PRESERVATION PLAN AND RECOMMENDATIONS FOR THE COLEMAN-LEIGH-WARREN CEMETERY, AUGUSTA, GEORGIA

Chicora Research Contribution 483

PRESERVATION PLAN AND RECOMMENDATIONS FOR THE COLEMAN-LEIGH-WARREN CEMETERY, AUGUSTA, GEORGIA

Prepared By:
Michael Trinkley, Ph.D.
Debi Hacker
and
Nicole Southerland

Prepared For:
Mr. Brad Cunningham
Friends of Coleman-Leigh-Warren Cemetery
PO Box 26
Augusta, GA 30901-0026

CHICORA RESEARCH CONTRIBUTION 483

Chicora Foundation, Inc.
PO Box 8664
Columbia, SC 29202
803-787-6910
www.chicora.org

January 2008

This report is printed on permanent paper ∞

MANAGEMENT SUMMARY

The Coleman-Leigh-Warren cemetery was apparently first used about 1821 and the last known burial was in 1870. In spite of this relatively short period of use, the reservation of the cemetery property has been passed down unbroken. Unfortunately, the graveyard has seen multiple episodes of significant vandalism, focusing on the destruction of the individual monuments and theft. Although about 3,000 brick are stockpiled, the surrounding brick wall has lost perhaps 75% of its brick.

While the cemetery today represents only a shadow of its former self, it is fortunate to have an organization committed to its long-term preservation. Over the past several years the Friends of the Coleman-Leigh-Warren cemetery have made great strides in securing and protecting the remains of this family graveyard.

This report outlines our recommendations for the preservation of the cemetery, as well as for various conservation and restoration efforts. The Friends have already formed a 501(c)(3) organization and have a leadership dedicated to the project. There is support from the community, including Augusta-Richmond County. This support is critical since on-going preservation efforts will be expensive given the deteriorated state of the property.

Initial steps involve the Board fully understanding preservation standards and procedures, such as the Secretary of the Interior's Standards for Preservation. Many seeming difficult or complex preservation decisions can be simplified by applying these standards in the decision making process.

Additionally, the Board must forcefully tackle the issue of vandalism. Up to this point the response has been one of removing the historic fabric – an understandable and appropriate tactic. However, if restoration is to be successful the Board must change its efforts from removing vulnerable fabric to taking the steps necessary to protect that fabric in situ.

Thus, we recommend such tactics as enlisting the aid of the community, putting pressure on local law enforcement to routinely patrol the site, and organizing Friends to visit the property on a routine basis. The Board must also adopt a policy and procedure to aggressively pursue all acts of vandalism or theft. To further harden the target we recommend the use of a motion activated camera and voice recording to record activities at the site. We also recommend that all of these steps be taken prior to any restoration efforts, to allow time for the procedures to be put into place and evaluated.

At the same time, we recommend that steps be taken to eliminate pedestrians cutting through the cemetery. This can most easily and cost-effectively be achieved by infilling the short gap in the fence along the National Hills subdivision. If that is unsuccessful, we recommend that the Friends install their own fence – an industrial quality chain link – along the north and west sides of the cemetery. This would channel pedestrians onto adjacent properties to the east and west – beyond the cemetery.

Similarly, we encourage the Board to seek an agreement that will terminate the use of the cemetery as vehicle access to the property to

the west since this practice uses another's property without compensation, is disrespectful to the cemetery, and compacts the soil. Moreover, there are two alternative means of access the property to the west, so the property owner is not significantly inconvenienced. If no agreement can be reached, then either fencing or bollards are a reasonable response to terminate this inappropriate activity.

With these steps, the cemetery achieves some degree of long-term protection and this allows other enhancement activities to take place.

Specifically, we recommend additional historical research in order to resolve uncertainties regarding the cemetery and its use. We also recommend that the hackberry trees in the cemetery – all in poor condition and endangering the public and the cemetery – be removed by an ISA Certified Arborist. They will be replanted, perhaps with Eastern red cedar.

To further enhance the cemetery, we recommend that the existing dilapidated wire fence be entirely removed. It only serves to make the cemetery look abandoned and uncared for. Next, the cemetery should be completely cleaned. All scrub vegetation should be removed from outside the walls. Inside the cemetery walls all vinca should be removed to bear soil. The soil should be graded to level and all remaining brick rubble removed. The soil should be roughly prepared for planting (although planting will be postponed until various repairs have been made).

The final two activities for the initial activities should be the planting of screening material to reduce the impact of the cell tower enclosure, as well as the placement of identification and regulatory signage at the cemetery.

These activities are recommended for the first year – 2008 – and have an estimated cost of $25,500.

The second year – 2009 – activities should focus on efforts to begin significant restoration. A meter, water line, and bibb should be installed to the cemetery – even in drought, it will be critical to have water for the newly planted landscape, as well as for restoration activities. The major undertakings will be the repair of the brick wall to a uniform height and repair of the brick tombs using a mason knowledgeable in preservation work and overseen by a conservator. This will also entail the purchase of additional brick and Indiana sandstone – materials necessary to the work.

This second year is estimated to have a cost of $53,250.

The third year will involve the repair of those ledgers that can be repaired, as well as the planting of the cemetery in a dwarf mondo grass. Although somewhat unconventional, this landscaping is recommended since it is hardy and will not require the maintenance typical of turfgrass.

The third year costs are estimated to be $38,000.

Beyond 2010, the Friends will need to allocate about $1,000 a year for routine maintenance – perhaps more for other repair or educational activities. In addition, once critical preservation is completed, the Friends can determine if they wish to spend the funds necessary – in excess of $25,000 – to replicate the Leigh monument.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

The Project

For several years a loosely formed organization, Friends of the Coleman-Leigh-Warren Cemetery, have battled the ongoing vandalism and destruction of their family cemetery. As early as November 2005 Chicora was asked to provide a proposal to assess the cemetery and provide recommendations for its long-term stabilization and repair. The friends group, largely spearheaded by Mr. Brad Cunningham, was formally organized in June 2006.

In early 2007 the Friends requested an updated proposal and by late 2007 funds had been allocated for this initial phase of the restoration efforts.

The cemetery is situated in the northwestern quadrant of the City of Augusta, about 2 miles north of the Summerville historic district (Figure 1).

The work was to include three specific tasks. The most significant, or primary component, was the assessment of the cemetery. This would examine a broad range of preservation topics, including not only maintenance of the landscape, but also security, pedestrian and vehicular access, vandalism, signage, and other issues involving the long-term preservation of the graveyard. The assessment would also provide broad recommendations regarding future conservation efforts.

A second task was an effort to identify unmarked graves using both a penetrometer (which measures ground compaction) and ground penetrating radar (GPR) (which uses high frequency radio waves to identify soil anomalies). This work examined both the area within the known (fenced) limits of the cemetery, as well as the area immediately adjacent to the cemetery.

The final task was to map the site, including any potential graves identified through either the penetrometer or GPR studies.

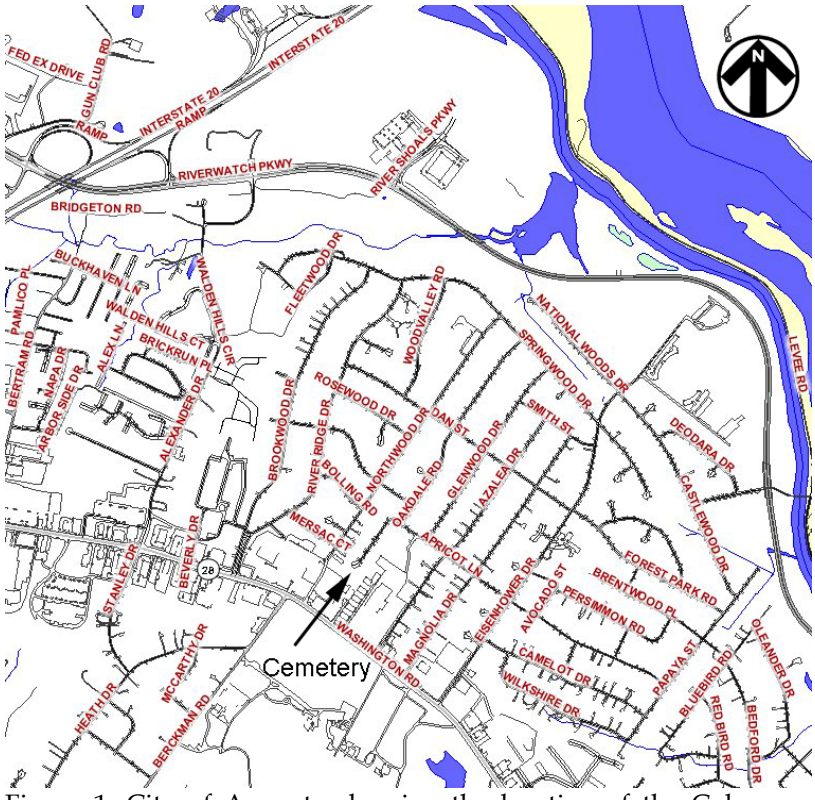

Figure 1. City of Augusta showing the location of the Coleman-Leigh-Warren Cemetery.

Table 1.
Secretary of the Interior's Standards for Preservation

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.

2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

Not included in the tasks was additional historical research, any repair of damaged features, or any formal stake-holder meetings.

The revised proposal was approved by the Friends of the Coleman-Leigh-Warren Cemetery and the work was conducted between November 26 and 28, 2007. The primary contact during the assessment was Mr. Brad Cunningham.

Preservation Fundamentals

Preservation is not an especially difficult concept to grasp, although the key principles are not always clearly articulated. The fundamental concepts are well presented in the Secretary of the Interior's Standards for Preservation (see Table 1).

This document reminds us – at least at a general level – of what we need to be thinking about as we begin a cemetery preservation plan. Those responsible for the care of the Coleman- Leigh -Warren Cemetery should be intimately familiar with the eight critical issues it outlines.

For example, all other factors being equal, a cemetery should be used as a cemetery – not to walk dogs, not as a playground, and not as a park. And until we are able to do what needs to be done, it is our responsibility to make certain that the site is preserved – it must not be allowed to suffer damage under our watch.

We must work diligently to understand – and retain – the historic character of the cemetery. In other words, we must look at the cemetery with a new vision and ask ourselves, "what gives this cemetery its unique, historical character?" Perhaps it is the landscape, the old and stately trees, the large boxwoods, the magnificent arborvitae. Perhaps it is the very large proportion of complex monuments, or the exceptional slate markers. It may simply be that it is a unique representation of a cemetery type rarely seen in a rapidly developing urban setting. Whatever it is, we become the guardians

responsible for making certain those elements are protected and enhanced (whether they are particularly appealing to us or not).

Whatever conservation efforts are necessary must be done to the highest professional standards; these conservation efforts must be physically and visually compatible with the original materials; these conservation efforts must not seek to mislead the public into thinking that repairs are original work; and the conservation efforts must be documented for future generations. If an agency doesn't have a conservator or if the caregivers aren't conservators, it is our responsibility as the stewards of the property to retain a conservator appropriately trained and subscribing to the Code of Ethics and Standards of Practice of the American Institute for Conservation (AIC).

The Secretary of the Interior reminds us that each and every cemetery has evolved and represents different styles and forms. It is our responsibility to care for all of these modifications and not seek to create a "Disney-land" version of the cemetery, tearing out features that don't fit into our concept of what the cemetery "ought" to look like.

Likewise, we are reminded that there will be designs, monuments, and other features that characterize our cemetery – and we are responsible for identifying these items and ensuring their preservation. We must be circumspect in any modifications, ensuring that we are not destroying what we seek to protect.

Before acting, we are required as good and careful stewards to explore and evaluate the property, determining exactly what level of intervention – what level of conservation – what level of tree pruning -- is actually necessary. And where it is necessary to introduce new materials – perhaps a pathway – into the cemetery, we must do our best to make certain these new elements are not only absolutely necessary, but also match the old elements in composition, design, color, and texture. In other words, if the cemetery has brick pathways, we would be failing as good stewards if we allowed concrete pathways – especially if our only justification was because they were less expensive.

Where conservation treatments are necessary, the Secretary of the Interior tells us that they must be the gentlest possible. However you phrase it – less is more – think smart, not strong – we have an obligation to make certain that no harm comes to the resource while under our care. And again, one of the easiest ways to comply is to make certain that caregivers retain a conservator subscribing to the ethics and standards of the American Institute for Conservation.

Finally, we must also recognize that the cemetery is not just a collection of monuments and the associated landscape – the cemetery is also an archaeological resource. We must be constantly thinking about how our efforts – whether to repair a monument, put in a parking lot, or resurface a path – will affect the archaeological resources – archaeological resources that just happen to be the remains of people buried at the cemetery by their loved ones.

These are especially critical issues in the case of the Coleman-Leigh-Warren Cemetery since there is evidence that a number of these standards have been violated over the history of the property. Modifications have taken place with little or no documentation, leaving caregivers guessing as to the nature of the work, the reason it was done, and even how it was conducted. Original fabric has been extensively vandalized. The landscape has been extensively modified, not only by the construction of an intrusive cell tower, but also by the extensive grading of property immediately adjacent to the cemetery.

Our first recommendation, therefore, is that the caregivers become thoroughly familiar with the Secretary of the Interior's Standards for Preservation

and reaffirm their responsibility as stewards of this historical resource to ensure that future preservation efforts are consistent with sound preservation principals and practices. These standards must become "talking-points" for all future discussions with the City of Augusta, as well as for all decisions made concerning the graveyard.

The Cemetery Location, Setting, and Context

The cemetery is situated about 850 feet northeast of the intersection of Washington and Berckman roads, and about 110 feet south-southeast of the end of Oakdale Road. It is accessed by way of a small, unnamed road that runs off Washington Road to a city emergency services complex.

The area is heavily commercial along Washington Road, but becomes more residential to the north as one moves away from the strip development that has overtaken this thoroughfare. The cemetery is situated immediately between the two distinct areas (Figure 2), within Census Tract 101.02, Block Group 1.

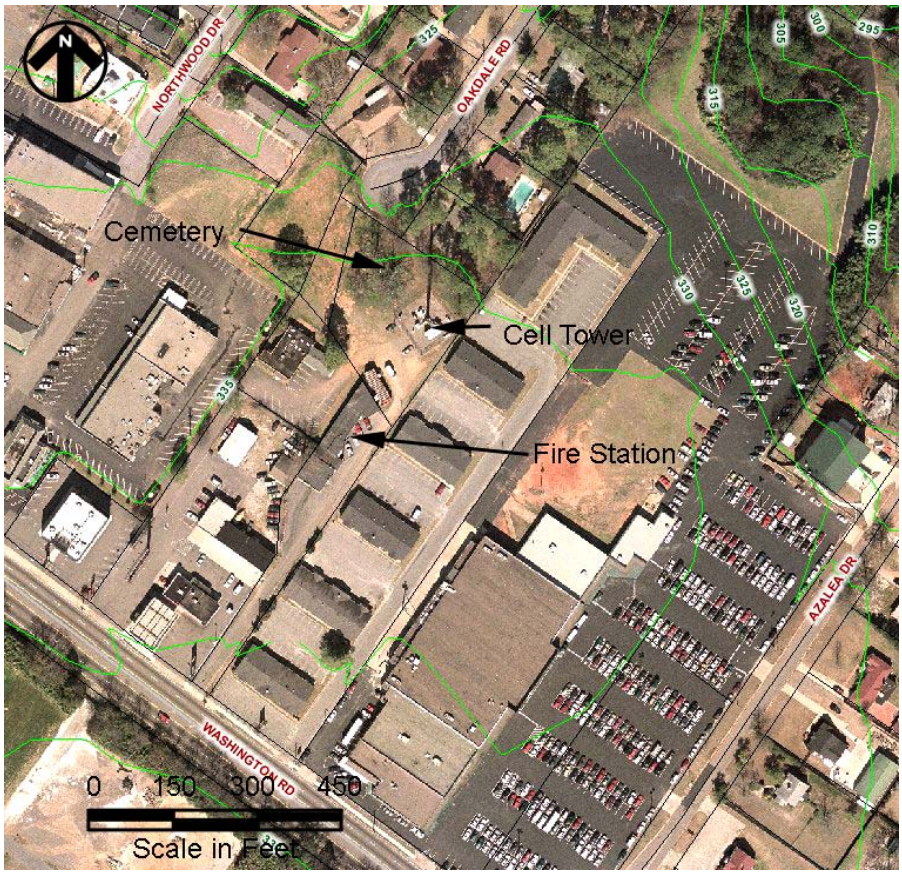

Figure 2. Aerial imagery of the Coleman-Leigh-Warren cemetery and the surrounding area.

