Fig. 3). More common today, the upper headstone is secured with a technique that uses small spacers set on the base and a setting compound. This technique or one that uses an epoxy adhesive may be found on older markers where the stones have been reset.

Figure 3. A multi-element grave marker from the early 19th century in the St. Michael's Cemetery, Pensacola, FL, consists of a vertical element with tabs (left image) into a slotted base (right image). Photo: Fran Gale.

Stacked-base grave markers use multiple bases to increase the height of the monument and provide a stable foundation for upper elements. Tall, four-sided tapered monuments, known as obelisks, are typically placed on stacked bases. Columns or upright pillars have three main parts – a base, shaft, and capital. Multiple-element grave markers may also include figurative or sculptural components. Traditionally, stacked base grave markers were set on lead shims with mortar joints or with lead ribbon along the outer edges.

Grave markers can also be engineered structures. Examples of grave marker structures include masonry arches, box tombs, table tombs, grave shelters, and mausoleums (Fig. 4). The box tomb is a rectangular structure built over the gravesite. The human remains are not located in the box itself as some believe, but

Figure 4. This sandstone table tomb, located in Cedar Grove Cemetery, New London, CT, is an engineered grave marker structure consisting of a horizontal stone tablet supported by four vertical table "legs" with and a central column,. Photo: Jason Church.

rather in the ground beneath the box structure. The table tomb is constructed of a horizontal stone tablet supported by small corner supports or columns. Grave shelters, also called grave houses, can be simple or elaborate wooden structures built over the gravesite. Mausoleums are above-ground buildings with compartments for multiple burials. Engineered structures also include hillside and underground tombs.

Guidelines for Evaluating and Registering Cemeteries and Burial Places, National Register Bulletin 41, provides a concise review of grave marker types.

Materials

Stone, brick, concrete, metal, and wood are the most common materials used for grave markers and for fences and gravesite enclosures in historic cemeteries. This section briefly describes the composition and properties of these diverse materials

Masonry materials

There is a wide variety of masonry materials used in historic cemeteries; some are naturally occurring and others man-made. Although there are notable exceptions, most masonry materials are durable, have high compressive strength, and are resistant to weathering. As grave markers, they typically represent the work of masons and stone carvers.

Stone is a naturally occurring material with a wide range of properties and is available in a variety of colors (Fig. 5). Geologists classify stone according to the way in which it was formed with the three categories being igneous, sedimentary and metamorphic rock. Stone found in cemeteries is predominantly quarried, though the use of field stones is not uncommon. The mineralogy and chemical composition of stones vary. Some are composed primarily of silicate minerals; granites, sandstones, slate, and schist are examples. Other stones contain calcium carbonate with marble and limestone in this group. Mineralogy, chemical composition, and

Figure 5. A variety of colors of natural stone are found in historic cemeteries, such as this pink granite marker in the Cedar Grove Cemetery, New London, CT. Photo: Jason Church.

physical structure of the stone influence weathering and the selection of materials and procedures for its cleaning and protection.

Man-made masonry materials are manufactured from naturally occurring raw materials. For example, the raw materials used to make brick include clay, sand, and shale. During firing, clay minerals and sand melt and come together forming silicates, aluminates, and metallic oxides. The resulting brick material has a hard-fired outer surface with a softer interior.

Concrete is a man-made material composed of cement, sand, gravel, and water. Most concrete produced after 1870 contains Portland cement, another manufactured product. In its plastic or wet state, concrete can be cast or poured. It hardens by hydration, a chemical-curing process. The resulting product has excellent compressive strength, but much lower tensile strength. Reinforcing concrete with steel helps compensate for this limitation.

All masonry materials are porous with an interior network of pores. The porosity of sedimentary rocks such as limestone and sandstone can be as high as 20 percent while the pore volume of granite is very low. Because moisture is a key factor in many deterioration processes, porous masonry materials are more vulnerable to weathering.

Metals

Metals are solid materials that are typically hard, malleable, fusible, ductile, and often shiny when new (Fig. 6). A metal alloy is a mixture or solid solution of two or more metals. Metals are easily worked and can be melted or fused, hammered into thin sheets, or

Figure 6. Decorative cast-iron grave markers like this late-19th century one in Oakland Cemetery in Shreveport, LA, are produced by heating the iron alloy and casting the liquid metal into a mold. Photo: Jason Church.

drawn into wires. Different metals have varying physical and mechanical properties, aesthetics, and weathering characteristics.

Ferrous metals and alloys, including cast iron, wrought iron, and steel, all contain iron. Cast iron also contains carbon and silicon and has a relatively low melting point. When heated to a liquid state, it can be molded into a variety of shapes. Wrought iron is an alloy with low carbon content. Its fibrous inclusions (called slag) are sometimes visible to the naked eye. Unlike cast iron, wrought iron is heated to the point where it becomes soft and then is hammered or "worked" into desired shapes. Most of the wrought and cast iron in historic cemeteries is ornamental rather than structural. While cast iron, steel, and wrought iron all contain iron, steel and wrought iron are more resistant to corrosion. Paint was often applied to ferrous metals to help protect them from corrosion and for decorative purposes. Metal elements were painted in a variety of colors including black, white, and green, among others.

Nonferrous metals and alloys, such as bronze, zinc, and lead, do not contain iron. Bronze contains about 85% copper, 10-15% tin, and sometimes lead. Historic bronze cemetery markers were created by casting processes that involves pouring liquid bronze into a mold. The completed casting is hollow. Bronze work may comprise a single molded component, such as a plaque, or multiple molded components welded or fitted together as with large statuary. Chemical patinas were applied to enhance color, and clear coatings for protection. Cast zinc monuments were popular from 1870 through the early 20th century. Most cast zinc is bluish-gray in color. Although cast zinc is resistant to corrosion, it is a brittle material with a tendency to "creep" or deform, especially when exposed to high outdoor temperatures.

Wood

Wood is a porous organic material composed of tubular cells in a parallel arrangement. The structure

Figure 7. As shown by this 1877 marker in Silver Terrace Cemetery, Virginia City, NV, exposure to sunlight can damage wood grave markers, making the wood more susceptible to water damage and cracking. Photo: Jason Church.

and characteristics of these cells determine the wood's appearance and influence wood properties. Wood-cell walls and cavities contain moisture. Oven drying reduces the moisture content of wood. After the drying process, the wood continues to expand and contract with changes in moisture content. The loss of water from cell walls causes wood to shrink, sometimes distorting its original shape (Fig. 7).

Hardwoods come from deciduous trees such as oak, maple, and walnut; softwoods from conifers such as pine, cedar, and fir. In general, hardwoods have higher density than softwoods, which makes them more durable materials, and are darker in color. Wood cut at different orientations affects its strength and weathering. As an organic material, wood is also particularly vulnerable to termites, carpenter ants, and other wood-destroying insects and fungi. Paints, coatings, and fungicides such as borates are used to help protect wood from various insect damage and fungal rot.

Other materials

Old cemeteries often include a wide variety of other materials not normally associated with contemporary grave markers, such as ceramics, stained glass, shells, and plastics (Fig. 8). As with masonry, metals, and wood, each has its own chemical and physical properties

Figure 8. A fired ceramic, this cameo is set in a marble grave marker, located in Elmwood Cemetery, Memphis, TN. Different materials may require different conservation approaches. Photo: Mary Striegel.

which affect durability and weathering. These materials present unique challenges and their properties must be understood before establishing appropriate maintenance and repair. Documentation of unusual materials is critical when repair is not possible.

Weathering

All grave marker materials deteriorate when they are exposed to weathering such as sunlight, wind, rain, high and low temperatures, and atmospheric pollutants (Fig. 9). If a marker is composed of several materials, each may have a different weathering rate. Some weathering processes occur very quickly, and others gradually affect the condition of materials. Weathering results in deterioration in a variety of ways. For example, when exposed to rainwater some stones lose surface material while others form harder outer crusts that may detach from the surface.

Figure 9. The limestone and sandstone grave markers in this historic cemetery have different weathering processes. On the left, the limestone shows surface loss in areas exposed to rainwater and gypsum crust formation below. The sandstone marker on the right displays uniform soiling, but surface hardening may be occurring. Photo: Fran Gale.

