

CITY OF CHARLOTTESVILLE, VIRGINIA
CITY COUNCIL AGENDA



Agenda Date:	November 2, 2020
Action Required:	Report
Presenter:	Jeff Werner, Preservation & Design Planner, Department of Neighborhood Development Services (NDS) Ben Ford, Ph.D., Principal, Rivanna Archaeological Services
Staff Contacts:	Jeff Werner, Preservation & Design Planner, NDS Alex Ikefuna, Director, NDS
Title:	Update on unmarked burials near the Gilmer/Craven/Hotopp Cemetery at Pen Park

Background:

On December 2, 2019, City Council approved a resolution authorizing the use of \$9,319 from the Department of Neighborhood Development Services Small Area Plans CIP fund to study the archeological evaluation of possible unmarked graves outside the enclosed family plots at the Gilmer/Craven/Hotopp Cemetery at Pen Park. With that approval, Council requested an update on the findings, after which options for next steps would be explored.

The City acquired Pen Park in the 1970s. *Pen Park*, as it was named by Dr. George Gilmer who acquired the property in 1777, changed ownership several times, with the occupants being the Gilmer family (from 1777 to 1812), the Craven family (from 1819 to 1845), and the Hotopp family (from 1866 to 1904). While others owned and occupied Pen Park for brief periods, the Gilmers, Cravens, and Hotopps are the only families to establish cemeteries there.

The City retained the services of Rivanna Archeological Services (RAS) who, on July 15, 2020, coordinated with NAEVA Geophysics Inc. to conduct an examination of the site using Ground Penetrating Radar (GPR). Evaluation of the GPR data suggests the likelihood of 43 unmarked and unrecorded graves outside the walls of the three family plots, roughly in three rows and primarily to the east, *behind* the family plots.¹ The majority lie outside the Gilmer and Craven sections. Both families enslaved individuals and the evidence suggests these graves are most likely those of individuals enslaved at Pen Park. There are at least four apparent graves directly outside the Hotopp section, possibly representing the graves of enslaved individuals or other

¹ See page 26 of the RAS report. The 43 anomalies detected by GPR are consistent with human burials; however, it is likely there are additional graves not detected by the GPR and it is likely that some of the detected anomalies are not graves. However, taken together, all of the evidence indicates, without doubt, the presence of multiple unmarked and unrecorded human graves in the area examined.

individuals who lived on the property and were employed by the family. Three apparent graves are not within the cluster immediately east of the family plots cluster and are therefore difficult to interpret—one at the northeast corner of the Gilmer plot and two located several yards south of the Hotopp plot.

The GPR evidence indicates patterns in the subsurface anomalies—sizes, depths, alignment in rows, and an east-west orientation—consistent with human burials. Despite the strength of the GPR data, the number of likely graves can only be estimated. A precise determination of the number and location of graves would require physical disturbance of the upper layer of soil; however, RAS recommends—and staff concurs—that the GPR findings are conclusive enough to establish the presence of human graves, without physical disturbance, and that the area examined should be delineated and protected.

Discussion:

With these findings, staff has initiated or will initiate the following steps:

- Coordinate with the Department of Parks and Recreation to keep golf carts off the areas with unmarked graves. (See area indicated in Figure #1 on page 1 of the RAS report.)
- Coordinate with the Department of Parks and Recreation to record on the Pen Park site plan the location of the area within which unmarked graves were located, such that this area is not disturbed by any future work or activity. (See area indicated in Figure #17 on page 26 of the RAS report.)
- Outreach: Issue a press release about the findings and include a request to the community for any information about the unmarked graves—from oral histories, family traditions, etc. Seek assistance in community outreach through local groups such as the Preservers of the Daughters of Zion Cemetery, Jefferson School African American Heritage Center, Central Virginia History Researchers, and the Burke Brown Steppe Chapter of the Afro-American Historical and Genealogical Society.

Moving forward, staff recommends that Council consider the following:

- Number and locate unmarked graves: The archeologist and staff recommend that the area east of the family plots not be disturbed; however, Council may request further examination to provide a precise determination. (See detailed discussion below.)
- Identities: The community will likely ask if these individuals can be identified (i.e. DNA testing). Any attempt to do so would require invasive disturbance of the graves and the results would be speculative, at best. Staff does not recommend such an effort; however, should Council want more information, there are experts who can provide it.
- Research: The goal of the examination was to determine the existence of unmarked graves. This goal has been achieved. The project did not include exhaustive archival and documentary research that could provide information about the identities of who these individuals might be. Council could request that research.
- Remembrance: Council should request the Historic Resources Committee (HRC) provide recommendations on how to memorialize and interpret this site. While disrupted by the public health emergency, in developing an appropriate narrative for Court Square, the HRC was planning to engage descendants of enslaved persons. A similar approach would be appropriate.

Additional suggestions (from RAS report):

Parks and Rec Planning

- Treatment of the vegetation at the Pen Park cemetery: The area surrounding the Pen Park cemetery enclosure is currently planted in sod but also contains large shrubs and trees. The City should consider creating management practices that address this vegetation. For example, should new plantings in the area of the newly identified burials be allowed? When a tree dies or needs to be removed, the City should make sure that disturbances are minimal and that stump grinding does not occur.
- Use of golf carts: The City may want to consider how golf carts are used in the vicinity of the Pen Park cemetery. Because of the adjacent 14th tee, golf carts frequently stop east of and adjacent to the Pen Park cemetery. Should the area containing the newly discovered burials be a restricted area where temporary parking of golf carts is prohibited? Should a more formal parking area for golf carts be created next to the 14th tee?
- Maintenance of the asphalt cart path: An asphalt surfaced golf cart path passes approximately 50 feet to the east of the Pen Park cemetery. The City should consider developing a policy for future repair and new construction of the golf cart path in the vicinity of the Pen Park cemetery.
- Maintenance of adjacent utilities: A sprinkler control box is located approximately 40 feet east of the brick enclosed Gilmer section of the Pen Park cemetery. Other buried utility lines may be located nearby. The City should consider developing a policy for future repair and new construction associated with water and electrical lines in the vicinity of the Pen Park cemetery.
- Public access to/use of the Pen Park cemetery:
 - **Developing an Event Policy:** The discovery of additional previously unidentified burials, most likely interments of enslaved African Americans held by the Gilmer, Craven and other families, as well as the potential future memorialization of the site, may mean that future visitors wish to hold commemorative events at the Pen Park cemetery. The City should consider the development of an event policy for the Pen Park cemetery that will take into account reasonable access to the park as well as potential conflicts with the use of the golf course.
 - **Public Access to the Pen Park cemetery:** The discovery of additional previously unidentified burials, as well as the potential future development of an educational and interpretive program in this location, may mean that more people will come to visit the Pen Park cemetery. The City should ensure that there is adequate public access to the Pen Park cemetery in the future. Currently the only access is via a concrete-surfaced pedestrian path. The City should consider the construction of a limited handicap access parking area, located in an appropriate place, that will allow all visitors adequate access to the site and which will facilitate the hosting of future commemorative events.

It should be noted that the three family plots remain in use. Descendants of the Gilmer, Craven, and Hotopp families have a right to access and use their plots. 1916 was the last burial in the Craven section. In 1991, George Gilmer, Jr. was interred in his family's plot (his wife's remains will also be placed there). In 2008, Dorothy Hotopp Wilber was interred in the Hotopp family plot.

Additional Archaeological Research

Should the City of Charlottesville want to determine the precise location and number of all of the graves outside of the Pen Park cemetery, additional archaeological investigations would be recommended. While the GPR survey has identified a total of 43 potential grave shafts adjacent to the Pen Park cemetery, additional archaeological investigations have the ability to 1) confirm that each potential grave shaft is in fact a human interment and to locate additional human interments not previously identified by the GPR survey; 2) to pin point the precise location of each human interment; and 3) to further define the full spatial extent of the newly identified burials. Confirming the identify of potential grave shafts and knowing the full extent of the burials adjacent to and outside of the Pen Park enclosure will be helpful in planning for any future memorialization of the site, as well as for developing guidelines for the future use and maintenance of the vicinity.

The recommended additional archaeological investigations *will not excavate individual grave shafts or knowingly disturb or relocate any human remains*. However because any excavation within or adjacent to the Pen Park cemetery has the potential to recover human remains, it is recommended that any future archaeological work east of the Pen Park cemetery occur with oversight from the Virginia Department of Historic Resources. It is recommended that the City secure a Permit for Archaeological Excavation of Human Remains from the Virginia Department of Historic Resources. Securing this permit in advance of any future archaeological fieldwork ensures that the cemetery delineation work plan receives an additional layer of review and oversight. Additionally, the permit enables the archaeological consultant to manage inadvertently encountered human remains in the unlikely event of their discovery.

The goal of additional archaeological excavation adjacent to the Pen Park cemetery should be the positive location and identification of each human interment, and the full definition of the extent of burials. The most accurate means of identifying all human interments and defining the extent of burials within a cemetery is to remove the topsoil from the project area. At the interface of the topsoil and the underlying naturally occurring subsoil, the tops of the grave shafts will be recognizable by their shape as well as the coloring and disturbed nature of the fill soils they contain, differentiating them from the surrounding naturally occurring red clay subsoil. Archaeological investigations should consist of shallow, controlled excavation that will extend only to a depth sufficient to visually identify each burial, generally less than 1-foot below grade. This work can be conducted with the assistance of a backhoe with a smooth edged bucket enabling the shallow excavation and removal of topsoil over a large area. Extant trees within the project area will be avoided leaving small 'islands' of turf where tree roots will be protected. Archaeological excavation and removal of topsoil should extend to a point approximately 25 feet beyond the last identified burial, or to a point where excavation is no longer possible, thereby defining a reasonable boundary for the previously unidentified burials. Once all human interments are positively located and identified, a surveyor should be brought in to accurately locate each burial and any relevant cultural features within the project area. Once the individual grave shafts have been accurately mapped by a surveyor, a permeable landscape fabric should be placed on top of the burials and the project area soils replaced. The area composing the newly identified burials, as well as any future memorialized area, should be entered as part of the legal record for Pen Park.

Alignment with City Council’s Vision and Strategic Plan

- Council’s *Vision 2025*:
 - Charlottesville cherishes and builds programming around the evolving research and interpretation of our *historic heritage and resources*.
- *City Strategic Plan*:
 - Goal 3.5: Protect historic and cultural resources.
- Additionally, from the recommendations of the Blue Ribbon Commission on Race, Memorials, & Public Spaces:
 - Highlighting and Linking Historic Places: [...] council provide financial and planning support for historic resource surveys of African American, Native American and local labor neighborhoods and sites, seeking National Register listing and zoning and design guideline protection, where appropriate.

Community Engagement

See the public outreach items noted in the *Discussion*. (Staff contacted the Preservers of the Daughters of Zion Cemetery and discussed ways to reach out to the descendant community.)

Budget Impact

No budget impact relative to the completion of this report. Additional actions, including those presented above, may require additional funding. These can be presented and discussed at a future meeting.

Recommendation

At this time, staff does not recommend any action by Council at the November 2, 2020 meeting. Given the scale, solemn nature, and sensitivity of this discovery, we recommend a period of reflection and discussion prior to any decision-making. We suggest that Council take the time to review the report and visit this site—staff can be available to provide insight and answer questions—and then plan for a thorough discussion at a future Council meeting.

Alternatives

Council may decide to initiate action on items presented in the *Discussion*.

Attachments

- Map: Pen Park cemetery and GPR identified potential grave shafts. (Fig. #15, RAS report.)
- Rivanna Archeological Services report, *The Pen Park Cemetery Survey*, dated October 15, 2020. (RAS report includes the Geophysical Investigation Report, dated October 9, 2020.)

Pen Park cemetery and GPR identified potential grave shafts. (Fig. #15, RAS report.)



The Pen Park Cemetery Survey

(VDHR 002-0190)
City of Charlottesville

Produced for the City of Charlottesville, Virginia

Produced by Rivanna Archaeological Services, LLC
Charlottesville, Virginia



Report Author: Benjamin P. Ford, Ph.D.
Principal, Rivanna Archaeological Services, LLC

October 15, 2020

MANAGEMENT SUMMARY

Since 2000, several depressions have been noted in the ground surface adjacent to and east of the Pen Park cemetery. At the request of the City of Charlottesville, in September of 2019 Rivanna Archaeological Services staff visited Pen Park Cemetery and confirmed the presence of the unusual depressions. Based on their size, orientation and clustering, it was believed that they could be unmarked burials.

In order to determine more conclusively the nature of the surface depressions, Rivanna Archaeological Services proposed a two-tiered research design composed of a Ground Penetrating Radar survey surrounding the entire Pen Park cemetery, as well as ground-truthing of a limited number of surface features and radar anomalies designed to verify the identity of the potential burials.

On July 15, 2020, NAEVA Geophysical Inc. conducted a Ground Penetrating Radar survey on a ca. 0.28-acre project area surrounding the Pen Park cemetery enclosure. Based on profile and plan view visualizations, NAEVA identified a total of 43 potential grave shafts located predominantly east of the Pen Park cemetery. An analysis of the Ground Penetrating Radar findings documented that the 43 newly identified grave shafts were located to the rear and behind the Pen Park cemetery, were arranged in at least three rows, and that the grave shafts extended the whole length of the Gilmer, Craven and Hotopp family sections. It is believed that this population of individuals likely represents enslaved African Americans owned by the Gilmer, Craven and other families, as well as possibly African Americans employees and their families associated with the 1866 – 1904 Hotopp farm and vineyard operation at Pen Park.

Because of the certainty that the surface depressions and Ground Penetrating Radar anomalies represented a significant sized burial ground, the limited excavation and ground-truthing originally proposed as part of the research design was abandoned. It was recommended that the City of Charlottesville acknowledge and memorialize the additional 43 burials in some way, and that plans be developed to guide the future use of the cemetery by the public and the continued use of the adjacent Meadowcreek Golf facility.

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PROJECT AREA DESCRIPTION

The Pen Park cemetery project area is located in the City of Charlottesville's Pen Park, a 280-acre park overlooking the Rivanna River and containing the Meadowcreek Golf Course. The project area is an approximately 12,800 square foot (0.28 acre) area surrounding the Pen Park cemetery, a brick, stone and iron fence enclosure composed of three sections containing members of the Gilmer, Craven and Hotopp families.

The area surrounding the Pen Park cemetery is covered in sod with plantings of large deciduous and evergreen shrubs and trees. Elevation of the project area is approximately 400 feet asl, and the ground slopes down slightly to the south and east. The project area is underlain by the Catoctin greenstone formation, a northeast-southwest oriented band of igneous rock.¹ Soils in the project area are a Yadkin clay loam with slope between 2 and 7%. The soils are generally located on terraces and are not considered prime farmland.²



Figure #1: Pen Park showing project area surrounding cemetery (red outline) at lower right.

¹ Wilbur A. Nelson, *Geology and Mineral Resources of Albemarle County*, pp: 24-27. Bulletin No. 77, Virginia Division of Mineral Resources. (Charlottesville: Virginia Division of Mineral Resources, 1962).

² U.S.D.A. Natural Resources Conservation Services, Web Soil Survey. Electronic resource, Accessed September 21, 2020. <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.

PROJECT BACKGROUND AND OBJECTIVES

Rivanna Archaeological Services, LLC [RAS] was contacted by the City of Charlottesville in late August of 2019 regarding the presence of several potential graves located outside of and adjacent to the east side of the existing Pen Park cemetery enclosure. On September 3, 2019, RAS staff visited the Pen Park cemetery to conduct a preliminary examination of the ground surface surrounding the existing enclosure. RAS staff confirmed the presence of a limited number of east-west oriented oblong depressions along the east side of the Pen Park cemetery, surface indications that suggested the presence of unmarked graves.

Based on the strong potential for the presence of unmarked graves outside of the Pen Park cemetery, RAS developed a research design that proposed a Ground Penetrating Radar (GPR) survey surrounding the Gilmer-Craven-Hotopp family enclosure, coupled with limited archaeological excavations designed to ground-truth a limited number of surface indications and/or GPR anomalies. The goal of the project was to determine if the several potential graves were in fact human interments and to gain a greater understanding of the quantity and extent of potential graves in this area.

PREVIOUS RESEARCH

Historical Research

A limited amount of historical research has been conducted on the Pen Park property and its associated Gilmer, Craven and Hotopp cemeteries. This research was largely driven by local events including the purchase of the then 134-acre Pen Park estate by the City of Charlottesville in 1971, student research through the Historic Preservation Program of the University of Virginia School of Architecture in the late 1990s, and a conditions and preservation survey of cemeteries maintained by the City of Charlottesville in 2003.

In response to a request for information following the purchase of Pen Park, in December of 1972 President of the Albemarle County Historical Society John Nalle produced a three-page letter that summarized the property's the eighteenth- and nineteenth-century ownership. It was in late 1971 that the City of Charlottesville acquired the initial 134-acre parcel at Pen Park to be developed as a new park. The interest in this purchase stimulated research on the history of the property as an aid to future development.³

As part of a comprehensive study of the Rivanna River, graduate students in the Community Public History and Planning Seminar in the Historic Preservation Program of the University of Virginia conducted research on individual sites along this important Albemarle County drainage. Pen Park was one of the sites selected for archival research. Shelly Pellish, a graduate student, summarized the history and development of the Pen Park estate and also presented preservation issues and promoted interpretive initiatives.⁴

Jeanne Siler, an intern with the City of Charlottesville in the summer of 2001, compiled information on the history and development of Pen Park from a variety of primary and secondary sources. In addition, Siler also interviewed Nancy Gilmer and Dorothy Hotopp Wilbur, descendants of the Gilmer and Hotopp families, on their memories of the Pen Park property and the family cemeteries there.⁵

In 2003 Lynette Strangstad issued a report based on a survey of Maplewood, Oakwood, Daughters of Zion and the Pen Park cemeteries. The report documented existing conditions and outlined general maintenance and conservation issues. The report issued general recommendations including that each cemetery be researched, mapped and documented and that a preservation plan be developed for each. In particular, Strangstad noted the presence of potential unmarked graves indicated by oblong east-west oriented depressions located outside of the Pen Park cemetery enclosures.⁶

³ Charlotte Tucker, History – A Vital Element in Planning. *The Daily Progress*, January 13, 1972; John M. Nalle, President, Albemarle County Historical Society to Mrs. Charlotte Tucker, Assistant Editor, *The Jefferson Journal*, December 11, 1972. Albemarle Charlottesville Historical Society, Charlottesville, Virginia.

