

“The saddest affair I have witnessed in the War”
A Battlefield Study of the Battle of the Crater, 30 July 1864

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TABLE OF CONTENTS

Introduction	6
Acknowledgements	7
Project Goals and Summary	9
Early Site History	12
Historical Background	14
Site History After 1865	21
Previous Excavations	27
Research Design	29
Field Methodology	31
Overview of Artifact Analysis	37
Artifact Analysis – The Battle of the Crater	39
<i>Minié Bullets</i>	41
<i>Cleaner Bullets</i>	45
<i>Round Musket Balls</i>	48
<i>Spencer Ammunition</i>	50
<i>Improvised Small Arms Ordinance</i>	53
Artillery Ammunition	57
Uniform and Accouterments	62
Post Battle Artifacts	
Early Commemorations	64
1937 Reenactment	66
Post WWII	70
Conclusions	74
Works Cited	76
Appendix 1	
List of Units Engaged, their strength and primary weaponry	81
Appendix 2	
Artifact Inventory	90

TABLE OF MAPS, TABLES, AND ILLUSTRATIONS

Map 1 Project Area 10

Map 2 Artifact Locations and Features 12

Map 3 Petersburg 13

Map 4 Confederate Defenses West of Elliott’s Salient 1x

Photo 1 Crater Improvements for Tourists 1x

Map 1 Project Area 10

Map 1 Project Area 10

Map 1 Project Area 10

Map 1 Project Area 10

Map 1 Project Area 10

Map 1 Project Area 10

Map 1 Project Area 10

Map 1 Project Area 10

Map 1 Project Area 10

Map 1 Project Area 10

Map 1 Project Area 10

Map 1 Project Area 10

Map 1 Project Area 10

Map 1 Project Area 10

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INTRODUCTION

The Battle of the Crater was one of the most important military engagements of the American Civil War. Fought on 30 July 30 1864, the Union attack sought to break the Confederate defenses surrounding the city of Petersburg, a major urban center in its own right and a life-line to the Confederate capital of Richmond, VA. The Civil War Sites Advisory Commission lists the engagement as a Class A, Decisive Battle having a “direct, observable impact on the direction, duration, conduct, or outcome of the war” (1993, Technical Volume I: Appendixes: 189).

The participation of African-American troops in the battle and the subsequent execution of black prisoners highlights the racial animosities that were the major underpinnings of the conflict. While much of this racially-based hate has been downplayed or conveniently side-line by those wishing to portray the conflict through rose-colored glasses, the contemporary documentary record is rather clear that by the last year of the war, the war was no longer an affair between gentlemen. The emancipation of slaves in the states in rebellion was viewed not only as the destruction of civil property, but also a direct attack on the southern way of life. The recruitment of African-Americans into the Federal Forces, which began as a trickle, had become a significant source of manpower by the later stages of the war. Despite periodic massacres of black troops by Confederates, close to a quarter million African-Americans served in the Union Army.

Between the 15th and the 20th of March 2015, a metal detecting survey of the Battle of the Crater was conducted to assess the status of the cultural resources connected with the engagement and to examine how far did Union troops advance from the mouth of the Crater. The survey was conducted by a joint team of scholars, volunteers, and students. Dr. Mandzy, who holds a PhD in History and an MA in Anthropology, served as the project’s PI. Dr. Fitzpatrick, a historian from Morehead State University and Dr. Michelle Sivilich, an anthropologist at Gulf Archaeology Research, also took part in the project. Critical assistance to the project was provided by Daniel Sivilich, one of the founders of modern battlefield archaeology. Five undergraduate and one graduate student from Morehead State University participated in this survey, as did eight members of Battlefield Restoration and Archaeological Volunteer Organization (BRAVO).

ACKNOWLEDGEMENTS

This project was made possible by the cooperative support of many individuals. Dr. Benjamin Lewis Fitzpatrick, a historian at Morehead State University, was involved with the project from the beginning and was an active participant during the fieldwork in Virginia. M. Scott McBride, the Dean of the Caudill College of Humanities, at Morehead State University, Dr. Michael C. Henson, the Associate Vice President for Research and Sponsored Programs, and Dr. Emma Perkins, Assistant Vice President of University College, strongly supported the project and contributed to its success. Fellow historians Drs. Kris DuRocher, John Ernst, John Hennen, Thomas Kiffmeyer, and Alana Scott King, also from Morehead State University, supported this project.

The project would not have occurred without the help of numerous officials. William Griswold, Ph.D., Archaeologist and Regional ARPA Coordinator at the National Parks Service and James W. Kendrick, Ph.D., Northeast Regional Archaeologist Chief, National Parks Service helped the project obtain the required research permits. Park Superintendent Lewis Rogers took an active interest in the project and worked strongly for its implementation. A special note of thanks to Park Archaeologist Julia Steele who devoted a great deal of time and energy to make this project a reality. We also want to thank Adam Baghetti, GIS/IT Specialist at Petersburg National Battlefield, for providing the project with a copy of a 1978 survey map. Bryce Suderow and Phil Shiman was also extremely helpful in our analysis and suggesting addition resources.

A number of private individuals worked tirelessly to bring the project to fruition. Dan Sivilich, the President of BRAVO, helped develop the project, recruit BRAVO members and conducted analysis of the artifacts. Unfortunately, a physical injury prevented Dan from participating in the fieldwork and Dr. Michelle Sivilich took on his responsibility of transit work, data collection and GIS mapmaking.

We would also like to thank the BRAVO members who made the project such a success, including: James Barnett, Glenn Gunther, Russ Balliet, Bill Hermstedt, Tim Reno, Ken Amman, Adrian Devine, and Bob Hall. Without their support and interest in the project, the survey would not have occurred. Finally, I need to mention the undergraduate and graduate students who worked on the project, especially Floyd Patrick Davis, Kelsey P. Becraft, Dakota Leigh Goedel, Jeffrey A. McFadden, Jessey C. Reed,

and Jaron A. Rucker. Upon the completion of the field work, Dakota Leigh Goedel, Jessey C. Reed, Jaron A. Rucker, Susan J. Pennington and Angelina M. Daniel all held internships with the Special Collections of the Camden-Carroll Library and conducted data management on the collection. Other students from Morehead State University's public history program, including Joshua D. Baker, Hannah R. Baldwin, Michaela D. Barbee, Jacob L. Cornett, Austin J. Crouch, Angelina M. Daniel, Jonathan F. Dean, Margarete C. Dearfield, Shawn D. Dixon, Claire F. Donaldson, Johnna B. Dorn, Lydia M. Keller, Caroline C. Lykins, Daniel A. Meritt, Luke Morehead, Lakin D. Mullins, Susan J. Pennington, Kelsey Randolph, Ellan S. Ryan, Timmy A. Smith, Triston Stone, and Emily C. Whetzel were involved with the analysis of the artifacts.