This area is 26.5% African American (Augusta's African American population accounts for 31.3%) and has a median household income of $36,754, nearly $3,700 higher than the median income for the city as a whole. To the east, however, the median income drops over 51% of the population falls into the category of low to moderate income. Nevertheless, nearly two-thirds of the population in this area has less than a college degree and 56.6% of the housing consists of rental units (the city-wide average is 42%).

The Coleman-Leigh-Warren Cemetery is identified as parcel 013-3-093-00-0 by Augusta-Richmond County and the cemetery encompasses 0.61 acres. To the north are single family homes, part of the National Hills subdivision. To the east is extensive rental commercial property. Augusta-Richmond County operates a fire department station immediately adjacent to the cemetery's southern boundary, with additional commercial property running southward to Washington Road. To the east are two large vacant lots owned by Alonza

Figure 3. View of National Hills subdivision north of the cemetery, with the cemetery fence at the right edge of the photograph. The development consists of modest, well-tended single family homes.

P. Boardman, Jr. and used for parking during the Masters Golf Tournament each spring.

Until recently the Augusta-Richmond County was using the cemetery property for a paramedic trailer. This has recently been moved. Another encroachment is the fenced cell tower, situated less than 100 feet east of the center of the fenced cemetery. This cell tower facility sits on about 0.08 acre of the cemetery's 0.61 acres (about 13% of the tract).

The cemetery setting is distinctly urban, being visually dominated by the commercial development to the south and the cell tower to the east. The vacant and heavily eroded lots to the west further detract from the setting. There is no vegetative or physical boundary that might help to reduce the visual or noise intrusion and provide a more peaceful setting.

The cemetery itself is dominated by a dilapidated and non-functional chain link fence. Although tremendous strides have been made by the friends group to clean the cemetery and reduce vegetation it still gives a rather overgrown appearance. The remaining monuments and surrounding brick wall are in ruinous condition. Because of the extensive vandalism the friends group has removed most of the loose bricks and monument fragments, placing them in secure storage.

The brick walled cemetery measures about 40 feet square – smaller than the imposing cell tower enclosure to the east. There are few

Figure 4. View of the commercial development to the south of the cemetery. This photo also shows the cut bank that has been taken up the fenced edge of the cemetery.

three-dimensional monuments remaining in the cemetery, although there are numerous low and heavily damaged tombs (Figure 5). The original entrance to the cemetery faces east and is not currently usable. The cemetery lacks landscaping; the large hackberry trees are in poor health and do little to enhance the property.

Figure 5. Interior of the cemetery showing its ruinous condition. View to the northwest.

The layout of the cemetery is typical for small family graveyards with the burials neatly arranged in a formal pattern. It appears that there may have been an earlier, perhaps ca. 1930, restoration effort, as evidenced by the use of Portland cement mortar on various tombs and repointing of the eastern wall.

Factors Affecting the Landscape Character

Augusta is the county seat of Richmond County and is one of the three consolidated cities in Georgia.

The fall line or transition between the coastal plain and piedmont runs through Richmond County and Augusta. As a result, the area is dominated by the irregular, gently rolling, dissected terrain. Elevations in the county range from 100 feet along the Savannah River to over 500 feet above mean sea level in the vicinity of Fort Gordon. The elevation in the immediate area of the cemetery is about 335 feet.

The soils at the Coleman-Leigh-Warren Cemetery are classified as the Georgeville Urban Land Complex with 2-8% slopes. While heavily urbanized, the typical soil profile would include about 0.6 foot of brown silt loam over a yellowish red silty loam clay to a depth of about 0.9 foot. Below this is a firm red clay. The soils are typically found on broad ridges and side slopes and are formed in residuum weathered from fine grain metavolcanic rock of the Carolina Slate Belt.

While remnant soils are found in the cemetery itself, the area to the west has been stripped of the upper 2-feet of soil, exposing the red clay B horizon.

Augusta's climate is classified as humid

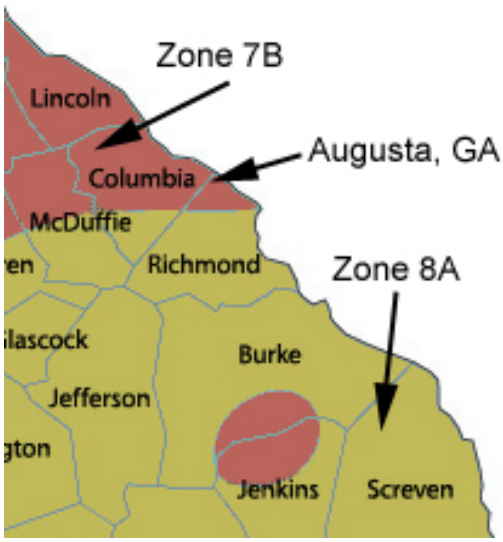

Figure 6. USDA plant hardiness zone for the Augusta-Richmond County area.

subtropical, with the city experiencing mild winters and humid summers. The average high temperature for the summer months is 91°F, the average low temperature is 68°F. The average high temperature for the winter months is 59°F, the average low temperature is 34°F.

Figure 6 reveals that the cemetery is just within USDA plant hardiness zone 7B, where the average annual minimum temperature is 5 to 10°F.

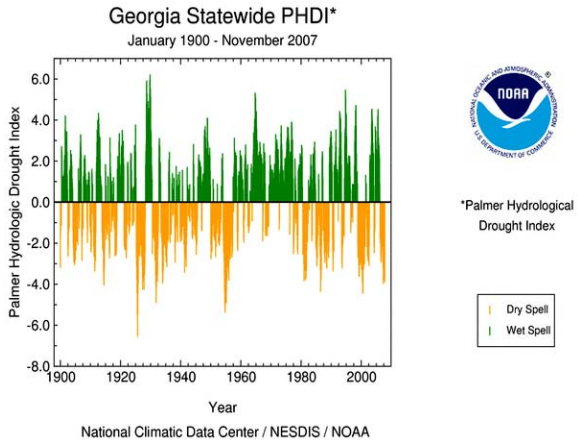

Figure 7. Statewide drought index.

The annual Augusta precipitation is about 46 inches, ranging from a normal high of 4.7 inches in March to a low of around 2.5 inches in November. Light snow is occasional, usually occurring in January and February. There is, however, considerable variation in precipitation over the past 100 years, with periods of noticeable drought (Figure 7). Generally wet weather was typical from about 2002 through 2005, but has been replaced by a deepening drought over the past several years. Currently much of Georgia is classified as in a drought, with Augusta identified as in stage D-4 drought (exceptional; this is indicative of a 1 in 50 year drought and is based on more than 30 different indices).

Recommendations

All board members of the Friends of Coleman-Leigh-Warren Cemetery, volunteers, and affiliated organizations should become familiar with the Secretary of Interior's Standards for Preservation.

All decisions regarding modifications, alterations, additions, or other actions affecting the Coleman-Leigh-Warren cemetery should be carefully evaluated against the Secretary of the Interior's Standards for Preservation.

All conservation (i.e., repair work) of monuments or fences should be conducted by conservators who subscribe to the American Institute for Conservation of Artistic and Historic Works (AIC) Code of Ethics and Standards of Conduct.

Special attention should be paid to the current drought conditions when attempting to restore the cemetery's landscape.

HISTORIC SYNOPSIS

This assessment was not tasked with conducting additional research, so this account relies on The Friends of Coleman-Leigh-Warren Cemetery website (colemanleighwarren.org) to provide a brief overview of the property's history. This provides a context for the assessment and recommendations offered.

The cemetery appears to have begun by 1821, with the burial of Lindsay Coleman, an early owner of Bedford Plantation. That same year Martha Leigh and Martha Leigh Longstreet were also buried in the family plot. Water Leigh was buried there in 1822.

It is possible that the brick wall surrounding the graveyard was constructed prior to Lindsay Coleman's death. The brickwork is consistent with early nineteenth century styles. In addition, the Friends' website notes its resemblance to the wall surrounding St. Paul's Church in Augusta (subscriptions for which were collected by Coleman).

The Bedford Plantation passed from Lindsay Coleman to Benjamin H. Warren. With Warren's death in 1870, the website reports the first reservation of the cemetery property:

> I authorize my Executors, in their discretion, and without any order of any Court, to sell either at public or private sale, and on such terms as they consider advisable, any or all of my estate, real and personal, and I direct such sale to be made, whenever it may be necessary for the purpose of a final division of my estate Provided, that the Family Burying Ground at Bedford and a right of way thereto from the public road, is to be reserved, and exempted from any such Sale (Richmond Co. Superior Court Will Book D, pp. 73-77).

The reservation was further reinforced with a plat drawn by E.W. Brown and recorded in 1887 (Richmond Co. Superior Court, DB 3X, pg. 201). The graveyard is identified as 1.1 acre more or less.

This plat may have been prepared prior to the 1888 sale of the Bedford Plantation to James H. Alexander. Regardless, this appears to be one of few continuous reservations, with the website observing that the cemetery was specifically reserved in every deed since that time. The 1888 reservation was clear:

> It is Hereby expressly understood however that the cemetery upon the said "Bedford" tract indicated upon said plat as the "Graveyard" with the right of way to the Washington Road said cemetery and right of way containing acre and one tenth acres more or less and having the metes and bounds represented upon a plat of survey recorded in said office Book XXX folio 201 is hereby reserved and not intended to be conveyed the reservation of said cemetery being expressly directed by said will (Richmond County Superior Court, DB 4A, pp. 89-92).

The graveyard continued to be used until just after the Civil War, with the last

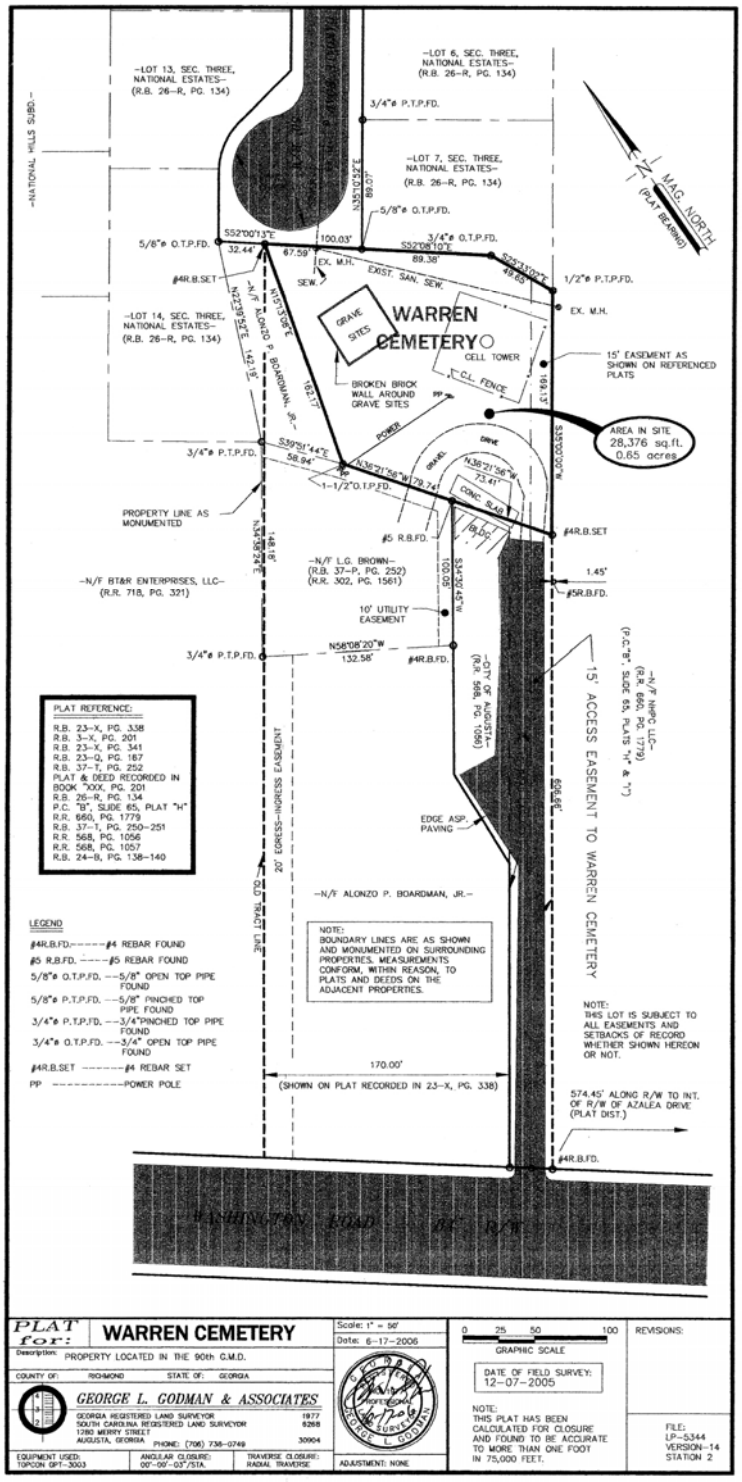

Figure 8. Plat of the Coleman-Leigh-Warren Cemetery prepared in 2005 and showing various intrusions on the cemetery property.

marked burials being those of Benjamin H. Warren and his wife, Mary Ann Warren, in 1870.

It appears that the cemetery lapsed into disuse and declined. By ca. 1930 it appears that some efforts were made to repair the wall, as evidenced by very poor repointing using Portland cement mortar. There is also evidence that a variety of the box tombs were rebuilt about this time, also using a very hard Portland cement mortar.

Clearly, however, the graveyard again lapsed into disuse and decay set in, resulting in much vandalism. The worst damage appears, however, to be relatively modern and is accompanied by a disturbing lack of respect for the cemetery and its reservation.

Figure 9. The Alltel tower dominates the visual landscape, significantly dwarfing the cemetery.

The City of Augusta in some manner took over the property, in spite of the reservation. The vacant property was used for the parking of cars during the city's annual Masters Tournament. Although this event began in 1934, it is unclear when parking began. Apparently access to the parking is by way of the 15-foot easement to the cemetery, across the cemetery, and onto either the cemetery property or the adjacent property owned by Alonzo P. Boardman, Jr.

To better facilitate this parking, the vacant lot adjacent to the cemetery was graded, reducing its elevation by several feet (see Figure 4). This grading extended off the adjacent property, encompassing the western portion of the cemetery tract.