⁴ Shelly Pellish, Pen Park. Notes on Brown Bag Lunch presented to the Albemarle County Historical Society, May 3, 1999. Albemarle Charlottesville Historical Society, Charlottesville, Virginia.

⁵ Jeanne Siler, *History of Pen Park and Its Cemeteries*, n.d. [2001]. Ms. in possession of the City of Charlottesville.

⁶ Lynette Strangstad, *Preliminary Site Evaluation, Charlottesville City Cemeteries, Charlottesville, Virginia*, np. Prepared for the City of Charlottesville, Virginia. Prepared by Stone Faces and Sacred Spaces, Mineral Point, Wisconsin, 2003.

Archeological Research

In the mid-1970s, C. G. Holland conducted an opportunistic survey of Albemarle County lands. In Between 1975 and 1978, Holland surveyed the exposed soils of the former Pen Park and identified four prehistoric sites consisting mostly of lithic debris and scatter (Figure #2 / Table #1).

Table #1: Archaeological and Architectural Sites identified within Pen Park.

<i>VDHR Site No.</i>	<i>Site Name</i>	<i>Prehistoric / Historic</i>	<i>Site Type</i>	<i>Chronological Period</i>
44AB0025	n/a	P	Camp	1606 – 15000 BCE
44AB0026	n/a	P	Camp	3001 – 6500 BCE
44AB0027	n/a	P	Camp	3001 – 6500 BCE
44AB0056	n/a	P	Camp, temporary	3001 – 6500 BCE
44AB0090	n/a	P	Camp	1606 – 15000 BCE
002-0190	Pen Park	H	Cemetery	1786 - Present



Figure #2: Map showing vicinity of Pen Park and its architectural and archaeological resources.

Upon the City of Charlottesville's acquisition of an additional 32 acres from Esther Wayland in 1979, the new parcel underwent a reconnaissance level archaeological survey. The survey consisted of a walkover of plowed fields at the northern end of the project area, as well as opportunistic excavation of shovel test pits on 30-foot intervals in the southern end of the project area. A single archaeological site was identified (44AB0090) consisting of quartz debris and shatter, a quartz biface and several quartz biface fragments scattered over a 2-acre area (Table #1).⁷

⁷ James R. Wood, A Cultural Resource Reconnaissance of the Charlottesville, Virginia, Pen Park Land Acquisition, p4. Prepared for the Virginia Research Center for Archeology and the Virginia Commission of Outdoor Recreation. Prepared by James Madison University, Archeological Research Center, 1980.

HISTORICAL CONTEXT

The following represents a preliminary history of the Pen Park property that focuses on the period of development between 1777 and the present, and particularly the Gilmer, Craven and Hotopp family tenure. The goal is to provide an accurate social and physical history of the property and to develop an adequate context for understanding if there may be additional unmarked interments outside of and surrounding the Gilmer, Craven and Hotopp family cemeteries.

Gilmer Family (1777 – 1812)

The land within which Pen Park is contained was originally a 400-acre tract of land patented in 1733 by Charles Lynch and located on the “south side of the Rivanna River.”⁸ Sixteen years later in 1749, Lynch sold the 400-acre parcel, along with an adjacent 245-acre parcel he had patented in 1748, to Robert Adams a nearby landholder.⁹ In 1773 Adams sold the 645 acres he acquired from Lynch, as well as an additional 430 acres, to John Harvie.¹⁰ Neither Lynch, Adams or Harvie are believed to have resided on the 400-acre parcel, although the land was likely cleared and cultivation begun in the mid-to-late eighteenth century.

Dr. George Gilmer acquired what would become Pen Park in 1786. In that year he purchased from John Harvie a 565-acre parcel located “on the Rivanna River.” The parcel included the original 400-acre Charles Lynch tract and a 137-acre tract originally patented by Harvie’s brother, Richard, in 1781.¹¹ Soon after his purchase, it is believed that George Gilmer and his family settled on the property overlooking the Rivanna River. Family history states that Gilmer named the property Pen Park after the Bristol, England estate of John Harmer. Gilmer had been educated in Bristol, England in the mid-eighteenth century and likely stayed with the Harmer family at their Pen Park home.¹²

It is George Gilmer who built the first residence at Pen Park shortly after his purchase. Based on a late nineteenth-century photograph (Figure #3), Professor K. Edward Lay describes the Pen Park domicile as an ‘H-plan’ structure, one that likely began as an eighteenth-century single-story residence, and was developed over time with the construction of an adjacent much larger two-story nineteenth-century residence with a connecting hyphen.¹³

⁸ Virginia Land Patent Book 15:47, June 20, 1773. Richmond, Library of Virginia.

⁹ Albemarle County Deed Book [ACDB] 1:160. Clerk’s Office, Albemarle County Courthouse, Charlottesville, Virginia.

¹⁰ ACDB 6:86.

¹¹ ACDB 9:309.

¹² Ruth D. Gilmer, Pen Park, p2-3. Gilmer Family file. Albemarle Charlottesville Historical Society, Charlottesville, Virginia.

¹³ K. Edward Lay, *The Architecture of Jefferson Country, Charlottesville and Albemarle County, Virginia*, pp: 56, 62. (Charlottesville: University Press of Virginia, 2000).



Figure #3: Pen Park residence, taken in the late nineteenth century. Note the 'H-shape' to the residence with the smaller older structure (at left) located behind the newer younger structure (at right) and hyphen connecting them.

The year after his acquisition of what would become Pen Park, Albemarle County Personal Property Tax Records document that Gilmer was charged tax on a total of 50 enslaved African Americans, 18 over the age of 16, and 32 under the age of 16. Gilmer was also charged tax on 14 horses and 39 cattle.¹⁴ In 1790, Gilmer was charged taxes for 27 enslaved individuals, and five years later in 1795 he was charged taxes for 34 enslaved individuals (Table #2).¹⁵

¹⁴ Albemarle County Personal Property Tax Records [ACPPTR], 1787. Richmond, Library of Virginia.

¹⁵ ACPPTTR, 1790; ACPPTTR 1795.

Table #2: Enslaved African Americans owned by the Gilmer Family, 1787 – 1812.¹⁶

Year	Name	Enslaved Under 16	Enslaved Over 16	Total Enslaved
1787	George Gilmer	32	18	50
1788	George Gilmer	8	18	26
1789	George Gilmer	10	18	28
1790	George Gilmer	5	22	27
1791	George Gilmer	7	25	32
1792	George Gilmer	6	26	32
1793	George Gilmer	7	29	36
1794	George Gilmer	12	27	39
1795	George Gilmer	8	26	34
1796	George Gilmer Estate	8	29	37
1797	Mrs. Lucy Gilmer	10	28	38
1798	George Gilmer Estate	5	34	39
1799	George Gilmer Estate	11	30	41
1800	George Gilmer Estate	7	28	35
1801	George Gilmer Estate	7	28	35
1802	George Gilmer (Jr.)	2	8	10
	Peachy Gilmer	0	3	3
1803	George Gilmer (Jr.)	2	9	11
	Peachy Gilmer	1	3	4
1804	George Gilmer (Jr.)	2	13	15
	Peachy Gilmer	1	2	3
1805	George Gilmer (Jr.)	1	13	14
	Peachy Gilmer	0	2	2
1806	George Gilmer (Jr.)	0	11	11
	Peachy Gilmer	0	4	4
1807	George Gilmer (Jr.)	1	10	11
1808	George Gilmer (Jr.)	1	10	11
1809	George Gilmer (Jr.)	1	11	12
1810	George Gilmer (Jr.)	2	10	12
1811	George Gilmer (Jr.)	3	9	12
1812	George Gilmer (Jr.)	2	11	13

George Gilmer died in December of 1795. His will, made out in March of that year, left his Pen Park estate to his wife Lucy for her natural state, as well as “half of all slaves such as she may choose.”¹⁷ After Lucy’s death in 1799, Pen Park was operated and maintained by William Wirt, a son-in-law, and his wife Mildred Gilmer. Mildred also died in 1799 and Wirt subsequently removed to Richmond.

Following the death of George Gilmer in 1795, his real and personal estate was divided between his ten children (Thomas, Mildred, George, Peachy, John, James, Harmer, Lucy, Francis, and Susanna). In 1797 Mildred Wirt and her husband William filed for their share but Mildred’s death in 1799 abated the cause.¹⁸ In January of 1803 George and Peachy Gilmer, both over the age of 21, received their

¹⁶ ACPPTR, 1787 – 1812.

¹⁷ Albemarle County Will Book, 3:265. Clerk’s Office, Albemarle County Courthouse, Charlottesville, Virginia.

¹⁸ William Wirt et ux vs. George Gilmer, Albemarle County Chancery Records, Index 1800-014. Library of Virginia, Richmond, Virginia.

share of the estate's enslaved African Americans.¹⁹ In 1804 John Gilmer filed a chancery suit against the other Gilmer heirs to divide the real and personal property of the George Gilmer estate and receive his share. In January of that year, commissioners assigned by the Albemarle County court divided the remaining enslaved African Americans formerly owned by George Gilmer into six lots based on the value assigned to them. A total of 57 individuals, men, women and children were itemized, valued and divided (Table #3).²⁰

Table #3: Division of the Enslaved African Americans owned by George Gilmer, 1804.

Lot	Name / Association	Value Assigned	# Individuals	
Lot 1	Mountain Fanny, a woman	L 35	1	
	Malinda her child, a girl	L 55	1	
	Urseley her child, a girl	L 35	1	
	Richmond Fanny and child	L 80	2	
	Archer her child, a boy	L 65	1	
	Lucy, girl of Priscilla's	L 55	1	
	John, Cesars son	L 105	1	
	John, Ellimont	L 105	1	
	Lot 2	Harry, a man	L 45	1
Rachel, a woman his wife		L 45	1	
Breechia, a boy and child of Rachel		L 65	1	
China, a girl and child of Rachel		L 40	1	
Riland, a boy and grandchild of Rachel		L 30	1	
Anderson, a boy and son of Rachel		L 20	1	
Clarinda, a woman and child of Rachel		L 80	1	
Polly and child		L 90	2	
Sam, a man		L 75	1	
Carey, a boy and child of Hannahs		L 40	1	
Lot 3		Scaton and child	L 100	2
		Priscilla a girl, her child	L 55	1
		Patsy, a girl, her child	L 40	1
	Albert, a boy, her child	L 35	1	
	Mary and child	L95	2	
	Billy, a man	L110	1	
	Cesar, a man	L 70	1	
	Aggy, a woman and wife to Cesar	L 35	1	
	Lot 4	Jack, a man	L 110	1
Suckey, his wife and child		L 90	2	
Wilson, a boy and child of Suckey		L 30	1	
Eady, a girl and child of Suckey		L 15	1	
Mary (of Pen Park), a woman		L 85	1	
Davy, a man		L 105	1	
Polly, a woman		L 80	1	
Sealia, a girl, daughter of Cuffy		L 30	1	
Old Dole, worse than nothing by		L 0.10	1	
Lot 5	Tener, a woman and her child	L 95	2	
	Elianor, a girl, her child	L 45	1	
	Lousey, a boy, her child	L 30	1	

¹⁹ The papers in this chancery cause were too decayed to read the names of the enslaved allotted to George and Peachy. See George Gilmer vs. John Gilmer etc. Albemarle County Chancery Records, Index 1807-002. Library of Virginia, Richmond, Virginia.

²⁰ John Gilmer vs. George Gilmer, etc. Albemarle County Chancery Records, Index No. 1805-004. Library of Virginia, Richmond, Virginia.

	Cuffy, a man	L 110	1
	Israel, a boy and child of Cuffys	L 65	1
	Dilea, a girl and child of Cuffys	L 60	1
	Isaac, a man	L 115	1
Lot 6	Hannah and child	L 95	2
	Nelson, a boy her child	L 55	1
	James, a boy her child	L 21	1
	Bob, a man	L 115	1
	Molley, an old woman	L 20	1
	Tamer, a woman	L 85	1
	Beck, her child	L 90	1
	Jenney, a girl	L 55	1

The Albemarle County lands owned by the George Gilmer estate were ordered to be divided between the remaining eight children in 1807. Pen Park was inherited by Francis W. Gilmer. The Gilmer children, particularly George Gilmer Jr., continued to farm the Pen Park plantation into the early nineteenth century. Francis W. Gilmer sold the core of Pen Park, containing the primary residence and adjacent 400 acres of land to Richard Sampson in 1812. Excepted from the 400-acre sale was a one-acre graveyard “which shall be laid off as the said Francis W. Gilmer ...shall determine together with a right of way thereto.”²¹ Although less wealthy than the Gilmers, during his tenure at Pen Park Richard Sampson is documented on being taxed for 13 enslaved African Americans in 1815, and 9 in 1818.²²

Craven Family (1819 – 1845)

John H. Craven purchased the 400-acre Pen Park plantation from Richard Sampson in 1819.²³ Craven had moved to Albemarle County around 1800. In 1811 he purchased a mill seat in partnership with James Dinsmore from George Swink and George Gilmer, the son of Dr. George Gilmer of Pen Park.²⁴ The mill seat was located at the confluence of Meadow Creek and the Rivanna River and was part of the Dr. George Gilmer Pen Park estate divided up by his children. Craven and Dinsmore developed this industrial center as the Park Mills, a three-story structure measuring 36 by 50 feet and valued at \$10,000 in 1812.²⁵

Craven was known as an exceptional farmer. He was one of several individuals who were founding members of the Albemarle Agricultural Society established in 1817. Craven could not have farmed without an enslaved labor force. The 1820 U.S. Census documents that John H. Craven owned 44 enslaved African American. A decade later in 1830, Personal Property tax records document that Craven was taxed on 37 enslaved individuals. By 1840 the U.S. Census recorded that Craven owned 53 enslaved African Americans.²⁶

²¹ ACDB 18:253.

²² ACPPTR 1815; ACPPTR 1818.

²³ ACDB 21:358.

²⁴ ACDB 17:359.

²⁵ Policy issued to John H. Craven and James Dinsmore. Mutual Assurance Society Insurance Records, 1812. No. R5V46N566.

²⁶ Fourth U.S. Census, 1820. Population Statistics, Albemarle County, Virginia; Personal Property Tax Records, Albemarle County, Virginia, 1830; Sixth U.S. Census, 1840. Population Statistics, Albemarle County, Virginia. Craven

John H. Craven died in 1845. A year earlier, Craven had deeded his Pen Park property in trust to Alexander Rives and James W. Saunders to secure several debts. After his death, the debts were still not satisfied and Pen Park was put up for auction. An advertisement for the sale of Pen Park described the property in detail.

Extensive Sale of Choice Lands in Albemarle – Pen-Park, the celebrated seat of the late John H. Craven, is in market.

In pursuance of the provisions of a deed of trust, of record in the Clerk's Office of the County court of Albemarle, executed to us by John H. Craven, to secure certain debts therein mentioned, we shall proceed, on Friday the 30th day of May next, or, if prevented by bad weather, then on the next fair day, to expose to public sale on the premises, that valuable, well known and highly improved estate, PEN-PARK, situate with in about a mile of the town of Charlottesville, and two and a half miles of the University of Virginia. This farm, comprising between four and five hundred acres, is beautifully situated in a bend of Rivanna River, with a fine exposure to the South and East. It has been long celebrated for he productiveness of its soil, and the high state of improvement, to which it was brought under the successful husbandry of its late proprietor. The farm buildings are of the most commodious and substantial character. There are also large and thriving orchards of the most select fruit. The dwelling-house is large and convenient and occupies a gradually swelling eminence in the centre of the farm – commanding the most striking views of the rich landscape, and picturesque scenery surrounding it. On both sides of this farm are valuable quarries of sand-stone, which have already been usefully employed in the construction of fences and out-buildings, and which, being very accessible, and easily worked, constitutes the cheapest material for permanent enclosures. It may be confidently affirmed, that no farm of superior – if, indeed, of EQUAL – advantages, is to be found in the neighborhood, so favorably known for the fertility of its soil, the salubrity of its climate, and the character of its society.²⁷

In May of 1845, the property was sold to Stapleton C. Sneed. A month later Sneed, likely serving as a land agent, turned around and sold Pen Park, then a 460-acre tract, to one Benjamin Pollard. In each case, the 1-acre cemetery was excepted from the sale.²⁸

Pollard, Schafer and Early Families (1845 – 1866)

From 1845 to 1866, a series of short-term owners purchased and cultivated the Pen Park plantation. Benjamin Pollard owned Pen Park for three years until he sold it to Charles W. Pollard in 1848, likely a relative. Charles W. Pollard owned Pen Park for only four years before selling it to Zebulon D. Shafer in 1852. Shafer held Pen Park for six years before he sold it to William T. (Buck) Early in 1858 (Figure #4).²⁹

also owned the Rose Hill plantation in Albemarle County and many of the enslaved African Americans recorded between 1820 and 1840 could have been living at this plantation as well.