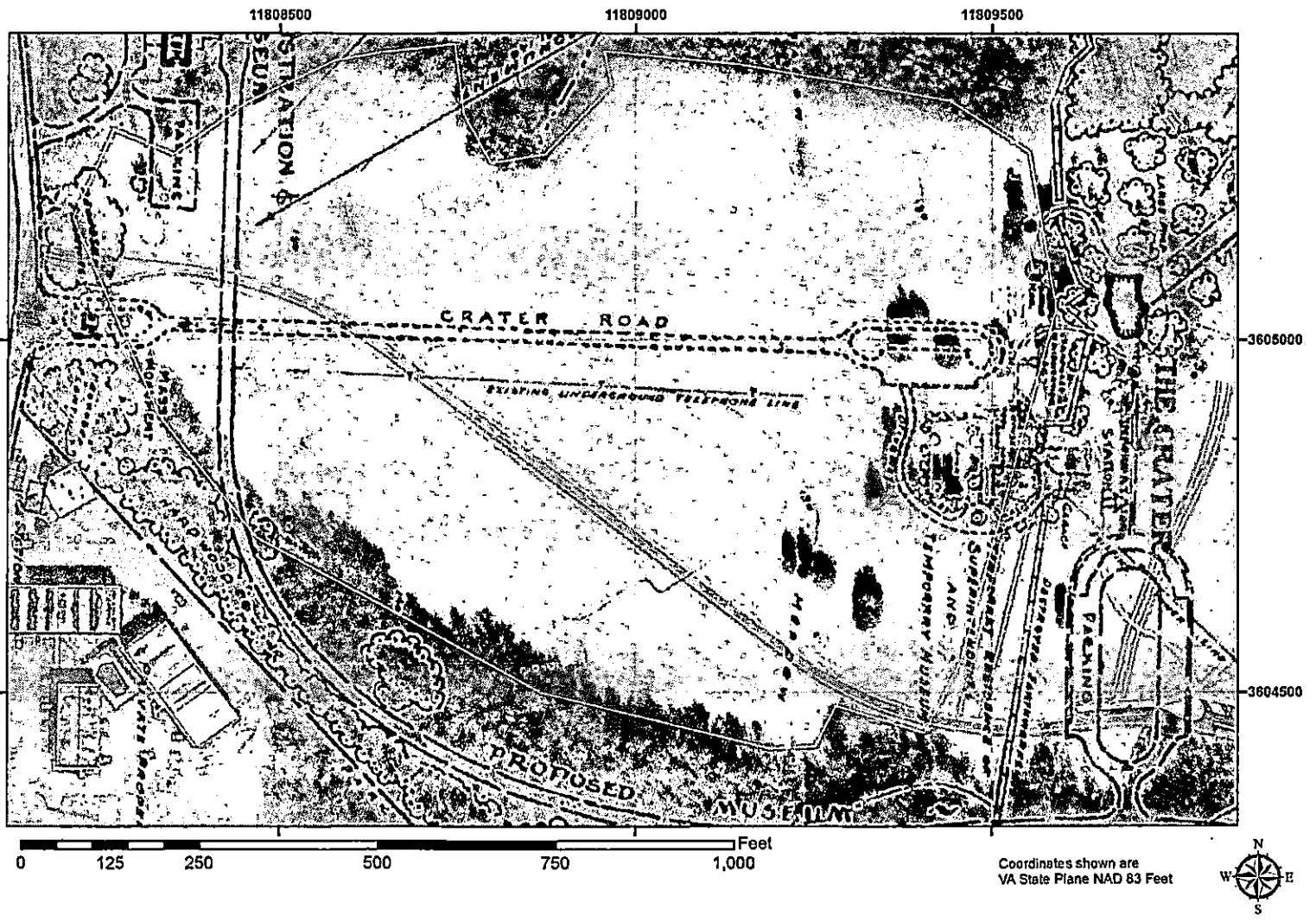
3D model

PROJECT GOALS AND SUMMARY

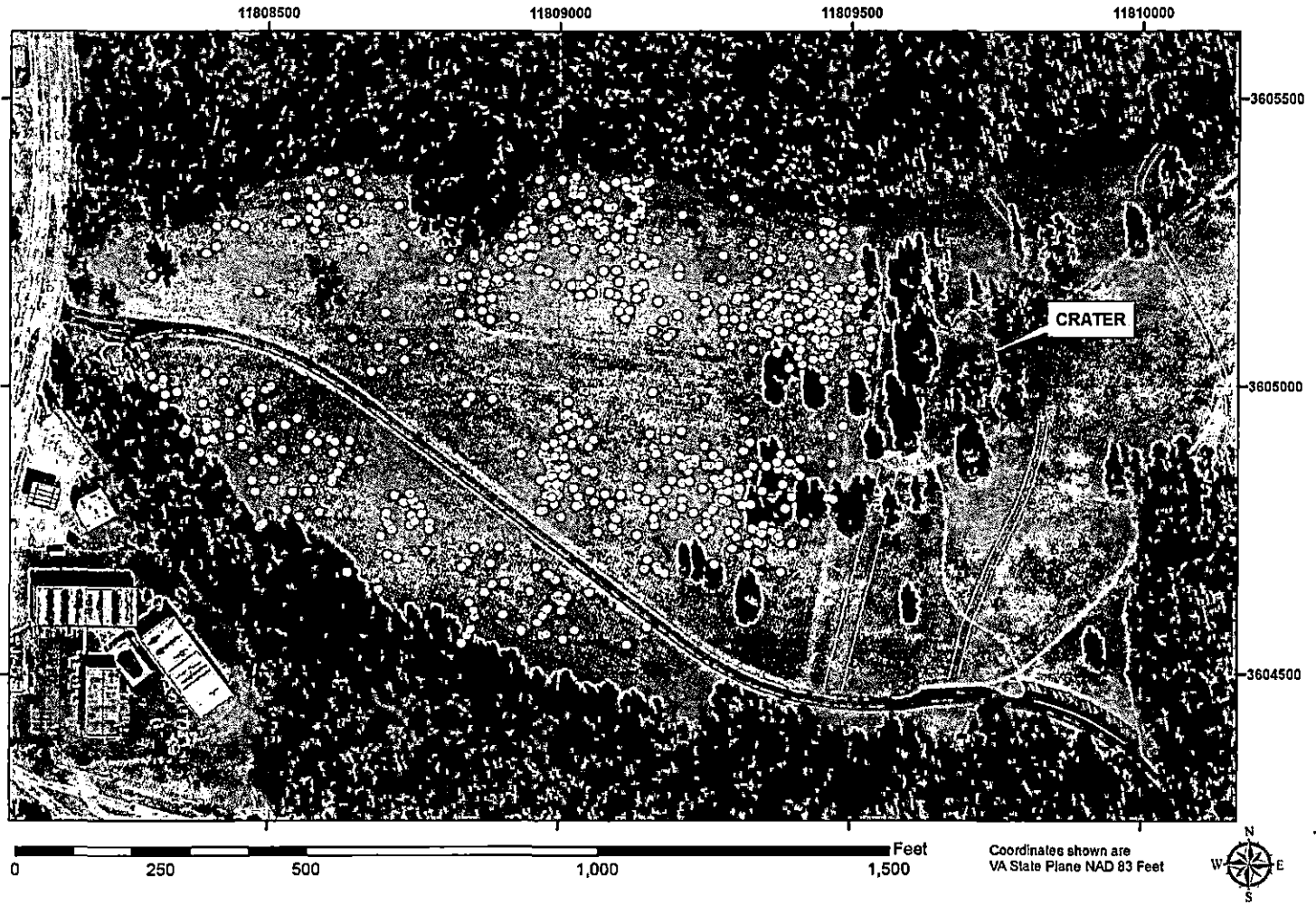
The Project area stayed within the confines as demarcated within the archaeological permit. This area is defined as the area west of the western perimeter of the Crater, as demarcated by the path that takes visitors around the Crater itself. The eastern boundary of the project area was defined by the Jerusalem Plank Rd. The northern boundary of the Project Area was the wooded area known as Elliott's Salient. The southern boundary of the Project Area was the tree line north of Baxter Road (see Map 1 below).

As a result of the survey, over seven hundred artifacts were located within the plow zone area (see Map 2 below). Since the area was previously used as farmland and as a golf course, the territory was plowed at numerous occasions and no notable stratigraphy was noted during the course of the survey. In keeping with the survey parameters, all identified features were simply noted and not excavated. The four features include: 1) an unexcavated pile of bricks, 2) an unexcavated post-Civil War midden, most likely associated with the golf course, 3) a previously unreported sewer line collector, and 4) a water line.

PETERSBURG CRATER ARCHAEOLOGICAL SURVEY WITH 1940 OVERLAY



PETERSBURG CRATER ARCHAEOLOGICAL SURVEY - ALL ARTIFACTS



MAP 2 - ARTIFACT LOCATIONS AND FEATURES

EARLY SITE HISTORY

Native Americans used the area of what is today Tidewater, Virginia as early as the Paleolithic. By the time of the arrival of the Europeans, the area around Petersburg was within the boundary of the Powhatan Confederation. This was an Algonquin speaking group, who inhabited the region for nearly 300 years prior to the arrival of British Colonist. The confederation consisted of an interwoven conglomeration of villages, which answered to a central King (Rountree 1989).

English settlers appear in the area by 1643, when they establish Bristol Parish. The construction of Ft Henry at the Falls of the Appomattox River spurred the development of Petersburg, first as a focal point for trade and later as a tobacco warehouse center (Oberseider and Savery 1995:6). By the early 18th century, two towns appear in the area, Petersburg and Blandford (Wallace 1983: 1). Blandford Church, built between 1734 and 1737, is the oldest standing structure in the city.

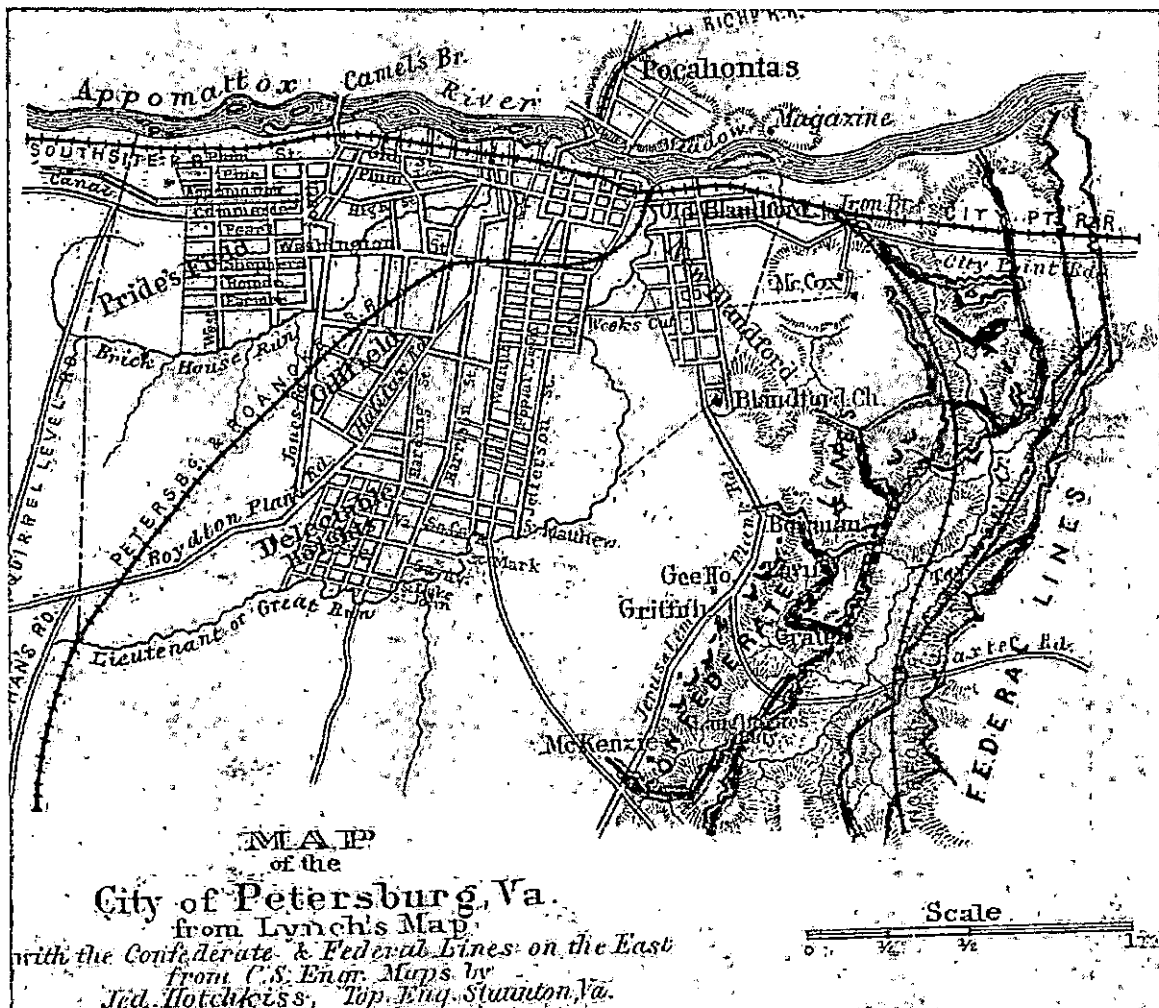
During the American War of Independence, Major General William Phillips and Brigadier General Benedict Arnold, now in service of the British crown, captured Petersburg on 25 April 1781. During the Battle of Petersburg, also known as the Battle of Blandford, the American forces retreated to Richmond and the British occupied the city (Wallace 1983:2). On 20 May Lord Cornwallis moved his force from South Carolina to Petersburg and took command of all the crown forces in the area (Johnson 1881: 28). The British forces then moved to Williamsburg and Yorktown.