Granite is a durable grave marker material considered resistant to weathering. It is a compact, hard rock with low porosity, and granite deterioration can be imperceptible for many years. Slate also has low porosity, but its layered structure can result in delamination. Some stones used to make grave markers, like sandstone, limestone and marble, are softer than granite and more porous. These materials are more vulnerable to weathering with deterioration noticeable during the initial years of exposure. With slate and other stones with layered structures, weathering sometimes results in delamination, defined as the separation of layers along bedding planes. Different rates of weathering are related to the chemical composition and physical structure of the material.

Deterioration affects other grave marker materials in different ways. With brick, durability is related to its firing temperature, which influences the brick's compressive strength and absorption. Brick fired at high temperatures has a protective fire skin. The weathering of concrete also is variable, and largely depends on the materials used in its manufacture. For example, Portland cement concrete is generally more resistant to weathering than lime concrete. With wood, grave markers fashioned from heartwood (the dead inner wood) are more durable than those of sapwood (the living exterior wood), and some wood species such as cedar, Osage orange and black locust contain extractives that provide decay resistance.

The term "inherent vice" is used to describe a material with a naturally occurring problem that leads to premature deterioration (Fig. 10). An example of this problem is marble that has cracked due to natural locked-in stresses. Inherent vice also describes grave markers that are composed of incompatible materials, where decay is accelerated in one or both materials because of chemical interactions caused by their close proximity. An example is the galvanic corrosion that occurs when dissimilar metals, such as copper and iron, are in contact and exposed to moisture.

Risk Factors

There are two major categories of risk factors that can impact historic grave markers. The first comprises naturally-occurring deterioration phenomena known as the forces of nature, including weathering. The list of natural risk factors includes climate, biological issues, and natural hazards such as fire and floods. The other category includes the many degradation phenomena that are related to human activities. The results of humans and their actions include pollution, lack of maintenance, inappropriate repairs, arson, and vandalism. While some of the factors related to human activities, such as improper repair, may not be intentional, the results can be just as damaging to grave markers.

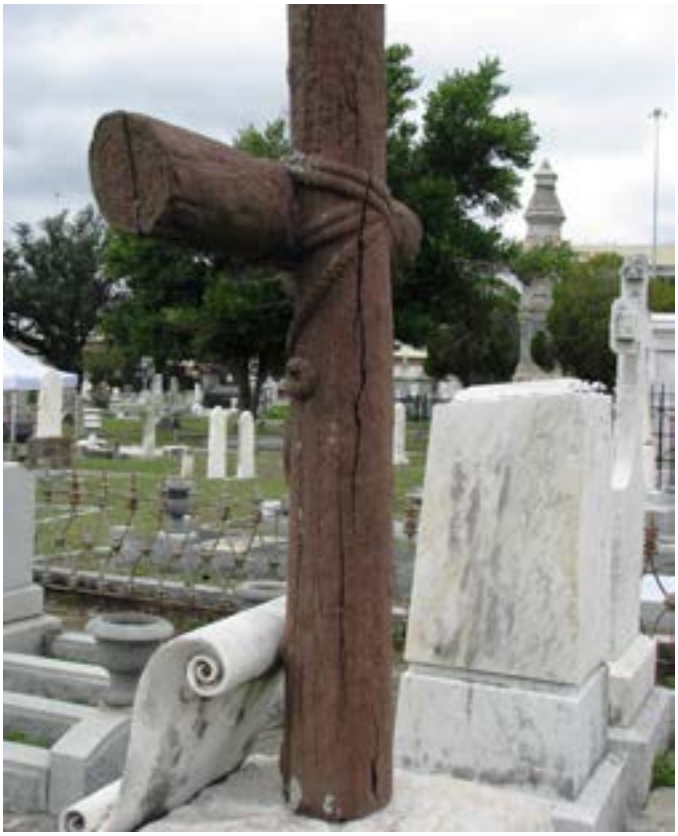

Figure 10. The sandstone cross (carved to look like wood) in this grave marker in St. Michael's Cemetery in Pensacola, FL, provides an example of inherent vice – the severe delamination affecting the sandstone has occurred along its natural bedding planes. Photo: Fran Gale.

Often, it is not possible to separate natural risk factors from those related to human activities. For example, pollution is deposited on grave markers by rain and other forms of precipitation, resulting in discoloration and often material degradation. Whether due to natural risk factors, human activities or both, "synergism" occurs when the result of two or more risk factors is greater than the sum of the individual effects. An example is the damage that occurs to salt-laden masonry materials during freeze/thaw cycles. The combined effect of these two deterioration factors is severe.

Natural Risk Factors

Climate plays an important role in weathering processes. Depending upon the climate, cemetery grave markers are exposed to rain, snow, sleet, ultraviolet (UV) light, humidity, high and low temperatures, and wind. All of these forces can damage masonry, metals, and wood. For example, with wood, the UV rays present in sunlight accelerate the weathering process.

Exposure to repeated changes in temperature can have an adverse effect on materials such as stone and other porous masonry. High temperatures deteriorate and weaken many materials while low temperatures cause materials to become brittle. In some climates there are rapid changes during spring and fall that

Figure A. Cemeteries are cultural landscapes made up of a variety of features. Grave markers are but one component of cemeteries that also include walkways, drives, fences, coping, trees, shrubs, and other vegetation. Each component adds to the understanding of the cemetery landscape. Photo: Debbie Dietrich Smith.

Vegetation Management

Carefully monitoring and managing of trees and other vegetation is an integral part of a cemetery preventive conservation program. Mature trees and ornamental shrubs can add character, shade, and seasonal color to historic cemeteries (Fig. A). However, if not properly maintained, they can damage grave markers, fencing, and other historic features. Mature trees may fall during storms and drop large limbs that topple grave markers and mangle fencing. Overgrown vegetation creates wet, shaded areas and fosters biological growth than can accelerate deterioration of stone, iron, and wood objects.

A treatment plan for cemetery vegetation should address trees, shrubs, vines, and "volunteer" growth. For the assessment and treatment of trees that pose hazards, consult an International Society of Arboriculture (ISA) certified arborist. Prune trees and shrubs adjacent to grave markers to allow air circulation and light penetration. Certified arborists and master gardeners should carry out this work or direct others in pruning trees and shrubs, as many may be historic features integral to the cultural landscape and worthy of preservation.

Regarding lawn care, historic cemeteries were not designed for today's large riding lawnmowers, yet this is the mower of choice for many cemeteries, as mowing is one of the most time-consuming and costly maintenance tasks generally undertaken. Mowing between tight spots with a large riding mower deck is destined to cause damage. Best practices include using a smaller, push mower between particularly sensitive features, and outfitting riding mower decks with protective bumpers. Low-cost options include using fire hose padding or a foam swimming 'noodle' (Fig. B). Additional damage is caused by riding over low stones or coping, especially when the blade height is set low. If rolling over these features is unavoidable, many riding mowers have a hand-control adjustment to temporarily raise and lower the blade height.

Improper use of a string-trimmer is also potentially destructive, especially when it comes into contact with soft materials such as marble, limestone, and wood. Using the lightest trim line and angling the trimmer head towards the ground will help reduce damage if the trimmer hits unintended targets. Consider hand trimming around the most significant, fragile features.

As a time-saving measure, herbicides are sometimes used around the base of features to remove unwanted grass and weeds. In most cases, use of herbicides for this purpose is not recommended, as salts within the herbicide can wick into the stone (especially soft stones) and cause spalling and deterioration. The removal of vegetation also exposes soil around the base of the grave marker, which, in a heavy rain, can cause soil splashing that may result in staining.

If fertilizer is applied, choose a natural organic fertilizer to minimize salt content for the reasons stated above. For any chemical application, be sure to rinse away residue from grave markers, etc., with water using a low pressure hose or spray bottle, to minimize continued contact.

Ongoing maintenance of cemetery vegetation is essential to conserve grave markers and fencing. Periodic inspections may warrant removing trees; trimming tree limbs, shrubs, and vines; and removing volunteer vegetation. All trees should be inspected at least every five years. Annual inspections are necessary to assess the condition of shrubs and vines, and to identify volunteer growth for removal. Mowing and trimming around the hundreds of stone, brick, iron, and wood features found in many cemeteries is a weekly or bi-weekly chore. Lawn care is the most time-consuming, and, if not done carefully, potentially destructive maintenance activity in historic cemeteries.