The City also leased a portion of the cemetery to Alltel for the construction of a cell tower. Originally proposed to be 199 feet above ground, the tower height was reduced to 152 feet and construction was completed in 1997 (FCC Registration Number 1047666).

Other intrusions include, until recently, a concrete pad on which the city placed a paramedic office (present as late as December 2005 when the property was platted, see Figure 8). Also present is a gravel drive that connects the 15-foot easement to the cemetery with a land-locked tract owned by L.G. Brown. A sanitary sewer line crosses the rear of the property, apparently connecting the sewer for the neighborhood to the north with a transfer station to the east.

Recommendations

Although not essential for preservation, more detailed historical documentation is critical for public interpretation – and this public involvement can help ensure long-term preservation. There is still much to be learned and carefully documented:

- **A detailed title search should be conducted to document all property transfers.**

- **A generalized history of Bedford Plantation should be prepared to assist in placing the family cemetery in the plantation context. Issues of special interest include the economic history of the tract and how it relates to the broader context of Augusta's development.**

- **A more thorough presentation of the inter-relationship of those buried in the cemetery and how they relate to the broader context.**

- **Research that might document, through diary or financial accounts, the construction of the surrounding brick wall.**

- **Additional research that might help explain the abandonment of the cemetery after ca. 1870.**

- **Information on the possible restoration efforts undertaken ca. 1930.**

- **Documentation of more recent restoration and protection efforts, such as the erection of the chain link fence around the cemetery. In addition, this research should also carefully document the various intrusive elements that have degraded the visual and physical integrity of the cemetery, such as the grading, the use of the property for parking, and the construction of the cell tower.**

ACCESS AND PEDESTRIAN ISSUES

Circulation and Roadways

The graveyard has been surrounded by development – to the east and southwest commercial buildings, to the south by a government complex, to the north by a housing development, and to the northwest by additional commercial units. The area to the west is vacant, but at times used for parking.

Access to the cemetery is by way of the original reservation – a "right of way thereto from the public road." This is today a 15-foot easement running north from Washington Road. With the average car or pickup ranging from 5.5 to 6.5 feet wide and heavy vehicles about 7 feet wide, this road must be considered essentially one-way. Those using the easement to access the cemetery must compete with emergency vehicles from the city's fire station.

There is a second easement (20-feet in width) about 150 feet west, providing access to the landlocked track owned by L.G. Brown. A graveled drive constructed on the cemetery property allows egress via Brown's parking lot and his 20-foot easement.

The only currently used access to the two lots owned by Alonzo P. Boardman, Jr. west of the cemetery (Parcels 013-3-087-00-0 and 013-3-095-02-0) is by way of the cemetery right-of-way and through the cemetery property. An alternative, of course, would be directly off Oakdale Drive or by way of Northwood Drive and across the vacant property of BT&R Enterprises (Parcel 013-3-097-00-0).

The access easement is paved with asphalt and maintenance is presumably by the August-Richmond County given its use by their emergency services. The wear coat on the road appears to be in satisfactory condition. An issue worthy of future discussion is the on-going maintenance of this easement.

A worse citing arrangement for a family graveyard can hardly be imagined, yet the problem is clearly the result of inappropriate land use and site development. Lots have been cut off and sold with no clear ingress and egress. Legitimate users of the deeded easement for the cemetery have been placed in dangerous competition with emergency vehicles. A narrow roadway is now forced to allow both ingress and egress. The situation has been made worse with the addition of cell tower maintenance traffic. There is no dedicated parking for visitors to the cemetery.

Drainage

No gutter or drains were observed along the edge of the access easement. There is, however, a narrow earthen median or strip separating the easement from the adjacent property to the east.

Natural drainage is to the north, with elevations dropping off toward the Savannah River floodplain bordered by Riverwatch Parkway.

Pedestrian Access and Sidewalks

Although there is a sidewalk on the north side of Washington Road, this major highway appears to have only limited pedestrian activity. Given the dense commercial development and limited tourism potential of the immediately surrounding area, it seems unlikely that there will be a large proportion of pedestrian traffic. Most visitors to the Coleman-Leigh-Warren Cemetery will likely arrive by vehicles.

Once at the cemetery, however, there is no clear entrance and the point of easiest ingress (using the now collapsed gate of the dilapidated chain link fence) forces visitors to walk over the remnants of the brick wall. It fails to provide a context and does not allow visitors to fully understand the place of the cemetery in the nineteenth century landscape.

Figure 10. Extensive ground cover in the cemetery.

Having entered the cemetery the extensive damage hides the natural orientation of the graves and the logical progression between graves.

Pedestrian access is also hampered by the dense, and hazardous, ground cover that has overtaken the cemetery. This groundcover is especially dangerous to the elderly and those lacking sure footing. It is made even more treacherous by the abundant brick rubble and uneven ground.

Pathways would likely not be historically appropriate in a small family graveyard expected to have low use. We anticipate that use will remain low for the foreseeable future. In addition, the creation of pathways would likely be disruptive to the graves. Pathways are, however, an issue that must be considered in conjunction with any effort to increase visitation. Efforts should be made to avoid problems by funneling pedestrian traffic through areas where the potential for erosion and damage to vegetation can be minimized.

Universal Access

The ADA or the Rehabilitation Act of 1973 is generally not interpreted to apply to cemeteries by the Department of Justice. Efforts to make the cemetery accessible would be extremely difficult given its size, the layout of graves, and the historical wall. Any effort to create ADA access through the wall would necessitate extensive change to the historic fabric and would significantly change the appearance of the cemetery.

We believe that reasonable accommodation can be provided by having photographs and other information on-line. This would allow a virtual tour of the cemetery and would make the experience more broadly accessible.

Inappropriate Pathways and Access

During this assessment we noted that pedestrians were using the cemetery property as a shortcut between the National Hills subdivision and Washington Road. The route appears to run from Oakdale Road, through an intentional interruption in the chain fence separating the subdivision from other property, across the brick-walled cemetery property, and out the easement to Washington Street. We observed an average of three to four individuals using this path on a daily basis during our assessment.

Not only is this activity disrespectful to the cemetery, it is causing additional damage to the cemetery wall, and it creates additional ground compaction that will interfere with efforts to establish a permanent landscape. In

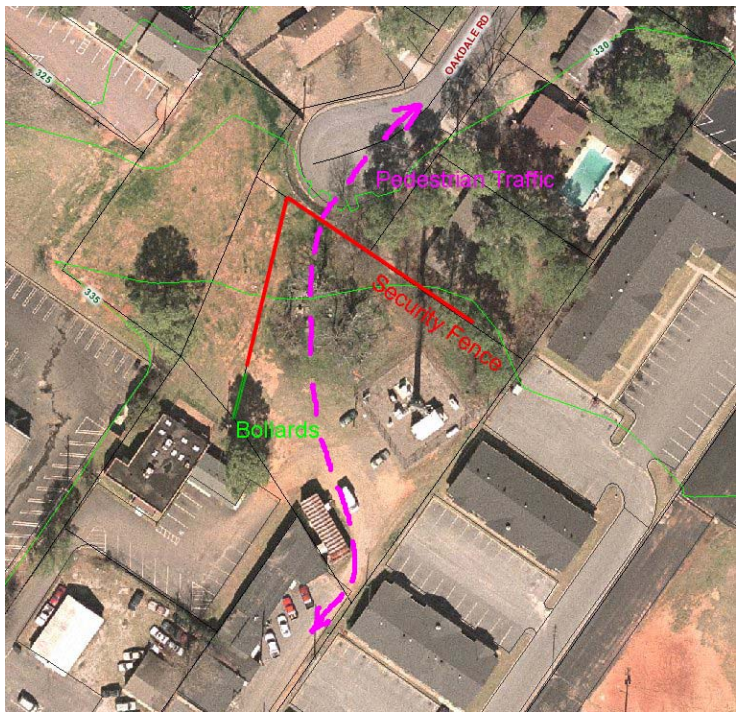

Figure 11. Recommendations for controlling access across and through the cemetery property.

addition, it places those responsible for the cemetery at risk of liability should an individual injure themselves on the cemetery tract.

The easiest solution, of course, is for the owner of the fence surrounding the National Hills subdivision to be made continuous and afterwards maintain it. This would prevent pedestrians from cutting through the cemetery.

If the owner of the fence is not cooperative, then the Friends should erect about 275 feet of fencing along their property line. Such a fence running about 160 feet from the north corner eastward and an additional 115 feet southward from the north corner would block easy pedestrian cut-throughs and channel pedestrians either along the eastern edge of the cemetery property, away from the brick-walled plot, or on non-cemetery property to the west.

We recommend high security chain link fencing. Such fencing is characterized by 2½-inch square posts; fabric held with clips, not bands; drive anchors for posts; and 1¼-inch 6-ga. mesh that is thermally fused vinyl coated. Although more costly than residential chain link, it has a much longer lifespan and is more difficult to vandalize.

A second issue of considerable concern is the use of the cemetery property by vehicles to access the Boardman property to the west. As with the inappropriate pedestrian traffic, this is disrespectful, it compacts the soil, it uses property for which no easement has been granted, and it creates liability.

The ideal solution is again one of mutual agreement, wherein the owner of the adjacent property refrains from the use of the cemetery property and adopts an alternative means of accessing the vacant lots. However, if this is not successful, then we recommend that the Friends complement the fence described above, with concrete bollards running the remaining 50 feet of their property line to prevent inappropriate use of the cemetery property. Bollards should have a maximum spacing of 5 feet, resulting in the need for approximately 10-12 for this open area. Of course, the cost of bollards should be compared to the cost of fencing – it would certainly be appropriate to extend the fence southward to the property corner if that were less expensive or desired.

A final issue involves access by maintenance vehicles for the Alltel tower. We presume that the lease provides use of this easement. The primary concern is the visual intrusion (see Figure 9); although the Friends should fully inform themselves of the provisions of this lease and any liability they may be exposed to as its result.

Recommendations

The Friends should prohibit all vehicular traffic across the cemetery parcel for the purpose of accessing properties to the west. The owner of these tracts should make arrangement to use one of the two other routes readily available. If necessary, concrete bollards should be installed to prevent the use of the cemetery property by vehicular traffic.

The Friends should similarly take steps to eliminate pedestrian traffic from using the cemetery tract as a route from Oakdale to Washington. This can be accomplished in one of two ways. The most cost effective is for the existing fence bounding the National Hills subdivision to be made continuous, thereby eliminating an access point. If this is not possible, the Friends should erect approximately 275 feet of industrial or high security fencing.

Pathways should be avoided, at least at the present time. They are both historically inaccurate for a family graveyard and are not justified by the low visitation. The Friends, however, should begin to control the dense groundcover in the cemetery, which is a significant trip hazard.

The Friends should fully inform themselves of the legal issues surrounding access to the Alltel tower. An effort should also be made to determine who has long-term responsibility for the maintenance of paved access easement to the cemetery.

LIGHTING AND SECURITY ISSUES

Vandalism

The Coleman-Leigh-Warren Cemetery has suffered extensive vandalism over the past several decades. This has taken the despicable form of wanton destruction of the markers; the theft of brick; and the use of the property to park vehicles.

The FBI reports that over the period from 1991 through 2000, property crimes in Augusta declined. This, however, may be misleading since it is based on the arrest rate, not the number of reported incidents. In contrast, Sterling's Crime Report for 30904 (the zip code for the cemetery area) classifies the level of property crime (on a scale of 1, low to 10, high) at 8. The national average is 3.

There seems to be no improvement in the problem – we are told that after virtually every news account of the cemetery, the Friends count on at least one or two people visiting the cemetery with the intent of stealing the bricks. What makes the extent of the problem surprising is that vehicles must pass by the Augusta-Richmond County emergency services offices, staffed 24/7. We would anticipate that this level of access visibility would reduce the problem – but it has not.

Until recently, however, problems were rarely noted and likely were never reported. Visitation was so infrequent that the cemetery was virtually abandoned. Now, however, there is more activity and with vegetation being reduced, it is likely that inappropriate use of the cemetery will be reduced.

A critical issue is the manner in which the damages are reported and then handled. In a historic cemetery, vandalism amounts to loss of historic fabric. Repairs are either very costly or, at times, not possible regardless of the funds available. Thus, it is critical that the Friends develop a form – and a policy – specific to the tracking of damage in the cemetery. This form should identify:

- What was damaged, with specific information concerning each stone, including the name and lot/plot?
- How was the stone damaged (toppled, broken into, number of fragments, scratched, etc.)?
- Where is the stone now (was the broken stone gathered up for storage, if so, where).
- An estimate of when the damage occurred. This should routinely include the last time the stone was known to be undamaged.
- An estimate – from a conservator – of the extent of the damage and cost for repair.
- A photograph of the damaged stone.
- When police were notified.
- When police responded and took a report.
- The outcome of the police investigation.

It is critical that the Friends report each and every case of vandalism, regardless of extent, to the police. The Friends should also educate the police concerning the historical value of these stones and the financial cost of the damage to ensure that law enforcement takes

the reports seriously. If the damage is recent, the police should be expected to assign crime scene investigators to collect evidence. This evidence may include shoe prints in soil or on stones, discarded beverage containers with finger prints, collection of evidence such as cigarettes, and collection of any eye witness accounts. The police should be expected to assign an investigator and this investigator should be expected to treat this as a real crime deserving of real investigatory efforts. Failure to do so will result in continued vandalism and the eventual loss of so much historic fabric that the cemetery will no longer be worthy of historical recognition.

Another issue which stands out is the importance of frequent visitation by the Friends. The Friends board should seek volunteers that would routinely visit the cemetery on different days and different time periods. Each visit should be recorded to assist in identifying the time that any damage took place. The visibility of these visits will be a significant deterrent to vandalism.

Perhaps the most critical issue, however, is that the cemetery receives, as near as we can determine, virtually no routine police patrols. Without periodic patrols – either police in cruisers or on bicycles, visiting the cemetery – there is relatively little hope of stemming the vandalism.

The Friends should have meetings with the police and city council to ensure that the cemetery is placed on routine patrols. This does not mean that once a week an officer rides by, but rather than every night at a different hour, the police make their presence known by driving to the cemetery and examining the area using their spotlight. The police should even periodically sit in the cemetery, perhaps doing their paper work.

It is only through this consistent presence of both law enforcement and the public that vandalism will be reduced.

Neighborhood Involvement

There are neighbors, living on Oakdale Road, in close proximity to the graveyard. There is also the adjacent Augusta-Richmond County emergency services center to the south of the cemetery which is staffed full time. These individuals should be contacted by the Friends and asked to help pay particular attention to the cemetery. They should be encouraged to call law enforcement should they hear or see any unusual or suspicious activities in the cemeteries. This neighborhood involvement is a critical supplement to routine police patrols.

The key is to have public involvement keeping an eye on the cemetery. The unexpected public presence will, over time, assist in deterring inappropriate behavior.

Cemetery Lighting

Lighting is sometimes seen as reducing vandalism. There are two problems with approach. The first is that the Coleman-Leigh-Warren Cemetery would not have been lighted historically. Thus, the introduction of lighting detracts from the historical integrity of the property, changing the historic fabric. The second problem is that lighting is only useful if there is someone guarding the property, using the lighting to identify problems. At the present time this does not appear to be the case.

In addition, it seems likely that the cemetery receives some degree of lighting based on its proximity to Washington Street and the adjacent commercial establishments. We visited the cemetery about 9pm one evening during our assessment. There is some modest amount of light already present.