Though devastated by the British occupation, the city continued to grow and develop as a central location. During the War of 1812, a volunteer company of about 100 men took the name Petersburg Volunteers and fought in the defense of Ft Meigs in northern Ohio (Ryan and Wallace 2004). Following the War of 1812, agricultural goods, primarily tobacco, cotton and grain, continued to flow through the city and locally manufactured goods, included iron cast in the city's foundries, were shipped by boat and later, by rail (Wallace 1983: 4).

In the 1800s, the city had one of the largest population of Free Blacks in the United States. Most of the Free Blacks in Petersburg lived in a section of town known as Pocahontas (Oberseider and Savery 1995: 10). The city's First Baptist Church is the

oldest African American congregation in the United States (Oberseider and Savery 1995: 78).

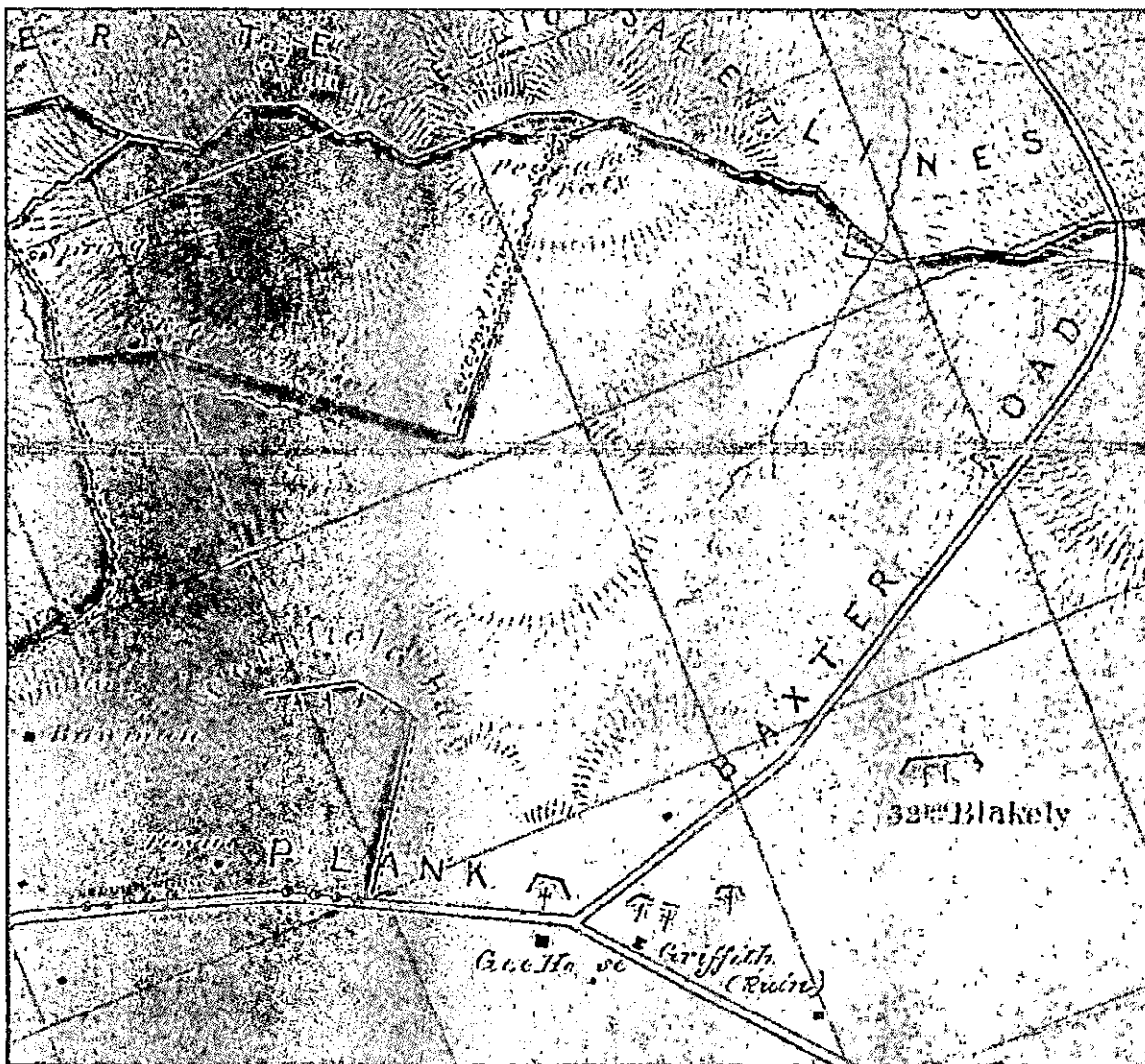
In 1861, when Virginia seceded from the Union, Petersburg was a vital component in the regional economy. The city's manufactures provided the Confederate forces with cannons, knives, swords, gunpowder and rope (Wallace 1983: 7). After the failure of McCellan's Peninsula Campaign, the city began to plan for a Union attack. A series of defenses, known as the "Dimmock Line", so named for the Confederate engineer who designed them, ringed the city. These lines were built by African-American slaves and stretched for 10 miles around Petersburg (Wallace 1983: 8).



MAP OF THE CITY OF PETERSBURG, VA FROM LYNCH'S MAP, 1867, LIBRARY OF CONGRESS

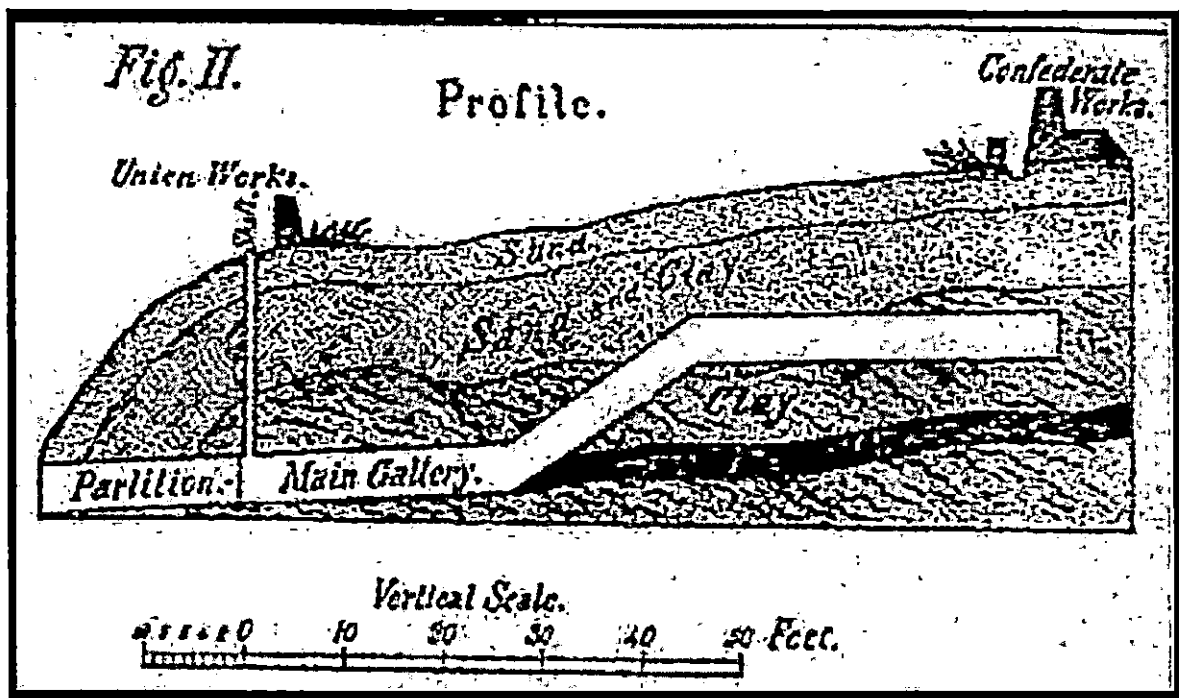
HISTORICAL BACKGROUND

The Battle of the Crater was part of the last major offensive of the war. Following the Overland Campaign, the General Lee was entrenched around the capital of the Confederacy. The Union Army under the command of General Grant turned its attention towards Petersburg, which served as Richmond's last major railroad hub and source of supplies. The initial assault on Petersburg was unsuccessful and Lee began to significantly re-enforce Petersburg's defenses. Grant maintained pressure on the Confederates and initiated what was to become an eight-month siege of Petersburg.



FRAGMENT OF A SKETCH OF CONFEDERATE LINES AT PETERSBURG
JEDEDIAH HOTCHKIS COLLECTION, 186-, LIBRARY OF CONGRESS

Attempting to avoid a lengthy siege, Grant searched for alternatives to quickly capture Petersburg. Major General Ambrose Burnside of the Ninth Corp proposed such an alternative. Under Burnside's command was Lt. Colonel Henry Pleasants, a former mining engineer, who commanded the 48th Pennsylvania Infantry Regiment. This unit and its commanding officer had worked in the mines of Pennsylvania and had considerable experience in working underground (Burbank 1898: 283). Pleasants proposed a plan to tunnel underneath the Confederate works and place enough explosives to blow a hole in the defenses. The Union would then assault the gap in the line and make for the heights above the Confederate defenses, known as Cemetery Hill, and then from there advance and capture Petersburg. Major General George G. Meade opposed the plan and reduced the amount of powder from the twelve thousand pounds of powder called for in the original proposal to eight thousand pounds (Burkhardt 2007: 160-1). The plan called for Pleasants' men to tunnel nearly 130 yards and place the explosive charge beneath a salient in the defenses occupied by Confederate troops under the command of Brigadier General Stephen Elliot. Burnside enacted Pleasants' plan on 24 June.