Figure B. A pool 'noodle' can be fitted to the deck of a lawnmower to prevent damage to grave markers. Photo: Debbie Dietrich Smith.

cause damaging cycles of expansion and contraction. Adjacent dissimilar materials may respond differently to temperature changes, resulting in distortion. High winds can carry water and abrasive particles causing abrasion and erosion, especially to soft materials. Wind may also drive rain water into masonry joints and permeable elements and materials.

Water, in liquid, solid or vapor form, plays a critical role in the deterioration process. Most grave marker materials are porous, and moisture from precipitation, ground water, or frequent landscape watering can enter the pore system. If temperatures drop below the freezing point, water in interior pores, joints and cracks freezes, and its increased volume often applies internal pressure, resulting in damage to the grave marker such as cracks or spalling.

Ferrous metals are particularly vulnerable to water-related deterioration. Iron increases in size when it corrodes, sometimes as much as 20 percent. As the corrosion process proceeds, the ferrous metal eventually weakens. When embedded within concrete or masonry materials, the corroding iron often causes cracks and spalls in the masonry.

Woody vegetation can damage grave markers in a variety of ways (Fig. 11). Trees, bushes, and vines can shade grave markers, extending the time that the markers are exposed to moisture. Tendrils and roots may burrow into mortar joints and openings, causing mechanical damage and large plants may lift up or shift markers. Even leaves and twigs, when allowed to collect on the ground near grave markers, can affect water drainage and evaporation (Fig. 12).

Microorganisms such as algae, fungi, and lichens may affect grave markers. Microorganisms hold in moisture and some produce acids. With acid-sensitive materials such as limestone and marble, the result is surface erosion. Sometimes the organisms use the material as a food source, dissolving minerals in the stone and attacking the cellular structure of wood. Wood is especially vulnerable to fungi, algae, and other microorganisms when its moisture content is above 25%.

Infestation by termites, carpenter bees and ants, and other insects can affect the appearance and structural integrity of wood. Unsightly bird droppings can also affect paint and other surface finishes.

Human Activities

Aside from vandalism and purposeful neglect, most risk factors attributable to human activity are unintentional. Sometimes damage to grave markers is the result of cleaning or repair done with the best of intentions. These unfortunate mistakes can be the result of insufficient training and funding, misuse of tools and equipment, and poor planning. With proper training and supervision, human risk factors can be lessened.

Figure 11. Woody vegetation can damage grave markers and pose a risk to visitors unless well managed and maintained. Photo: Jason Church.

Deferred maintenance usually accelerates the deterioration of grave markers and can be a safety hazard. All materials have a service life with mortar, paints, and other coatings requiring periodic upkeep to be effective. For example, unless ferrous metal has a sound protective coating, exposure to weathering can result in corrosion. Loose, misaligned or detached grave markers may lead to further damage or deterioration if not corrected in a timely manner. When nearby trees and shrubs are overgrown and invasive vegetation is present, needless risks to historic grave markers may also occur.

Inappropriate maintenance activities can be devastating. One of the most common threats stems from improper lawn care, particularly the misuse of mowing equipment and string trimmers (weed whackers). The use of large mowers or mishandling them can lead to displacement of markers. Scrapes, gouges and even breakage also can occur. Improper use of string trimmers in areas immediately adjacent to grave markers can result in

Figure 12. A cemetery professional undertakes a tree inventory in American Cemetery, Natchitoches, LA, to determine the health of trees in the cemetery. Management decisions for trimming or removal are based on the inventory. Photo: Debbie Dietrich Smith.

Avoiding 10 Common Maintenance Mistakes

1. Maintain records on conditions and treatments of historic markers

2. Seek advice from persons experienced with preserving historic markers when initiating a major maintenance or repair program.

3. Discourage visitor use of chalk, shaving cream, and other materials to highlight carvings and lettering.

4. Train grounds crews in methods to avoid damage to historic markers, including flat grave markers which can be easily damaged by machinery, fertilizers and weed killers.

5. Remove graffiti as quickly as possible, using appropriate methods, so as not to encourage further marker disfiguration and vandalism.

6. Maintain ground cover around cemetery markers to avoid surrounding dirt from splashing back and staining grave markers.

7. Never use rotary grinders to resurface or "clean" historic markers.

8. Avoid the use of coatings on masonry without proper investigation.

9. Avoid high pressure water washing to clean historic markers.

10. Repair rather than replace damaged and deteriorated grave markers. For markers encased in cement, leave any repair work to trained conservators.

scratching and even cutting into softer stone and wood. Generally, the use of chemical weed killers at the base of grave markers should be avoided, especially if there is a risk that the marker would absorb the chemicals.

Repointing masonry grave markers using Portland cement mortars that are harder than historic mortars often results in accelerated deterioration of the masonry material. Mortar should be softer than the adjacent masonry, enabling trapped moisture to migrate out, and serve as the sacrificial material when cracking occurs to relieve excessive stress. Problems also result when using impervious "protective" coatings that can trap moisture within the masonry, resulting in damage during wet/dry and freeze/thaw cycles (Fig. 13).

Figure 13. The impervious coating used to "protect" this sandstone grave marker trapped moisture within the stone, eventually resulting in deterioration and surface loss. Photo: Fran Gale.

Figure 14. High-pressure water washing can damage grave markers. The photograph shows "wand marks" on the headstones produced by inappropriate pressure washing. Photo: Jason Church.

Harsh cleaning products and techniques can have a detrimental effect on grave markers. Acidic cleaners such as muriatic acid can dissolve minerals in many masonry materials and can attack metals. Alkaline cleaners, such as bleach, are notorious for leaving residual salts that are deposited on the surface (a process called efflorescence). Both acidic and alkaline cleaning can result in staining, especially if rinsing is inadequate. Using high-pressure water, above 500 to 1,000 psi, can needlessly damage materials as well, increasing their vulnerability to weathering (Fig. 14). If the marker is fragile, even low pressure water can be damaging. Techniques to avoid include aggregate blasting with sand or other harsh media and the use of power tools with abrasive wire or NyloxTM brushes.

Pollution

Grave markers can be both visually and materially affected by pollution. Most readily apparent is the discoloration that takes place when airborne pollutants are deposited on markers. Depending on the exposure, how water is shed, and the marker material and intricacies, discoloration on markers will usually appear uneven and in streaks.

While the visual effect of pollution is often discoloration, less apparent is the potential damage caused by pollution to the grave marker materials themselves. Most rain is slightly acidic, and its pH (a measurement of acidity) becomes more acidic when pollutant gases, such as sulfur dioxide and nitrous oxides, are present. Acid rain damages materials containing calcium carbonate, such as limestone and marble, resulting in surface loss or erosion. When erosion is severe, the grave marker inscription, carvings and sculptural elements may become discernable. Recarving the inscription is not recommended. Instead, a small stand-alone interpretative sign could be placed nearby.

Acid rain also damages bronze grave markers. Pollutant gases alter the composition of exposed bronze, often producing water-soluble minerals. These minerals are washed away during subsequent rains, resulting in surface erosion. If the bronze element is positioned on a masonry pedestal or plinth, the minerals are deposited on the masonry below. These effects of acid rain are disfiguring to the bronze element and associated masonry.

Condition Assessments

Condition assessments help identify potential safety hazards, required preservation work, and any additional conservation that is needed for stabilization and protection of grave markers. Assessments also provide important baseline information about deterioration affecting grave markers. The collected information is helpful in determining and prioritizing maintenance tasks, identifying unstable conditions that pose an immediate threat, and for developing a plan for any needed repair or conservation work. Assessments should be recurring, preferably every spring. Condition assessments also help determine the extent and severity of damage following a disaster.

Depending upon the size of the cemetery and funding available, the initial assessment may be carried out by a team consisting of cemetery staff, a materials conservator, and, where necessary, an architect or structural engineer for cases involving large monuments and mausoleums (Figs. 15a and 15b). For smaller cemeteries without large monuments and mausoleums, and where funding is problematic, volunteers can be trained to prepare a condition assessment under the guidance of an experienced individual.