²⁷ Richmond Enquirer, Vol. 43, No. 5, May 23, 1845.

²⁸ ACDB 42:491; 42:488.

²⁹ ACDB 46:46; 53:265; 57:262.



Figure #4: Detail, *Map of Albemarle County from Surveys and Reconnaissances made under the Direction of Albert H. Campbell, Capt. P. Eng. & Chief*, showing the Pen Park residence of William T. Early. Lt. C. S. Dwight, 1864.

Hotopp Family (1866 – 1904)³⁰

Immigrants from Germany in 1850, brothers Wilhelm (William) and Heinrich (Henry) Hotopp acquired the then 410-acre Pen Park estate from William T. Early in 1866 (Figure #5). Three years later in 1869, Henry conveyed his share of Pen Park to William.³¹ William Hotopp originally planted a 2-acre vineyard at Pen Park. This was expanded substantially to 60-acres by the end of the nineteenth century. To support his Pen Park vineyard, Hotopp also built a wine cellar and barn on the property. William Hotopp, along with several others, formed the Monticello Wine Company in 1873, a cooperative serving regional grape growers.

³⁰ Twenty year old Julia Hotopp, a resident of Pen Park and daughter of William Hotopp, claimed to have been assaulted by an unidentified African-American man on July 11, 1898. Hotopp's claim led to the public lynching of John Henry James at Wood's Crossing in Albemarle County on July 12, 1898.

³¹ ACDB 61:305; 64:210.



Figure #5: Detail, *A Map of Albemarle County, Virginia, From Original Surveys*, showing the William Hotopp [Hotopp] Pen Park residence overlooking the Rivanna River. Green Peyton, 1875.

William Hotopp's viticultural experiment was received positively by the local media. "Mr. Hotopp is progressing very satisfactorily with his experiment in grape culture at Pen Park. So far everything promises well."³² By the late 1860s, his progress in planting different varieties, the slow but gradual expansion of his vineyard, and the relative success of his grapes received additional attention and spurred other farmers to plant both grapes and other fruit for local consumption and export.

In the Spring of 1866, Mr. Hotopp bought the farm he now owns within one and a half miles of Charlottesville and in March of that year planted an experimental vineyard of something under two acres to determine what varieties were best adapted to our soil and climate. The kinds experimented with were Concord, Delaware, Norton's Virginia, Clinton, Hartford Prolific, Ives Seedling, Diana, Alvey, Iona, Catawba, Isabella, Creveling, Adirondack, Rebecca, Israella, Taylor's Bullitt, Rogers' Hybrid No. 12, Cynthianna, Herbemont and a few other varieties not important to be mentioned. The object of this experimental vineyard was to test the value of the different varieties enumerated, both for fruit and wine, so as to deduce from actual experience the knowledge necessary to pursue the business of vine-dressing, on the safest and surest basis. ...Mr. Hotopp's main experiment was upon a strong red gravelly soil with a south eastern exposure. ...Mr. Hotopp has placed in cultivation about 14 acres in the

³² Charlottesville Daily Chronicle, July 9, 1867.

various stages of 4th, 3rd, 2nd and 1st year. ...It is the intention of Mr. Hotopp to plant 60 acres gradually as he can supply himself with plants of his own raising.³³

A report in the Virginia Commissioner of Agriculture for 1879 noted that the "vineyard of Mr. William Hotopp" possessed 29 acres of vines in production, six acres in Concord, two acres in Delaware, one half acre in Rivira, w acres in Ives, 5 acres in Clinton, 2 acres in Diana and Catawba, one half acres in Louisiana, and eleven acres in Norton's Virginia.³⁴

Throughout the late nineteenth century, the success of the Hotopp farm and Pen Park vineyard would not have been possible without the farm laborers and vineyard workers he employed. The 1880 U. S. Census of Agriculture recorded that Hotopp paid a total of \$800 in wages in 1879 to employees working on his farm and vineyard. An 1886 report of the Bureau of Statistics noted that William Hotopp employed seven African-American men in 1886 on his vineyard and farm. U. S. Census records document that in 1870 and 1880 the Hotopps had six African-American domestic servants living and working in their household. In addition, at least three to four other African-American households, located adjacent to the Hotopps and likely living on the Pen Park estate, were occupied by African-American families in which the occupation of the male head of household was listed as 'works on farm,' or 'day laborer.'³⁵

William Hotopp died in 1898. A suit between his heirs followed and in October of 1898 a decree of the Circuit Court of Albemarle County declared that Pen Park would be sold. A day later, the 410-acre Pen Park property, was sold to his seven children for \$40,000.³⁶ The outcome of a second suit between the Hotopp heirs in 1903 decreed that the property was again required to be sold. In 1904, Pen Park was auctioned in front of the Albemarle County courthouse. The property was described as "the valuable and historic 'Pen Park' farm and vineyard, on the Rivanna River. ...Excellent dwelling, with handsome grounds and good farm buildings on the land; also the noted Pen Park vineyard and wine cellar, from which the well known Hotopp wines have been produced. The farm contains 410 acres, of which some 60 or 70 are in vineyard, about 50 in woodland, and the balance in productive and well-improved farming land."³⁷

A handbill posted before the June 6th 1904 auction described the Pen Park property in detail.

Public Sale of Famous Farm near Charlottesville, Va. – Monday, June 6th, 1904, Court day, at 12 o'clock M., in front of the court house of Albemarle County, the historic 'Pen Park' farm, once the home of the Gilmores [sic] and also the residence at one time of William Wirt. The property consists of some four hundred and seven acres of land, of which a portion is splendid Rivanna bottom, the residue is upland of which there are perhaps 50 acres in wood. Thearable land, partly in grass and partly in vineyard (there

³³ Grape Culture in Albemarle. Charlottesville Chronicle, October 14, 1869.

³⁴ Thomas Pollard. Third Annual Report of the Commissioner of Agriculture, pp: 133. (Richmond: R. E. Frayser, 1879).

³⁵ Tenth U.S. Census, 1880. Non-Population Statistics, Productions of Agriculture, Albemarle County, Virginia; John D. Imboden, Virginia, p: 177. In United States Treasury Department, Report on the Internal Commerce of the United States, by William F. Switzler, Chief of the Bureau of Statistics, Treasury Department. (Washington D.C.: Government Printing Office, 1886); Ninth U. S. Census, 1870. Population Statistics, Albemarle County, Virginia; Tenth U. S. Census, 1880. Population Statistics, Albemarle County, Virginia.

³⁶ ACDB 112:214.

³⁷ Public Sale of Noted Farm and Vineyard, Richmond Times Dispatch, July 2, 1903, p6.

being some 60 or 75 acres of the latter) is all in a high state of cultivation and is of excellent quality. The farm was owned by William Hotopp at the time of his death and it was there that the celebrated Hotopp Wine was manufactured. There is a large dwelling house on the place containing some 12 or 13 rooms (with a large cellar underneath the dwelling suitable for the storage of wine) and the property has on it all of the usual outbuildings, including several cabins for tenants, needed for a comfortable home and profitable farm. The 'Pen Park' cliff on the river contains a large quantity of rock admirably adapted for building purposes. This property is about two miles from Charlottesville on the north of the City, and Rio station on the Southern railway is about one mile to the north of the farm. Besides the vineyard mentioned above there is a quantity of other fruit on the place, such as apples, peaches, pears, etc.³⁸

In June of 1904, the then 407-acre Pen Park estate was sold out of the Hotopp family to the partnership of C. E. Hughes and Robert L. Thomas (Figure #6). The deed of sale did not include the 1-acre Pen Park graveyard.³⁹

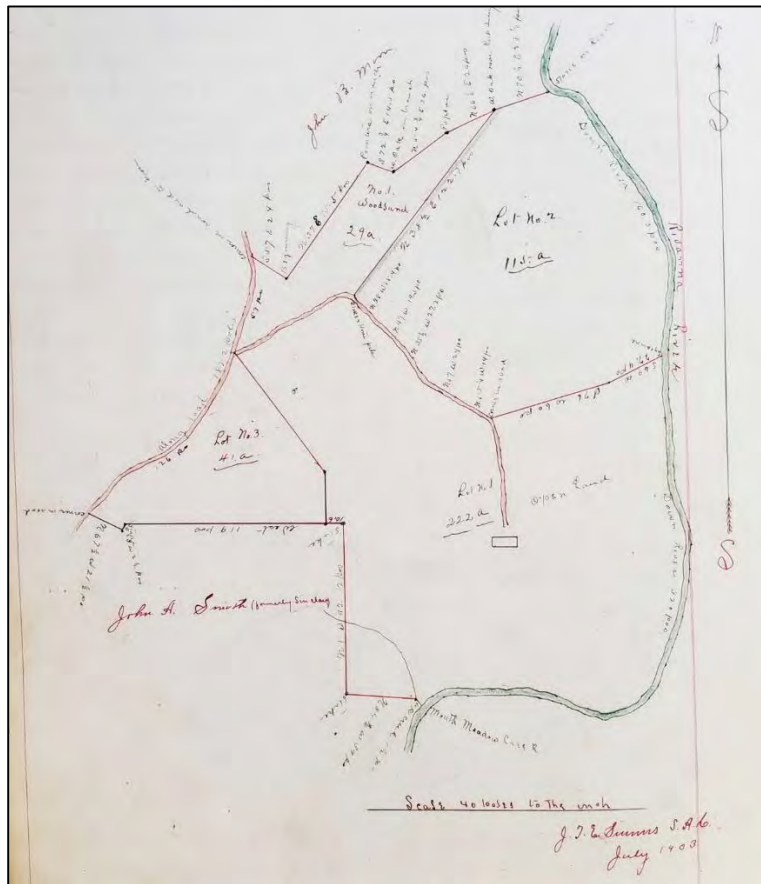


Figure #6: Plat of Pen Park estate. J. T. E. Simms, S. A. C., July 1903.

³⁸ Public Sale of Famous Farm. Handbill, May 19, 1904. Clara M. Hotopp, etc. vs. Emma Hotopp, etc. Albemarle County Chancery Records, Index 1905-035 (original: 1905-033 Cc).

³⁹ ACDB 130:377.

Pen Park in the Twentieth Century (1904 - 1966)

Like many former large estates of the period, the 407-acre Pen Park property was subdivided and resold several times during the early twentieth century. After acquiring C. E. Hughes' share, Robert L. Thomas sold the 407-acre Pen Park to William L. Flannagan and O. T. Allegre in 1909.⁴⁰ Flannagan and Allegre held on to Pen Park for a few years and in 1913 divided the 407 acres into four lots. They sold the 60-acre lot 1, including the Pen Park 'mansion house,' to W. G. Payne. They then divided the bulk of the property between themselves. Allegre received Lots 2 and 3, and Flannagan received Lot 4 (Figure #7).⁴¹

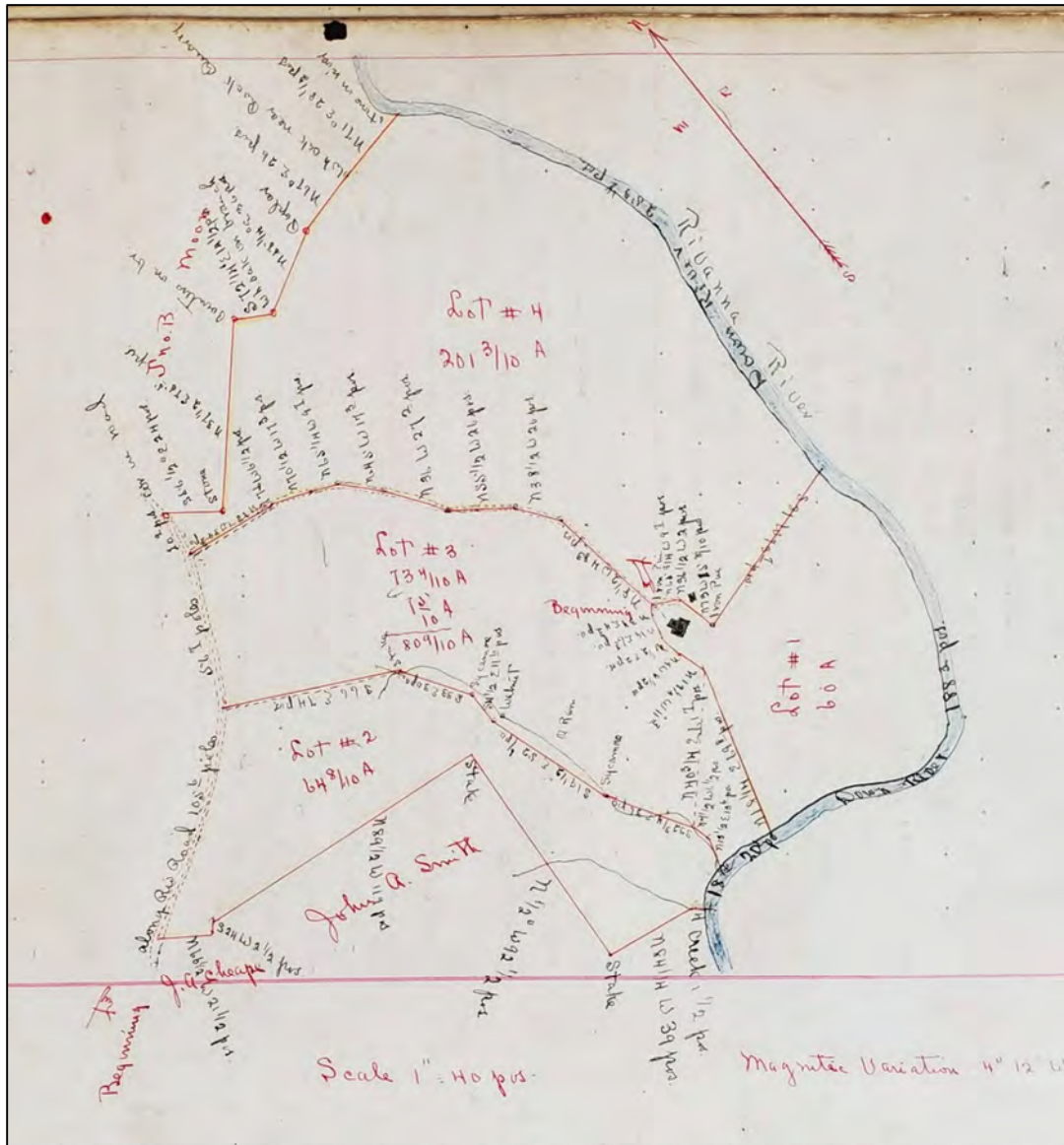


Figure #7: Plat showing division of the former Pen Park estate. M. M. Van Doren, October 1, 1913.

⁴⁰ ACDB 141:157.

⁴¹ ACDB 153:440, 153:442. The Pen Park residence reportedly burned to the ground in the first decade of the twentieth century.

Over the course of 1918, F. Y. Newton acquired both the Payne parcel (lot 1 – 60 acres), and the Allegre parcels (lot 2 – 68 8/10 acres; and lot 3 – 80 9/10 acres).⁴² In 1920 he redivided the residual Pen Park estate and sold a new 107-acre parcel to Robert F. Wayland. The parcel, identified as “part of a tract known as Pen Park including the mansion house and other improvements thereon,” included lots 16, 17 and 18 on a new plat (Figure #8).⁴³

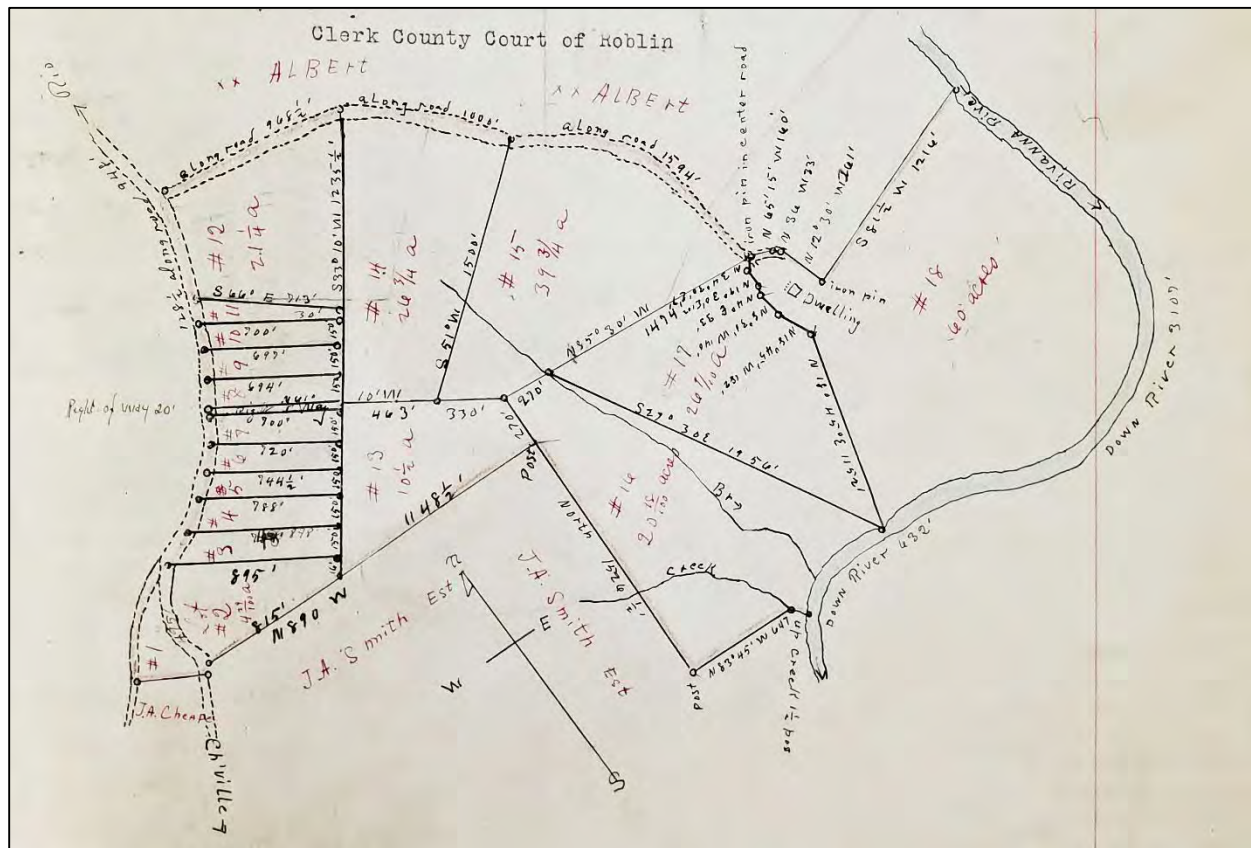


Figure #8: Plat of the division of the former Pen Park estate. M. M. Van Doren, C. E., September 28, 1920.