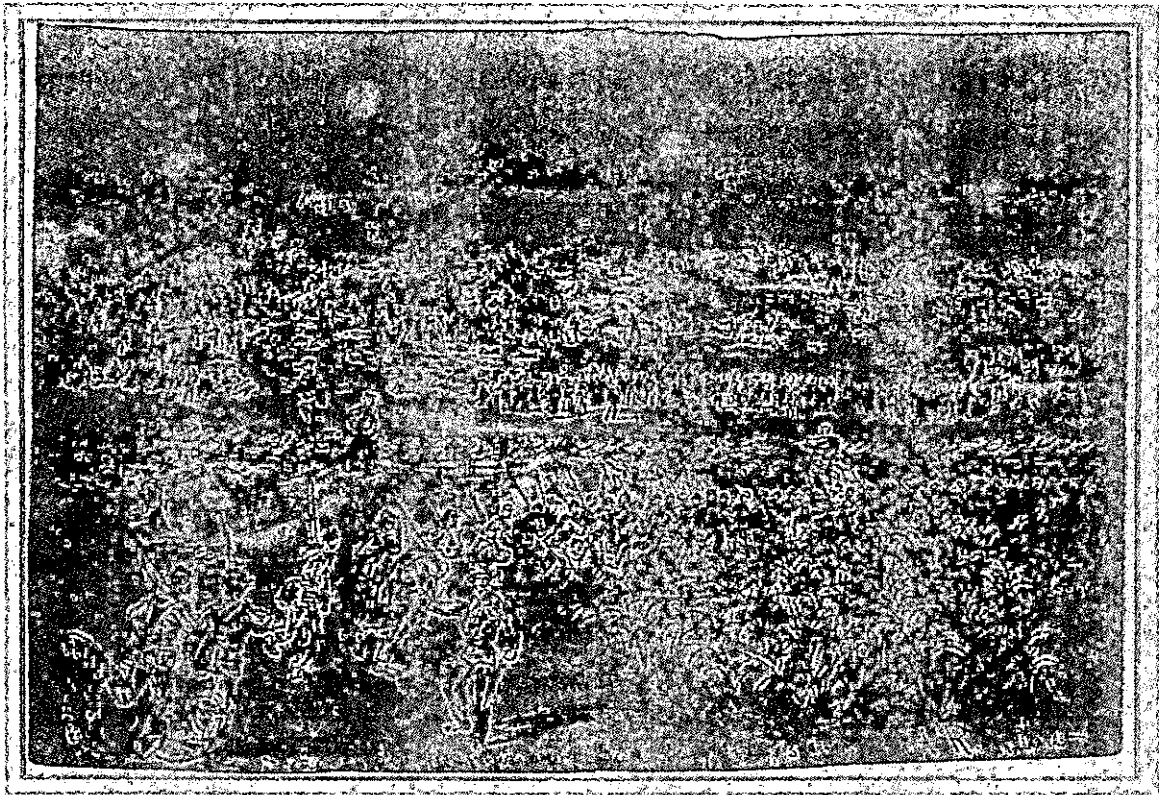


FRAGMENT OF A SKETCH OF CONFEDERATE LINES AT PETERSBURG
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At the same time that the 500 ft. long gallery underneath no man's land was being constructed, Edward Ferrero's nine regiment strong Fourth Division was chosen to spearhead the assault. Burnside specifically chose the Fourth Division as it was one of the most fresh and eager units under his command. Burnside picked the Fourth Division precisely for its lack of combat experience, believing that veterans would attempt to remain under cover (Cavanaugh and Marvel 1989: 17). In the weeks prior to the assault the men of the Fourth Division rehearsed and drilled for the assault on the breach. Confederate forces caught onto the Union mining efforts and dug countermines in an attempt to locate it, but to no avail. On 23 July, Pleasants' mine was completed.

On 29 July, the day before the mine was set to explode, General George Meade ordered Ferrero's division removed from leading the attack. Meade communicated to Burnside that Grant had agreed that black troops should not be used in favor of more experienced troops (Cavanaugh and Marvel 1989: 21). A few months later when testifying to Congress, Meade stated that he did not believe in the ability of the black regiments (Hess: 56). Brigadier General James Ledlie's worn First Division was chosen to lead the assault.

At 4:44 AM on 30 July 1864 Union miners successfully detonated 8,000 pounds of gunpowder beneath Elliott's Salient, where Pegram's Battery was positioned. Guns and men were thrown in all directions by the explosion. The resulting crater was 150-200 ft. long, 60 ft. wide, and 30 ft. deep. The magnitude of the blast stunned both sides and nearly three hundred Confederate soldiers were immediately killed by the blast (Axelrod 2007: 123). The Confederates were completely taken by surprise but it took almost an hour before the Union troops began to exploit the gap. General Ledlie, who remained in a bombproof rather than accompanying his men, had failed to properly inform his troops of the battle plan for assaulting the crater (Burbank 1898: 285). The soldiers of the First Division failed to exploit the hole in the Confederate line and many of the battle fatigued Union troops sought shelter in the Crater rather than charging around it.

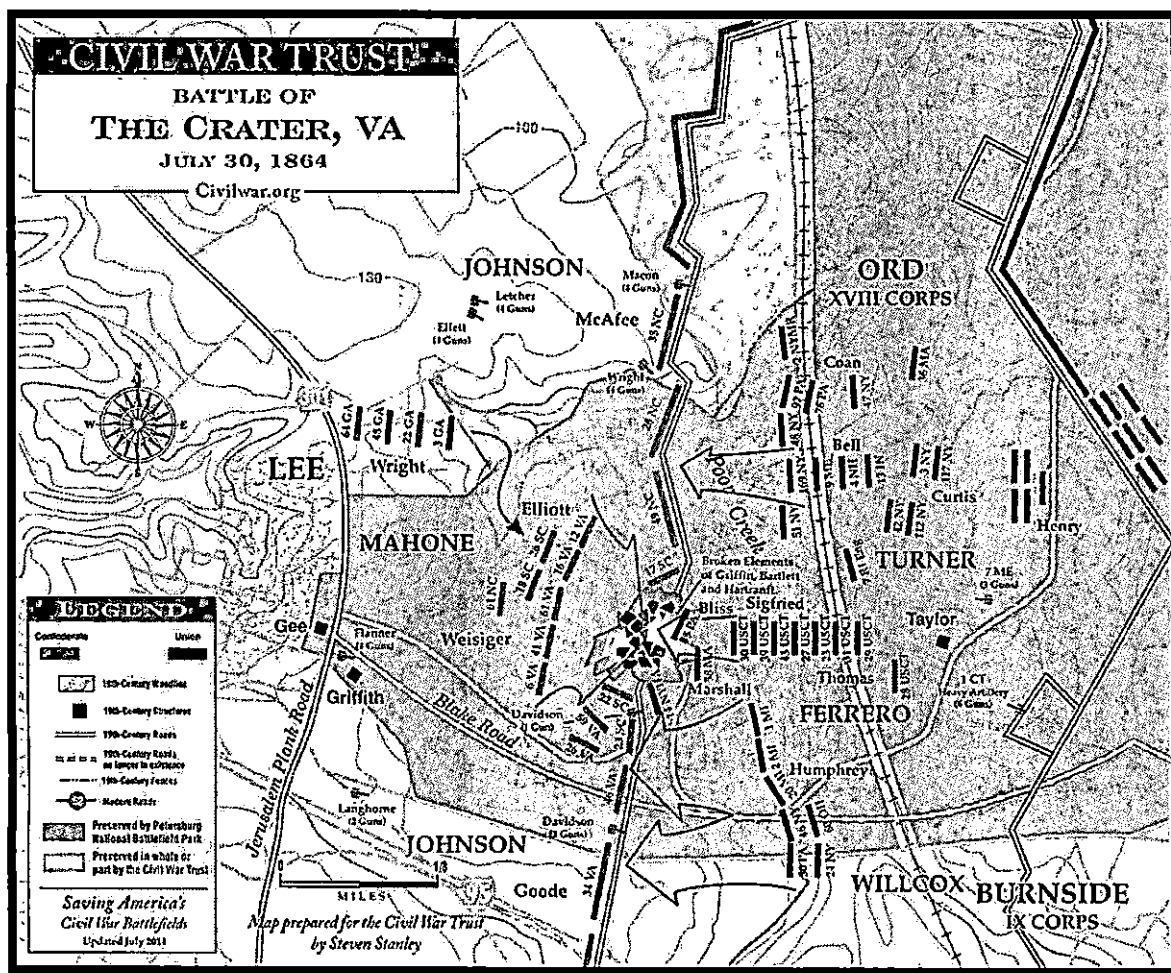


SCENE OF THE EXPLOSION SATURDAY JULY 30th
ALFRED R. WAUD, 1864, LIBRARY OF CONGRESS

Confederate artillery began to fire upon the Union troops. Among the first Confederate officers to respond to the Union advance was John Haskell of South Carolina, who brought with him two light batteries up the plank road and began to shell the enemy directly. Other Confederate batteries were also brought into action. According to John Wise, an officer in Bushrod Johnson's command, "From our ten-inch and eight-inch mortars in the rear of the line, a most accurate fire was opened upon the troops in the breach; and our batteries to the north and south began to pour a deadly storm of shell and canister upon the crowded masses" (Wheeler 1991: 283).

Haskell's position was exposed to the "batteries and sharpshooters of the enemy" and he "darted into the covered way to seek [Brigadier General Stephen] Elliot and implore an infantry support for his exposed guns. Elliot, responding to his appeal, was severely wounded as he attempted, with a brave handful of his Carolinians, to cover Haskell's position" (Wheeler 1991: 283).