Given the extent of vandalism at the cemetery, it is clear that the existing lighting already present is providing little protection. We do not recommend any additional lighting.

The Role of Vegetation

In the past the cemetery has been heavily overgrown and this vegetation has reduced visibility and made the cemetery appear abandoned. Such abandonment encourages inappropriate behaviors and provides cover.

It is critical that not only is the vegetation keep at the current level, but even improved. The better the visibility, the less likely criminals will seek out the property.

Figure 12. Drug paraphernalia found on the cemetery property during this assessment

Other Inappropriate Uses

Another problem appears to be the use of the property for drug activities. During this assessment we identified several items of drug paraphernalia (Figure 12). Although the response to this problem is identical to those already listed, this problem should be noted in all communications with the police. In addition, volunteers should be especially careful in clean-up activities to avoid accidental needle sticks.

Hardening the Target

Some discussion has already considered entirely fencing the cemetery. The primary perceived benefit would be to eliminate inappropriate access, thereby ensuring that stones and other features remained intact. The downside of this approach, however, is equally obvious – it would dramatically reduce opportunities for appropriate enjoyment and would significantly alter the appearance of the property.

Fencing cemeteries, especially small graveyards, creates the impression of a fortress. It alienates visitors, putting them at a distance from the resources. It also creates another feature requiring ongoing maintenance.

In addition, the cemetery was fenced at one point in time and this fence has been completely torn down by vandals. We recommend that the remnants of this fence be removed. We are reluctant to recommend additional fencing at this time.

Another option for hardening cemetery targets is the use of video and photographic imaging technologies. At the high end are systems such as VistaScape – an automated wide-area surveillance system that detects, tracks, and classifies objects in real time on a computer screen. If an object violates a policy set by the user, the software streams live video of the alarm event to the display and can also send wireless alerts to law enforcement personnel. Although an ideal solution, the cost makes such system beyond the reach of most cemeteries.

An alternative, however, is the Flashcam by Q-Star Technology

(http://www.qstartech.com). This self-contained digital system is motion activated; a photograph is taken (a flash unit allows night photographs at 100 feet), and a customized recorded announcement is played. Units are solar powered, eliminating the need for electrical connections. Photographs are high resolution and time/dated stamped. Units can be downloaded wirelessly. Although not inexpensive, they are among the most affordable solutions for cemeteries facing on-going vandalism and theft problems.

Figure 13. Example of the Q-Star Flashcam 880.

Recommendations

The Friends should develop a policy and its form for identifying, reporting, and responding to damage, vandalism, and theft within the cemetery.

The existing fence surrounding the cemetery has been heavily vandalized and no longer serves any function. It should be removed as part of the ongoing clean-up efforts. Leaving it in place only furthers the impression that the cemetery is abandoned.

The Friends should work to ensure that there are routine police patrols through the cemetery. These should occur at least once per night, with special attention paid to weekends and holidays. The Friends group could supplement this patrol, especially on weekends.

The Friends should seek to involve adjacent neighbors of the graveyard, including the residents of National Hill subdivision to the north and the staff of the fire station to the south.

Maintenance should be continued and improved to eliminate vegetation that would hide illegal and inappropriate activities on the cemetery property.

We do not encourage additional lighting since its benefits are ambiguous. Similarly, enclosing the property with fencing should be a last effort since it will significantly alter the appearance of the property and reduce public access.

A potentially useful means of hardening the cemetery target is the installation of a surveillance system such as Q-Star Technology's Flashcam.

LANDSCAPE MAINTENANCE

Cemetery Trees

Current Conditions

The cemetery today contains five trees, all hackberry (*Celtis occidentalis)*. The tree self-seeds and is considered invasive. It suffers from a variety of problems under the best of circumstances, including significant surface roots that can lift sidewalks, weak collar formation, susceptibility to breakage, and large amounts of litter.

Figure 14. Rotted hackberry branch and pre-existing damage to the cemetery wall.

To make matters worse, these trees are aged and in very poor health. One has recently lost a very large, major branch, causing extensive damage to the tree (Figure 14).

Given the condition of the trees, we recommend that all be removed as soon as practical. The removals should be conducted by an ISA certified arborist (see Table 2) with the stumps cut as low as possible to the ground. Stumps, however, should not be ground. No chemical additives should be used to hasten decay, although it is acceptable to paint an herbicide on the stump if it is a tree that will promote suckers.

Once these trees are removed we recommend that 2-3 new trees be replanted in order to help maintain the historic appearance of the cemetery.

Selection Issues

Cemeteries, in general, have historically been dominated by large deciduous trees, although evergreens such as cedar are also very common. They provide a distinctly inviting image for visitors and passersby. These trees also provide some visual separation from adjacent buildings – especially in cluttered urban environments.

There are, however, few studies of the species found in family cemeteries – at least partially because these small graveyards were rarely planned. Most vegetation was likely indigenous, occurring

Table 2.
ISA Certified Arborists in the Augusta area

Barrett, George	Barrett Tree Co., Augusta	706-650-0333
Edmonds, Brian		706-737-2965
Frazier, Kirby		706-821-1670
Frischknecht, Henry	Empire Tree & Turf, Augusta	706-854-0926
Ligon, Brian	Big Dog Stump & Tree, Augusta	706-831-3943
Lowery, Leonard	Empire Tree & Turf, Augusta	706-339-0550
McMillan, Daniel	UAP Timberland, Augusta	706-863-0936
Simkins, Leroy	Simkins Land Co., Augusta	706-722-0272

Table 3.
Comparison of Historically Appropriate Trees That Might Be Used in City and Mount Hope Cemeteries

Common Name	Scientific Name	Origin	Cultivation			Size (HxS)	Litter	Breakage	Roots	Notes
			Zone	Light	Drought					
American Ash	*Fraxinus americana*	Native: 1724	3-9A	PS-FS	M	50-80x40-60	Much	Weak	Problem	Not tolerant of urban soils or heavy clay.
American Beech	*Fagus grandifolia*	Native: 1783	3-8	S-S	M	50-75x40-50	None	Resistant	Problem	Not tolerant of urban soils or heavy clay.
American Elm	*Ulmus americana*	Native: 1670	2-9	PS-FS	M	70-90x50-70	Much	Weak	Problem	Michael Dirr (1998) recommends "Valley Forge," "New Harmony," and Princeton" as respectably disease tolerant.
American Linden	*Tilia americana*	Native: 1752	3-8	PS-FS	M	50-80x35-80	Much	Weak	No Problem	Good specimen tree; typically more formal landscape.
American Sycamore	*Platanus occidentalis*	Native: 1640	4B-9A	FS	H	75-90x50-70	Much	Resistant	Problem	Historically anthracnose has been a problem, but may be treated today with a properly labeled fungicide.
Arborvitae	*Thuja occidentalis*	Native: 1536	2-7	PS-FS	M	25-40x10-12	None	Resistant	No Problem	Good screen or hedge plant; not commonly used as a specimen plant.
Eastern Red Cedar	*Juniperus virginiana*	Native: 1664	2-9	PS-FS	H	40-50x10-20	None	Weak	No Problem	Planted for "perfect columnar growth" and traditional African American cemetery tree.
Live Oak	*Quercus virginiana*	Native: 1739	7B-10B	PS-FS	H	60-80x60-100	Much	Resistant	Problem	Raleigh is at the edge of its range; southern classic.
Red Oak	*Quercus rubra*	Native: 1783	5-8A	FS	H	60-70x50-60	Much	Weak	Problem	Not as popular as elm and maple.
Sugar Maple	*Acer saccharum*	Native: 1735	3-8A	S-FS	M	50-80x35-80	None	Resistant	No Problem	Excellent colors through all seasons; frequently used for ornamental plantings.
Tree-of-Heaven	*Ailanthus altissima*	Exotic: 1784	5-8A	PS-FS	H	60-75x35-60	Much	Weak	Problem	Today viewed as pest or weed tree, but if well cared for it can be a spectacular specimen tree.
Weeping Willow	*Salix babylonica*	Exotic: 1730	2-9A	PS-FS	H	45-70x45-70	Much	Weak	Problem	Roots are especially aggressive.
White Oak	*Quercus alba*	Native: 1724	3B-8	PS-FS	M	60-100x60-80	Much	Resistant	No Problem	A northern oak; Raleigh is at the edge of its range. Was a favored tree, however.

Light: shade, part shade, part sun, full sun; Drought: moderately to highly tolerant; Size shows height x spread in feet; Roots reflect the presence of surface roots or roots that lift sidewalks. Data from USDA, Forest Service Plant Fact Sheets.

naturally. Plantings were likely sparse and often do not survive to be documented today.

All other factors being equal – today's plantings should focus on those tree species that are known to have been used historically. While diversification may be acceptable, it should not dilute the original design or intent (if known). Therefore, we urge care in selecting additional plantings, focusing on a small number of historically appropriate trees (see Table 3) to maintain the historical integrity of the cemetery.

Some trees, whether historically appropriate or not, should probably be avoided since they pose significant maintenance issues. These include trees that produce dense shade (causing problems with the turfgrass); trees that exhibit suckers or surface roots (also causing turfgrass problems, e.g., beech, honeylocust, linden, poplar, and willow); trees that drop large quantities of leaves, seeds, or sap (such as ash, black cherry, catalpa, ginko, horsechestnut, mulberry, and sweetgum) ; and trees that are especially weak or vulnerable to wind or ice damage (such as ash, black cherry, pine, poplar, red maple, silver maple, tuliptree, willow, and white ash).

When Table 2 is examined, it becomes clear that there is no such thing as a perfect tree. Many of the historically appropriate species have significant problems. At least some of these problems, however, can be overcome through judicious placement and appropriate planning.

We recommend the use of Eastern red cedars at the Coleman-Leigh-Warren Cemetery. They are historically appropriate, will produce no litter, and once established are drought tolerant.

Trees should be replanted as older ones are removed and a general effort should be made to plan for future tree replacement, perhaps using a mix of fast-growing but short-lived trees intermixed with slow-growing but long-lived trees to create a planned appearance. It is also appropriate to plan replacement trees in anticipation of their need, allowing them an opportunity to become established before the diseased or damaged tree is removed.

Planting Issues

Locations chosen for planting should not interfere with gravestones or fences. Issues of security should also be considered and the use of small trees that obscure eye level views should generally be limited or avoided.

Research is suggesting that trees, especially older mature trees, improve in health when turfgrass is removed under the branch spread and mulch is applied at a depth not exceeding 3 to 4-inches. Maintenance should be closely supervised to prevent over mulching of vegetation.

All replacement trees should be of at least 1-inch caliper and meet the minimum requirements of the American Nursery and Landscape Association's American Standard for Nursery Stock (ANSI Z60.1-2004).

Maintenance Issues

Maintenance involves at least four basic issues: watering, fertilization, pruning, and pest control.

It is unlikely that the caregivers for the Coleman-Leigh-Warren Cemetery will be able to routinely water newly planted trees. While relying on rainfall after initial planting is typically acceptable, the current drought makes it imperative that water is provided over the first year. A good choice is the use of water rings or bladders for the newly planted trees. These typically store about 20 gallons of water, gradually releasing it over 48 hours or longer.

While shoot growth (growth occurring in the present year) and foliage color are often used as indicators of nutrient deficiency, the best indicator of whether fertilization is necessary is

a soil test. Samples should be taken every 3 to 5 years to determine whether any macro or micronutrients are lacking.

Based on the recommendations of a certified arborist, the Friends should then anticipate periodic fertilization (possibly including adjustment of pH through liming and the addition of soil amendments). Fertilization should be conducted on the basis of need and excess fertilization can damage trees; nevertheless, the ISA position is that, "tree fertilization should be done in accordance with ANSI A300 standards" (Lilly 2001:47). These ANSI A300 (Part 2)-1998 standards represent the standard of care of the industry. This is why proactive involvement by certified arborists in cemetery maintenance will be useful.

Fertilization is typically accomplished through deep root fertilization – an approach where the liquid fertilizer is injected into the soil with a probe, usually 6 to 12-inches below the surface at a spacing of about 2 to 3 feet. This process not only provides fertilization, but also some aeration of the soil. An alternative approach used a drill to excavate holes in a similar pattern which are then filled with a granular fertilizer. Either is acceptable. The ANSI 300 standards allow foliar applications, injections, or implants only when soil application is impractical or ineffective.

It is best to fertilize trees when they are actively growing and have available water to help absorb nutrients. In Augusta this is typically from the spring, after new leaves emerge, through mid-season. Fertilizer should not be applied late in the season or during periods of drought.

In a cemetery setting organic fertilizers should be the primary choice. These materials, such as cottonseed meal and bone meal, have much lower salt indices than inorganic fertilizers – resulting in reduced salt uptake by monuments. This is important since salts cause staining, spalling, and deterioration of marbles, sandstones, brick, and even granites. In addition, organic fertilizers have a slower release rate and are easy on the root systems.

Trees should be pruned in such a manner as to preserve the natural character of the plant and in accordance with ANSI A300 (Part 1) - 2001 standards.

In pruning, branches should always be cut just beyond the branch collar (an extension of the main stem) and not flush with the trunk. Large branches should be removed with three cuts to prevent tearing of the bark which can weaken the branch and lead to disease. All pruning within the cemetery should be performed by an ISA Certified Arborist, preferably one who is also an ISA Certified Tree Worker/Climber Specialist (see Table 1).

Trees should be inspected for potential threats to monuments, as well as general health. Ideally these inspections should be made yearly and after any storm where the winds exceed 55 mph. They should be pruned to remove potentially hazardous dead wood on a yearly basis, but safe pruning every 5 years by a certified arborist is acceptable. Plywood shelters or timber cribbing should be used as necessary to protect stones and monuments during the pruning process. Rigging and/or a crane must be used to minimize the potential for damage to stones or the landscape. Under no circumstances are tree climbers (hooks, spikes, gaffs) to be worn while ascending, descending, or working in trees to be pruned.

Shrubbery

Selection and Planting

There is one possible intentional planting in the cemetery and shrubbery is typically not a significant feature in family plots. We are also hesitant to recommend plantings given the security issues and need to minimize areas of reduced visibility.

If plantings are deemed critical, special care should be taken to focus on those plants that are known to be period appropriate such as crepe myrtle, elaeagnus, forsythia, camellia, hydrangea, azalea, lilac, or memorial rose. The location of plantings should be chosen with security in mind, ensuring that plantings – when mature – will not offer hiding places and will not obstruct the view of the cemetery.

Plantings, however, may be appropriate as screening, especially for the existing chain link fence surrounding the cell tower. Here there are two options. One is a climbing plant, such as Confederate Jasmine (*Trachelo-spermum jasminoides*). In sun or partial shade this is a fast growing plant with a heavily scented clusters of phloxlike flowers in spring and summer. It could quickly cover the fence and shield the ground level equipment from view. Another alternative is the Leyland cypress (*x Cupressocyparis leylandii)*. These grow very rapidly, are drought tolerant, and can grow to heights of 50 feet with a spread of 15 to 25 feet. They form good screens and would be ideal for this site.

Fertilization

As with trees, the best indication of the need for fertilization is a soil test, which should be performed at least every two to three years. While some shrubs, such as boxwood, provide an indication of deficiency through the yellowing of lower leaves, such evidence can be missed and does not indicate the extent of the problem.

Where fertilization is necessary most shrubs, because of their shallow root systems, respond adequately to broadcasting the appropriate organic fertilizer around the base of the plant, typically at the drip line.