The son of Robert F. Wayland, Rosser L. Wayland, acquired additional lands including lots #14 and 15 on the 1920 plat in 1925 (Figure #8).⁴⁴ The Wayland family owned lands composing the former Pen Park estate for nearly half a century utilizing it as pasture for a dairy farm as well as limited cultivation of crops. In 1929 Robert F. Wayland sold the then 137-acre Pen Park parcel to his wife, Dora, and five children “in equal shares as tenants.” The Wayland Dairy farm would supply milk to Charlottesville and Albemarle County throughout the second quarter of the twentieth century.⁴⁵

A Park for the City of Charlottesville (1966 – Present)

Rosser L. Wayland and other Wayland heirs sold two tracts totaling 133.69 acres, encompassing the core of historic Pen Park, to the Piedmont Development Corporation in 1966. In August of 1971, the

⁴² ACDB 167:26; 167:28.

⁴³ ACDB 174:401.

⁴⁴ ACDB 189:532, 533.

⁴⁵ ACDB 175:247; 206:191.

Piedmont Development Corporation sold the same parcels to Trustees for a group called the Pen Park Land Trust. In September of 1971 the Pen Park Land Trust sold the 133-acre core of historic Pen Park to the City of Charlottesville.⁴⁶ The City of Charlottesville would continue to acquire additional small tracts in 1973 and 1979 from the Wayland family increasing the holdings of its new park overlooking the Rivanna River.⁴⁷

The Pen Park Cemetery

No sources were identified during archival research documenting the dates of establishment and physical expansion of the Pen Park cemetery. The earliest reference to a cemetery on the land occurs in 1812 when a 1-acre parcel, to be laid off in the future, is reserved from the sale of the Pen Park estate. This early reference to a burial ground at Pen Park likely derives from the deaths and burials of George Gilmer (1795), Mildred Gilmer (1795), and Lucy Gilmer (1800), as well as the deaths of enslaved African Americans owned by the Gilmer family between 1786 and 1812.

The Pen Park cemetery possesses three distinct partitions, a northern enclosure constructed of brick and containing Gilmer family members and related descendants; a central enclosure constructed of stone and containing Craven family members and related descendants; and a southern enclosure constructed of an iron fence and containing Hotopp family members and related descendants. Online sources identify at least 37 individuals, members of the Gilmer, Craven and Hotopp families buried within the Pen Park cemetery.⁴⁸



Figure #9: DAR and Gilmer family members at the Pen Park cemetery for the dedication of a marker to Dr. George Gilmer, 1927.

⁴⁶ ACDB 415:322; 493:156; 493:626.

⁴⁷ ACDB 529:55; 687:325.

⁴⁸ Pen Park Gilmer Estate Cemetery. Find A Grave.com. Accessed September 21, 2020. Online resource: <https://www.findagrave.com/cemetery/search?cemetery-name=Pen+Park-Gilmer+Estate+Cemetery&cemetery-loc=&only-with-cemeteries=cemOnly&locationId=>

In 1927, the Daughters of the American Revolution erected a grave marker honoring Dr. George Gilmer in the Gilmer section of the Pen Park cemetery (Figure #9).⁴⁹

The earliest photograph of the Pen Park cemetery suggests that it has not changed much in the last century. An aerial photograph from 1937, when the property was under pasture and cultivation by the Wayland family, shows that the Pen Park cemetery was an area possessing and surrounded by trees. Perhaps just as importantly the area kept in trees, left uncultivated, and presumed to be defined as cemetery space included a large area east and south of but adjacent to the cemetery enclosure (Figure #10).



Figure #10: Detail, 1937 aerial photograph, showing the Pen Park domestic complex with the main residence (blue circle), and tree shrouded cemetery (red outline).

The then dilapidated brick enclosure surrounding the Gilmer family section of the Pen Park cemetery was restored in 1975 as part of a regional U. S. Bicentennial project. The enclosure was rebuilt by the U. S. Army Foreign Science and Technology Center.⁵⁰

⁴⁹ Address of George Gilmer, June 10, 1927. Ms-446-c. Mrs. George (Ruth) Gilmer Papers. Albemarle Charlottesville Historical Society, Charlottesville, Virginia.

⁵⁰ Daily Progress, October 5, 1975.

RESEARCH DESIGN

As originally proposed, the Pen Park cemetery research design was composed of two phases of fieldwork, an initial Ground Penetrating Radar survey, and a phase of limited archaeological excavation or ground-truthing. The GPR survey was conducted immediately surrounding all sides of the ca. 130-foot by 30-foot cemetery enclosure with a particular focus on the eastern side where surface indications suggested the presence of unmarked burials, possibly of enslaved African Americans, outside of the historic burial ground. The total area to be examined by GPR, excepting areas of dense plantings, was approximately 12,800 square feet or 0.28 acres. NAEVA, a Charlottesville-based geophysical contractor, undertook the GPR survey on Wednesday, July 15, 2020.

Following the completion of NAEVA's GPR survey and data analysis, RAS was scheduled to undertake controlled, shallow excavations that would investigate two or more areas where surface indications and/or GPR 'anomalies' suggested the presence of potential unmarked grave shafts. The shallow excavations were intended to remove the overlying topsoil to a point where the underlying red clay subsoil was visible, generally a depth of less than one foot. At this point, disturbances dug into the red clay subsoil would be visible, and cultural features such as grave shafts would stand out based on their color and textural differences. The purpose of the archaeological test excavations was to provide more conclusive evidence concerning the presence or absence of unmarked graves outside of the cemetery enclosure and was predicated on the discovery of only a few 'anomalies.'

However, following a review of the preliminary examination of the ground surface surrounding the Pen Park cemetery, as well as the quantity and patterning of the potential grave shafts identified by the GPR survey, it was determined that there was more than enough evidence to conclusively state that there were a significant number of unmarked human interments present outside of the Pen Park cemetery. The limited archaeological excavations were abandoned, and the remaining labor focused on conducting archival research that would contextualize the findings and producing a technical report.

PRELIMINARY EXAMINATION OF THE GROUND SURFACE

On September 3, 2019, Rivanna Archaeological Services, LLC staff visited the Pen Park cemetery to conduct a preliminary examination of the ground surface surrounding the brick and stone enclosure. The examination was conducted in an approximately 25-foot perimeter surrounding the Pen Park cemetery enclosure. Along the east side of the Craven and Hotopp sections of the Pen Park cemetery, several east-west oriented oblong depressions were noted (Figure #11). The depressions appeared to be located east of and adjacent to the stone and iron fence enclosures, and also appeared to be generally clustered near one another. No grave markers were noted anywhere surrounding the Pen Park cemetery, or in association with the identified surface depressions.



Figure #11: East side of Pen Park cemetery looking north and showing flagged oblong east-west oriented depressions in the ground surface indicating potential burials. Soils visible in photograph are disturbances by animals.

GROUND PENETRATING RADAR (GPR) SURVEY

The GPR survey, data processing, and analysis was conducted by NAEVA Geophysics (Charlottesville, Virginia) according to the methods, equipment, and standards detailed in their technical report 'Geophysical Investigation Report: External Area Around Pen Park Cemetery, Charlottesville, Virginia' attached to this document as Appendix One.

Methods

The GPR survey focused on an approximately 0.28-acre project area encompassing a 25-foot zone surrounding the north, west, and south sides, and approximately 50 feet on the east side of the Pen Park cemetery enclosure (Figure #12). With the exception of areas of dense plantings, the 0.28-acre survey area was covered as completely as possible by close-interval (0.5 meter) GPR north-south oriented transects, parallel to the long axis of the cemetery (Figures #13 and 14). The north-south orientation of the transects was chosen to enhance the identification of potential east-west oriented human interments.



Figure #12: GPR Survey area (blue shading) surrounding the Pen Park cemetery.



Figure #13: GPR Survey along the east side of the Pen Park cemetery.



Figure #14: GPR Survey north of the Pen Park cemetery.

GPR utilizes high frequency electromagnetic energy to image objects below ground. An electromagnetic pulse is emitted which travels through the ground and is reflected upon encountering materials with differing electrical properties. GPR 'anomalies' are identified in soils based on differing electrical properties when compared to the surrounding natural soils. Grave shafts and other disturbed cultural contexts generally contain moister soils than the surrounding undisturbed soils. Moist soils possess a higher electrical conductivity than drier soils. Potential grave shafts, as well as other natural and cultural features, have the ability to be identified in the GPR data based on their ability to retain greater moisture. However as graves and other cultural features deteriorate over time the soils they contain possess less moisture and begin to resemble the surrounding natural soils.

The relative size and shape of GPR 'anomalies' can also be mapped. In GPR transects that are set on a north-south axis, perpendicular to the traditional east-west oriented burial, grave shafts can be seen as oblong, rectangular-shaped features in one or more transects placed at close intervals

GPR data returns recorded digitally during the Pen Park cemetery survey were examined by NAEVA in both profile and plan view visualizations to enable the detection of GPR 'anomalies,' areas of disturbed soils containing more moisture than the surrounding undisturbed soils, features that are potentially consistent with expectations for the geophysical signatures of unmarked grave shafts. A brief report describing the objectives, site location, equipment used, methods of survey and analysis, and results was issued by NAEVA Geophysics (See Appendix One).

Findings

The GPR Survey identified a total of 43 potential grave shafts outside of and surrounding the Pen Park cemetery enclosure. The potential grave shafts were concentrated predominantly along the east side of the Gilmer, Craven and Hotopp enclosures (n = 40), with three potential grave shafts located north of the Gilmer enclosure (n = 1), and south of the Hotopp enclosure (n = 2). The potential grave shafts located along the eastern side of the Pen Park cemetery appeared to be arranged in three distinct rows (Figure #15). Seven of the GPR identified potential grave shafts overlapped with surface depressions identified during the preliminary field examination. Four additional surface depressions did not register a GPR 'hit.'

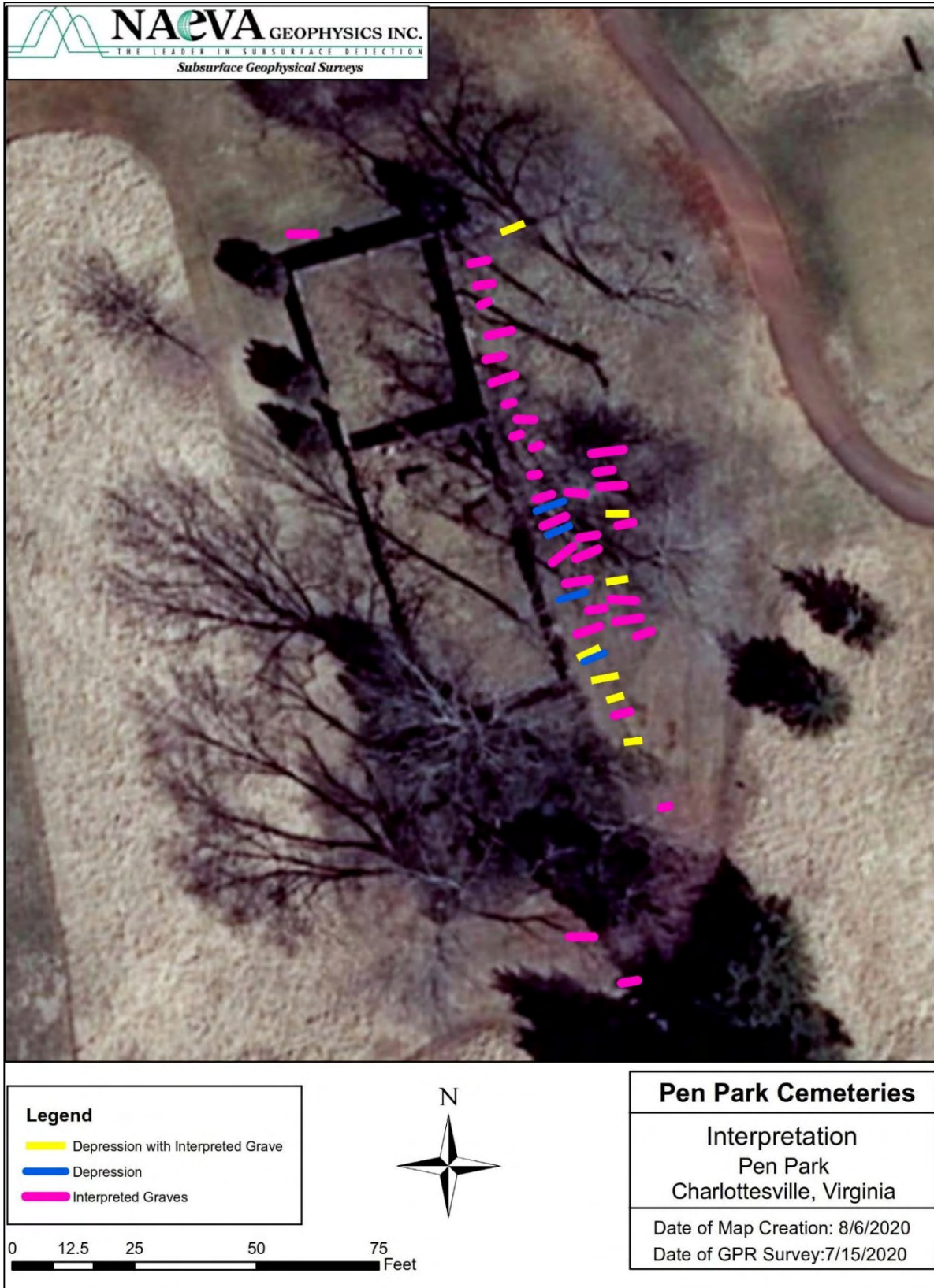


Figure #15: Map showing Pen Park cemetery and GPR identified potential grave shafts.

DISCUSSION AND ANALYSIS

The number, location and patterning of both visually identified surface depressions, and GPR identified potential grave shafts, convincingly documents the use of the area outside and predominantly east of the Pen Park cemetery enclosure for human burials by a large population over a significant period of time.

Size and Shape of Pen Park Cemetery

The earliest photograph of the Pen Park cemetery shows that it was a tree-covered polygon in 1937. The area of trees may or may not have been fenced, however it is clear from the aerial photo that this area was not cultivated like the surrounding soils. The fact that it was intentionally left uncultivated suggests that the entire polygon was identified as cemetery space (Figure #16).



Figure #16: Pen Park cemetery showing the area kept in trees in 1937 (red outline, at left) and the same area in 2018 (red outline, at right).

The shape of the area in trees in 1937 was a trapezoid, generally following the north, west and south sides of the existing cemetery enclosure, but extending far beyond the east side of the enclosure. The fact that the east side was the only side of the cemetery defined space that did not follow the line of the enclosure suggests that this too was acknowledged as sacred space (Figure #17).



Figure #17: Pen Park cemetery in 2018 showing long rectangular enclosure and area kept in trees (red outline) in 1937. Note the area east of the enclosure kept in trees in 1937 *includes* the area where a large number of potential graves were identified.

Number of Human Interments

The number of potential grave shafts identified through the GPR survey and the preliminary visual examination of the ground surface surrounding the Pen Park cemetery should be interpreted as the best possible results for the methods used. As previously noted, the identification of GPR 'anomalies' depends upon the differing electrical properties of grave shafts as compared to the surrounding natural soils, as well as their interpreted profile (size, shape, location and depth, etc.). It is important to acknowledge however that there may in fact be additional unidentified grave shafts that do not show

surface indications and which did not possess enough difference in electrical properties to be seen in the GPR data. Likewise, there may be GPR 'anomalies' identified as potential grave shafts that are, in fact, other cultural or natural features.

As previously noted, the GPR survey identified a total of 43 potential grave shafts located predominantly along the east side of the Pen Park cemetery. This number includes those potential grave shafts identified only by surface depressions ($n = 4$), those GPR anomalies identified as potential grave shafts ($n = 32$), and potential grave shafts identified by both surface depressions and GPR data ($n = 7$).

The number of potential grave shafts identified outside of the Pen Park cemetery is considerably larger than anticipated when compared to the relatively few surface depressions identified during the preliminary field examination. The size of this population, and the presence of two to three rows of individuals, suggests that the interments may have occurred over a long period of time.

Identification of the Population

One of the more significant questions to be answered is to determine who is buried outside of the Pen Park cemetery. In the absence of any inscribed grave markers and / or any burial records, the names of the individuals buried adjacent to and outside of the Gilmer, Craven and Hotopp cemetery enclosures remains elusive. An examination of the historical context for the establishment and development of the Pen Park estate however provides some evidence as to whom the population may represent.