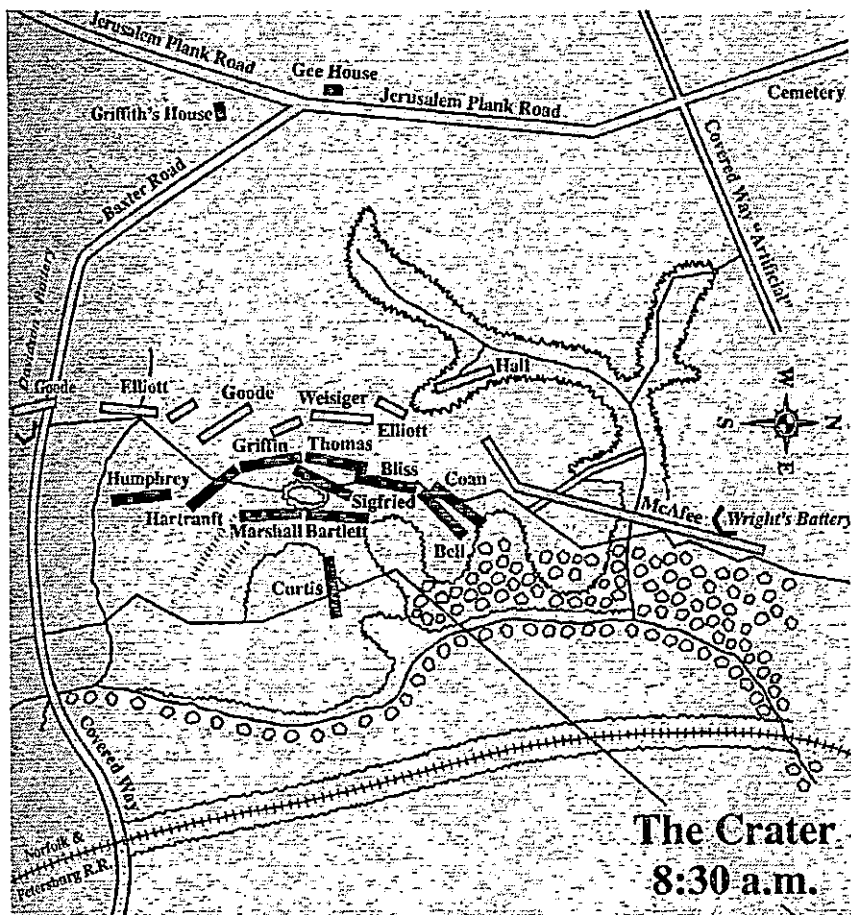
When Elliot was wounded, Major General Bushrod Johnson took command of what remained of Elliot's troops. Confederate troops then reformed and fired down on the Union troops, halting their initial advance. Confederate artillerymen also were able to redirect their fire and bring fresh guns to bear on the advancing Union forces. More Union troops were fed into the assault. Orlando Wilcox's Third Division followed Ledlie's troops but they also were halted at the Crater. Only small portions of Wilcox's men successfully passed to the left of the Crater to continue their assault (Cozzens 2002: 550).



FRAGMENT OF A SKETCH OF CONFEDERATE LINES AT PETERSBURG
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By 8:00 AM, Ferrero's Union forces advanced and engaged Confederate forces along the Crater. While under heavy fire, the leading two regiments of the Fourth

Division were successful in making their way through the confusion and turned back part of the Confederate defensive line, capturing upwards of 250 men in the process. According to Union observer Regis de Trobriand, black troops also captured a flag and recaptured a Union one (Wheeler 1991:284). Confederate works were captured, including part of a sheltered way and a section of trench (Schmultz 2009:217,218).



FRAGMENT OF A SKETCH OF CONFEDERATE LINES AT PETERSBURG
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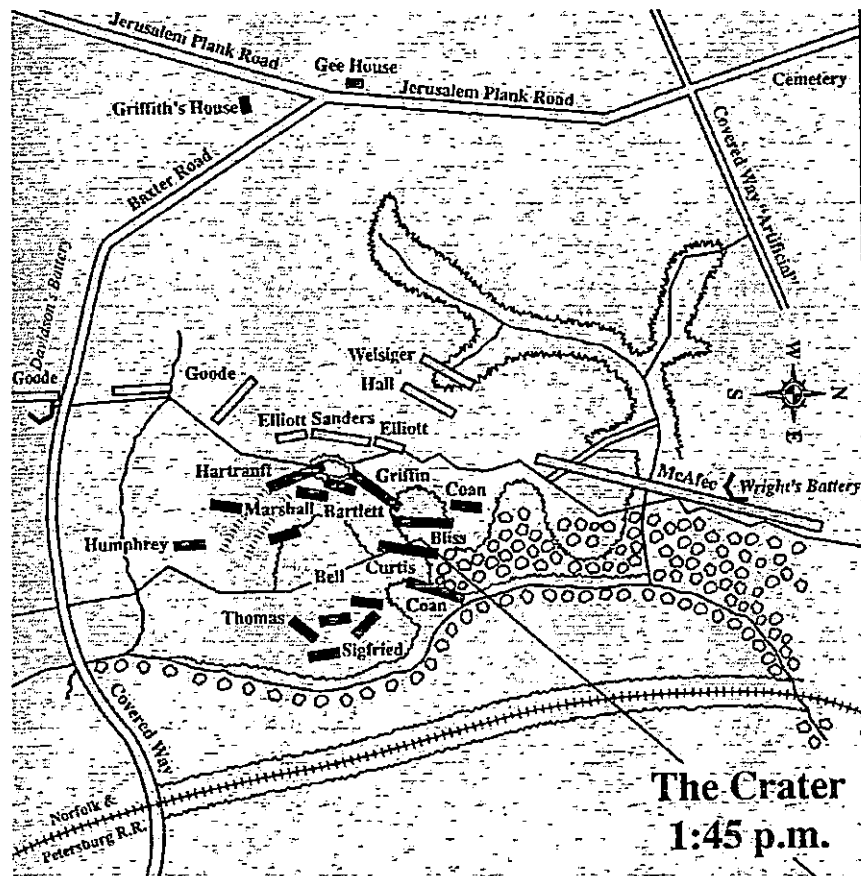
From early in the attack, it was clear that additional Confederate troops were needed. Accordingly, Col. Venable of General Lee's staff requested that General William Mahone send two brigades from his division to contain the enemy. To this General Mahone replied that "I can't send my brigades to General Johnson, I will go with them myself" (Wheeler 1991:283).

Mahone's men made their way up the covered way which led to the rear of the Confederate line covering the Crater (Wheeler 1991:283-4). Mahone's two brigades deployed in a ravine about two hundred yards west of the Crater (Lykes 1951:21). Around 9:30 AM, "eight hundred heroes rushed into the [captured Confederate] trench ... and slaughtered hundreds of whites and blacks, with decided preference for the Ethiopians" (Wheeler 1991:284-5). The initial Confederate assault was successful but the Union troops were able to maintain a fifty-foot section of the trench, near the Crater (Wheeler 1991:285).

FRAGMENT OF A SKETCH OF CONFEDERATE LINES AT PETERSBURG
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The second Confederate assault, launched at approximately 10:00 failed to drive off the Union troops. Confederate artillery continued to bombard the Union position. In total, between 9:30AM and 1:00PM at least four Confederate counterattacks were launched to deprive the Union forces of regaining any momentum (Sunderow 1997: 220). Brutal close quarters fighting left these brigades disorganized and, with difficulties reforming their line, the Union troops fell back into the Crater (Cozzens 2002: 51).

The sight of black troops participating in the battle enraged Mahone's men and they gave them no quarter. Confederate soldiers killed black soldiers who were either wounded or retreating. Black troops, who successfully surrendered, were also killed by Confederate troops while being taken to the rear. After the war, some Confederates recorded of their actions. One Confederate of the 46th Georgia stated that "the Bayonet was plunged through their hearts & the muzzle of our guns was put on their temple & their brains blown out" (Levin 2012:27). According to Colonel Weld of the 56th Massachusetts, he noted that when the enemy was taking him to the rear, three rebels shoot and kill a black soldier walking ahead of him (Burkhardt 2007: 167).



FRAGMENT OF A SKETCH OF CONFEDERATE LINES AT PETERSBURG
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Shortly after 1:00 PM the Confederates rushed the Crater and began slaughtering the United States Colored Troops. A white flag was raised by the Federal troops and the majority of surviving Union soldiers attempted to flee back to their lines (Wheeler 1991:285). Black troops were specifically targeted and white troops were generally spared. Mahone's men chanted "Spare the white man, kill the nigger!" (Slotkin 2009: 289). The pit was covered with blood so thick that it "collected in puddles" (Burkhardt 2007: 169). By 2:00 PM the firing died down and the captured Federals were taken back to Petersburg.

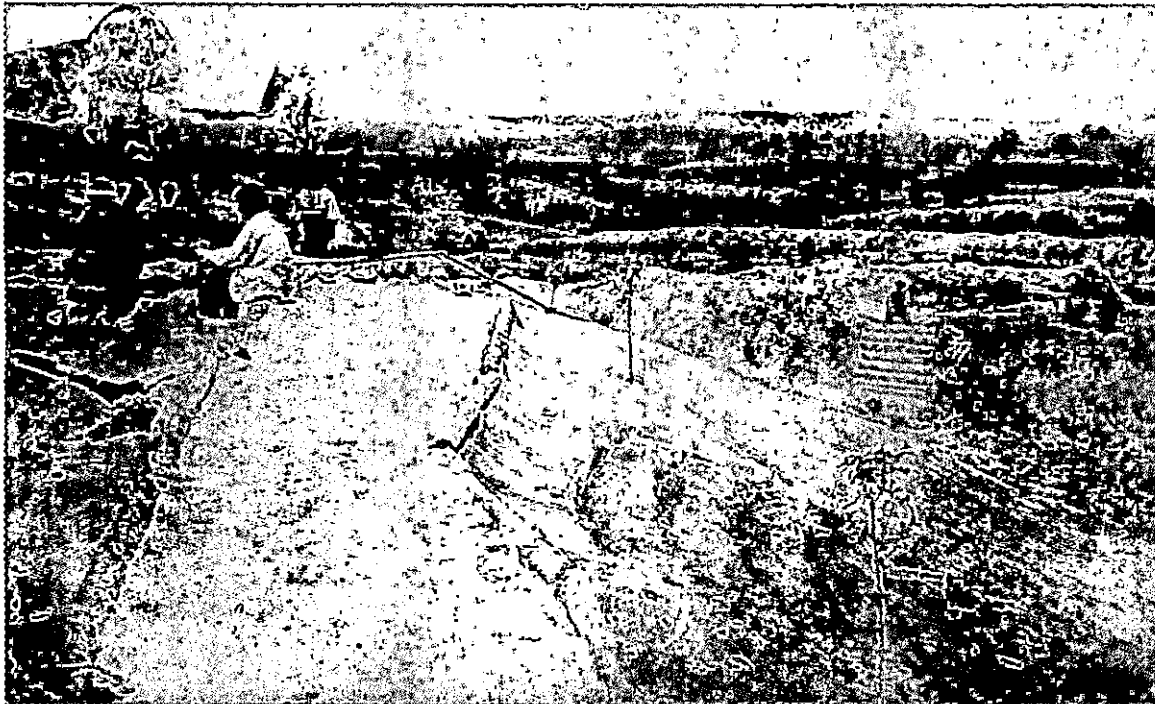
On 1 August, both sides agreed to a three-hour armistice to bury the dead. According to Confederate William Miller Owen, a long trench was dug equidistant between the lines and "Negro prisoners were made to carry the dead bodies into the trench and throw them in" (Wheeler 1991:286). As this work continued, the supervising Union and Confederate officers drank lemonade and exchanged pleasantries.