The first step in any condition assessment is to gather background information, including cemetery records and documents, historical photographs, records of previous repair and maintenance work, and current practices. The next step is to conduct an on-site survey. Following the survey, recommended maintenance procedures should be provided. If the team or individual conducting the survey is experienced in repairing historic grave markers, their assessment should include information about appropriate materials and techniques for restoration and stabilization.

Survey forms facilitate both recording of field conditions and needed maintenance or repair work. Most forms include sections for marker type (headstone, obelisk, etc.), construction materials, orientation, dimensions, soil type, and grave marker deterioration. There are a number of excellent examples of survey forms available for download, including the National Park Service Condition Survey Form at www.ncptt.nps.gov However, because each cemetery is unique, it may be necessary to modify an existing form.

A tool kit for the condition assessment may include binoculars, digital camera, magnifying glass, measuring tape, clipboard, carpenter's rule, level, magnet, and flashlight. For large monuments, a ladder or aerial lift may be required. Photographs of each marker, including overall shots and close-up details, are an essential part of the documentation process. Photo logs are helpful for

Figure 15a. Condition surveys are undertaken to document current conditions, determine safety issues, and plan both emergency stabilization and future treatment plans. There are a variety of survey forms available that can be tailored to the specific cemetery. Photo: Mary Striegel.

Figure 15b. Photographs are used to document the condition of the grave marker as part of a condition assessment. Photo: Fran Gale.

recording the date, direction, and photographer. Digital photographs should be captured in a standardized size and format (.tif, .jpg, .raw).

Defining conditions can be challenging, especially for cemetery staff and volunteers who are new to the process. There are a number of illustrated glossaries that can assist with determining accurate terminology for describing conditions. The ICOMOS Illustrated Glossary on Stone Deterioration Patterns http://www.international.icomos.org/ and the NACE International Resource Center Corrosion 101 http://nace.org/ are excellent resources.

Where deterioration is apparent, the assessment should address questions such as:

- What are the physical characteristics of the defects? Has deterioration obscured ornamental work or made the inscription difficult to read?
- What is the extent of the affected area? Are all areas of the marker affected by deterioration or is there a pattern?
- Do the conditions appear to be stable or getting worse.
- Are the defects affecting other materials or impacting the safety of visitors?
- Is deterioration contributing to loss or theft?
- Is further investigation required?

Maintenance

The old axiom that an ounce of prevention is worth a pound of cure certainly applies to the preservation of historic cemeteries. Maintenance is essential to the long-term preservation of historic grave markers. The principal components of a maintenance program include regular inspections, cyclical and prioritized maintenance work, and annual reports and budgeting. An important first step is the development of a support team, including staff, conservators, engineers, skilled masons, and other professionals. In most cases, the cemetery manager should initiate this process.

The cemetery manager can use the information from the condition assessment report to develop a maintenance plan with a list of cyclical maintenance work. Many tasks can be carried out by in-house staff. For example, maintenance cleaning of metal and stonework can often be accomplished by rinsing with a garden hose. Applications of wax coatings can be used to protect bronze elements. Trained staff can undertake these tasks. Teaching graffiti removal techniques to cemetery staff may also be necessary if vandalism is an on-going problem. Staff should have access to written procedures

Figure 16. A professional mason works to insert a new piece of stone. Often referred to as a "dutchman", this repair technique requires replacing the deteriorated stone section with a new finished piece of the same size and material. Photo: Jason Church.

that include lists of appropriate materials and forms for recording the work completed.

Some work is best done by specialists (Fig. 16). For example, unless there is a trained mason on staff, replacing deteriorated or missing mortar will require a skilled masonry contractor. Services of a conservator or trained cemetery specialist should be used for removing severe soiling and staining from grave markers and for carrying out adhesive repair work such as selectively replacing a piece of stone when a marker is damaged by mechanical equipment. Care should be taken to clearly define the scope of work when hiring a contractor. It is useful to reference guidelines and preservation standards, such as those provided by the Secretary of the Interior or the American Institute for Conservation, whenever possible.

Treatments

In historic cemeteries, preservation treatments are used to preserve grave markers and protect them from future deterioration. Tasks such as cleaning, where appropriate, painting, or lime washing may be undertaken both as an initial treatment and on a cyclical basis as part of the maintenance program for the site. Other treatments, including repointing, patching and filling, and resetting, should be undertaken on an as-needed basis.

It is important to note that the Secretary of the Interior's Standards for Treatment of Historic Properties provide concepts and guidelines for maintaining, repairing, and replacing historic materials. The Standards promote best practices that will help to protect grave markers in historic cemeteries and other irreplaceable cultural resources. If replacement is required, the new material should match the old in composition, design, color, and texture. With chemical and physical treatments, the Standards recommend using the gentlest means possible.

Cleaning

Cleaning is carried out to remove soiling, staining, and contamination from grave markers (Fig. 17). Cleaning improves the visual appearance of the marker and sometimes reveals existing problems such as erosion and cracks. For various protective treatments, cleaning may be a necessary step in surface preparation. Although cleaning often is desirable and beneficial, the use of improper materials and techniques can cause great damage; when cleaning historic grave markers is undertaken, one should keep in mind the principle, "first do no harm."

To avoid a heavy build-up of soiling that might require aggressive cleaning procedures, regularly scheduled cleaning should be carried out by cemetery staff. The frequency of cleaning depends on a number of factors, including climate, location and vegetation. Before cleaning, an on-site inspection should be conducted to identify monument materials, including those not designated for cleaning since they may inadvertently come in contact with cleaning products and could be harmed. Temporary protective measure may be needed to safeguard nearby grave markers. Identifying the types of soiling present, including pollutants and contaminants, is important in deciding what cleaning procedures to use.

For some monuments, existing conditions may preclude cleaning. Even gentle cleaning may not be recommended for conditions such as severe erosion, advanced deterioration, or fragile areas. Additionally, open joints, unstable repairs, and large cracks may require alternate cleaning procedures.

General maintenance may involve low-pressure water washing. In most cases, surface soiling can be removed with a garden hose using municipal water or domestic water supply from a well. To avoid risks due to freezing, air temperature above 40° F is recommended for the time of treatment and subsequent 24 hours. To help remove stubborn soiling and dirt, soft, natural bristle scrub brushes are best. Avoid metal bristle brushes or firm nylon brushes and wrap metal elements with masking tape to avoid scratching grave markers.

Figure 17. Volunteers can undertake cleaning of grave markers once they have received initial training. Cleaning methods may include wetting the stone, using a mild chemical cleaner, gently agitating the surface with a soft bristle brush, and thoroughly rinsing the marker with clean water. Photo: Jason Church.

Selecting A Conservator or Preservation Professional

A conservator or preservation professional can provide valuable assistance in preserving historic cemeteries by documenting and surveying cemetery conditions, assisting with work plans and prioritizing work, and recommending specific maintenance and repair procedures. More commonly, they recommend more specialized preservation treatments for historic markers and carry out the actual work.

Specialized skills are required for undertaking certain treatments on historic grave markers or where markers are highly significant or are in more advanced states of disrepair. When contracting for grave marker conservation, it is important to interview conservators who have worked in cemeteries. They should be experienced with the historic materials and nature of the conditions where the work is to be undertaken. Prior to selecting a conservator, details about their previous work and training should be obtained and confirmed. Most conservators will provide sample reports and photographs of previous work.

The American Institute for Conservation of Historic and Artistic Works (AIC) offers information about selecting a conservator and what to expect once you have contracted with a conservator. Searching the "Find a Conservator" database provides a list of local and regional AIC members who have attained Professional Associate or Fellow status in the organization. More information can be found on the AIC website at http://www.conservation-us.org/

A conservator will inspect grave markers before designing appropriate treatments and submit a written plan for their proposed conservation work that includes materials to be used, a cost estimate, and a schedule for the project. As part of the contract, the conservator should be required to submit a written completion report that clearly describes their treatment of the marker/s and includes maintenance and care recommendations.

Soaking and/or spraying water in a fine mist are effective methods to remove natural growth. Water also has a "swelling action" for some soiling, making it easier to remove with gentle scrubbing. With cyclic spraying, a fine mist of water is directed at the targeted area for a short time (e.g., 20 minutes or less), followed by a short "off" period. This on/off process is repeated several times. Because high-pressure water can abrade the surface, this treatment is not recommended for masonry monuments.