Most shrubs should be fertilized when they are actively growing and have available water to help absorb nutrients. Broad-leaved evergreens, such as boxwood, are best fertilized in the winter or spring. Summer or fall fertilization of these plants may induce late season growth that is highly susceptible to winter injury. Some plants which exhibit episodic growth, such as forsythia, may benefit from a more continual fertilization program based on soil analysis and plant growth response.

Pruning

When shrubs are headed back or sheared routinely (as is often done by commercial landscape maintenance firms), a lot of dense, thick new growth is produced near the outer portions of the canopy. As a result, less light reaches the interior portions of the plant, leaves within the canopy become sparse, and the plant appears stemmy and top-heavy. To avoid this problem, head back the shrub's shoots to several different heights.

Thinning (cutting selected branches back to a side branch or main trunk) is usually preferred over heading back. Thinning encourages new growth within the interior portions of a shrub, reduces the size, and provides a fuller, more attractive plant.

Renewal pruning means cutting the plants back to within 6 to 12 inches of ground level. In this instance, timing is more important than technique. The best time to prune severely is before spring growth begins. Pruning in late fall or midwinter may encourage new growth which can be injured by cold. Renewal pruning results in abundant new growth by midsummer. Once the new shoots are 6 to 12 inches long, the tips should be pruned to encourage lateral branching and a more compact shrub.

Renewal pruning works well with most broadleaf shrubs, while narrow-leaf evergreens (such as boxwood) do not respond well when severely pruned and may actually decline. Boxwoods are best pruned, rather than sheared, to maintain a natural shape and to keep plants at a desired size so that they do not outgrow their

landscape too quickly. With much deadwood on their interiors significant rehabilitation is necessary.

An alternative to the drastic removal of top-growth on multiple stem shrubs is to cut back all stems at ground level over a period of three years. At the first pruning, remove one-third of the old, mature stems. The following year, take out one-half of the remaining old stems and head back long shoots growing from the previous pruning cuts. At the third pruning in yet another year, remove the remaining old wood and head back the long new shoots.

Common landscape shrubs, like crape myrtle, are often pruned as tree forms. The best time to begin a tree form is in late winter before spring growth begins. It is easiest to start a tree form from a 1-year-old plant, but you can also use older, mature plants. Select one to three of the most vigorous growing trunks or upright branches (depending on the number of main trunks desired) and prune all other upright (vertical) branches to ground level. Remove lateral branches that are less than 4 feet off the ground along the main trunk and thin the canopy by getting rid of inward growing branches or branches that cross one another. Avoid shearing since this will result in a high-maintenance topiary that is out of place in the cemetery setting.

In general, summer-flowering plants should be pruned before spring growth begins since these produce flowers on the current season's growth. Spring-flowering plants, such as forsythia, should be pruned after flowering since they produce flowers on the previous season's growth.

Groundcover

The cemetery is covered in a mat of vinca or periwinkle (*Vinca minor*), an evergreen vine. The plant is considered invasive and groundcovers in cemeteries have a range of problems, including both difficulty of control and their significant tripping hazard. It is also ineffective at preventing other weedy species from rapidly multiplying.

We recommend that the vinca be removed. This can be accomplished by manually removing as much of the plant as possibly using a garden rake. The plant spreads through rooting shoots, so it is critical that the roots be completely raked up. Although herbicides, such as Roundup (glyphosate), are effective, they are not target specific and are damaging to stone and masonry. Therefore, non-chemical control should be the first choice (although its use in combination with the planting of a new groundcover might be justified – see below).

Once removed there are two options. The more conventional is a turfgrass, such as centipede or perhaps buffalo grass. Turfgrass, however, will require maintenance.

We believe that a better choice would be dwarf mondo grass (*Ophiopogon japonicas*). This evergreen, sod-forming perennial is actually a member of the lily family, but it would be ideally suited for the Coleman-Leigh-Warren Cemetery since it sods an excellent shade or filtered sun tolerant lawn that never requires mowing. The plants are easily established, require little care, are drought tolerant, and do not require heavy feeding. The "Kioto" cultivar is the most common dwarf variety, growing to a height of about 4-inches. "Nippon" is slightly shorter, growing to 2-4 inches. The "Gyoko-ryu" variety grows to only 1½-inches, but spreads very slowly and is primarily used in bonsai arrangements.

Dwarf mondo is established vegetatively. The cemetery plot would first be well prepared, with the soil treated with an herbicide such as Roundup to eliminate competition. Afterwards soil amendments can be added, including a complete organic fertilizer. Individual tufts should be planted about 2-inches apart and it may require up to 3 years for the plants to completely fill in.

An annual top-dressing of 1⁄2 inch of compost spread over the mondo grass bed helps promote lateral spread of rhizomes and provides micronutrients and small, slowly released amounts of nitrogen. Compost is particularly beneficial during the first several growing seasons and will shorten the time to reach full cover.

Figure 15. Dwarf mondo grass (photo courtesy Clemson University).

Good information on mondo grass is available from several publications, including http://www.ctahr.hawaii.edu/oc/freepubs/pdf/OF-28.pdf and http://hgic.clemson.edu/pdf/hgic1110.pdf.

The area outside the cemetery need not be sodded and may be left in its current naturalized/urban condition. However, we recommend that the lot be thoroughly cleaned and lightly graded to remove the brick pile and other impediments to routine mowing. The numerous small trees should also be aggressively thinned (or entirely removed). This will allow easy access to the property and facility periodic mowing.

Other Maintenance Issues

Although the cemetery is small and every effort should be made to minimize water needs, it will be necessary to water the groundcover during its installation and for several weeks afterwards. Similarly, water will be needed for the young trees until they become established.

Consequently, we recommend that the Friends establish a water line to the cemetery with a single hose bibb. This will allow spot watering when necessary.

Long-Term Cemetery Maintenance

The use of cedars and dwarf mondo grass with significantly limit the amount of landscape maintenance necessary at the cemetery. However, some periodic care will be required, so the Friends should anticipate allocation of perhaps $500-$1,000/year toward upkeep activities.

Recommendations

An ISA Certified Arborist should be retained to remove all of the hackberry trees currently in and adjacent to the cemetery.

Two to three 1-inch caliper trees (we recommend Eastern red cedar) that are historically appropriate should be planted as replacements for those removed. Special care should be exercised to ensure adequate watering over the first year of growth.

Consideration should be given to planting of screening material at or on the cell tower fence in an effort to soften the visual intrusion of this facility on the cemetery. We recommend either Confederate jasmine or Leyland cypress.

We do not recommend the planting of shrubbery since such material was likely not historically appropriate, will increase the level of maintenance, and may pose security concerns.

Steps should be taken to remove the vinca groundcover in the cemetery. This work may require 1-2 years and may be ongoing with conservation efforts.

Once preservation/conservation efforts are complete, we recommend the installation of a dwarf mondo grass. This will require significantly less maintenance than any turfgrass and yet will be drought resistant and provide year-round color.

The remaining cemetery lot should be lightly graded, brick debris removed, and other vegetation aggressively thinned or removed. The area may then be left natural/urbanized with no specific landscaping. This will facilitate easy mowing and reduce long-term care costs.

An appropriate long-term cemetery landscape maintenance agreement should be forged to ensure that the cemetery remains in acceptable condition.

OTHER MAINTENANCE ISSUES

Signage

At the present time the cemetery lacks any signage – this should be corrected.

From a cemetery preservation perspective signage is of four basic types: identification, regulatory, informational, and interpretative. They are generally recommended in this same priority.

Identification signage might include the name of the cemetery and might also include the cemetery's date of founding or historic significance (i.e., listed on the National Register).

Regulatory signage specifies laws, regulations, or expected standards of behavior. We recommend that the Friends develop signage dealing, minimally, with these issues (perhaps with some modifications of language as might be needed):

- This is a private cemetery. Visitors are welcomed, but proper conduct is expected at all times. Absolutely no alcoholic beverages, fireworks, or fire arms are allowed in the cemetery.

- Many of the stones in this cemetery are very old, fragile, and may be easily damaged. Please refrain from leaning, sitting, or climbing on any monument or mausoleum. All children must be escorted by an adult. No stone rubbings are permitted.

- No pets are allowed in the cemetery.

- No plantings are allowed within the cemetery and the plantings deemed inappropriate, diseased, or damaging the cemetery will be removed.

- For additional information concerning maintenance issues, please contact the _____ at _____. In case of emergency contact _____.

This signage should be installed in a visible location that is consistent with the anticipated path of those visiting the cemetery.

The last two types of signage are informational (for example, directional signs) and interpretative (information on historic people buried in the cemetery). Neither is immediately necessary and, if eventually placed, should not obscure or detract from the more important regulatory signage.

Trash

For years the Coleman-Leigh-Warren Cemetery received little attention. That, coupled with its proximity to both commercial and residential areas, resulted in considerable trash being present. Today the area has been extensively cleaned and the trash problem is significantly reduced.

With continued preservation efforts and landscape maintenance, it is likely that trash will not become a major issue. However, the Friends should ensure that the landscape maintenance contract includes a provision for trash collection. Regular inspections of the property should also ensure to report any littering problems.

We do not recommend the installation of trash cans since the Friends have no ability to maintain such receptacles.

Recommendations

The Friends should develop regulatory signage for use at the cemetery. This signage should

minimally deal with proper care of the monuments, prohibiting rubbings and warning visitors of their fragile condition; it should prohibit certain behaviors and actions, such as use of alcoholic beverages; and it should include contact and emergency information.

Regulatory signage may be combined with identification signage, as long as the rules are clear and not lost. Informational and interpretive signage are not recommended for the cemetery at the present time.

Care should be taken to ensure that the cemetery remains trash free.

CONSERVATION ISSUES

What is Conservation?

Conservation is *not* restoration. Restoration means, very simply, making something "like new." Restoration implies dramatic changes of the historic fabric, including the elimination of fabric that does not "fit" the current "restoration plan." Restoration is inherently destructive of patina and what makes a property historic in the first place. The "restorer" of a property will know nothing of the Secretary of the Interior's Standards for Preservation and care even less.

One of the most important early writings was that of nineteenth century art critic and observer John Ruskin. In *The Seven Lamps of Architecture* published in 1849 and in particular, "The Lamp of Memory," Ruskin introduces us to the issue of trusteeship where he explains,

> it is again no question of expediency or feeling whether we shall preserve the buildings of past times or not. We have no right whatever to touch them. They are not ours. They belong partly to those who built them, and partly to all the generations of mankind who are to follow us.

Ruskin also crisply stated the difference between restoration and repair, noting that "restoration" means,

> the most total destruction which a building can suffer: a destruction out of which no remnants can be gathered: a destruction accompanied with false description of the thing destroyed.

In contrast conservation can be defined as preservation from loss, depletion, waste, or harm. Conservation seeks to limit natural deterioration.

Conservation will respect the historic fabric, examine the variety of options available, and select those that pose the least potential threat to the property. Conservation will ensure complete documentation, whether it is of cleaning, painting, or repair. Conservation will ensure that the work done today does not affect our ability to treat the object tomorrow.

Standard for Conservation Work

As Ruskin stated, The Friends of Coleman-Leigh-Warren Cemetery are the stewards of this cemetery, holding what belonged to past generations in trust for future generations. As such the Friends bear a great responsibility for ensuring that no harm comes to the properties during their watch.

One way to ensure the long-term preservation of these properties is to ensure that all work meets or exceeds the Secretary of the Interior's Standards for Preservation, discussed on pages 2-3 of this study.

Another critical requirement is that the city ensure that any work performed in the cemetery – whether it involves the repair of brick work, the cleaning of a stone, or the reconstruction of a heavily damage monument, is conducted by a trained conservator who subscribes to the Standards of Practice and Code of Ethics of the American Institute for Conservation of Historic and Artistic Works (AIC).

These Standards cover such issues as:

- Do no harm.
- Respect the original fabric and retain as much as possible – don't replace it needlessly.
- Choose the gentlest and least invasive methods possible.
- Is the treatment reversible? Is retreatment possible?
- Don't use a chemical without understanding its affect on the object and future treatments.
- Don't falsify the object by using designs or materials that imply the artifact is older than it is.
- Replication and repairs should be identified as modern so that future researchers are not misled.
- Use methods and materials that do not impede future investigation.
- Document all conservation activities – and ensure that documentation is available.
- Use preventative methods whenever possible – be proactive, not reactive.

The AIC Code of Conduct also requires a professional conservator provide clients with a written, detailed treatment proposal prior to undertaking any repairs; once repairs or treatments are completed, the conservator must provide the client with a written, detailed treatment report that specifies precisely what was done and the materials used. The conservator must ensure the suitability of materials and materials – judging and evaluating the multitude of possible treatment options to arrive at the best recommendation for a particular object.

General Conservation Procedures

Brickwork and Repointing

Repairs should always begin with photographing the structure as it exists in order to completely document the original fabric and construction details. Only the unsound brickwork should be removed, stopping as soon as sound material is encountered. Repair should, as far as possible, use similar brick, mortar, joints, and tooling. Brick should match in size, hardness, texture, and color. Mortar should match the original in color, texture, and most importantly, strength.[1]

Historic bricks are often far softer than modern examples. The use of a modern hard cement mortar will cause extensive damage to this soft brick as one expands more rapidly than the other. Mortar should always be designed to deteriorate more quickly (it should be sacrificial, meaning the use of high lime mortars) than the brick since it can be readily replaced through pointing.

All repointing should minimally meet or exceed the specifications established by *Preservation Briefs 2: Repointing Mortar Joints in Historic Masonry Buildings*.

New mortar must conform to the following criteria: (1) it must match the historic mortar in color, texture, and tooling, (2) it must have greater vapor permeability and be softer than the masonry units, and (3) it must be as vapor permeable and as soft as the original mortar.

To achieve these criteria it may be necessary to have a conservator conduct a mortar analysis. It is also inappropriate to specify a single mortar that is appropriate for all preservation work, since a variety of time periods and original mortars are present at the Coleman-Leigh-Warren cemetery. However, in

[1] While historically appropriate mortars can be mixed, typically as a 1:3 ratio of either lime putty or NHL 2 or 3.5 with sand, recently prepackaged mixes have been marketed. These products are superior when large jobs are undertaken, since they assure that the materials and mix are consistent. They are available from Virginia Lime Works (Mix-n-Go) and Cathedral Stone (Restomix).

general, the mortar should be high in lime and low in compressive strength. A natural hydraulic lime (NHL) or air lime would generally be specified for such work. For example, an air lime or NHL 3.5 might be mixed at the ratio of 0:1:3 for much repointing work at these properties. The sand selection would be especially critical since that additive would primarily determine the final color (and texture) of the mortar.

Existing joints would need to be raked out to a depth 2.5 times their width. Thus, a 3/8-inch joint would need to be raked out to a minimum depth of 15/16-inch (typically expressed as 1-inch). The repointing mortar, generally mixed somewhat dry to minimize shrinkage and reduce cleaning efforts, would be firmly packed in the thoroughly cleaned and moistened joint using lifts no deeper than 1¼-inches.

Marble Repair

In most cases gravestones are fragile and their repair is delicate work. There are many commercial products on the market, used by many commercial stone companies, which are totally inappropriate for historic stone.

Appropriate conservation treatment will usually involve drilling and pinning, carefully aligning the two fragments. Threaded 316 stainless steel rod (or occasionally nylon) and epoxy adhesives formulated for the specific stone are used in this type of repair. Diameters and lengths of pins vary with the individual application, depending on the nature of the break, the thickness of the stone, its condition, and its expected post-repair treatment.