The butcher's bill for the Battle of the Crater is estimated to be around 7,000 men. Union casualties numbered around 5,000 with over 450 killed, nearly 2,000 wounded, and 2,000 captured or missing. These numbers were probably much higher, with many of the dead being listed missing. Confederate casualties, including the initial explosion and Mahone's counterattack, totaled close to 1,500. Upon hearing that the assault was a failure, Grant considered the battle to be a disaster as well as the "saddest affair I have witnessed in this war" (Simon 1984: 361). The battle of the Crater proved to be an unsuccessful attempt to produce a quick end to the siege and the war. The Richmond-Petersburg Campaign continued until March 25, 1865 when Lee's thin and weary defenses were finally overcome. He surrendered less than three weeks later at Appomattox Courthouse on April 9.

SITE HISTORY AFTER 1865

With the War over, William H. Griffith returned to his farm but was unable to resume his previous profession. The family house had burned in the earliest days of the siege and “he could only afford to build a small rude cabin” (Cavanaugh and Marvel 1989: 112). In 1868 a visitor wrote, “There is still a vast hollow in the earth, though the look of the place has changed in consequence of the falling in of the sides. Human bones were still lying about; shreds of uniform and cartridge-pouches and bayonet scabbards, some of them scorched and curled up as with fire” (Macrae 1870: 190).

Capitalizing on the tourists who passed by to view the Crater, Mr. Griffith fenced off the site of the explosion and charged an admission fee of twenty-five cents (Kinard 1995:80). He soon added a relic shop and added flagstone walkways to the Crater (Cavanaugh and Marvel 1989: 112). A few years later, as the tourist business continued to grow, Mr. Griffith built the Crater Saloon. To provide better access to the Crater itself, a series of steps were dug into the pit. Note the skulls and the unexploded ordinance on the lip of the Crater in this circa 1870 photograph.



CRATER IMPROVEMENTS FOR TOURISTS

<http://civilwartalk.com/threads/veterans-of-the-crater.98225/> accessed 29 May 2015

A wide range of visitors visited the site, including former military veterans and an ever increasing number of upper and middle class Northerners who travelled south for health reasons. A luxurious hotel in Petersburg, the Jarratt, published a guide for visitors to help them tour the battlefield. After the death of William Griffith in 1873, his son Timothy R. Griffith operated the farm until his death in 1903 (Levin 2006: 8).

Memory of the Battle of the Crater was popularized by former Confederate General William Mahone. A railroad developer after the war, Mahone used his war time legacy to further both his political and economic career. In 1869, Mahone commissioned John Eldar, a former mapmaker, to paint a canvas that depicted the Virginia Brigade destroying the enemy. In the dramatic painting, *The Battle of the Crater*, Confederate troops are heroically depicted putting an end to the Union advance.

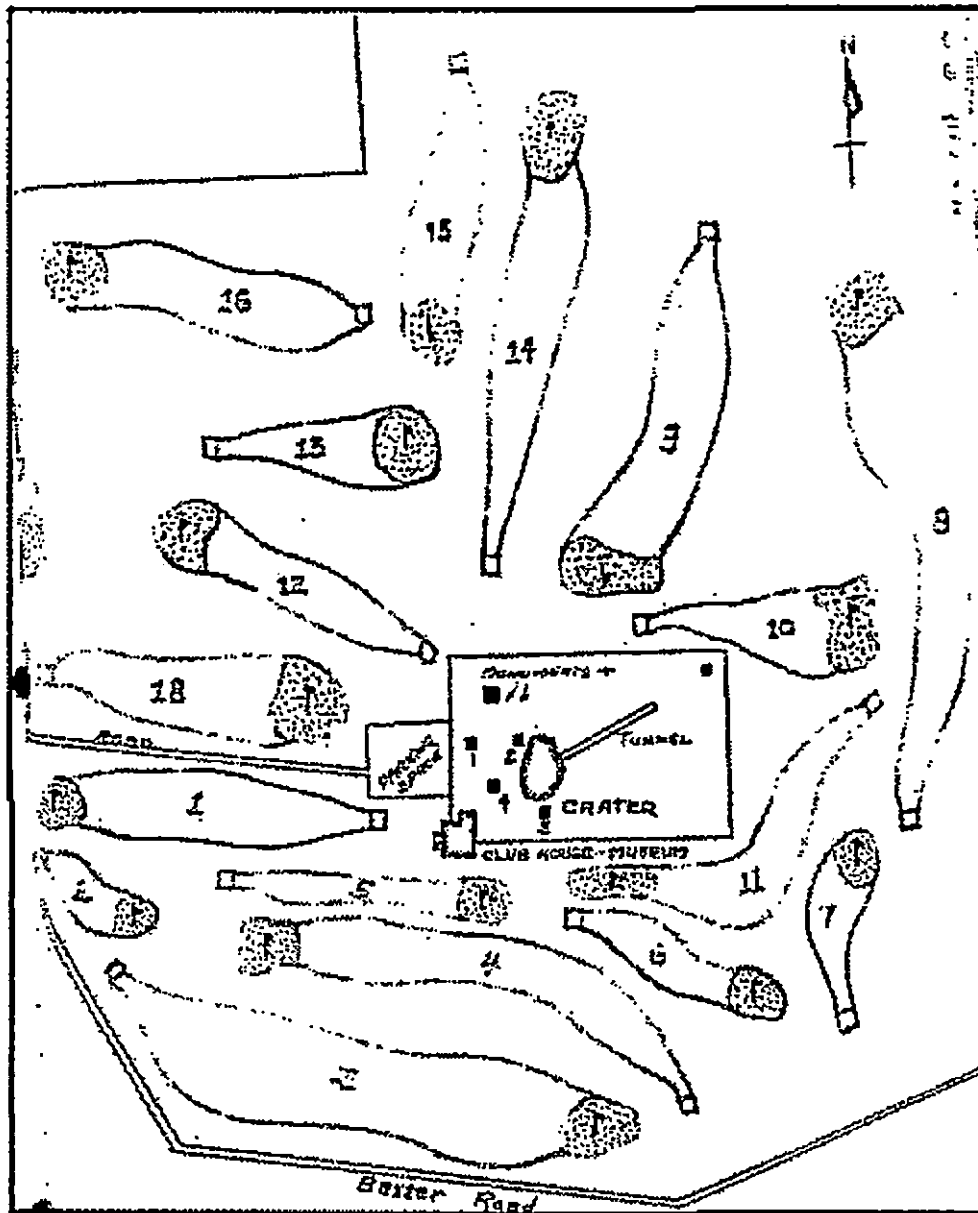
In 1875, 1876 and 1877, veterans from Mahone's Brigade met at the Crater. During the first meeting of the Memorial Association of Mahone's Old Brigade, the general was voted as the first president (Levin 2012:43). In the Confederate reunions that followed, speeches were given and the men marched in uniforms and carried flags. However, Union troops also came to the Crater. In 1885, Union veterans from Pennsylvania toured the Crater and held their business meeting on site (Levine 2012:88). A photograph from 1887 shows veterans from the 57th regiment, along with William Malone, at the Crater (Levine 2012:89).

In 1903, the first reenactment of the Battle of the Crater took place. Following a parade through Petersburg, the veterans followed the Jerusalem Plank Road and gathered in the ravine from which the brigade made its charge (Levin 2012:69). There, in front of an estimated crowd of 20,000, the old soldiers charged the Crater, which was defended by five companies of the Seventieth Regiment and cadets from a military school (Levin 2012: 69-70). For thirty minutes both artillery and infantry fired at each other and after the event, each old soldier received a solid silver medal.

As the economic fortunes of Petersburg began to decline at the beginning of the 20th century, a number of attempts were made to develop historical tourism. Most of these grand endeavors failed, but various monuments were erected on the battlefield. In April 1924, Congressman Patrick Dewey introduced a bill that would create a commission which would study the feasibility of organizing the battlefields for tourism

and military study (Levin 2012:97). The bill passed Congress and in July 1926 President Coolidge signed “An Act To Establish a National Military Park on the Battlefields of the Siege of Petersburg” (Federal Law PN 467-69 HR 7817) (Wilson 1976: 6).

The area around the Crater was not originally included in the Petersburg National Military Park for in 1925, a commercial enterprise, the Crater Battlefield Association, acquired the land. The Association established a visitor center near the Crater and constructed an 18-hole golf course on the surrounding grounds.



PLAN OF GOLF COURSE
FROM BROWN 2000: 8

For a small fee, the Golf Course allowed tourists to visit the Crater. To further capitalize on the Civil War battlefield, the Association also had re-dug the mine tunnel and electrically illuminated it for visitors (Wilson 1976: 5).



VIEW OF THE CLUBHOUSE
PHOTOGRAPH CURTESY OF JULIA STEELE

In 1932, the Petersburg National Park was dedicated and in 1936 the National Park Service took over stewardship from the War Department. That same year, the NPS purchased the holdings of the bankrupt Crater Battlefield Association and acquired the Crater battlefield area.