For stains that are not water soluble or where organic solvents are ineffective, it is sometimes necessary to use chemical cleaning. Chemical cleaners include acids, alkalis, detergents and organic solvents. Each has advantages and disadvantages. Acids dissolve the interface between the stain and substrate while alkalis allow for longer dwell periods but must be neutralized. Some detergents are near-neutral in pH (neither acidic nor alkaline) and easier to rinse.

Before selecting or using a chemical cleaning agent, the manufacturer's Safety Data Sheet (SDS), available with the product and online, should be reviewed. The SDS provides information about the product's composition, including identified hazards, proper handling and storage, disposal, and required personal protective equipment. Once a chemical cleaning product has been selected, the manufacturer's instructions should be followed. Before undertaking large-scale cleaning, it is always advisable to undertake small-scale tests (approximately 6" x 6"areas in discrete locations), and then waiting several days before assessing the results.

Chemical cleaning is used to remove metallic stains and other contaminants such as old coatings and graffiti. For severe staining, poultice cleaning is useful as it extends contact time with the cleaner. A poultice is a mixture of clay or other inert material, such as paper pulp, and a cleaning agent. The mixture is applied to the surface and allowed an extended dwell period. The chemical cleaner dissolves the stain and the clay draws the stain out to the surface. When using a poultice, it should be applied just beyond the stained area and covered with polyethylene. The best practice is to leave the treatment on the surface for 24 hours and then remove the polyethylene cover and allow the poultice to continue drying. Once the poultice is dry, the mixture is then collected and the surface is thoroughly rinsed. For some stubborn stains, the application may need to be repeated.

Chemical cleaning also may be required if biological growth (algae, fungi and lichen) is severe. A study conducted by the National Park Service provides guidelines for cleaning government-issued marble headstones and recommends biocidal cleaners that contain quaternary ammonium compounds. Like all cleaning methods, chemical cleaning can accelerate deterioration. Adverse effects include efflorescence, stains, and etching.

Graffiti Removal

Markers with graffiti tend to be targets for further vandalism (Fig. 18). Timely removal helps deter future vandalism and improves the marker's appearance.

If the graffiti is water soluble, it can be removed using water and a soft cloth or towel. Rinsing the cloth frequently helps to avoid smearing graffiti on unaffected areas. If the graffiti is not water soluble, organic solvents or commercial graffiti removal products suitable for the grave marker material are recommended. Products should be tested prior to use. General cleaning of the entire marker is a good follow-up for a more even appearance. For deep-seated graffiti, poultice cleaning (previously described) may be required to extract staining materials.

Figure 18. Graffiti is carefully removed using a low-pressure dry-ice misting instrument. Photo: Jason Church.

Repointing

Missing and deteriorated mortar in old cemetery grave markers is a common condition, and the mortar should be replaced to prevent water intrusion and potential damage (Fig. 19). Several questions should be considered when selecting materials for repointing. Most importantly, what is the masonry substrate that

Figure 19. Masonry markers like this box tomb may require the repointing of mortar joints. It is important to use a mortar that is softer than the historic brick. In this case a conservator uses a lime putty-based mortar to repoint. Photo: Jason Church.

requires repointing? What mortar mix is suitable for the historic masonry? How quickly will mortar need to cure? Soft mortars contain traditional lime putty or modern hydrated lime. Harder mortars contain natural or Portland cement. If necessary, mortars can be tinted with alkali-stable pigments to match historic mortar colors. The selection of the mortar to be used is critically important to the success of the project. An inappropriate mortar can result in unattractive work and accelerate the deterioration of the historic grave marker. Always avoid the use of bathtub caulk and silicone sealants for repointing mortar joints.

Prior to repointing, any loose and deteriorated mortar needs to be removed from the joint, preferably using hand tools. Following joint preparation, the mortar materials (lime, cement, and sand) are mixed, and then water added to form a stiff paste. The repointing mortar is applied using a tuck pointing trowel, typically with a narrow 1/8"- 1/2" flat blade. Mortar is compacted into the joint, and then excess mortar is removed and the original joint profile replicated. Good repointing requires skill. Generally, a mason or person with masonry training should repoint mortar joints.

Resetting

Resetting is recommended for grave markers when their foundations are unstable or out of plumb (Figs. 20a through 20c). This often complex activity involves lifting the grave marker, leveling its foundation, and returning the marker to its original upright position. Workers can be injured and the grave marker damaged if resetting is not carried out properly and safely.

Inexperienced staff or volunteers should not attempt resetting without training from a conservator, engineer, or other preservation professional. When dealing with fragile or significant grave markers, or those with large

Figure 20a. This slate grave marker in the Ancient Burying Ground in Hartford, CT, is a ground-support stone. Resetting requires digging a hole that will hold the base of the stone and then compacting the soil at the bottom of the hole by hand. Photo: Fran Gale.

Figure 20b. To facilitate drainage, crushed stone, gravel, and sharp sand line the hole and are hand-tamped around the stone after placement. Photo: Fran Gale.

Figure 20c. The reset ground-supported grave marker should be level and plumb. Photo: Fran Gale.

Safety

Encouraging the public to visit and explore public burial grounds and cemeteries increases awareness of the value of these sacred sites. If visitation is promoted, owners and property managers must be responsible for ensuring that their sites are safe for staff and visitors. This responsibility includes monitoring the condition of grave markers.

Historic cemeteries can be hazardous workplaces for staff members, consultants, contractors, and volunteers. Awareness of potential hazards in a historic cemetery and careful planning are essential to avoiding injury. Maintain an appropriate first aid kit on site for minor injuries and have an emergency plan in place that includes contact information for medical assistance.

Creating a safe work environment in historic cemeteries requires appropriate planning for each project, starting with personal protective equipment. Suitable clothing and personal protective equipment should be fundamental safety requirements. Supportive shoes such as steel toe work boots or sturdy lace-up shoes help protect ankles and feet from injury, just as good work gloves help protect hands from cuts, scrapes, and splinters. Whether using a chipper, drill and other power tools or equipment, safety glasses or goggles are essential. A back brace often is recommended for heavier lifting tasks. Do not work alone or, if you must, tell someone where you are and when you expect to return.

During hot weather, heat stress is a present risk. Besides knowing the signs of heat stress, preventive measures should be taken by each worker:

- Wear light, loose-fitting, breathable clothing and a broad-brimmed hat.
- Use sunscreen, reapplying as needed.
- Take frequent breaks in the shade.
- Make sure fresh water is available and drink to stay hydrated.
- Eat small meals before and during work.
- Avoid caffeine, alcohol, and large amounts of sugar.

Trip and falling hazards include uneven ground, holes, open graves, toppled grave markers, fallen tree limbs, and other debris (Fig. C). Sitting, climbing, or standing on a grave marker should be avoided since the additional weight may cause

Figure C. Gophers and other burrowing animals produce uneven ground and holes that are trip and falling hazards to visitors and staff of historic cemeteries. Photo: Jason Church.

deteriorated and structurally unstable monuments to break or collapse with serious injury potentially occurring to the worker and damage to the marker. To help prevent injuries that can result from unstable grave markers, it is important to routinely identify and flag severely damaged and unstable grave markers for corrective work and to rope off any marker considered to be in immediate danger of collapse. Prior to beginning work, the immediate area around the job site should be rechecked for safety hazards.

Snakes, wasps, and burrowing animals inhabit historic cemeteries (Fig. D). Snakes sun on warm stones and hide in holes and ledges, so it is important to be able to identify local venomous snakes. An appropriate venomous snake management plan should be in place, and

Figure D. Yellow jackets that are nesting below the projecting molding of this grave marker pose a hazard to visitors and staff because, if disturbed, they will vigorously defend their nest. Yellow jacket, paper wasp and hornet nests should be removed from grave markers by trained staff or specialists. Photo: Jason Church.

all workers should be familiar with it. Workers and volunteers should be instructed as to safety measures to be taken in regards to snakes, including proper clothing where there is an identified risk.

The imported red fire ant is an invasive pest, prevalent in the southern United States. They attack en masse, resulting in painful bites that can be potentially life threatening to people with allergic reactions. It is important to be able to identify the presence of red imported fire ants; be informed as to safety measures to take when working in areas known to be infested with them; and take steps to control them as necessary. A rescue medicine is available for those with serious allergic reactions.