Sometimes pins are not used in a misguided or misinformed effort to save time and money. Instead the pieces are simply joined using a continuous bead of epoxy or some other adhesive. Experience indicates that for a long-lasting repair, particularly in structural applications, use of pins is usually necessary. Moreover, most adhesives are far stronger than the stone itself, meaning that failure of the repair is likely to cause additional damage to the stone.

After many such repairs it will be necessary to fill the voids with a natural cementitious composite stone material resembling the original as closely as possible in texture, color, porosity, and strength. This type of repair may be used to fill gaps or losses in marble and is often used to help slow scaling of bedded sandstone exposed to the elements.

Under no circumstances should latex or acrylic modified materials be used in composite stone repair. These additives may help the workability of the product, but they have the potential to cause long-term problems. Such products are not appropriately matched in terms of strength or vapor permeability.

More suitable materials are materials such as Jahn (distributed by Cathedral Stone) or the lime-based mortars of U.S. Heritage. These closely resemble the natural strength of the original stone, contain no synthetic polymers, exhibit good adhesion, and can be color matched if necessary.

All infill work should be conducted by a trained conservator. The Jahn products, in fact, require certification in their use through Cathedral Stone.

Cleaning of Monuments

A significant amount of damage may result from inappropriate cleaning techniques. The most common cleaning technique is the use of a bleach product – probably because bleach (either sodium hypochlorite or calcium hypochlorite) is widely available and inexpensive. It is, nevertheless, unacceptable for historic monuments.

Table 4 discusses problems with a variety of "common" stone cleaning processes widely used by commercial firms and the

public. Providing this sort of information to families who have loved ones buried in the cemetery may help deter abusive cleaning. Cleaning is also often largely an aesthetic issue. Too often aggressive cleaning removes not only soil, but also the patina of age – leaving monuments that no longer appear historic. Consequently, cleaning should be conducted no more frequently than perhaps once every 5 years.

The safest product for cleaning is simply low pressure (less than 90 psi) water and a soft bristle brush. When some other assistance is needed a product that has been found safe for most stones is D/2 Architectural Antimicrobial distributed by Cathedral Stone.

Table 4.
Comparison of Different Cleaning Techniques

Cleaning Technique	Potential Harm to Stone	Health/Safety Issues
Sand Blasting	Erodes stone; highly abrasive; will destroy detail and lettering over time	Exposure to marble dust is a source of the fatal lung disease silicosis
Pressure Washers	High pressure abrades stone. This can be exacerbated by inexperienced users. Pressures should not exceed 90 psi.	None, unless chemicals are added or high temperature water is used.
Acid Cleaning	Creates an unnatural surface on the stone; deposits iron compounds that will stain the stone; deposits soluble salts that damage the stone	Acids are highly corrosive, requiring personal protective equipment under mandatory OSHA laws; may kill grass and surrounding vegetation
Sodium Hypochlorite & Calcium Hypochlorite (household and swimming pool bleach)	Will form soluble salts, which will reappear as whitish efflorescence; can cause yellowing; some salts are acidic	Respiratory irritant; can cause eye injury; strong oxidizer; can decompose to hazardous gasses
Hydrogen Peroxide	Often causes distinctive reddish discolorations; will etch polished marble and limestone	Severe skin and eye irritant
Ammonium Hydroxide	Repeated use may lead to discoloration through precipitation of hydroxides	Respiratory, skin, and eye irritant
D/2 Architectural Antimicrobial	No known adverse effects, has been in use for nearly 10 years	No special precautions required for use, handling, or storage

Preparation for Conservation

Prior to any conservation work it will be necessary to clean and grade the soils within the cemetery. Mounds resulting from collapse of the walls will need to be removed with brick salvaged. Soil from looting of graves needs to be removed. Loose rubble needs to be collected. During this process the vinca can be removed. During this process the hackberry trees can also be removed since the work will cause minimal disruption to the cemetery conservation efforts.

With the trees removed, the soils graded, rubble removed, and vegetation cleared, the first conservation task will be the stabilization of the cemetery's surrounding brick wall and brick box tombs.

Repair/Stabilization of Brick Wall

The original wall, double wythe, was laid in common bond with headers every 10th course. The brick used in the wall construction averages 8½ to 9 inches in length, 4⅛ to 4¼ inches in width, and 2½ to 2¾ inches in thickness. Approximately 2-foot square columns are found at the wall corners and about every 13 feet along the walls.

Figure. 16. Condition of the surrounding brick wall. From upper left to lower right: southeast corner; south wall; west wall; north wall, showing tree damage shifting a section of the wall outward; close-up of the steps on the east wall with metal banding; portion of the interior east wall showing repointing with hard Portland cement mortar.

Today the wall ranges from less than a foot high to about 3 feet in height, with the best preservation along the east where steps over the wall allowed access into the cemetery. Preservation along the west and south walls is far worse, with the wall barely breaking through the vinca in some areas.

There is much loose brick associated with the wall, much of the existing yellow sandy lime mortar is very friable and loose, and the interior of the eastern wall has been heavily smeared with hard Portland cement in an attempt to repoint.

Thus, all standing walls will need to be repointed and much of the wall will need to be rebuilt from the foundation up. In addition, the Portland cement joints will need to be cut out and replaced with an appropriate high lime mortar.

It would be inappropriate to fully rebuild the cemetery walls. Not only is too little known about the wall (such as its height or finish), but the creation of a wall would reduce visibility and create an unnecessary security risk.

We recommend that the wall be rebuilt to a height of 2 feet in all areas – or approximately eight courses above grade. Along the east wall, where the best preservation is found, we recommend that the wall be repaired to a maximum height of 14-16 courses. This will allow the wall to be integrated into the steps, allowing visitors to better understand its original appearance and function. This will also result in maintaining the existing historic fabric and very minimal conjecture of original appearance.

We estimate that the work will include approximately 2,500 linear feet of repointing with about 300 linear feet of OPC joints that must be cut out prior to repointing. We anticipate construction of approximately 200 square feet of wall will need to be built or rebuilt.

The new construction on this wall will require approximately 10 bricks per square foot, or a total of about 2,000 bricks. There may be about 1,000 brick in storage. It may be that additional brick can be procured locally from salvage yards. If brick need to be purchased, a suitable match may be the Glen-Gery Handmade Oversize brick, measuring 8½x4x2¾ inches. Appropriate colors might include Pennsbury, in the orange range, or Monticello, in the red range. The closest suppler is The Exum Company in Columbia, SC. Additional information is available at http://www.glengerybrick.com/pdf/4p5.pdf.

Repair of Brick Box Tombs

One triple box tomb and six single box tombs are present in the cemetery, each ranging from about 2-6 courses of brick above grade (Figures 17-18). All are missing their original ledgers. Each is also in very poor condition, evidencing extensive previous repair using hard Portland cement mortar. The random brickwork also suggests that most have been rebuilt and probably contain little unaltered historic fabric.

The treatment of these box tombs is critical to restore the appearance of the cemetery and provide appropriate means of resetting the ledgers that have been removed for safekeeping.

This work can be accomplished only after vegetation is removed, all loose brick is recovered, and the soils are graded. With an established grade to work from the treatment of the boxes will be somewhat similar to the previous discussion of the wall. A major difference, however, is that we have found little original brickwork in the box. Therefore, it is not necessary to cut out OPC joints. What is necessary is to stabilize the box and rebuild them to a consistent height of six courses above grade.

Figure 17. Box tomb remains at the Coleman-Leigh-Warren Cemetery. From upper left to lower right, number 1(unknown), 8 (Lucy G.W.B. Coleman), 7 (William H. Warren), 9 (Robert M. Warren), 10 (Lindsay Coleman), and 11 (Sarah Coleman).

Figure 18. Box tomb of the Leigh Family (4-6).

All but one of the six single box are single wythe. The one exception has double wythe head and foot, with single wythe side walls. Consequently, each box will require approximately 150 brick, of which perhaps only 50 are currently present, leaving a deficit of approximately 600 brick.

There was apparently a seventh box tomb, for Frances Ann Bele Warren. Although there is no surface indication of this grave, the GPR study identified its location. Portions of the ledger are also present.

It would not be appropriate to rebuild this box tomb since there is no longer any indication of its original appearance. It is appropriate to lay a concrete slab, upon which the ledger could be mounted for exhibition.

The triple box, associated with the Leigh family, is unusual since the brick side walls were covered with sandstone blocks and the top, rather than receiving a ledger, was capped with sandstone upon which a monument was placed.

Much of the sandstone is either missing or badly spalling and fragmented. Nevertheless, the repair of the box tombs can be accomplished in the same manner as the individual tombs.

We estimate that the double wythe walls will require about 300 brick to repair.

The stone appears to be Aquia sandstone, a material that has not been quarried since the 1930s and is virtually impossible to find today. Indiana sandstone, which is readily available, looks similar and is a far better dimensional stone. One supplier of this material is Indian Creek Stone Products (http://www.indiancreekstone.com/home/).

We estimate that about 48 square feet will be need to reroof the box tombs, while about 96 square feet will be need for new veneer (the existing veneer material is entirely unsuitable since it was originally set with

Table 5.
Marble Repair Summary

Stone	Condition	Recommendations	Projected Cost (2008$)
2 – W.L. Warren	Broken, top not identified; spalling; sunken; soiled	Reset; infill crack to limit water intrusion; clean	$450
3 – Warren	Column broken, fallen; top urn missing; eroded under base; soiled	Stabilize base; repair and reset column; clean	$2,400
4-6 – Leigh	35+ fragments, few suitable for repair; monument entirely destroyed	Replace with simple marble slab	$2,800
7 – Wm. H. Warren	25+ fragments, but fit well and suitable for repair	Repair, infill missing sections; reset on repaired brick box tomb	$3,400
8 – Lucy G.W.B. Coleman	35+ fragments, few suitable for repair; monument entirely destroyed	Replace with new ledger; reset on repaired brick box tomb	$2,800
9 – Robert M. Coleman	Possible fragments identified; not suitable for repair	Replace with new ledger; reset on repaired brick box tomb	$2,800
10 – Lindsay Coleman	2 fragments; right base missing	Repair, infill missing section; reset on repaired brick box tomb	$1,800
11 – Sarah Coleman	6+ fragments; about 80% of ledger	Repair, infill missing sections; reset on repaired brick box tomb	$2,200
12 – Frances A.B. Warren	4 fragments; upper half of ledger nearly intact	Reset on concrete base; add simple marker if desired to explain	$1,200

exposed bedding planes causing extensive deterioration.

Repair of Marble

As a general rule, historic fabric should be preserved, repaired, and reused whenever possible. Only as a last resort should historic fabric be replaced by new fabric.

With that said, it is important to realize that many of the monuments in the Coleman-Leigh-Warren Cemetery have been heavily damaged. For several, relatively few fragments can be found or those that have been recovered are relatively small. Thus, in several cases repair *is not feasible* – either in terms of the current technology or in terms of the costs associated.

Table 5 lists the monuments known to have existed, or are thought to have been present at some point, in the cemetery. The condition of each is briefly described, recommendations are offered along with the projected 2008 cost, not including the cost of any associated brick work repair (discussed above).

Two ledgers (8 – Lucy G.W.B. Coleman and 9 – Robert M. Coleman) are so damaged that repair is not feasible and we recommend replacement with new marble ledgers. The edge finish should duplicate the original and the lettering, in so far as possible should be similar. In both cases in smaller text at the lower left, the wording, "Ledger replaced in 20__" should be added.

Similarly, although there are many small fragments associated with the monument for the Leigh family, the fragments are not sufficient to allow repair.

There is interest in duplicating this monument and similar monuments are present in the nearby Summerville Cemetery (see Figure 20). It is possible that a craftsman could be found that is capable of performing such intricate and complex work. The cost, however, would be significant – likely in excess of $25,000.

Until such funds are available, we recommend preparing a simple marble slab with the names of the Leigh family originally interred in the three box tombs and erect it on top of the rebuilt boxes. This would ensure that the graves

Figure 19. Marble monuments from the Coleman-Leigh-Warren Cemetery. For upper left to lower right: 2 – Walter Leigh Warren; 3, Warren monument – front, oblique, and close-up of the broken column; 11, Sarah Coleman; 7, William H. Warren; 10, Lindsay Coleman.

Figure 20. Examples of monuments identified as not suitable for repair. In the upper left is a photograph of fragments thought to represent the remains of 8, Lucy G.W.B. Coleman. The remaining photographs in the first and second rows are of various fragments associated with monument 4-6, Leigh. The bottom two photographs are of a similar monument in Augusta's Summerville Cemetery.

are marked and would be a relatively inexpensive temporary investment.

A third unusual situation is the partial ledger for Frances Ann Bele Warren. The grave probably had a box tomb originally, but this is no longer present and the grave is only identifiable through the ground penetrating radar study. A suitable approach is to set a concrete pad on which the remnant ledger can be mounted. If desired, a small marble slab can be added below with additional information.

Recommendations

All work in the cemetery should be conducted by trained conservators who subscribe to the Code of Ethics and Standards of Practice of the American Institute for Conservation of Historic and Artistic Works (AIC). This should be the minimum level of competency required by the Friends on all projects.

The surrounding wall is an important aspect of the cemetery character. It should be rebuilt to a consistent, but variable height, depending on how much original fabric remains. Existing fabric in satisfactory condition should be repointed. OPC mortar should be cut out and replaced with a high lime mortar. It is likely that some new brick will be required.

The six single and one triple box tombs should be rebuilt and/or repaired as necessary. The triple tomb (Leigh) will require additional sandstone for capping and veneer. Since the original Aquia sandstone is no longer available, a suitable substitute material may be Indiana sandstone.

Six of the marble monuments can be repaired and reset. Three cannot and will need to be replaced. It may be possible to replicate the Leigh monument, but the cost would be extensive and we recommend making this a long-range project.

GRAVE IDENTIFICATION AND MAPPING

Penetrometer Survey

Brief Background

A penetrometer is a device for measuring the compaction of soil. When natural soil strata are disturbed – whether by large scale construction or by the excavation of a small hole in the ground – the resulting spoil contains a large volume of voids and the compaction of the soil is very low. When this spoil is used as fill, either in the original hole or at another location, it likewise has a large volume of voids and a very low compaction.

Penetrometers come in a variety of styles, but all measure compaction as a numerical reading, typically as pounds per square inch (psi). The dickey-John penetrometer consists of a stainless steel rod about 3-feet in length, connected to a T-handle. As the rod is inserted in the soil, the compaction needle rotates within an oil filled (for damping) stainless steel housing, indicating the compaction levels. The rod is also engraved at 3-inch levels, allowing more precise collection of compaction measurements through various soil horizons. Two tips (½-inch and ¾-inch) are provided for different soil types.

Of course, a penetrometer is simply a measuring device. It cannot distinguish soil compacted by natural events from soil artificially compacted. Nor can it distinguish an artificially excavated pit from a tree throw that has been filled in. Nor can it, per se, distinguish between a hole dug as a hearth and a hole dug as a burial pit. What it does, is convert each of these events to psi readings. It is then up to the operator to determine through various techniques the cause of the increased or lowered soil compaction.

Like probing, the penetrometer is used at set intervals along grid lines established perpendicular to the suspected grave orientations. The readings are recorded and used to develop a map of probable grave locations. In addition, it is important to "calibrate" the penetrometer to the specific site where it is being used. Since readings are affected by soil moisture and even to some degree by soil texture, it is important to compare readings taken during a single investigation and ensure that soils are generally similar in composition.