In April 1937, 3,000 men took part in a re-enactment that involved the 1,200 U.S. Marines and 650 cadets from the Virginia Military Institute. Army and National Guard units also took part in the reenactment. It has been estimated that 50,000 people came to

see the reenactment of the Battle of the Crater (Wilson 1976: Figure 4). To facilitate the spectators, a stand was constructed that overlooked the Crater Battlefield.



VIEW OF VIEWING AREA UNDER CONSTRUCTION
PHOTOGRAPH CURTESY OF JULIA STEELE

Following the 1937 reenactment, the old Crater Battlefield Association Clubhouse was converted into a museum. The original master plan for the park, drafted in the early 1940s, was not implemented and a second master plan was created in the 1962 (Wilson 1976: 7). The park used the existing visitor center until 1966 when the present day Eastern Front Visitor Center was built.

PREVIOUS EXCAVATIONS

Since 1864, a number of excavations were conducted on the Crater Battlefield. In September 1865, John T. Trowbridge visited the battlefield and noted a “Negro man and woman” digging for bullets in the vicinity of the Crater and was told that “they got four cents a pound for them in Petersburg” (Levin 2012:36). Lieutenant Colonel James Moore, who was tasked with recovering the Union dead from the siege, undertook major excavations. After acquiring grounds for a cemetery, Moore sent out his 100 men in a line five feet apart to look for graves. At the Crater, Moore’s men found 669 graves (Cavanaugh and Marvel 1989: 112). Others also found graves and Mr. Griffith “unearthed a mass grave of Negroes” (Cavanaugh and Marvel 1989: 113). In 1928 and 1931, the remains of Union troops were uncovered around the Crater and reburied (Levin 2012:155).

According to the park supervisor’s reports of 1937 and 1938, two archaeological projects were conducted in 1937 by Foreman, a CCC engineer and Hargrave, a historian (Wilson 1976: 8). At least part of their work focused on the mine entrance. Though some photographs of their research exists, no archaeological reports from this fieldwork are on file with the NPS.

In 1958, NPS historian T. J. Harrison conducted work at the site and located his test area relative to a monument that had been removed by 1976. Wilson reports that no report was found for this work (1976: 8).

In 1962, two NPS archaeologists, John Griffith and Rex Wilson dug a 6 by 9 foot test unit. In the process of their work, the archaeologists found the original tunnel and some of the 1937 work (Wilson 1976: 8).

In September and October 1975, Charles I. Wilson of Historic Conservation & Interpretation, Inc. was contracted to conduct a research project on the Crater (Wilson 1976). His work was focused on three areas: Area A explored an area where part of the tunnel had recently collapsed, Area B looked at the conjectural Crater end of the tunnel and Area C was a series of small auger holes sunk at across the Crater. As a result of these excavations, the location of the entire tunnel was determined and it was found to be in extremely poor condition.

In the summer of 1999, archaeologists from the University of Maryland excavated part of the Federal picket line near the Crater (Brown 2000: i). Four units were sunk and archaeologists excavated a seven-foot section of the Federal picket trench and features associated with the Battle of the Crater. Several features were noted beneath the plow zone and individual battle related artifacts were found in the plow zone layer. The low number of recovered military artifacts from the trench areas is possibly attributed to Mr. Griffith, or others, who may have mined the trench for relics and scrap metal before they filled it in (Brown 2000: 54).

More recently, Julia Steele, the park archaeologist at Petersburg National Battlefield, excavated a small section of the battlefield near the relocated Massachusetts Monument. The monument was originally located near the Crater, but was moved to the edge of the battlefield near the Jerusalem Plank Road. According to the archaeologist, quantities of spent ordinance were located in the area, which suggested that the area may have been involved in the Battle of the Crater (Steele: pers. comm., July 2014).

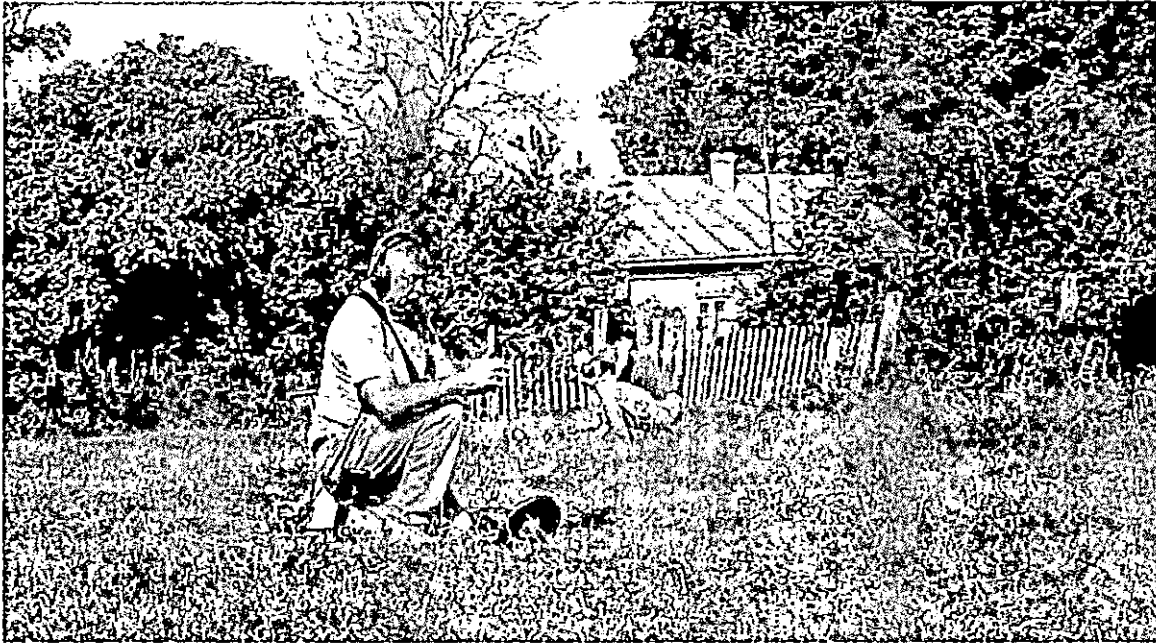
RESEARCH DESIGN

Throughout the world, archaeologists have a long-standing tradition of studying military conflicts. Battlefield studies, such as Harrington's work at Ft. Necessity, the scholarship done by Thordeman, Noörlund and Ingelmark at Wisby, and the research conducted by Hanson and Hsu at Ft. Stanwix all share a trait of highlighting the multi-disciplinary nature of studying past human conflict. Yet as battlefields tend to occupy large tracks of land and artifacts are generally not distributed in depth, shovel testing, units, and trenching of areas over which large bodies of men fought for a very brief period of time have produced results that are not reflective of past human activity (Babits 2001:118). Because of the methodological limitations of excavating the thousands of square meters that compose a field of conflict, archaeologists, not surprising, focused their attention toward particular features, such as campgrounds, hospitals and burial grounds. As a result, Ivor Noel Hume, one of the founders of American historical archaeology, went so far as to state a battlefield "will have little to distinguish it, except perhaps some graves and a scatter of hardware... there can be no meaningful stratigraphy (as far as the battle is concerned) and the salvage of relics becomes the be all and end all" (Hume 1971:188).

In the early 1980s, scholarship took a significant leap forward with the archaeological survey of the Little Bighorn battlefield. Conducted by Doug Scott and Richard Fox, this pioneering work combined non-standard equipment (metal detectors) with modern survey technology. As a result of this work, scholars for the first time had a way of looking at an entire battlefield. Not only did the methodology allow for the recovery of items that were scattered over vast distances, but detailed mapping of the finds allowed scholars to plot out their distributions. Further study identified relationships between the artifacts and when combined with topography, historical maps and documentary sources, allowed for a nonpartisan analysis of the events that transpired at a particular day in 1876.

In the thirty years since the study of the Little Bighorn battlefield was published, scholars continued to expand and build on the groundbreaking success of this pioneering work. Advances in GPS systems and GIS computer technology make it even easier to

undertake a survey of a wide area. Grant funding opportunities have allowed scholars to look to at battlefields in different ways and provide a much more comprehensive way of examining past behavior.



PROF. MANDZY'S CREW WORKING AT THE 1649 ZBORIV BATTLEFIELDS
(UKRAINE)

The first question revolves around the issue of archaeological resources connected with Battle of Crater. The area of the Crater itself is demarcated on the battlefield by a circle of stones. The documentary evidence is quite clear that the explosion had left a significant hole in the ground and a comparison between the current topography and photographs taken shortly after the battle show that the area has changed significantly over the last 150 years. Much of the hole was filled in, either by natural erosion or by post battle activity. The existence of a souvenir stand near the mouth of the Crater in the 19th century, as well as the construction of a golf course in the early 20th century have all negatively impacted the archaeological resources connect with the battle. Nevertheless, as numerous battlefield survey have documented, it is difficult to completely eradicate all evidence of past fields of conflicts and the current methodology allows us to document areas and degrees of disturbance.

The second research question examines how far did the Union troops advance out

past the Crater. One account, published shortly after the war, states that “Then the division of colored soldiers, under General Ferrero, was sent forward to storm the (Cemetery) hill ... They pushed well up toward the crest, and captured some men; but they too, were soon hurled back by a heavy fire. They rallied and again advanced, when they were repulsed a second time” (Lossing 1874:352-3). A more recent scholar states that “The Federals got stuck in the five-hundred yard breach of the Confederate line” (Hess 2010:xi), “320 yards of the Confederate line north of the crater and about 150 yards south of it (Hess 2009:97). Although the Confederates were able to contain the breakthrough and later that day successfully counter-attacked, the question remains how far did the Union assault get beyond the perimeter.

FIELD METHODOLOGY

A metal detecting survey of the area was conducted between 15 and 20 March 2015 to assess the status of the cultural resources connected with the engagement and to examine how far did Union troops advance from the mouth of the Crater.

Working in teams of two, a student from Morehead State University was paired with a volunteer metal detectorist from the Battlefield Restoration and Archaeological Volunteer Organization (BRAVO). Such pairings allowed students to learn from the volunteer/skilled detectorists, many of whom have multiple decades worth of metal detecting experience.