It is clear that the persons documented as having been buried within the Gilmer, Craven and Hotopp sections of the Pen Park cemetery are all white individuals. Headstones mark their precise location and provide name, birth, death and relationship information. Future research into state death records for Albemarle County may also document many of these interments. In contrast, none of the potential grave shafts identified outside of and adjacent to Pen Park cemetery possess markers, either fieldstones or other more formal inscribed headstones.

The chances that 43 individuals associated with the prominent white families who owned Pen Park are buried outside of the existing cemetery enclosure without markers and lacking burial records seems unlikely given the well-marked and well-recorded interments within the Gilmer, Craven and Hotopp enclosures. Therefore if the 43 potential grave shafts are not likely members of the white Gilmer, Craven and Hotopp families, then they likely represent the burials of enslaved African Americans, and/or African Americans who lived and worked on the Pen Park estate between 1866 and 1904.

U. S. Census and Albemarle County Personal Property Tax Records document that the Gilmer and Craven families possessed significant numbers of enslaved African Americans during the periods in which they owned and resided at Pen Park. Dr. George Gilmer, and the George Gilmer estate, possessed 26 to 41 enslaved individuals between 1786 and 1801, while John H. Craven possessed 37 to 53 enslaved individuals between 1819 and 1845. The significant enslaved population living and working at Pen Park from the late eighteenth through the mid-nineteenth century means that there would also have been a significant number of enslaved African American deaths due to age, disease and enslavement.

Likewise, following Emancipation, the establishment of the Hotopp vineyard and wine making facility at Pen Park, as well as the operation of a farm throughout the last three decades of the nineteenth century, necessitated a number of laborers to perform the required tasks. An 1886 report of the Bureau of Statistics noted that William Hotopp employed seven African-American men in 1886 on his vineyard and farm. In addition, the 1870 and 1880 census record that the Hotopps had six African American individuals living in their household and listed as domestic servants. The presence of African American laborers and domestic help and their families associated with Pen Park between 1870 and 1900 suggests that burials outside of the Pen Park cemetery could have occurred in the post-Emancipation period as well.⁵¹

Black and White Cemeteries in Pre-Emancipation Virginia

Enslaved African Americans had little control over how and where they buried their loved ones. Enslaved burials in Virginia typically followed a limited number of options. They are found: 1) buried in the same cemetery as their white owner, 2) buried outside of and adjacent to the white cemetery; and 3) buried in a separate, distinct cemetery. Many different examples of burial patterns have been documented in Albemarle County. At the University of Virginia, enslaved African Americans were buried adjacent to and outside of the formal stone wall enclosed white cemetery. At Dunlora, the plantation and residence of Samuel Carr⁵² 1.5 miles north of Pen Park on the Rivanna River, enslaved African Americans were buried in a separate cemetery located approximately 0.3 miles southwest of the white cemetery. At Pen Park, it appears that enslaved African Americans were buried outside of but adjacent to the white cemetery. This typical burial pattern may have continued well into the post-Emancipation period.

Pen Park Cemetery Burial Patterns

Analysis of the spatial patterning of the 43 potential grave shafts located outside of the Gilmer, Craven and Hotopp enclosures enhance the interpretation of the Pen Park cemetery. The most obvious spatial pattern is that the predominant number of potential grave shafts are located adjacent to and along the east side of the Pen Park cemetery. A significant majority (40 of 43 or 93%) of the burials follow this pattern.⁵³ This spatial pattern may be a direct result of the historic designation of a 'front' and 'rear' to the Pen Park cemetery. For both the Gilmer and Craven sections, the two pre-Emancipation sections in the Pen Park cemetery, the primary entrances to the brick (Gilmer) and stone (Craven) enclosure are located on the west side. The west side of the Pen Park cemetery is also the more level of the two long sides, as the east side falls off subtly to the south and east. This would mean that west side was the formal front of the cemetery, and that the east side was the back of the cemetery. The GPR survey did not identify any potential grave shafts located along the west or front of the Gilmer, Craven or Hotopp enclosures. The location of approximately 93% of the potential grave shafts to the east, or rear, of the Pen Park cemetery is significant and likely represents an intentional decision to place enslaved African Americans in this location.

⁵¹ John D. Imboden, Virginia, p: 177. In United States Treasury Department, Report on the Internal Commerce of the United States, by William F. Switzler, Chief of the Bureau of Statistics, Treasury Department. (Washington D.C.: Government Printing Office, 1886).

⁵² Samuel Carr (b. 1771 – d. 1855) was a contemporary of both Dr. George Gilmer and John H. Craven.

⁵³ Two of the potential grave shafts are located south of the Hotopp enclosure, one is located north of the Gilmer enclosure.

The several potential grave shafts located east of and adjacent to the Hotopp enclosure, the southern most of the three enclosures, is interesting. These five potential grave shafts appear to reflect the presence of the Hotopp enclosure, a cemetery which was not established until 1866 at the earliest, and most likely in June of 1867 with the death of Johanna H. A. Hotopp. If these potential grave shafts are indeed reflecting the presence of the Hotopp cemetery and enclosure, then this would mean that these interments date to the post-1866 period and may reflect the deaths of African Americans living and working at the Pen Park vineyard and farm.

An examination of the map of potential grave shafts documented that most of the GPR identified burials (designated pink and blue in Figure #15) appeared to be clustered nearly exclusively east of the Gilmer and Craven sections, while most of the burials possessing surface indications such as oblong depressions (designated yellow and blue in Figure #15), appear to be clustered east of the Craven and Hotopp sections of the Pen Park cemetery. Much like the Gilmer, Craven and Hotopp sections that proceed in age from north to south, the potential grave shafts adjacent to and east of the Pen Park cemetery may follow a similar progression in time. Very few of the burials identified by GPR also possess surface indications (n = 4) suggesting that over time, their surface signature (e.g. oblong depressions) may have been filled in. Likewise, burials that do possess a surface indication, may be more recent in time.

The absence of any headstone or footstone markers associated with the 43 potential grave shafts is potentially significant. It was common for most eighteenth and nineteenth-century white and black burials to possess some kind of grave marker, even if only a fieldstone. The complete absence of grave markers suggests that many have been removed over time, either in an effort to erase this portion of the cemetery, or for the care and maintenance of the sod.

RECOMMENDATIONS

The recommendations below are tailored to address possible 'next steps' that the City of Charlottesville might take regarding the 43 potential grave shafts located adjacent to and outside of the Pen Park cemetery.

Memorialization

It is recommended that the City of Charlottesville memorialize, in some way, the presence of the 43 individuals buried outside of the Pen Park cemetery enclosure. It is believed that these interments are those of enslaved African Americans owned by the Gilmer, Craven and other families, as well as possibly African Americans associated with the Hotopp vineyard and farm during the 1866 – 1904 period. Memorialization may include erecting signage with compelling text and graphics. Memorialization may also involve the construction of some form of enclosure that visually separates the 43 potential burials from the surrounding golf course. The area composing the newly identified burials, as well as any future memorialized area, should be surveyed and mapped and entered as part of the legal record for Pen Park.

Guidelines for the Future Use and Treatment of the Pen Park Cemetery

Prior to the GPR Survey, it was believed that all of the human interments at Pen Park were contained within the existing cemetery enclosure. Now that it is known that a significant number of additional previously unidentified burials are present predominantly along the east side of the cemetery, it is recommended that the City of Charlottesville consider the development of new policy and guidelines on how this area is to be maintained by park staff and used by the public in the future.

Among the considerations relevant to the use and maintenance of the surrounding public golf course are the following:

- Treatment of the vegetation at the Pen Park cemetery: The area surrounding the Pen Park cemetery enclosure is currently planted in sod but also contains large shrubs and trees. The City should consider creating management practices that address this vegetation. For example, should new plantings in the area of the newly identified burials be allowed? When a tree dies or needs to be removed, the City should make sure that disturbances are minimal and that stump grinding does not occur.
- Use of golf carts: The City may want to consider how golf carts are used in the vicinity of the Pen Park cemetery. Because of the adjacent 14th tee, golf carts frequently stop east of and adjacent to the Pen Park cemetery. Should the area containing the newly discovered burials be a restricted area where temporary parking of golf carts is prohibited? Should a more formal parking area for golf carts be created next to the 14th tee?
- Maintenance of the asphalt cart path: An asphalt surfaced golf cart path passes approximately 50 feet to the east of the Pen Park cemetery. The City should consider developing a policy for future repair and new construction of the golf cart path in the vicinity of the Pen Park cemetery.
- Maintenance of adjacent utilities: A sprinkler control box is located approximately 40 feet east of the brick enclosed Gilmer section of the Pen Park cemetery. Other buried utility lines may

be located nearby. The City should consider developing a policy for future repair and new construction associated with water and electrical lines in the vicinity of the Pen Park cemetery.

Among the considerations relevant to the use of the Pen Park cemetery by the public are the following:

- Developing an Event Policy: The discovery of additional previously unidentified burials, most likely interments of enslaved African Americans held by the Gilmer, Craven and other families, as well as the potential future memorialization of the site, may mean that future visitors wish to hold commemorative events at the Pen Park cemetery. The City should consider the development of an event policy for the Pen Park cemetery that will take into account reasonable access to the park as well as potential conflicts with the use of the golf course.
- Public Access to the Pen Park cemetery: The discovery of additional previously unidentified burials, as well as the potential future development of an educational and interpretive program in this location, may mean that more people will come to visit the Pen Park cemetery. The City should ensure that there is adequate public access to the Pen Park cemetery in the future. Currently the only access is via a concrete-surfaced pedestrian path. The City should consider the construction of a limited handicap access parking area, located in an appropriate place, that will allow all visitors adequate access to the site and which will facilitate the hosting of future commemorative events.

Additional Archaeological Research

Should the City of Charlottesville want to determine the precise location and number of all of the graves outside of the Pen Park cemetery, additional archaeological investigations would be recommended. While the GPR survey has identified a total of 43 potential grave shafts adjacent to the Pen Park cemetery, additional archaeological investigations have the ability to 1) confirm that each potential grave shaft is in fact a human interment and to locate additional human interments not previously identified by the GPR survey; 2) to pin point the precise location of each human interment; and 3) to further define the full spatial extent of the newly identified burials. Confirming the identify of potential grave shafts and knowing the full extent of the burials adjacent to and outside of the Pen Park enclosure will be helpful in planning for any future memorialization of the site, as well as for developing guidelines for the future use and maintenance of the vicinity.

The recommended additional archaeological investigations will not excavate individual grave shafts or knowingly disturb or relocate any human remains. However because any excavation within or adjacent to the Pen Park cemetery has the potential to recover human remains, it is recommended that any future archaeological work east of the Pen Park cemetery occur with oversight from the Virginia Department of Historic Resources. Solely as a precaution against the unlikely event that human remains are encountered, it is recommended that the City secure a Permit for Archaeological Excavation of Human Remains from the Virginia Department of Historic Resources. Securing this permit in advance of any future archaeological fieldwork ensures that the cemetery delineation work plan receives an additional layer of review and oversight while also enabling the archaeological consultant to manage inadvertently encountered human remains in the unlikely event of their discovery.

The goal of additional archaeological excavation adjacent to the Pen Park cemetery should be the positive location and identification of each human interment, and the full definition of the extent of burials. The most accurate means of identifying all human interments and defining the extent of burials

within a cemetery is to remove the topsoil from the project area. At the interface of the topsoil and the underlying naturally occurring subsoil, the tops of the grave shafts will be recognizable by their shape as well as the coloring and disturbed nature of the fill soils they contain, differentiating them from the surrounding naturally occurring red clay subsoil. Archaeological investigations should consist of shallow, controlled excavation that will extend only to a depth sufficient to visually identify each burial, generally less than 1-foot below grade. This work can be conducted with the assistance of a backhoe with a smooth-edged bucket enabling the shallow excavation and removal of topsoil over a large area. Extant trees within the project area will be avoided leaving small 'islands' of turf where tree roots will be protected. Archaeological excavation and removal of topsoil should extend to a point approximately 25 feet beyond the last identified burial, or to a point where excavation is no longer possible, thereby defining a reasonable boundary for the previously unidentified burials. Once all human interments are positively located and identified, a surveyor should be brought in to accurately locate each burial and any relevant cultural features within the project area. Once the individual grave shafts have been accurately mapped by a surveyor, a permeable landscape fabric should be placed on top of the burials and the project area soils replaced. The area composing the newly identified burials, as well as any future memorialized area, should be entered as part of the legal record for Pen Park.

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GPR
MAGNETICS
ELECTROMAGNETICS
SEISMICS
RESISTIVITY
UTILITY LOCATION
UXO DETECTION
BOREHOLE CAMERA
STAFF SUPPORT

Geophysical Investigation Report

External Area Around Pen Park Cemeteries Charlottesville, Virginia

Date of Investigation:
July 15, 2020

OCTOBER 9, 2020

Prepared for
The City of
Charlottesville, Virginia

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Appendices

APPENDIX A. DEPTH SLICES, INTERPRETATION AND COMPOSITE IMAGES

1 INTRODUCTION

1.1 Background and Objectives

NAEVA Geophysics Inc. (NAEVA) was contracted by the City of Charlottesville to conduct a geophysical investigation for the area surrounding three adjacent historic family cemeteries in Pen Park which contain graves of the Gilmer, Craven and Hotopp families. The purpose of the geophysical investigation was to attempt to ascertain if depressions found outside the walls of these cemeteries are in fact unmarked graves. NAEVA proposed utilizing ground penetrating radar (GPR) to attempt to image the subsurface at the site to answer the question.

1.2 Site Location and Description

The portion of the cemetery that was examined with GPR was roughly a 25-foot buffer outside the walls of the cemetery with the eastern side extending further out to encompass all visible depressions. The survey covered 0.26 acres (**Figure 1**). For the most part the site is in an open area with trees on the east and south sides. The surface is vegetated with mowed grass. Surrounding the cemetery is the Pen Park golf course. The eastern side has a paved road for golf carts and a utility in the northeast corner of the collection area. A few depressions were observed on the eastern side. Their positions were recorded with high accuracy real time kinematic (RTK) GPS and later plotted with potential graves found with GPR.

A grid was established using metric tape measures, with the southwestern corner designated at 0N, 0E. A series of parallel profiles were collected with GPR at a spacing of 0.5 m to cover the collection area. **Figure 1** shows the portion of the cemetery that was examined.



Figure 1: Area of investigation

2 EQUIPMENT

2.1 Sensors and Software GPR

Ground penetrating radar is a common tool to locate unmarked graves. For this project NAEVA used a Sensors and Software GPR system. GPR utilizes the propagation and reflection of high frequency electromagnetic (EM) energy to image subsurface structures and objects. The GPR transmitter emits a pulse, which then travels through the ground and is partially reflected when it encounters an interface of two materials with differing electrical properties. The remaining energy continues downward, perhaps encountering other reflectors, or eventually dissipating due to spreading losses or attenuation in conductive materials. The GPR receiving antenna is connected to the console electronics, which digitizes the signal. The travel time of the reflected energy is very accurately measured (in nanoseconds), as well as the relative amplitude of the signal. The amplitude of the returning signal is a function of the contrast in electrical properties of the materials, and the depth. Conductive materials, including clay, very rapidly attenuate GPR energy, limiting depth penetration.

A Sensors and Software Noggin Plus system with a 250 MHz antenna was initially tested on this site by running over depressions of the east side that were believed to be graves and over known graves within the Gilmer family portion of the cemetery. During testing it was determined the GPR system would be successful at imaging burials at the site.

Data were collected in a North – South direction using a 0.5-meter line spacing to cover the area of investigation. Survey line direction was oriented N-S to maximize the possibility of multiple traverses over E-W oriented burials. Stacked GPR pulses into the ground were triggered using a wheel odometer connected to the GPR electronics spaced at 16 stations for every 10 cm traveled. Straight line profiling across the survey area was accomplished using guide ropes laid perpendicular to the direction of travel, painted with bands of alternating color as a visual cue.

2.2 Trimble RTK GPS

A Trimble R8 RTK GPS base station and rover were used to obtain real-time positions of features of interest and to properly position data in the processing stage. The GPS base station was used in conjunction with one rover mounted on a range pole to record the locations of depressions within the survey area and to record the coordinates of the collection area so data could be georeferenced in the processing stage. The GPS rover received real-time corrections broadcast to the roving GPS unit via a radio link using a Trimble TDL450 radio modem transmitting at 2 watts. This system provides positional corrections at a rate of 1 hertz (Hz), with an expected accuracy of 2 cm horizontal and 3 cm vertical when the required minimum of 5 satellites are available. Data quality derived from a satellite can depend on overhead canopy, local topography, the elevation of the satellite in the sky, weather, and other factors.

A control point was measured by NAEVA for use as a base station by collecting static readings and uploading the data to the National Geodetic Survey's OPUS system. Data was later shifted to match the corrected base station location.

3 RESULTS

3.1 Summary of Data Processing

GPR data were processed using Sensor and Software's EKKO Project program. Hyperbolic velocity calibration was used to determine the speed of the electromagnetic waves passing through the subsurface. For this site, a value of 0.28 ft/ns was used. The profile time axis was able to be converted to depth using this speed constant for the site. Profiles were processed using DC removal and background subtraction filters, which removed noise in the data. A SEC2 gain was employed to compensate for signal attenuation. Within EKKOProject, profile data was dewowed, and a migration and envelope applied. The above processes turn the profiles into amplitude response profiles that can be gridded and have slices cut through the investigation area at varying depths. Color contour maps of the gridded GPR data at 0.5ft intervals are presented in **Appendix A**.

3.2 GPR Analysis

The GPR data were collected in a series of parallel traverses, oriented grid N-S. Subsurface features with straight edges are best defined with GPR if the survey line is oriented perpendicular to the axis of the target. Since graves were expected to be oriented in an East – West orientation, GPR lines were only collected in a North – South direction.