Paper wasps, yellow jackets, and hornets are another concern, building nests around and on ledges and lips of box tombs, mausoleums, and other grave markers. They are very territorial around their nests and will vigorously defend them. There are non-toxic sprays that can be used in and around the work area. Nests should be safely removed.

Burrowing animals like armadillos, groundhogs, gophers, and moles disrupt the ground with their digging and tunnels and can create tripping hazards or undermine grave markers. Prairie dogs have been known to dig up bones and destroy gravesites. Sinkholes created by these animals can also be perfect places for other creatures like snakes to inhabit.

Proper work practices and lifting techniques need to be used whenever lifting or resetting grave markers. Many markers are surprisingly heavy. For example, a common upright marble headstone measuring 42" long, 13" wide, and 4" deep weighs over 200 pounds. Volunteers and workers should work in pairs, be able bodied, and have training in safe lifting techniques. Lift equipment and ergonomically correct tools should be routinely used to lift heavy markers (for most people this includes markers that weight more than 50 pounds). For smaller grave markers, a simple wooden clamp system can be constructed for a two-person lift (Figs. E1 and E2).

Figure E1. The simple wooden clamp system allows two people to safety lift a marble grave marker. Photo: Sarah Jackson.

Figure E2. The clamp system is constructed from off-the-shelf wooden boards. Photo: Sarah Jackson.

stacked bases, a specialist should be contracted for resetting.

It is important to check state and local regulations to make sure that digging around the grave marker is authorized before starting any resetting effort. Also, grave markers should be documented and cleaned before resetting. It is also a good time to measure and record the overall size of the marker and note any stone carver's marks or inscription of the company that made the marker. The company name is often found on buried portions of the base and revealed during the resetting process.

Typical materials required for resetting include a hoist, shovels, plumb lines, levels, tamping devices, wooden stakes, and boards. To improve drainage, sand and small gravel or small stones are commonly used when resetting.

Prior to resetting, it is important to establish the type of base. Most grave markers have one of three main base types: (1) ground supported, (2) slotted base, or (3) stacked base. Similar tasks are undertaken for each base type.

Ground-supported stones are a common type of historic grave marker. This type includes the traditional New England slate and brownstone markers and government-issued marble headstones. The primary goal with any ground-supported marker is to have it level and plumb. To reset the marker, a few inches or more of soil is first removed from around the stone. This is usually sufficient to enable a stone marker to be straightened.

The enlarged hole is then filled and compacted around the marker.

If a grave marker has fallen over and has been covered with soil or turf, it must first be inspected for attached concrete or other anchoring system. If this system is still attached, the grave marker may break during lifting. After removing the stone, it can be cleaned and then temporarily set on wood supports.

The hole left from removal of the marker will need to be enlarged to hold the base of the stone. Soil at the bottom of the hole should be compacted by hand, not with a power tamper. In most cemeteries, crushed stone or sharp pea-size gravel mixed with angular sand can be used to line the hole and then hand-tamped around the stone after it is placed in the hole. The gravel helps facilitate drainage and keeps the stone from settling. A bubble level can be used to ensure that the stone is plumb. Markers should not be set in concrete.

The second type of monument base is the slotted base where the upright element is secured to the base using mortise-and-tenon style construction. The upright element in the slotted base may be leaning or loose. In any case, the upright element should be removed from the base, the base leveled, then the element returned to the base. It is important to keep in mind the depth that the base was intended to be set into the ground. This may be indicated by the style of the base or the observed soil- line staining. Many bases were intended to sit flush on grade while some were set a few inches below ground.

Prior to resetting, the upright element should be disengaged from the base and carefully set aside. In most cases, the base will need to be removed to properly prepare the hole before resetting the grave marker. After doing so, four to six inches of soil should be removed from the hole and the soil then tamped by hand to make a proper bed or foundation. The foundation area can be filled with crushed stone or sharp pea-sized gravel and sand, checking to make sure that the base is plumb and level as resetting proceeds. Clean the headstone prior to resetting. Old mortar, concrete or epoxy should be removed from the slot and the bottom of the upright element using a hammer and small chisel. Once the stone elements are cleaned and the base is level and plumb, the next step is placing the upright element into the slot. A lime mortar can be used to fill any gaps in the slot. This prevents water intrusion that may cause marker movement related to freeze-thaw cycles.

A third common base type is the stacked base. This style includes at least one element placed on a base or a series of bases of varying sizes. Resetting a stacked-base grave marker usually requires special skills and lifting equipment. Depending upon the complexity of the marker, a conservator, experienced masonry contractor, or preservation professional with engineering skills is usually needed.

The sections of a stacked-base grave marker often are pinned together for support. If deteriorated, the pins should be replaced. Using a hammer and chisel, a conservator or person experienced in working with historic grave markers should remove any corroded iron, copper, or bronze pins, as well as the old mortar or adhesive adhered to each section. Replacement pins should be stainless steel all-thread, and sized slightly shorter and smaller than the existing hole. The replacement pins then can be set with epoxy, lime mortar, or packed in lead. Once the pins are in place, the sections of the stacked base can be individually reset using traditional or contemporary materials. These include lead, shims, mortars, and setting compounds. Finally, each gap or seam between sections should be pointed with a setting compound or appropriate mortar to prevent water intrusion.

Filling and Patching

Hairline masonry cracks may be the result of natural weathering and require no immediate treatment except to be photographed and recorded. However, larger cracks often merit further attention. Repairing masonry cracks involves several steps and typically a skilled hand (Fig. 21). The repair begins with the removal of loose material and cleaning. Materials that are used for crack repair include grouts for small cracks and epoxy for large cracks affecting the structural integrity of the monument. Gravity or pressure injection is used to apply grout or epoxy. Crack repair can be messy, so careful planning and experience are helpful. If the crack is active, a change in size of the crack will be noted over time. Active cracks require further investigation to ascertain the cause of the changes, such as differential settlement, and to correct, if possible, the cause prior to repairing the crack.

Figure 21. Cracks in a stone marker should be filled to keep water and debris out and prevent the crack from becoming larger. A patching mortar is designed to be used, in this case, with historic marble. Photo: Mary Striegel.

Repairing masonry markers with severely damaged or missing pieces requires a skilled mason or conservator. The materials used for patching are similar to those used for repointing mortar joints. With patching, it is critical that the physical and mechanical properties of the patching material be appropriate for the masonry material. Work includes designing a durable patch compatible with the substrate. Proper curing is especially critical for large patches and often involves procedures to protect the patch from premature drying. Repairs to stucco-covered surface should be carried out by a skilled plasterer using a stucco mix that is compatible with the original material.

Repairing delaminated slate and brownstone grave markers also requires a skilled mason or conservator. With this condition, there are openings along bedding planes which expose the stone grave marker to moisture intrusion. Treatments are design to eliminate or reduce moisture intrusion that would accelerate deterioration. The selection of appropriate repair materials and procedures depends on the severity of the condition. Traditionally, delaminated slate or brownstone grave markers were "capped" with a strip of lead or other metal. Today, this repair technique is seldom used, in part because the drilling procedure used to attach the cap can be damaging, if the stone is brittle. Also, there are toxicity issues associated with the use of lead. An alternative approach is to fill the openings exposed by delamination with grout or patching material that is compatible with the stone. Adhesion of the repair material to the delaminated surfaces is particularly important.

The decision whether to use patching material or undertake a dutchman repair with matching materialdepends on the grave marker material, location of the damaged area, size, and other factors. A successfully executed dutchman usually results in a repair that has long durability and maintains a similar weathering pattern to the adjacent historic material. When working with stone grave markers, repairs using dutchman techniques are best done by a skilled stone craftsman.

Detached fragments should be collected, documented and stored in a suitable facility. Reattachment of these fragments should be undertaken by a conservator or mason. This work often requires pins to reinforce the joints and patching to compensate for losses.

Protective treatments

Protective treatments for metal, stone, and wood grave markers stabilize corrosion and protect the monument from rainwater, pollutants, and other contaminants. Treatments may vary not only due to material differences, but also to specific site conditions.

Wax coatings are often used for bronze markers (Fig. 22). Wax provides a protective barrier against moisture, soiling, and graffiti. There are several steps in the wax application process. Where there is little corrosion, gentle cleaning of the marker is undertaken prior to applying the wax coating. Apply a thin layer of wax to the marker using a stencil brush or chip brush.