It is also important to compare suspect readings to those from known areas. For example, when searching for graves in a cemetery where both marked and unmarked graves are present, it is usually appropriate to begin by examining known graves to identify the range of compaction present.

After the examination of over 30 cemeteries using a penetrometer, we are relatively confident that similar ranges will be found throughout the Carolinas and Georgia. It is likely these ranges are far more dependent on general soil characteristics (such as texture and moisture) than on cultural aspects of the burial process. Thus graves typically yield compaction levels of less than 100 psi, while undisturbed soils yield compaction readings of 150 psi or greater.

Results at Coleman-Leigh-Warren Cemetery

We initially attempted to "calibrate" the penetrometer by examining areas of known graves in the cemetery. This, however, provided unsuccessful because of the large amount of brick rubble found throughout the enclosed cemetery area. In addition, where soils were found without rubble, the compaction levels

were very high – typically in excess of 250 psi. While this may be the result of activities within the cemetery, it may also be the consequence of the severe drought.

Moving to the area outside the cemetery walls, we found the penetrometer no more

Figure 21. Use of a penetrometer in the cemetery.

successful. In the area south of the cemetery we encountered significant quantities of gravel. The origin of this material is unknown, although it may be associated with the use of the area for parking during the Masters Tournament. In addition, compaction readings were even higher than within the enclosure – 300+ psi. These readings were found consistently as we moved to the west. Of course in this direction the upper 2 feet of soil has been removed and the area is known to have been used for parking.

In sum, the penetrometer was not effective in this area and no evidence of graves was encountered.

Ground Penetrating Radar Survey

Ground-penetrating radar (GPR) is a near-surface geophysical technique. It involves the transmission of high frequency radar pulses from a surface antenna into the ground. The time between when this energy is transmitted, reflected from buried materials, and then received back at the surface is then measured. When many thousands of radar reflections are measured and recorded as antennas are moved along transects within a grid, a three-dimensional picture what anomalies – or features – can be created.

A range of antennae frequencies are available. Low frequency antennas (10-120 MHz) generate long wave-length radar energy that can penetrate up to 150 feet under ideal conditions. However, there is a trade-off; they are capable of resolving only very large subsurface features. On the other hand, a 900 MHz antenna can penetrate only about 3 feet at most, but it is able to resolve features down to a few inches in diameter.

The effectiveness of GPR depends on yet another factor – the physical characteristics of the material through which the waves pass. Soils that are electrically conductive will attenuate the GPR waves, allowing only very shallow penetration. Soils that have electrically conductive clay or that are wet are poor candidates for GPR studies. Other problematic soils are those that contain salts or that have relatively high magnetic charges.

The GPR study was conducted by GEL Geophysics operated by Ms. Kate McKinley using a RAMAC GPR system configured with a 250 MHz antenna array. The transmitter radiates repetitive short-during electromagnetic (EM) signals into the earth from the antenna. EM waves are reflected back to the receiver by

interfaces between materials with differing dielectric constants. The intensity of the reflected signal is a function of the contrast in the dielectric constant at the interface, the conductivity of the material which the wave is traveling through, and the frequency of the signal. The profiling recorder receives the signal from the antenna and produces a continuous cross section of the subsurface interface reflections, referred to as "reflectors," "reflector events," or "anomalies." The skilled operator seeks to identify those reflectors or anomalies that are most consistent with grave shaft excavations.

Figure 22. GPR survey within the cemetery.

Also used was a time-domain electromagnetic system (EM-61). Time domain electromagnetic methods measure the electrical conductivity of subsurface materials. The conductivity is determined by inducing (from a transmitter) at time or frequency-varying magnetic field and measuring (with a receiver) the amplitude and phase shift of an induced secondary magnetic field. The secondary magnetic field is created by subsurface conductive materials behaving as an inductor as the primary magnetic field is passed through them.

The Geonics EM-61 system can discriminate between moderately conductive earth materials and very conductive metallic targets. The EM-61 consists of a portable coincident loop time domain transmitter and receiver with a 1.0 x 0.5 meter coil system. It generated 150 pulses per second and measures the response from the ground after transmission or between pulses. The secondary EM responses from metallic targets are of longer duration than those created by conductive earth materials. By recording the later time EM arrivals, only the response from metallic targets is measured, rather than the field generated by the earth material.

In the case of this study, the GPR survey included all of the area within the property boundaries, excluding the cell tower facility. Data were collected in a grid but the baselines were not perpendicular to each other. The grid was designed to maximize coverage over the unfenced area. The GPR data were collected with 2.5 feet between parallel profiles. The EM-61 data were collected with 5 feet between profiles. The geophysical data were processed and interpreted in the field, with anomalies having the signature consistent with a potential grave marked in the field using paint. Their locations were then surveyed by Chicora. These data were further scrutinized and additional anomalies have been added and are shown in Figure 22.

Some areas between the two fenced areas were investigated using an irregular pattern across the area (meandering path method). The purpose of the meandering path method was to insure full coverage over the entire site.

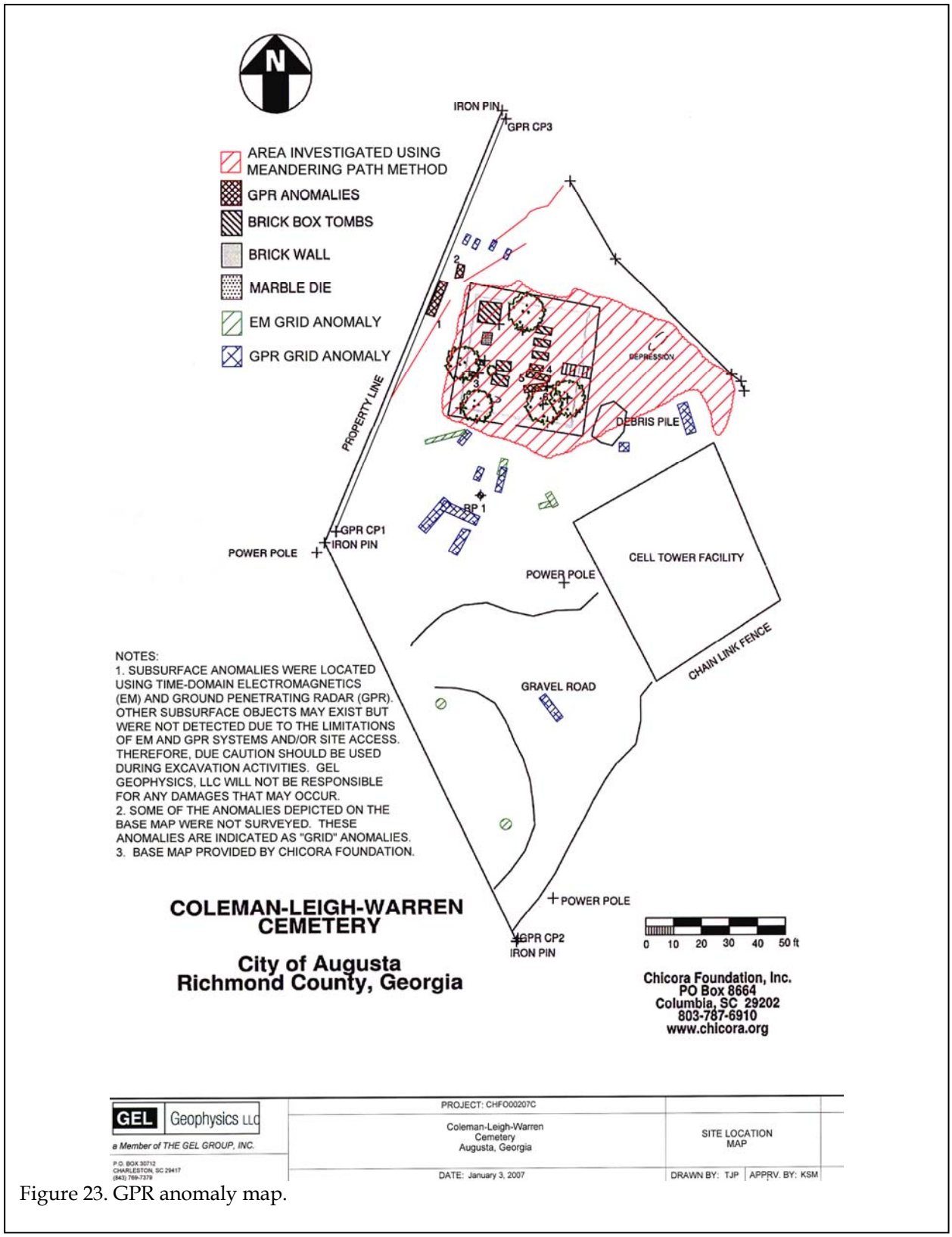

Figure 23. GPR anomaly map.

Figure 23 illustrates the area of investigation and all of the geophysical anomalies indentified to have characteristics of burials. Based on the characteristics of the data, it is believed that the subsurface is congested with a network of tree roots and buried debris. None of the geophysical anomalies identified in the data sets are specifically indicative of burials (i.e., none appear consistent with the size or orientation anticipated for a grave shaft; as such their origin and nature are undetermined). However, all of the anomalies identified in Figure 22 have non-specific characteristics that may warrant further investigation, if desired.

Within the bricked cemetery the GPR was successful in defining four anomalies, each consistent with the size and oriented expected for graves. These include the grave of Frances Ann Bele Warren, as well as two additional graves to the south in that same line. Also identified was the grave of an unidentified infant initially recorded in 1924, but subsequently lost. No other graves were identified within the walled enclosure.

There remains the possibility that anomalies remain undetected due to either method limitations, subsurface soil conditions, or the occurrence of features below the depth of penetration of the signals.

Mapping

Although the cemetery has a recent plat, a task of this work was to prepare a map of the cemetery plot and its immediate surroundings, including any additional graves that might be identified by either the penetrometer or GPR work.

This mapping was prepared using a Sokkia SET530R3, a total station that uses a prism to 13,000 feet or can map objects up to 1,100 feet without a prism. Accuracy is 3" (1 mgon or 0.0009°).

The resulting map is provided as Figure 24. It shows the standing or at-grade box tombs, other monuments, and the suspected graves within the cemetery walls. Also shown are the two GPR anomalies identified outside the cemetery plot. Although their function is not known, their size and orientation are not consistent with burials.

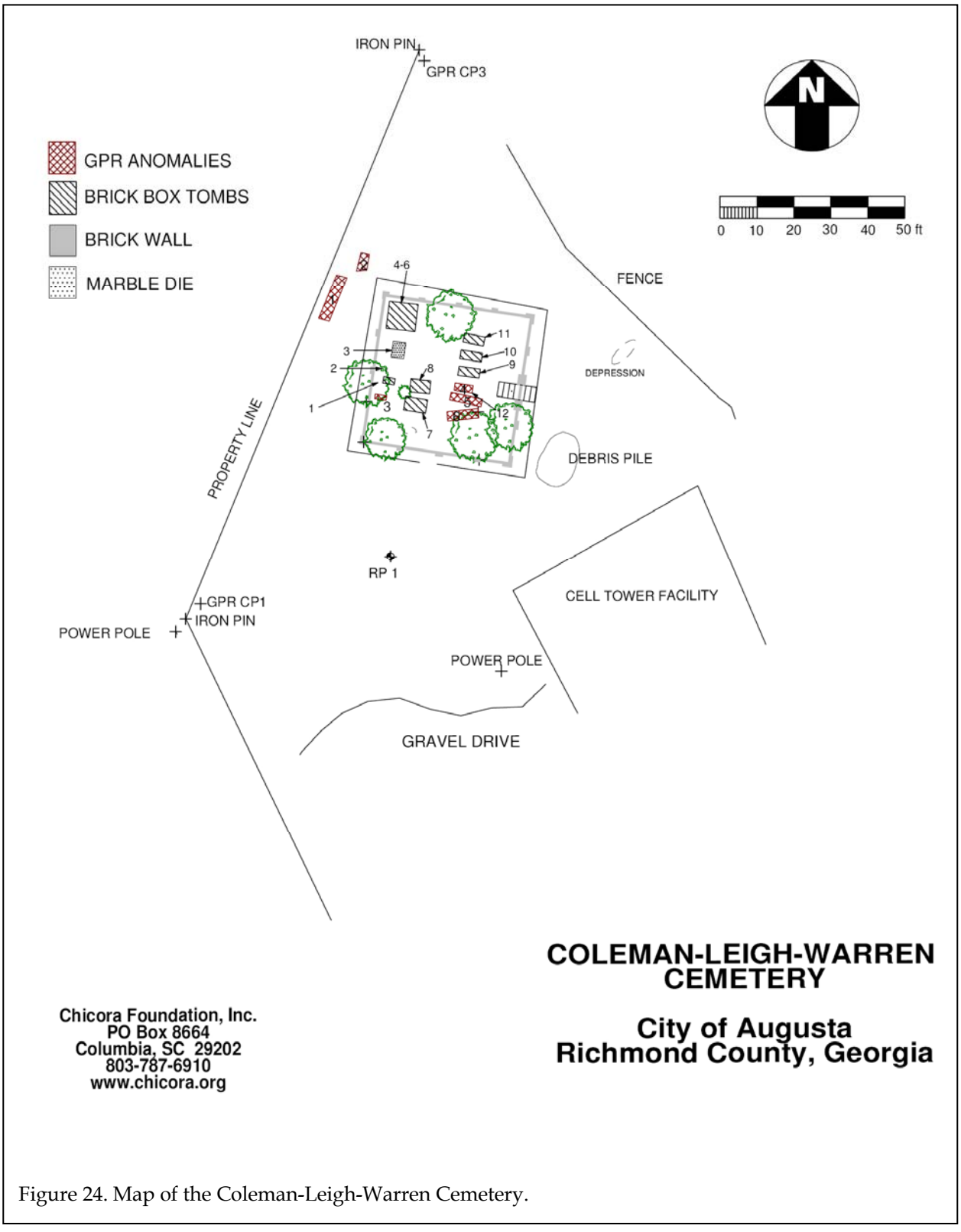

Figure 24. Map of the Coleman-Leigh-Warren Cemetery.

RECOMMENDATIONS AND FUNDING

With limited funds it is often critical that organizations establish priorities for cemetery conservation/preservation projects, ensuring that the most critical issues are dealt with first. There are different methods for assigning priorities; here we have simply organized the recommendations in a logical progression, but have not assigned any time frame since we are not familiar with the funding levels available to the Friends.

The costs are based on the best information available at this time. Some are derived from previous projects; others are determined using Means Site Work and Landscape Cost Data. All estimates are 2008$.