GPR anomalies seen in the data correspond to differences in conductivity with the surrounding soil. Suspected grave shafts can be seen in the data in some places since the disturbed soil retains slightly higher moisture content than undisturbed soil. The suspected graves also retain more moisture than surrounding soil as they decay which is the response seen in the data. As less and less of a grave remains intact, the closer the response resembles the surrounding soil, which deduces the response seen by the GPR.

After corrections were done to the data, each GPR profile was examined for grave like features and potential associated grave shafts. The criteria used to pick potential graves included hyperbola depths of at least 2.5 ft, hyperbola widths of at least 2.25 ft. When encountered, these features were marked on the profiles. Adjacent profiles were examined anytime a potential grave was seen in the data in order to confirm a potential

grave both continued onto adjacent profiles and maintained the same depth. Features not oriented roughly E-W were rejected as potential grave locations. With the age and likelihood these graves did not contain caskets, but burial shrouds, any feature that continues through at least 3 profiles, was at the right depth, and was roughly orientated E-W was considered a potential grave location. Some potential graves also show a grave shaft. Only features that met the criterial within the profile data were used to discern potential grave locations. Depth slices were only used as a visual aide.

In **figure 2**, a GPR response simulator created the expected signature of an intact modern grave. Boxlike reflectors in the subsurface with tails coming off either side is representative of the kind of features marked in the profiles. Pristine grave responses like **Figure 2** were not present in the survey area presumably because these individuals were not buried in caskets and natural decay over time has left very little in terms of remains.

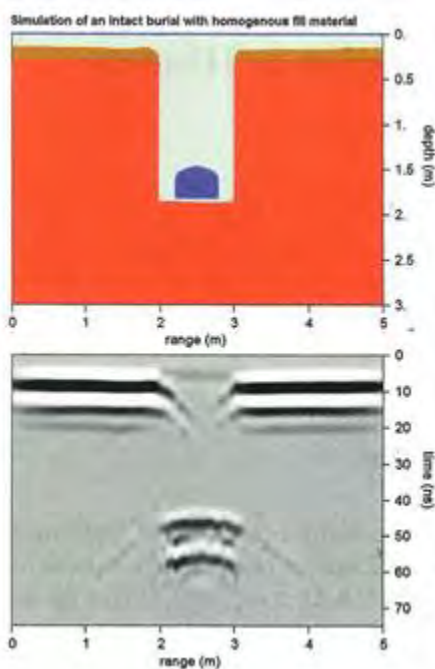


Figure 2 Modeled GPR data over intact grave site (Goodman, Piro 2013)

NAEVA also looked to data collected in the walled in Gilmer portion of the cemetery that still contained grave stones in order to find a better representation of the response of graves that fit the same time period and geologic conditions experienced by graves outside the walls. **Figure 3** shows a profile from the Gilmer portion of the cemetery that passes over a known grave with the peak of the hyperbola marked with a blue dot.

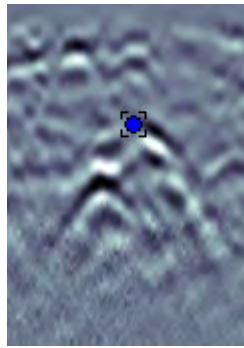


Figure 3: An example of known grave found in the Gilmer portion of the cemetery

Identified burials outside the walls of the cemetery varied in response due to varying ages and how they were buried. **Figures 4** and **5** show examples of the kind of hyperboles that were picked as potential graves. Figure 4 shows a strong response at the right depth and the size of the hyperbola matched well to what was seen in the Gilmer Cemetery. Similar size and depth hyperbolas were seen in adjacent profiles at the same location.

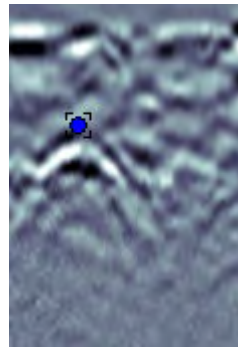


Figure 4: A potential grave outside the cemetery

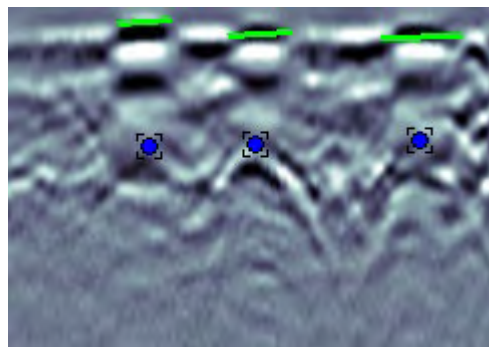


Figure 5: Three potential graves outside the cemetery with grave shafts

Figure 5 is more representative of graves outside the walls of the cemetery. Hyperbolas were still present yet responded with less amplitude. Surprisingly, many of these were accompanied by the remains of grave shafts directly above the hyperbola. The

green lines show the top of grave shafts while the blue dots mark the top of potential graves. These hyperbolas also fit the criteria by having the right depth, size, orientation (E-W), and correlative adjacent profiles.

The GPR data were gridded and contoured, and are displayed in **Appendix A**. Each slice has a thickness of approximately 0.5 feet, based off a GPR velocity of 0.28 ft/ns, ranging from the surface (Slice 1) down to a maximum of 5 feet (Slice 10). The GPR provided useful data to a depth of approximately 5 feet at this site. Depths are shown at the bottom right hand corner of each slice figure. In addition, a 3D transparent image of the data can also be found in **Appendix A**.

Gridded and contoured data was also exported into Geosoft to create a transparent 3D representation. All depth data was combined, and low amplitude data was made transparent. High response areas show up as orange. Suspected graves do not show up well since the remaining response is low. However, the higher response grave shafts mostly clustered next to the Craven portion of the Cemetery show up well in the composite image. The composite amplitude map can be found in **Appendix A**.

In the area investigated, we interpret that approximately 43 graves are present, with the majority being in two rows on the eastern side. An interpretation of grave locations can be found in **Appendix A**.

6 CONCLUSIONS

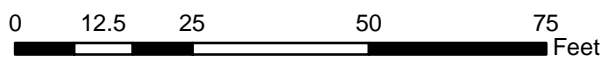
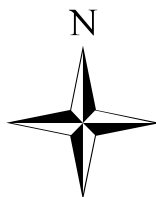
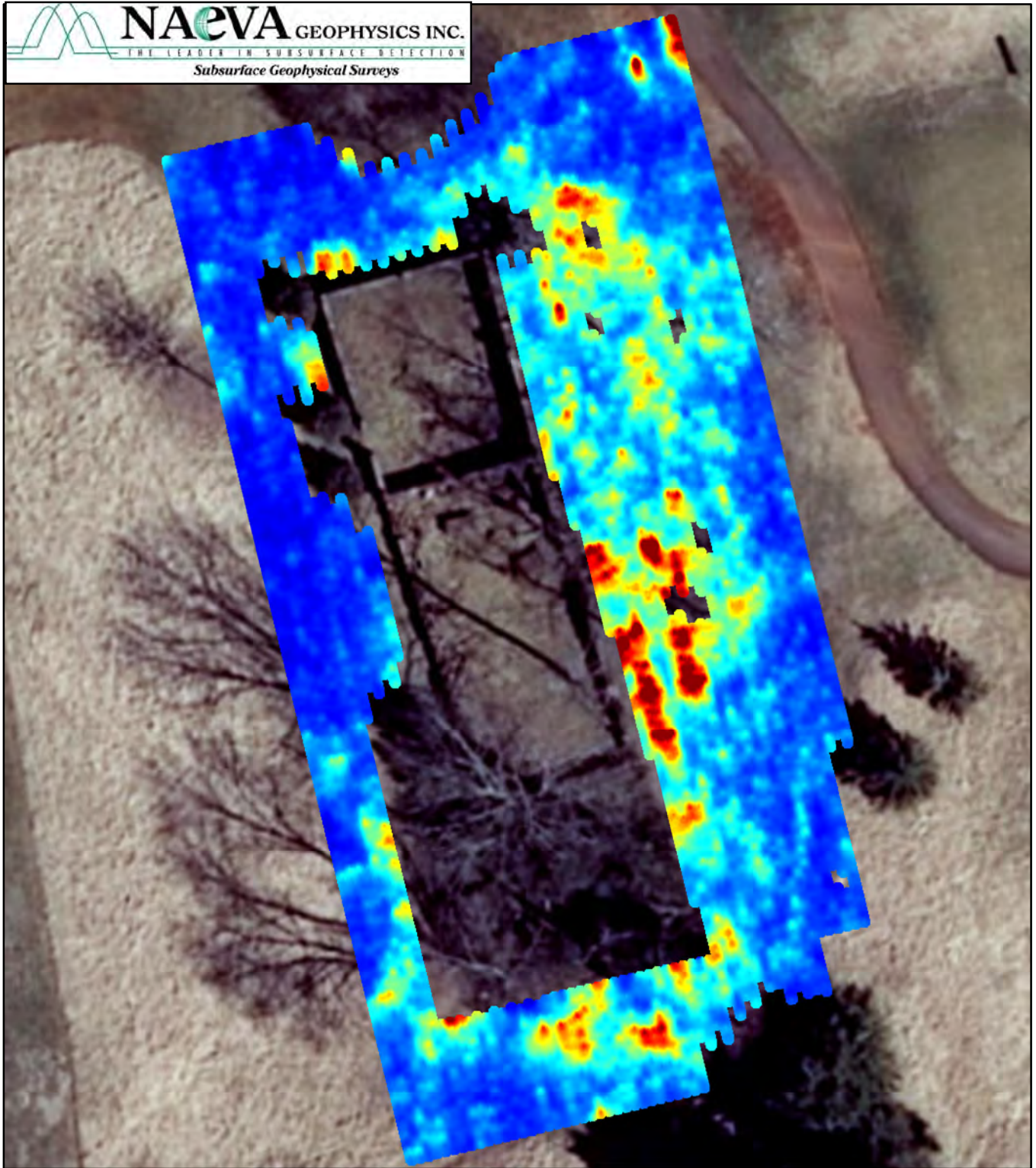
GPR data suggests as many as 43 graves in the study area that are clustered mostly on the eastern side of the survey near the walls of the family cemeteries. These graves presumably are of varying ages and states of decay. Some graves still look well preserved like the one imaged in **Figure 4**, however most are nearing the point where very little remains. Some graves may already be at the point where they are not detectable to geophysical methods.

7 REFERENCES

Goodman, Dean, Piro, Salvatore, GPR Remote Sensing in Archaeology, 2013

Appendix A

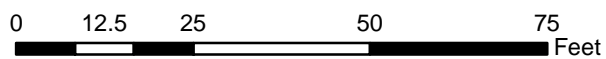
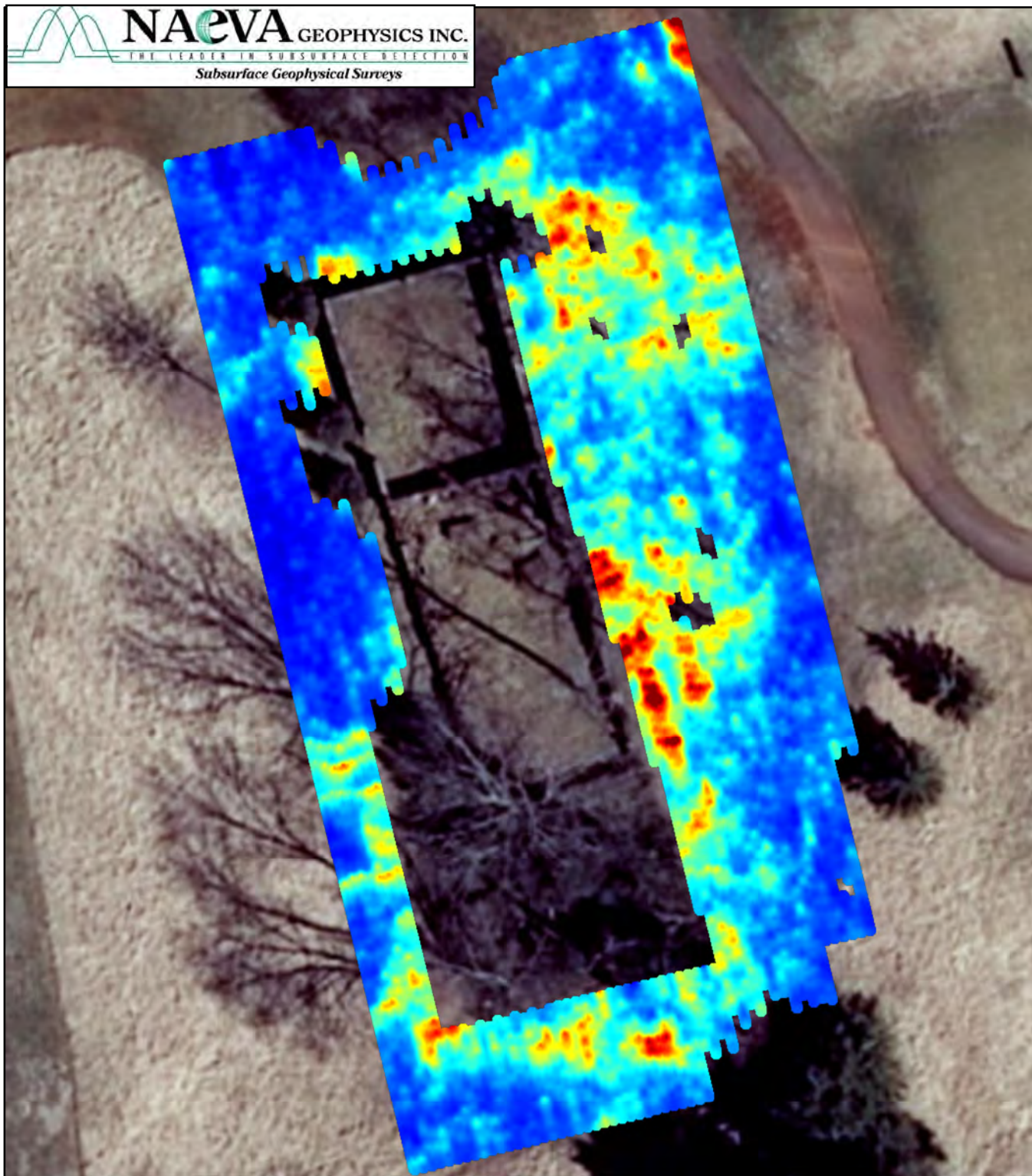
GPR Slices and Interpretation



Pen Park Cemeteries

Slice 1 (0.0 to 0.5 ft)
Pen Park
Charlottesville, Virginia

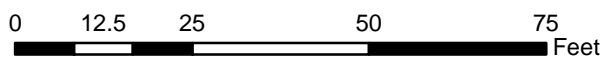
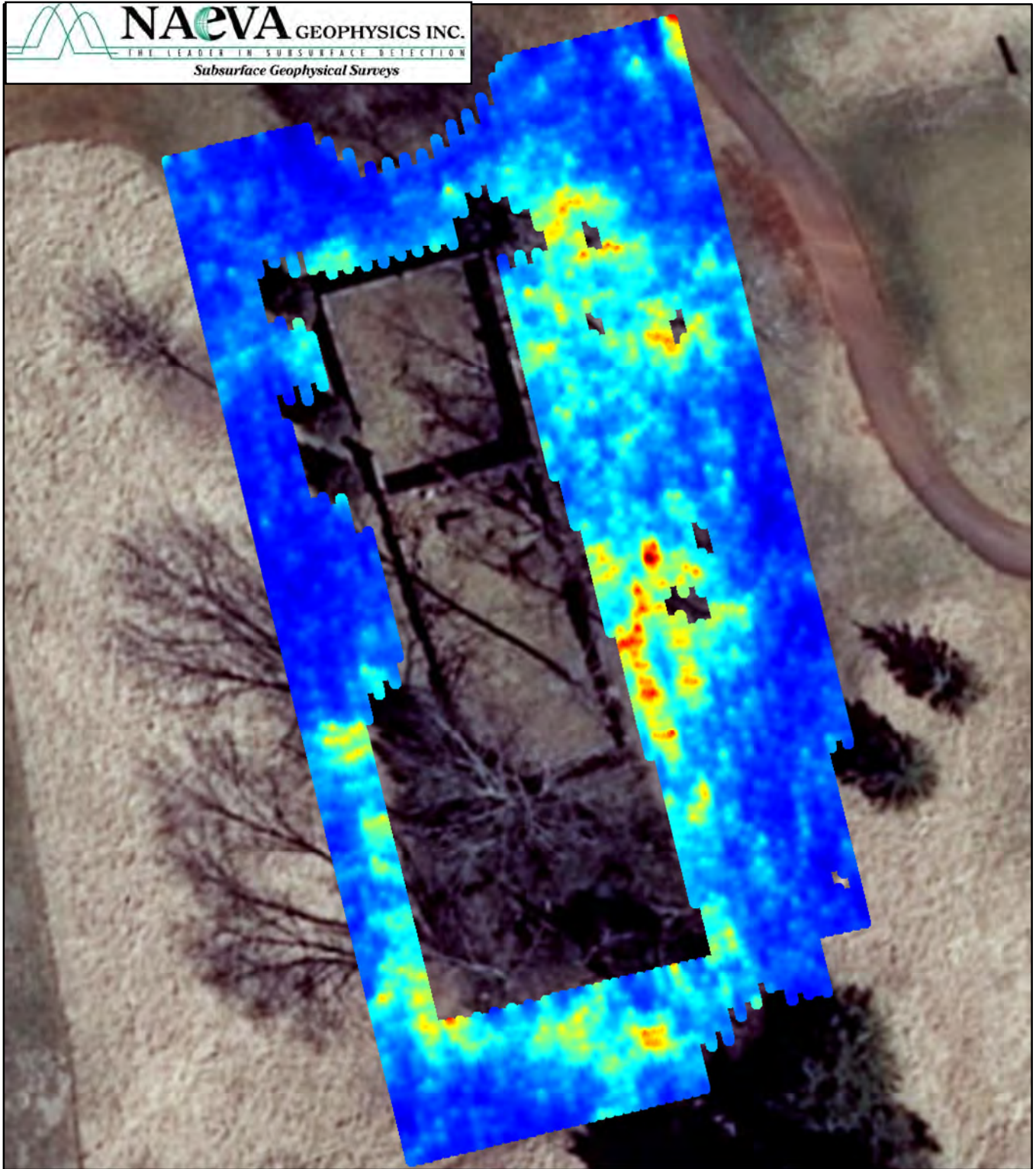
Date of Map Creation: 8/6/2020
Date of GPR Survey: 7/15/2020