Figure 22. A protective coating must be maintained on metal elements. Wax or lacquer coatings help preserve the bronze patina and slow corrosion. Conservators apply a microcrystalline wax to this bust at St. Mark's Church in-the-Bowery, New York, NY. Photo: John Scott.

Mineral spirits can be added to the wax to facilitate brush application. A soft, clean cloth is used to remove excess wax and buff the surface. A second coat of wax is sometimes needed.

In most climates, iron objects require coatings to protect them from corrosion. Clear coatings are sometimes used to protect wrought iron objects. A corrosion inhibitive primer and topcoat are used for cast iron and steel objects. Direct-to-Metal (DTM) coatings combine the two. Because of their durability, acrylic enamels, urethane, and fluoropolymer coatings are preferred. Proper surface preparation is important, including the removal of surface soiling, flaking paint, and loose rust. This can be accomplished with compressed air, wire brushing, solvent rinsing, or other cleaning method. Next the surface is cleaned with a damp cloth, repeatedly rinsing the cloth as needed. While the surface needs to be thoroughly dried before painting, it is important to repaint as soon as possible since even overnight condensation deposits are not desirable.

Another approach for iron objects is using a rust converter to stabilize corrosion that involves less surface preparation. Commercially available rust converters contain tannin or phosphoric acid and react with rust to form more stable iron compounds. The surface must be painted following surface preparation with the rust converter.

Limewash is a traditional coating that brightens stucco-covered grave markers (Fig. 23). Like paint coatings, it needs to be periodically applied. Limewash is prepared with lime putty or hydrated lime and water. Curing begins following application. The lime putty or hydrated lime reacts with carbon dioxide in the air in a process called carbonation. This reaction eventually forms calcium carbonate, a stable hard coating. Limewash is a "green" coating with no volatile organic compound content and is "breathable," i.e., it allows for water vapor transmission. Although commonly white, limewash can be colored or tinted with alkali-stable pigments such as iron oxide.

Figure 23. Limewash is a breathable coating sometimes used to protect the surface of the grave marker and provide a decorative finish. Limewash is applied by brush in five to eight thin coats (with each coat about the consistency of skim milk). The surface is allowed to slowly dry between coats. Sometimes the surface is covered by damp burlap to slow the drying process. Photo: Sarah Jackson.

Before applying the limewash, the masonry surfaces should be inspected for coating residues that need to be removed and any required repair work undertaken. Stucco-covered surfaces should be repaired and allowed to fully cure before applying limewash. If the original color has been determined, the renewal coating can be formulated to match. In preparing the wash, enough water is added to lime putty or hydrated lime to produce slurry with the consistency of skim milk. A mixture of four parts water and one part lime usually works well. A Zahn or Ford cup can be found at a hardware store and used to measure the thickness of the limewash and ensure consistency with each batch. Although many traditional recipes include additives, a simple mixture of lime and water performs best. Using a power drill with a paddle attachment to stir the limewash will help ensure that the lime particles are fully suspended in the mixture. Any pigment for coloration is added during the final mixing.

The surface must be cleaned of old coating residues, soiling, and other contaminants. After dampening the surface, the limewash is applied in 5-8 thin coats, allowing each coat to dry between applications. Limewash is translucent immediately after application and then becomes opaque when dry.

Proper curing of limewash is critical to its durability. To prevent premature drying, the treated surface may need to be covered with damp burlap. Limewash must not be applied when frost or freeze conditions are predicted or in temperatures above 90° F. Ideally, limewash should be applied during spring or fall when temperatures are around 70° F, avoiding direct sunlight where possible.

Clear water repellents and consolidation treatments are sometimes considered for severely deteriorated grave markers, including unpainted wood markers and masonry. For wood markers, epoxy consolidants are used to patch and repair. For masonry materials, it is important to remember that they are porous, and water vapor and liquid water can travel through their internal network. Protective treatments must allow for water vapor transmission to prevent trapping moisture inside the marker. Although a wide variety of water repellents have been employed on masonry (wax, acrylic, epoxy resins, etc.), silane and siloxane treatments have been the most successful. These organosilicon compounds are "breathable," penetrate below the surface, and form chemical bonds with silicate minerals.

When erosion is severe, consolidation treatments (e.g., ethyl silicate) have been used to replace mineral binders lost to weathering (Fig. 24). Because these treatments are not reversible, laboratory and on-site testing are essential. Application by a conservator or other experienced preservation professional is advised.

Figure 24. A severely deteriorating monument or grave marker can be treated with a stone consolidant. The treatment is usually applied using a spray system. The consolidant soaks into the stone and replaces mineral binders that hold the stone together. On-site and laboratory testing and evaluation are performed prior to using this non-reversible type of treatment. Photo: Lucas Flickinger.

Conclusion

Maintenance is the key to extending the life of historic cemetery grave markers. From ensuring that markers are not damaged by mowing equipment and excessive lawn watering, to proper cleaning and resetting, good cemetery maintenance is the key to extending the life of grave markers. Whether rescuing a long-neglected small cemetery using volunteers or operating a large active cemetery with paid staff, the cemetery's documentation, maintenance and treatment plans should include periodic inspections. Only appropriate repair materials and techniques that do not damage historic markers should be used and records should be kept on specific repair materials used on individual grave markers. A well-maintained cemetery provides an attractive setting that can be appreciated by visitors, serves as a deterrent to vandalism, and provides a respectful place for the dead. A community history recorded in stone, wood and metal markers, cemeteries are an important part of our heritage, and are deserving of preservation efforts (Fig. 25).

Figure 25. Involving the community in activities helps to develop an appreciation for the cemetery and serves to deter vandalism. Events may include children through school or scouting organizations and can help teach across the curriculum. Photo: Debbie Dietrich Smith.

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This publication has been prepared pursuant to the National Historic Preservation Act, as amended, which directs the Secretary of the Interior to develop and make available information concerning historic properties. Additional information offered by Technical Preservation Services is available on our website at www.nps.gov/tps. Further information on the programs and resources of the National Center for Preservation Technology and Training can be found at www.ncptt.nps.gov. Comments about this publication should be made to: Technical Preservation Services, National Park Service, 1849 C Street NW, Washington, DC 20240.

Whether large or small, well maintained or neglected, historic cemeteries are an important part of our cultural landscape. This historic cemetery at Cape Lookout National Seashore, NC, provides a record of the families who lived in Portsmouth Village during the 19th and early 20th centuries. Photo: Fran Gale.

CHAPTER 200
SB 11 - FINAL VERSION

01/19/2023 0014s
8Jun2023... 1597h
06/29/2023 2242EBA

2023 SESSION

23-0564
08/04

SENATE BILL ***11***

AN ACT relative to African American burial grounds.

SPONSORS: Sen. Watters, Dist 4; Sen. Perkins Kwoka, Dist 21; Sen. Rosenwald, Dist 13; Sen. Altschiller, Dist 24; Sen. Fenton, Dist 10; Sen. Whitley, Dist 15; Sen. Avard, Dist 12; Sen. D'Allesandro, Dist 20; Sen. Prentiss, Dist 5; Sen. Gannon, Dist 23; Sen. Chandley, Dist 11; Sen. Carson, Dist 14; Rep. DiLorenzo, Rock. 10

COMMITTEE: Energy and Natural Resources

ANALYSIS

This bill requires the consultation with the descendants or descendant community prior to excavation or exploration of African American burial grounds.

- -

Explanation: Matter added to current law appears in ***bold italics.***
Matter removed from current law appears [~~in brackets and struckthrough.~~]
Matter which is either (a) all new or (b) repealed and reenacted appears in regular type.

CHAPTER 200
SB 11 - FINAL VERSION

01/19/2023 0014s
8Jun2023... 1597h
06/29/2023 2242EBA

23-0564
08/04

STATE OF NEW HAMPSHIRE

In the Year of Our Lord Two Thousand Twenty Three

AN ACT relative to African American burial grounds.