Table 6.
Prioritization of Recommendations

	Recommendation	Tasked To	Budget
1.	Formalize policy that all decisions at Coleman-Leigh-Warren will be made in the context of the Secretary of the Interior's Standards for Preservation	Board	n/c
2.	Establish by policy that remnant historic fabric will be preserved and that the existing family cemetery characteristics will be preserved	Board	n/c
3.	Establish policy and procedures to identify, report, and respond to damage, vandalism, and theft within the cemetery	Board	n/c
4.	Work with Augusta-Richmond County law enforcement to establish routine police patrols to the cemetery	Board	n/c
5.	Establish a procedure for Friends to monitor the cemetery on a routine basis	Board & Friends	n/c
6.	Contact adjacent neighbors, especially National Hills and Augusta-Richmond County emergency services to engage them in protection efforts	Board & Friends	n/c
7.	Work with adjacent property owner to close fence, preventing pedestrians from cutting through the cemetery	Board	n/c
8.	Work with adjacent property owner to eliminate the use of the cemetery to access the vacant lots to the west	Board	n/c

Table 6, cont.
Prioritization of Recommendations

	Recommendation	Tasked To	Budget
9.	Determine liability arising from Alltel tower; determine access maintenance	Board	n/c
10.	Conduct additional historical research	Friends or Consultant	$5,000
11.	Use ISA Certified Arborist to remove hackberry trees	Contractor	$6,500
12.	Install Q-Star Flash CAM at cemetery to monitor vandalism	Board	$6,500
13.	Remove vegetation surround cemetery; clean up cemetery grounds, level soil, remove all brick debris, grade, add soil amendments as necessary	Contractor	$1,000
14.	Remove remnant fence surround the cemetery	Contractor	$550
15.	If closure of National Hills fence and access route (items 7 and 8) are unsuccessful, install chain link fence along west and north property edges	Contractor	$4,800
16.	Plant screening at cell tower fence	Contractor	$400
17.	Install signage	Contractor	$800
18.	Purchase additional bricks for wall and tomb repair	Board	$1,300
19.	Install meter, water line, and bibb at cemetery	Contractor	$3,800
20.	Repair/stabilize brick wall	Conservator & Mason	$30,000
21.	Purchase Indiana sandstone for repair of tomb	Board	$9,400
22.	Repair box tombs	Conservator & Mason	$8,500
23.	Plant 3 new trees in or around cemetery	Contractor	$250
24.	Repair stones	Conservator	$24,000
25.	Plant dwarf mondo grass in cemetery	Contractor	$14,000
26.	Replace Leigh monument	Contractor	$25,000

Table 6 reveals that the projected preservation costs for the Coleman-Leigh-Warren cemetery are approximately $141,800. This amount can be reduced slightly if, for example, the historical research is handled in-house and the Board is successful in closing the northern fence and preventing vehicular traffic across the cemetery without the need for erecting a fence (these two items would result in a savings of $9,800).

It is critical, however, to maintain momentum – there must be a perception of progress. In addition, costs will only escalate (and none of our budget recommendations include an inflation factor). Thus, we recommend that items 1-17 be accomplished in 2008. This will require a budget of about $25,550.

Table 7.
Yearly Budget Recommendations

Year	Items	Budget
2008	1-17	$25,550
2009	18-23	$53,250
2010	24-25	$38,000
Ongoing	Maintenance	$1,000/year

The second year – 2009 – we recommend that items 18-23 be completed, with a total budget of $53,250. This work would significantly bring the cemetery back to a recognizable condition.

The final year, we recommend that last phases of restoration work – the repair of the monuments and planting of the cemetery – be conducted. This would require a budget of $38,000.

With the completion of all critical work, the Board can then determine if they wish to attempt to replicate the Leigh monument or make other arrangements. This replication, however, should receive the lowest priority since it involves entirely new work.

APPENDIX 1.

MICHAEL TRINKLEY

Chicora Foundation, Inc.
P.O. Box 8664 • 861 Arbutus Drive
Columbia, South Carolina 29202
803/787-6910

Education/Training

1974	B.A., Anthropology, University of South Carolina, Columbia
1976	M.A., Anthropology, University of North Carolina, Chapel Hill
1980	Ph.D., Anthropology, University of North Carolina, Chapel Hill
1997	Non-Destructive Investigative Techniques for Cultural Resource Management, NPS Workshop, Fort Scott National Historic Site, Fort Scott, Kansas (geophysical techniques)
1999	Jahn Installer Workshop, Cathedral Stone Products, Inc., Jessup, Maryland (3 days) (certified installer 9906811-SC)
2001	Preservation & Care of Brownstone Buildings, Technology & Conservation Conference, Boston, Massachusetts
2003	Lime Mortar Workshop, U.S. Heritage, Chicago, Illinois
2004	Preservation Masonry Workshop, School for the Building Arts, Charleston, SC (2 days)
2005	International Lime Conference, Orlando, Florida
2005	Edison Coatings Workshop, Richmond, Virginia (1 day)
2005	Historic Masonry Preservation Workshop, John Lambert, Campbell Center for Historic Preservation Studies, Mt. Carroll, Illinois (1 week)
2005	Preservation Masonry Workshop, College for the Building Arts, Charleston, SC (2 days)
2005	Masonry Analysis & Testing Workshop, Berkowitz and Jablonski, Campbell Center for Historic Preservation Studies, Mt. Carroll, Illinois (1 week)
2005	Jahn 4-Hour Workshop, Cathedral Stone Products, Columbia, SC

2006	Stone Carving and Restoration Workshop, Traditional Building Skills Institute, Snow College, Ephraim, Utah (3 days)

Memberships

American Institute for Conservation of Historic and Artistic Works
US/ICOMOS – Brick, Masonry & Ceramics Committee
Association of Preservation Technology
Preservation Trades Network
National Trust for Historic Preservation
Association of Gravestone Studies

Abstract of Cemetery Conservation/Preservation Experience (not inclusive of legal/archaeological experience):

1992	Reviewer of National Trust for Historic Preservation publication on historic cemeteries publication by Lynette Strangstad.
1998-99	Principal Investigator, Survey and Documentation of African-American cemeteries in Petersburg, Virginia. Including mapping, grave location, and development of historic context. (with Preservation Consultants, Charleston, SC).
1998-99	Conservation activities, Maple Grove Cemetery, Maple Grove United Methodist Church, Waynesville, North Carolina.
1999	Instructor, Cemetery Preservation: Making Good Choices Workshop, Virginia Association of Museums, Petersburg, Virginia.
1999	Instructor, Cemetery Preservation: Making Good Choices Workshop, Georgia Local History Conference, Augusta, Georgia.
2000	Consultation regarding maintenance and clearing of Ricefield's Woodville Cemetery, Georgetown County, South Carolina.
2000	Invited Speaker, Cemetery Conservation Techniques, Historic Cemetery Preservation Workshop, Maryland Historical Trust, Annapolis, Maryland.
2000	Preservation assessment, Summerville Cemetery, Augusta, Georgia.
2001	Assessment and preservation plan for Glenwood Cemetery, Thomaston, Georgia.
2001	Reconnaissance survey of cemeteries in Richland County, South Carolina.
2001	Preservation guidelines for St. Paul's Cemetery, Augusta, Georgia.
2001	Instructor, Cemetery Preservation: Making Good Choices Workshop, Restoration International Trade Event, New Orleans, La.

2001	Instructor, Cemetery Preservation: Making Good Choices Workshop, National Preservation Institute, Washington, D.C.
2002-2003	Conservation program, Old Waxhaws Presbyterian Cemetery, Lancaster County, South Carolina.
2003	Treatment of markers at the Vardeman Cemetery, Lincoln County, Kentucky.
2003	Consultation concerning cemetery walls and pathways, Maple Grove Cemetery, Waynesville, North Carolina.
2003	Invited Speaker, Preservation of African American Cemeteries Conference, 2003, Helena, Arkansas.
2003	Instructor, Cemetery Preservation: Making Good Choices Workshop, Washington County, Georgia Historical Society, Sandersville, Georgia.
2003	Preservation assessment, Old City Cemetery, Sandersville, Georgia
2003	Instructor, Cemetery Preservation: Making Good Choices Workshop, National Preservation Institute, Washington, D.C.
2003	Treatment of markers at Oakview and Riverside cemeteries; examination of burial vaults in white and African American sections, City of Albany, Georgia (FEMA funded).
2003	Preservation assessment, Historic Cemeteries at Five Cemeteries, Bannack State Park, Bannack, Montana
2003	Instructor, Cemetery Preservation: Making Good Choices Workshop, Bannack State Park, Bannack, Montana
2003	Consultation concerning cemetery brick wall, Midway Church, Midway, Georgia.
2004	Treatment of markers at Richardson Cemetery, Clarendon County, South Carolina.
2004	Instructor, Cemetery Preservation: Making Good Choices Workshop, National Preservation Institute, Washington, D.C.
2004	Treatment of markers at Maple Grove Cemetery, Waynesville, North Carolina.
2004	Consultation regarding State Historical Marker, Roseville Cemetery, Florence County, South Carolina.
2004	Consultation regarding the Mary Musgrove Monument, Musgrove Mill State Park, Laurens County, South Carolina.
2004	Invited Speaker, Cemetery Preservation Workshop, SC Genealogical Society Annual Meeting, Walterboro, South Carolina.

2004	Treatment of markers at Wrightsboro Cemetery, Thomson, Georgia.
2005	Treatment of markers at Pon Pon Cemetery, Colleton County, South Carolina.
2005	Treatment of markers at Walnut Grove Plantation, Spartanburg County, South Carolina.
2005	Consultant on cemetery fence theft, Save Austin's Cemeteries, Austin, Texas.
2005	Treatment of markers at Richardson Cemetery (Second Phase), Clarendon County, South Carolina.
2005	Instructor, Cemetery Preservation: Making Good Choices Workshop, National Preservation Institute, Washington, D.C.
2005	Treatment of marker in Oakview Cemetery, Albany, Georgia.
2005	Treatment of markers at Trinity Cathedral, Columbia, SC.
2005	Preliminary preservation recommendations, Randolph Cemetery, Columbia, SC.
2005	Treatment of markers in Presbyterian Cemetery, Union, SC.
2005	Instructor, Cemetery Preservation: Making Good Choices Workshop, Save Oklahoma's Cemeteries, Muskogee, Oklahoma.
2005	Instructor, Cemetery Preservation: Making Good Choices Workshop, National Preservation Institute, Las Vegas, New Mexico.
2005	Treatment of marker, Reynolds Homestead, Critz, Virginia.
2005	Assessment and preservation plan for Lewis Cemetery, King and Queen County, Virginia. King and Queen County Historical Society.
2006	Treatment of markers in Presbyterian Cemetery, Union, SC (second phase).
2006	Assessment and preservation plan for Pine Lawn Memorial Gardens, Aiken, South Carolina. SC Department of Archives and History, Columbia.
2006	Assessment of Unadilla Cemetery, Unadilla, Georgia.
2006	Invited Speaker, Planning a Cemetery Preservation Project, People and Places: South Carolina's Seventh Annual Statewide Historic Preservation Conference, SC Department of Archives and History, Columbia, South Carolina.
2006	Assessment and Preservation Plan, Memory Hill Cemetery, Milledgeville, Georgia.
2006	Assessment and Preservation Plan, Springwood Cemetery, City of Greenville & Friends of Springwood Cemetery, Greenville, South Carolina.

2006	Invited Speaker, Cemetery Rehab, South Carolina Landmark Conference, SC Department of Archives and History, Aiken, South Carolina.
2006	Assessment, Town of Dedham, MA cemetery, Vollmer Associates, Boston.
2006	Assessment and Preservation Plan, Naval Medical Cemetery Portsmouth Cemetery, Portsmouth, Virginia.
2006	Instructor, Cemetery Preservation: Making Good Choices Workshop, National Preservation Institute, Washington, D.C.
2006	Invited Speaker, Preservation Needs at Greenville's Springwood Cemetery, Greenville Chapter of SC Genealogical Society, Greenville, South Carolina.
2006	Preparation of landscape plan, Randolph Cemetery, Columbia, South Carolina.
2006	Treatment of markers in the Cason Plot, Long Creek Baptist Church, Warrenton, Georgia.
2006	Treatment of markers in the Watson Plot, Thomson City Cemetery, Thomson, Georgia.
2006	Treatment of markers at Trinity Cathedral, Columbia, South Carolina (second phase).
2006	Assessment and Preservation Plan, Old Athens Cemetery, University of Georgia, Athens, Georgia.
2006	Preparation of Treatment Plan, Terrell Tomb, Sparta, Georgia.
2006	Emergency conservation treatment, Settler's Cemetery, City of Charlotte, North Carolina.
2006-2007	Preservation Assessment and Recordation, St. Elizabeth's Cemetery, Washington, DC (for General Services Administration).
2006-2007	Preservation Assessment, three Raleigh Cemeteries, Raleigh, North Carolina.
2007	Historic research, Randolph Cemetery, Columbia, South Carolina.
2007	Treatment of Monuments at Laurelwood Cemetery, Rock Hill, South Carolina.
2007	Assessment of markers, Machpelah Cemetery, Lincoln County, North Carolina.
2007	Assessment of Moss Family Cemetery, Stanly County, North Carolina.
2007	Treatment of Monuments at the Old Athens Cemetery, University of Georgia, Athens, Georgia.
2007	Treatment of markers at Trinity Cathedral, Columbia, South Carolina (third phase).

2007	Invited Speaker, Annual Conference of the South Carolina African American Heritage Commission, Mars Bluff, South Carolina.
2007	Instructor, Cemetery Preservation: Making Good Choices Workshop, National Preservation Institute, Greensboro, North Carolina.
2007	Treatment of markers at Machpelah Cemetery, Lincoln County, North Carolina.
2007	Assessment of markers, St. Johns Cemetery, Richmond, Virginia.
2007	Preservation Assessment, Village Cemetery, Newberry, South Carolina.
2007	Instructor, Cemetery Preservation: Making Good Choices Workshop, Lincolnton Historical Society, Lincolnton, North Carolina.
2007	Treatment of markers, Settler's Cemetery, Charlotte, North Carolina.
2007	Assessment of markers, Unitarian Church Cemetery, Charleston, South Carolina.
2007	Preparation of Conservation Scope of Work, Chalmette National Cemetery, Louisiana (for Lord, Aeck & Sargent, Ann Arbor, Michigan).
2007	Preservation Assessment and Assessment of markers, Mann Family Cemetery, North Attleboro, Massachusetts.
2007	Treatment of the Pringle Vault, City Cemetery, Sandersville, Georgia.
2007	Assessment of the Plunk Family Cemetery, Lincolnton, North Carolina.
2007	Assessment of City Cemetery, South Bend, Indiana.
2007	Assessment of Magnolia Cemetery, Mobile, Alabama.
2007	Treatment of the Middleton family vault, Middleton Plantation, Dorchester County, South Carolina.
2007	Treatment of ledgers in family cemetery, Augusta, Georgia.
2007-2008	Treatment of markers at Richardson Cemetery, Clarendon County, South Carolina (third phase).
2008	Assessment of three city cemeteries, Thomasville, Georgia.

National Register Nominations of Cemeteries

1999	Preliminary Multi-Property Nomination, African American Cemeteries of Petersburg, Virginia. Submitted to Virginia Department of Historic Resources, Richmond, Virginia (with Sarah Fick, Preservation Consultants).

2000 National Register Nomination, King Cemetery, Charleston County, South Carolina. Submitted to South Carolina State Historic Preservation Office, SC Department of Archives and History, Columbia.

2002 National Register Nomination, Scanlonville or Remley Point Cemetery, Charleston County, South Carolina. Submitted to South Carolina State Historic Preservation Office, SC Department of Archives and History, Columbia.

2005 Preliminary Information Form – Hopkins Family Cemetery, Richland County, South Carolina. Submitted to South Carolina State Historic Preservation Office, SC Department of Archives and History, Columbia.

2007 Preliminary Information Form – Harts Bluff African American Cemetery, Wadmalaw Island, Charleston County, South Carolina. Submitted to South Carolina State Historic Preservation Office, SC Department

Cemetery Preservation Plans

Historical Research

Identification of Grave Locations and Mapping

Condition Assessments

Treatment of Stone and Ironwork

Chicora Foundation, Inc.
PO Box 8664 ▪ 861 Arbutus Drive
Columbia, SC 29202-8664
Tel: 803-787-6910
Fax: 803-787-6910
www.chicora.org