Pen Park Cemeteries

Slice 2 (0.5 to 1.0 ft)
Pen Park
Charlottesville, Virginia

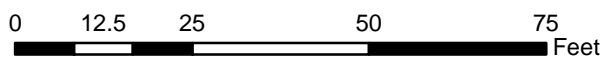
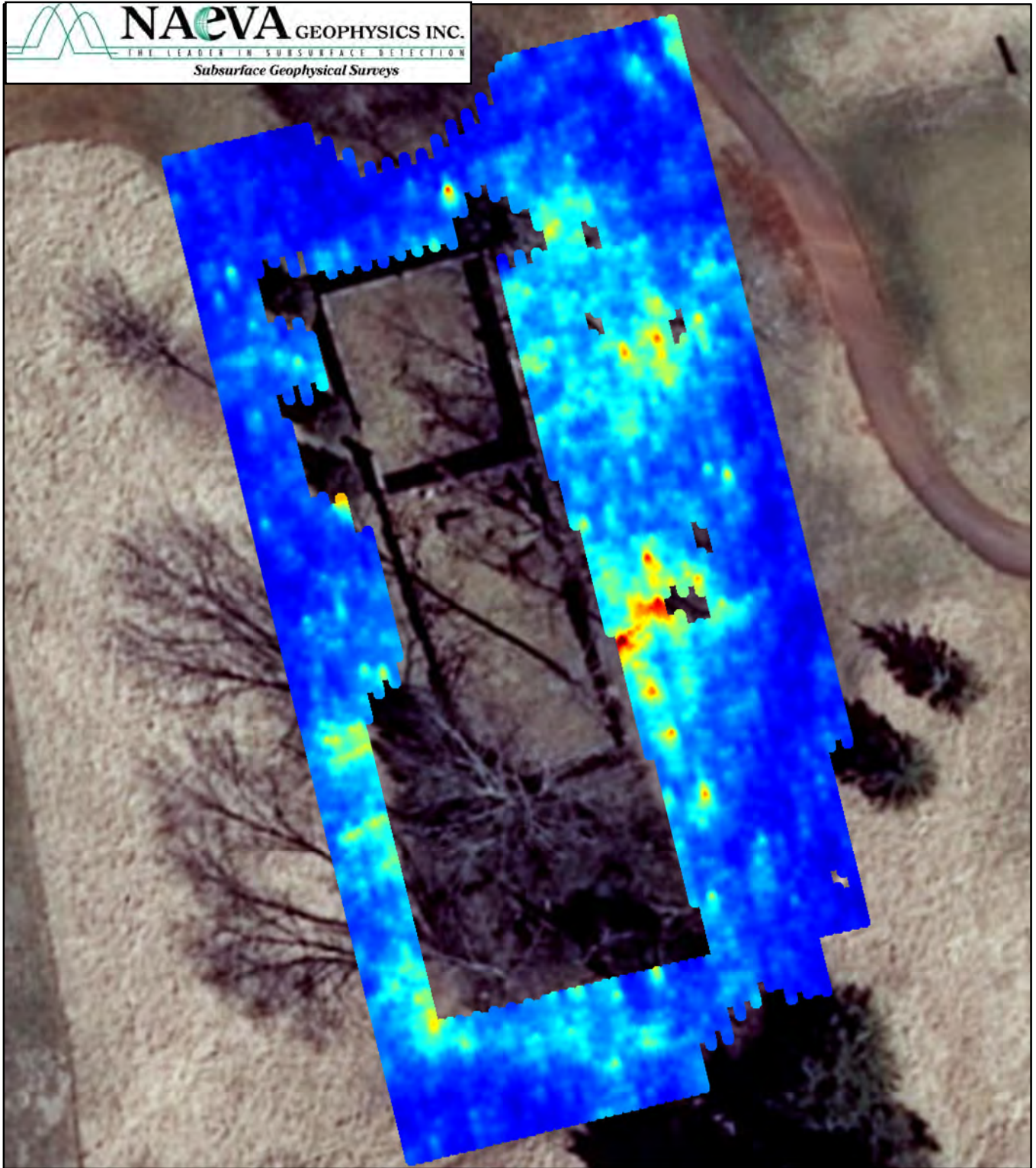
Date of Map Creation: 8/6/2020
Date of GPR Survey: 7/15/2020



Pen Park Cemeteries

Slice 3 (1.0 to 1.5 ft)
Pen Park
Charlottesville, Virginia

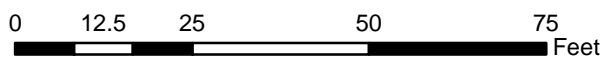
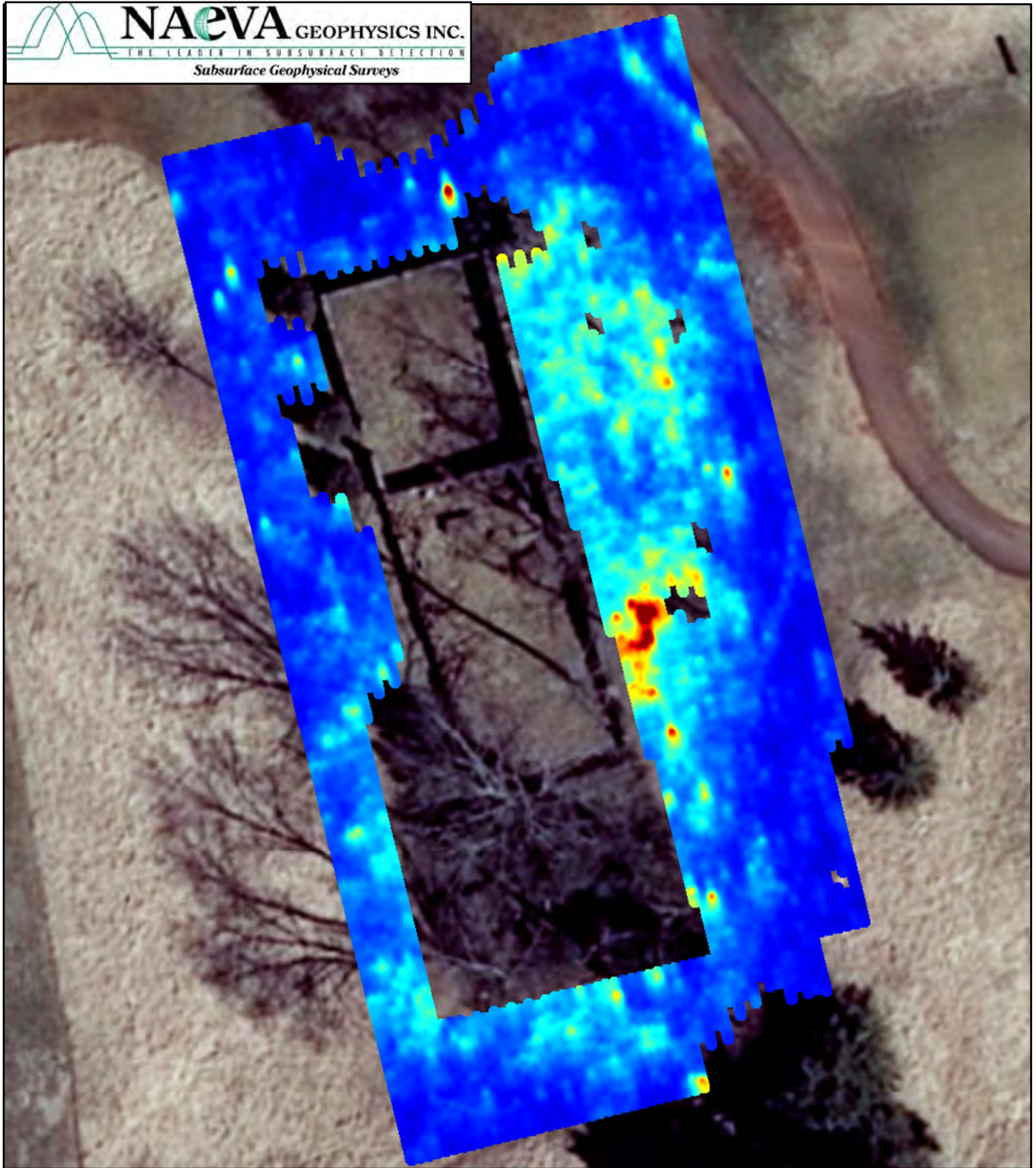
Date of Map Creation: 8/6/2020
Date of GPR Survey: 7/15/2020



Pen Park Cemeteries

Slice 4 (1.5 to 2.0 ft)
Pen Park
Charlottesville, Virginia

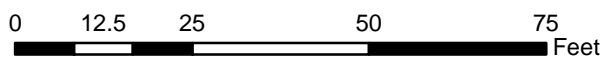
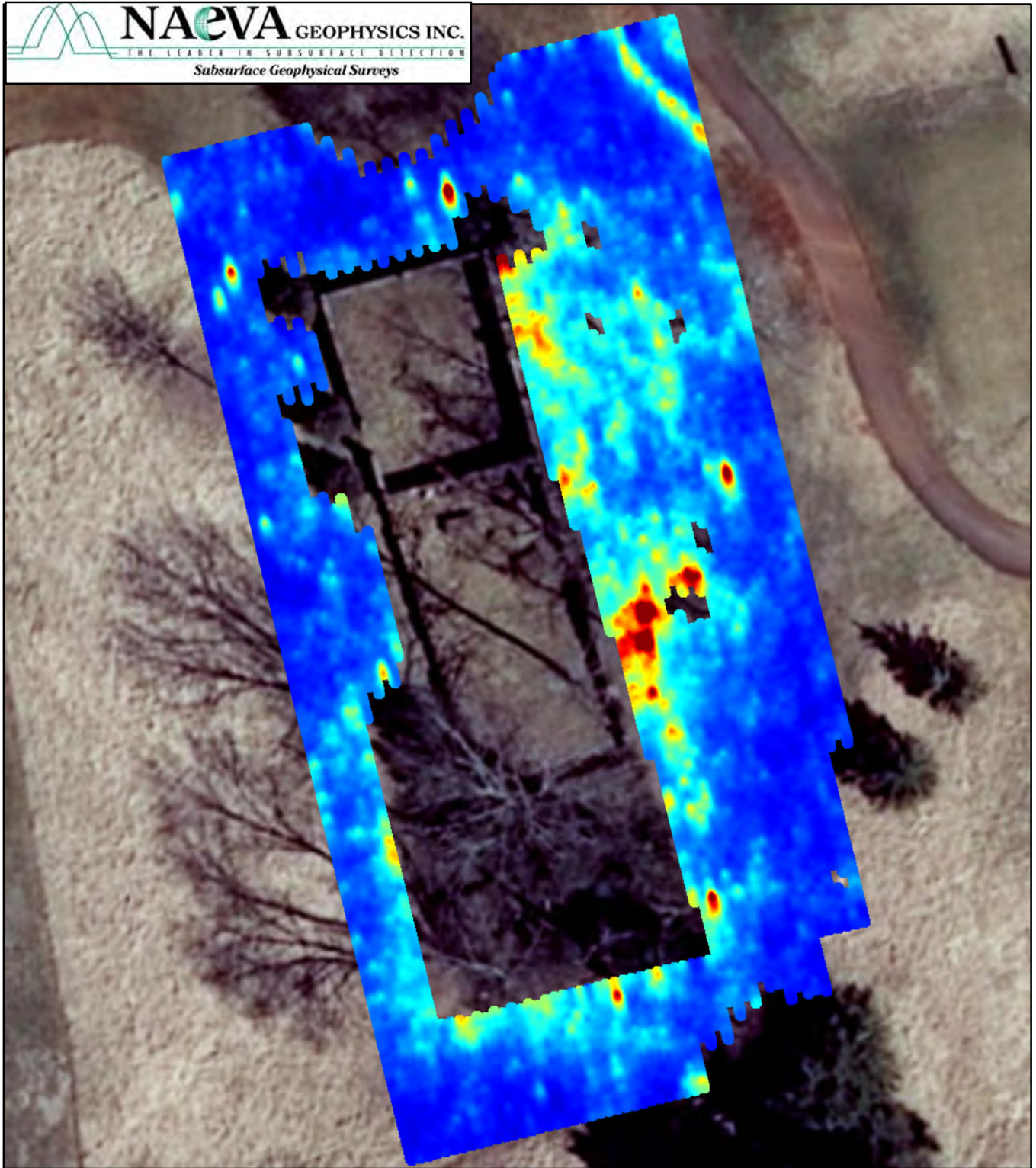
Date of Map Creation: 8/6/2020
Date of GPR Survey: 7/15/2020



Pen Park Cemeteries

Slice 5 (2.0 to 2.5 ft)
Pen Park
Charlottesville, Virginia

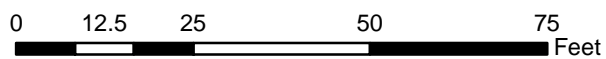
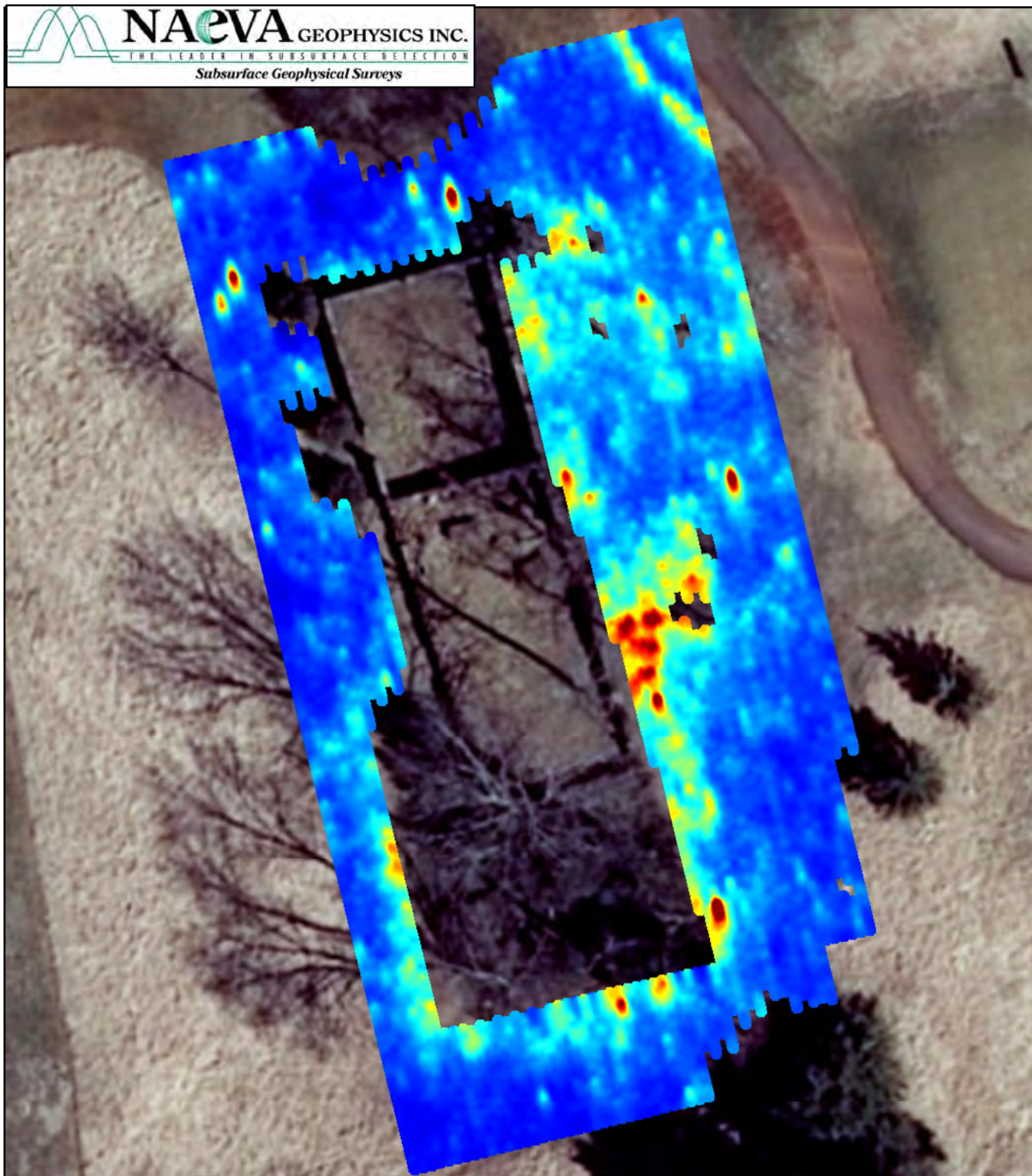
Date of Map Creation: 8/6/2020
Date of GPR Survey: 7/15/2020