Be it Enacted by the Senate and House of Representatives in General Court convened:

200:1 Discovery of Remains and Notification of Authorities; African American Burial Grounds. Amend RSA 227-C:8-a, III to read as follows:

III.(a) If the unmarked human burials or human remains are encountered by a professional archaeologist, as a result of survey or test excavations, the remains may be excavated and other activities may resume after notification, by telephone or certified letter, is provided to the state archaeologist, and immediate notification is given to living descendants or specific groups known to have affinity with the remains. The treatment, analysis, and disposition of the remains shall be as provided in RSA 227-C:8-c and 8-g.

(b) If a professional archaeologist directing long-term systematic archaeological research, that is, research designed to continue for one or more field seasons of 4 or more weeks' duration, sponsored by any accredited institution, accredited college or university with research interests in New Hampshire, as a part of his ***or her*** research, recovers Native American remains ***or remains from a suspected African American burial ground***, he ***or she*** may be exempted from the provisions of RSA 227-C:8-b through 8-f and 8-g, III so long as he ***or she***:

(1) Notifies the state archaeologist within 5 working days of the initial discovery of ***either the*** Native American remains ***or the remains from a suspected African American burial ground***;

(2) Reports to the state archaeologist, at agreed upon intervals, the status of the project;

(3) Curates the remains prior to ultimate disposition; and

(4) Conducts no destructive skeletal analysis without the express permission of the state archaeologist.

Upon completion of the project fieldwork, the professional archaeologist, in consultation with the skeletal analyst and the state archaeologist, shall determine the schedule for the completion of the skeletal analysis. In the event of a disagreement, the time for completion of the skeletal analysis shall not exceed 4 years. The director or [~~his~~] ***their*** designee, after consultation with the state archaeologist, shall have authority concerning the ultimate disposition of the Native American remains after analysis is completed in accordance with RSA 227-C:8-g, I and 8-h, II and III. ***The ultimate disposition of remains and other archaeological materials such as markers, gates, mortuary materials or other archaeological materials found in an African American burial ground shall be in consultation with the descendants or descendant community.***

(c) The state archaeologist shall notify the county medical examiner of any reported human skeletal remains discovered by a professional archaeologist.

200:2 Consultation with Native American and African American Communities; African American Burial Grounds. Amend RSA 227-C:8-d to read as follows:

227-C:8-d Consultation with Native American Community *and African American Community*.

I.*(a)* If the professional archaeologist determines that the human remains are Native American and the remains are known to have affinity to federally recognized Indian tribes or specific living ethnic groups or other nonfederally recognized Indian groups, the state archaeologist shall immediately notify the leaders, officials, or spokespersons for these tribes or groups wherever the appropriate tribes or groups are located, whether in or outside the state of New Hampshire. The state archaeologist shall consult with such persons who respond in a timely fashion in the determination of the most appropriate treatment for the interments.

(b) If the professional archaeologist determines that the human remains are from an African American burial ground the state archaeologist shall immediately notify the descendants or descendant community, whether in or outside the state of New Hampshire. The state archaeologist shall consult with such persons who respond in a timely fashion in the determination of the most appropriate treatment for the interments.

II. Within 4 weeks of the notification, the appropriate Indian tribe or group *or African American community* shall communicate in writing to the state archaeologist its concerns with regard to the treatment of interment and ultimate disposition of the Native American remains *or remains from an African American burial ground, whichever applies*.

III. Within 90 days of the receipt of the concerns, the state archaeologist, with the approval of the principal official or officials of the Indian group or tribe*, or the descendants or descendant community associated with the African American burial ground, whichever is applicable*, shall prepare a written agreement concerning the treatment and ultimate disposition of the [~~Native American~~] remains. The written agreement shall include the following:

(a) Designation of a qualified skeletal analyst to work on the skeletal remains;

(b) The type of analysis and the specific period of time to be provided for analysis of the skeletal remains;

(c) The timetable for written progress reports and the final report concerning the analysis to be provided to the state archaeologist by the skeletal analyst and the professional archaeologist; and

(d) A plan for ultimate disposition of Native American remains *or remains from an African American burial ground, whichever is applicable,* subsequent to the completion of adequate analysis.

IV. If no agreement is reached within 90 days, the state historic preservation officer and commissioner shall determine the terms of the agreement.

200:3 Disposition of Human Remains; African American Burial Grounds. Amend RSA 227-C:8-g to read as follows:

227-C:8-g Disposition of Human Remains.

I.*(a)* If the human remains are Native American, the director or [~~his~~] *their* designee, after consultation with an appropriate federally recognized Indian tribe or specific living ethnic group or other

nonfederally recognized Indian group, shall determine the ultimate disposition of the remains after the analysis.

(b) If the human remains are from a newly discovered African American burial ground, the director or their designee, after consultation with the descendants or descendant community associated with the African American burial ground, shall determine the ultimate disposition of the remains after the analysis.

II. If the skeletal remains are other than Native American *or from an African American burial ground,* and the next of kin have been identified, the next of kin shall have authority concerning the ultimate disposition of the remains after the analysis.

III. If the state archaeologist has received no information or communication concerning the identity or next of kin of the deceased, the remains shall be transferred to the state archaeologist who shall arrange for either permanent curation according to standard museum procedures or for reburial in a public cemetery after adequate analysis.

IV. In the case of remains encountered during the course of long-term research of a professional archaeologist is provided in RSA 227-C:8-a, III(b), the director or [~~his~~] *their* designee, on recommendation of the state archaeologist, may grant permission to a sponsoring institution, which shall include accredited colleges, universities, museums, or professional archaeological organizations, to permanently curate the remains according to standard museum procedures after appropriate analysis is completed.

V.*(a)* If a determination is made by the director or [~~his~~] *their* designee and the commissioner, in consultation with an appropriate federally recognized Indian tribe or specific living ethnic group or other nonfederally recognized Indian group, that Native American remains shall be reinterred following the completion of analysis, an appropriate tribe or group may provide a suitable reburial location and reburial ceremony. If it elects not to do so, it shall be the responsibility of the department to provide a suitable reburial location.

(b) If a determination is made by the director or their designee and the commissioner, in consultation with the descendants or descendant community associated with the African American burial ground, that the African American remains shall be reinterred following the completion of analysis, the community may provide a suitable reburial location and reburial ceremony. If it elects not to do so, it shall be the responsibility of the department to provide a suitable reburial location.

VI. The expense of transportation of Native American remains *or remains from an African American burial ground* to the reburial location shall be borne by the party conducting the excavation and removal of the remains. The reburial ceremony may be provided by an appropriate federally recognized Indian tribe or specific living ethnic group or other nonfederally recognized Indian group. If such tribe or group elects not to do so, the reburial ceremony shall be the responsibility of the director or [~~his~~] *their* designee and the commissioner.

200:4 Consultation with Other Individuals; African American Burial Grounds. Amend RSA 227-C:8-e, I to read as follows:

I. If the professional archaeologist determines that the human skeletal remains are other than Native American *or from an African American burial ground*, the state archaeologist shall publish notice

that excavation of the remains has occurred, at least once per week for 4 successive weeks in a newspaper of general circulation in the county where the burials or skeletal remains were situated, in an effort to determine the identity or next of kin, or both, of the deceased.

200:5 New Paragraphs; Cemetery Trustees; Maintenance, Repair, and Preservation of Burial Grounds; Addition of African American Graves. Amend RSA 289:14-a by inserting after paragraph V the following new paragraphs:

VI. Any activities undertaken under this section involving an African American grave shall be conducted in consultation with the descendant community.

VII. Any African American remains, marker, gate, or associated mortuary or archaeological materials that have been removed from a site shall be returned for reburial or placement at the grave site, or if removed under the provisions of paragraph V, in consultation with the descendant community.

VIII. Any African American remains, marker, gate, or associated mortuary or archaeological materials that have been removed from a cemetery or burial ground shall be returned for reburial or placement at the grave site, in consultation with the descendants or descendant community. If such return is deemed to be not feasible or appropriate by the descendants or descendant community, they shall be deposited in another suitable location, under paragraph V, in consultation with the descendants or descendant community, by June 30, 2028.

IX. The New Hampshire division of historical resources, department of natural and cultural resources, shall serve in an advisory capacity to municipalities and the descendants and descendant community in complying with paragraphs VI-VIII of this section.

200:6 Effective Date. This act shall take effect 60 days after its passage.

Approved: August 04, 2023
Effective Date: October 03, 2023