Pen Park Cemeteries

Slice 6 (2.5 to 3.0 ft)
Pen Park
Charlottesville, Virginia

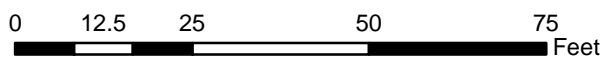
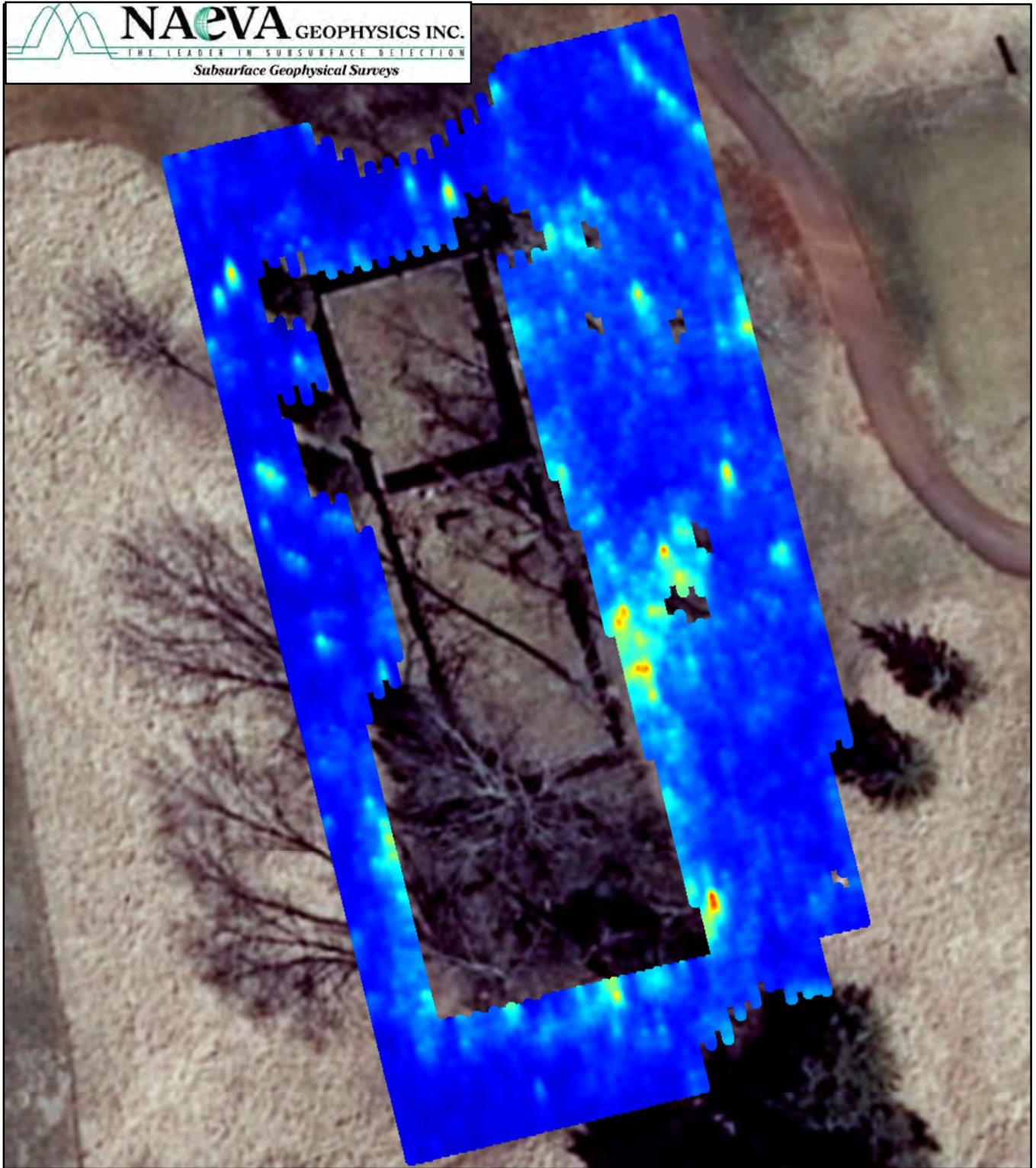
Date of Map Creation: 8/6/2020
Date of GPR Survey: 7/15/2020



Pen Park Cemeteries

Slice 7 (3.0 to 3.5 ft)
Pen Park
Charlottesville, Virginia

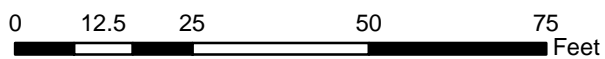
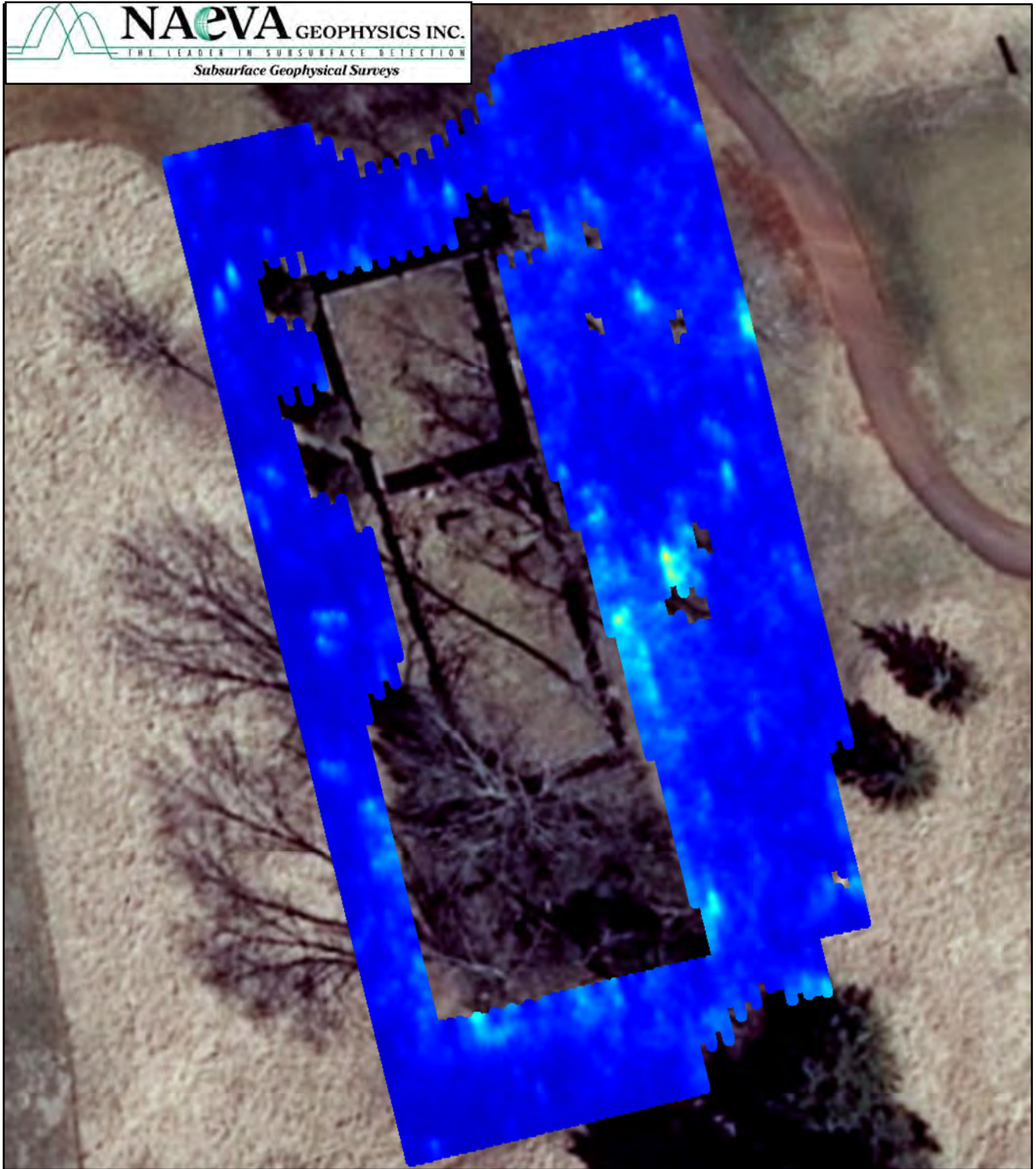
Date of Map Creation: 8/6/2020
Date of GPR Survey: 7/15/2020



Pen Park Cemeteries

Slice 8 (3.5 to 4.0 ft)
Pen Park
Charlottesville, Virginia

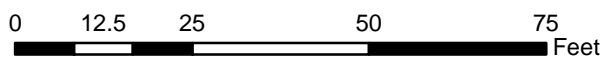
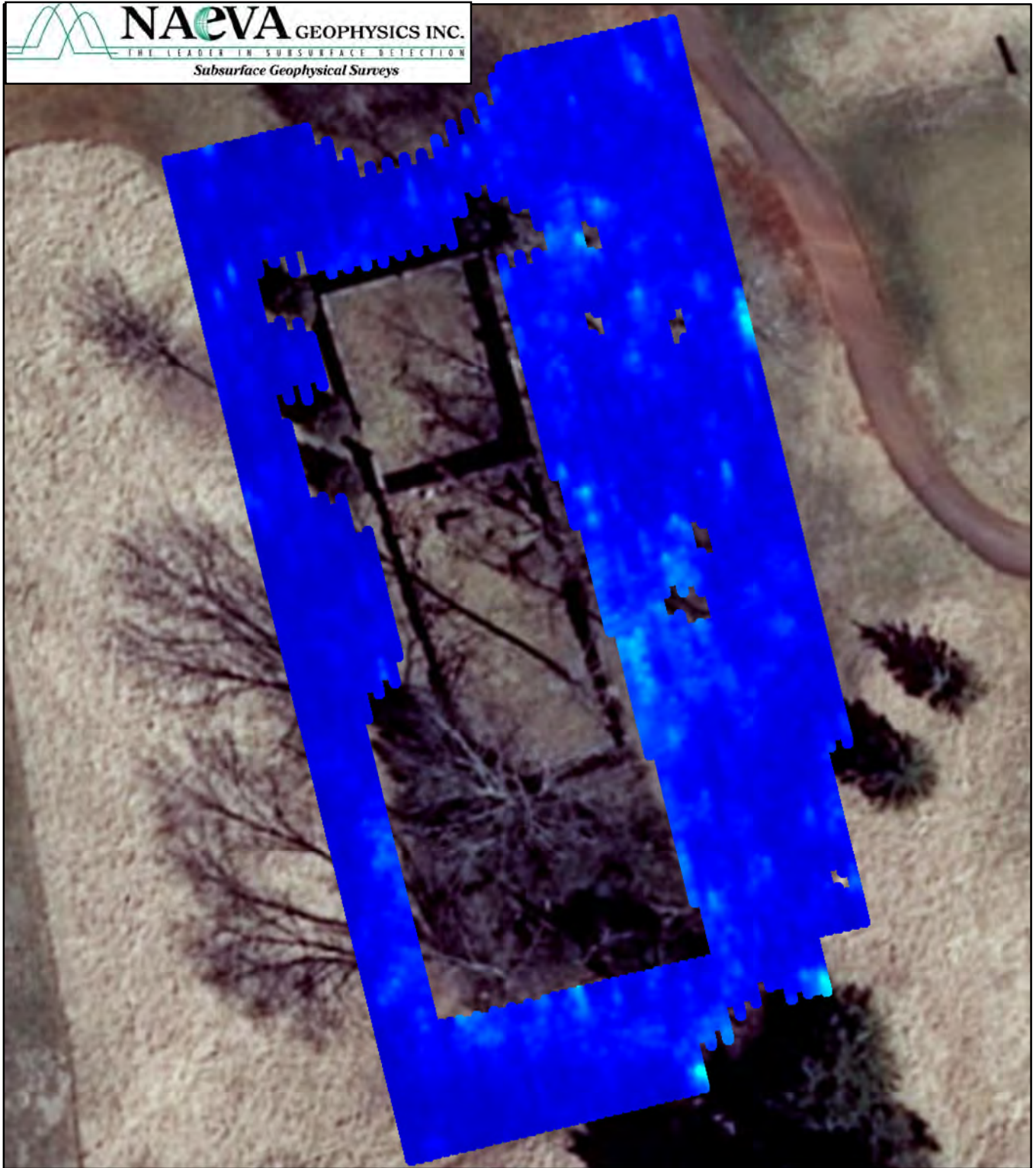
Date of Map Creation: 8/6/2020
Date of GPR Survey: 7/15/2020



Pen Park Cemeteries

Slice 9 (4.0 to 4.5 ft)
Pen Park
Charlottesville, Virginia

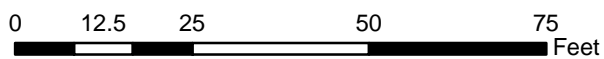
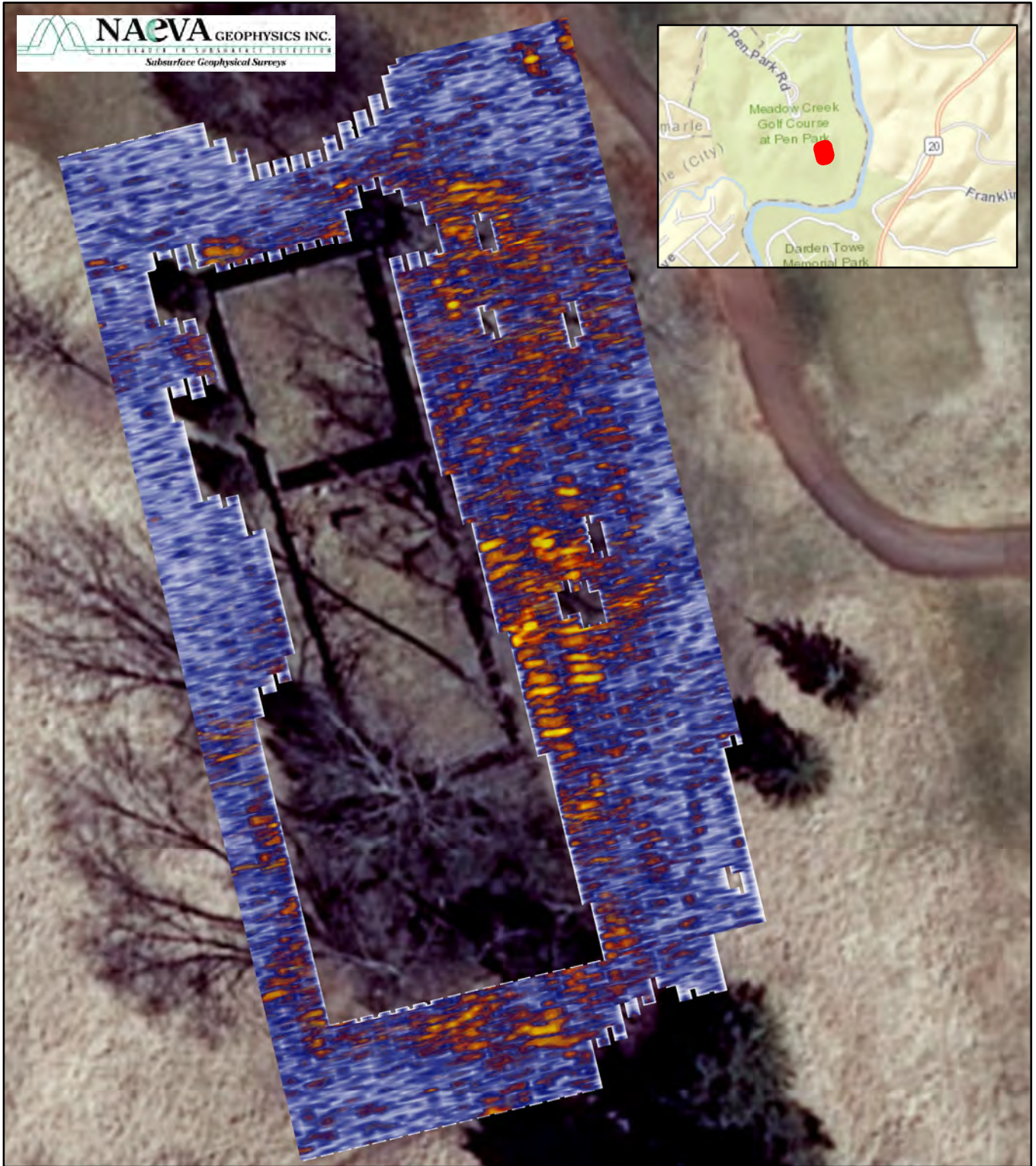
Date of Map Creation: 8/6/2020
Date of GPR Survey: 7/15/2020



Pen Park Cemeteries

Slice 10 (4.5 to 5.0 ft)
Pen Park
Charlottesville, Virginia

Date of Map Creation: 8/6/2020
Date of GPR Survey: 7/15/2020



Pen Park Cemeteries

Composite GPR Amplitude Map

Pen Park
Charlottesville, Virginia

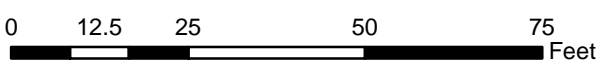
Date of Map Creation: 10/11/2020

Date of GPR Survey: 7/15/2020



Legend

- █ Depression with Interpreted Grave
- █ Depression
- █ Interpreted Graves



Pen Park Cemeteries
Interpretation Pen Park Charlottesville, Virginia
Date of Map Creation: 8/6/2020 Date of GPR Survey: 7/15/2020