MSU STUDENT AND BRAVO MEMBER FIND THE FIRST MINIE BULLET
OF THE SURVEY

To maintain better control of the large project area, the field was arbitrarily divided into four quadrants. The southeast, or first quadrant, was designated as the area south of the old service road that took visitors to the Crater/golf course/visitor center. As each artifact had its own particular GPS coordinates and the quadrants would not matter in the final analysis, a random tree was chosen to separate the southeast and southwest quadrants. The second, or southwest quadrant, was designated as the area due west of the first quadrant. As the park archaeologist Julia Steele identified an area which she had previously excavated near the recently moved Massachusetts monument, we included the area into our sweep but spent most of our time working in areas to the east of her project zone. The third quadrant was the area north of the old service road and to the east of the same random tree used on the previous days. The fourth quadrant included the northwest percale of the project area.

Each team swept their designated section of the battlefield. Once a metal detector registered a find, the team extracted the artifact from the ground. At the request of the park superintendent, who wanted as few artifacts retained as possible, and the park archaeologist, who wanted to collect as much information as feasible, the only items not recovered were dated items less than fifty years old. This was limited to modern (post 1965) US coins, tin foil fragments, and pull-tabs. This follows the spirit of the National Historic Preservation Act of 1966, were policy of preserving all items that are more than fifty years old. All items with no discernable date or those that were more than fifty years old were collected and processed.

All items were then placed in a plastic "zip-lock" plastic bag. Within each bag we placed an artifact card. The card contained such basic information as the date of find, its location, the excavator and a brief identification.

Battlefield Restoration and Archaeology Volunteer Organization	
bravodigs.org	
SITE: C 1	DATE: 3/16/15
NAME: TIM RENO	
DESCRIPTION: MINI BALL	

SAMPLE ARTIFACT TAG

Each artifact was individually bagged and the find spot was marked with a plastic pin flag - an 18-inch long plastic pin to which a large bright pink plastic flag was attached. Each bagged artifact was placed in the exposed hole with the pin flag going through the bag. The hole was left open for inspection by one of the archeologists for potential features or non-metallic artifacts. The team then moved on to search for more artifacts.



FIELD WITH PINK FLAGS SHOWING ARTIFACT LOCATIONS

The next step in the field procedure was to record the GPS coordinates of the find spot using a hand held Garmin GPSmap 60C GPS. In an open sky area, such as the project area, accuracy of Garmin GPSmap 60C GPS is within 3 to 4 meters. At this point the artifacts were collected and assigned a unique Field Identification Number (or *FIN*). The field numbers were based on the date and the artifact found that day – thus the 12 artifact recovered on the 13th of March 2015 would be recorded as such as 13.3.15.12. An artifact tag with the GPS coordinates was then placed in a bag with the other finds from that day's morning or afternoon session. To prevent loss of data, the artifact number was recorded on the bag and in the field notebook.

At the end of the artifact collection phase, the location of each artifact was measured using a Trimble 5600 total station laser transit with a TDS Ranger 500 data collector operated

by Michelle Sivilich, PhD. The transit has a specification accuracy of ± 2 mm at a range of 5,000 meters.



DR. MICHELLE SIVILICH PLOTTING THE LOCATION OF AN ARTIFACT

Control points for the transit work were established by Adam Baghetti, GIS/IT Specialist at Petersburg National Battlefield. He provided a copy of a 1978 survey map of a series of brass-capped concrete monuments that were set to delineate the park boundary around the crater. Note: elevation data was not measured during the 1978 survey. The format for the control point data was in Virginia State Plane coordinates in North American Datum (NAD) 1927 feet and was converted to NAD 1983 feet using Corpscon software developed by the US Army Corps of Engineers. All data was collected in this coordinate system. Control points C23 and C24 were selected as the base points for the survey since they were the only points with lines of sight that were not obstructed by trees. These points were in a ravine to the east of the crater and were used to establish a temporary control point using a two-point resection procedure. The monument for C24 was destroyed, but its location was estimated with the remaining rebar. The temporary point and C23 were used to establish additional control points in the project area. 2013 high resolution digital aerial orthophotographs and a contour data shape file of the project area were also provided by Adam Baghetti. The artifact locations were mapped onto the aerial photographs using ESRI ArcView 10.2 GIS (Geographic Information System) software for spatial relationship and KOCO analysis.

Our initial plan was to leave the excavated holes open in order to see if any stratigraphic profiles could be noted. Unfortunately, the only soil changes noted were within two features encountered during our survey. As the excavation of these features was beyond the purview of our permit, the features were noted and left *in situ*. During the survey, a total of four features were identified, including: 1) an unexcavated pile of burned bricks, 2) an unexcavated post-Civil War midden, most likely associated with the golf course, 3) a previously unreported sewer line collector, and 4) a water line.

During the course of our excavations, almost all artifacts were found within the plow zone topsoil and at a depth between 4 to 6 inches. At the weather forecast indicated rain at end of the week, we postponed the washing of artifacts until the last two days in the field. All items were washed in warm water and allowed to air dry. The absence of any noticeable humidity in the covered garage and the basement in the field house allowed for the air-drying artifacts over a 24-hour period. The artifacts underwent preliminary analysis and the data was added to an excel database. All of the artifacts were

then repacked in their field “zip-lock” bags for transportation to Morehead State University where they underwent further analysis. During this time, the artifacts were temporary housed in a secure location in the Special Collections of the Camden-Carroll Library.

OVERVIEW OF ARTIFACT ANALYSIS

As archaeological sites, battlefields are unique as they represent the actions of many individuals over great distances. For a short period of time, measured in days or even hours, combatants seek to follow a set of rules and often act in unison. Once the great fury of activity is over, the majority of the individuals leave the area, while others may be buried at the site. Archaeologically, traces of the activities that occurred on the fields of conflict are overwhelmingly found within the top few inches of the topsoil. Unlike sites that were occupied for extended periods of time, battles occurred during the course of hours, rather than days, months, years, decades, or even centuries. This lack of long term occupation results in a lack of any notable stratigraphy. Since traditional archaeological field techniques are not well suited for excavating battlefields, scholars have used metal detecting surveys to allow for a study of these specific archaeological sites.

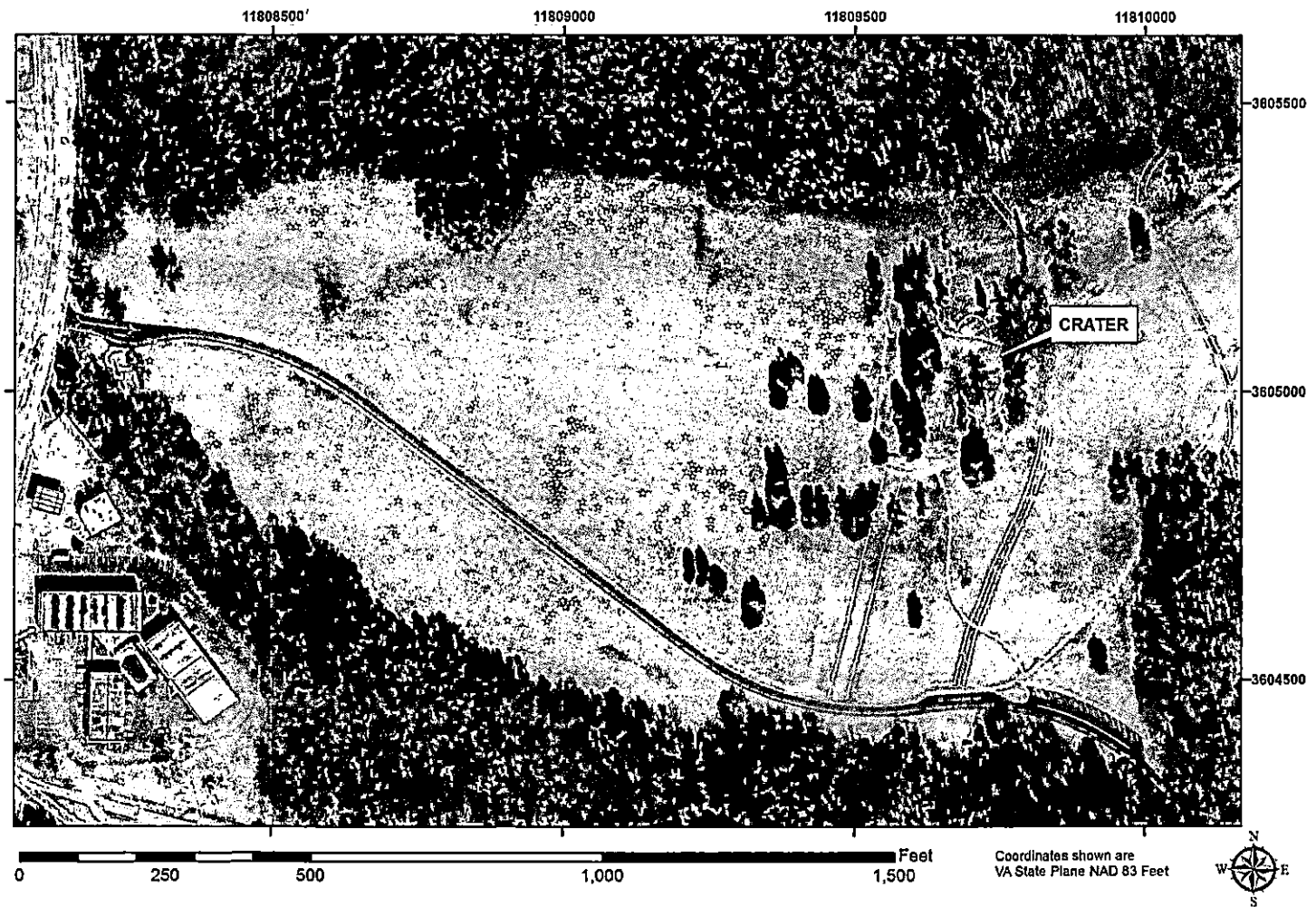
Metal detecting surveys, however, bring with them their own specifics. While the activities of a battle occurred over the course of a very short period of time, the landscape over which the engagement occurred was used for generations before and after the battle. Thus, the recovered metal artifacts from a survey document not only the material culture of the battle, but the activities of people who came both before and after the battle. Since it is not possible to use stratigraphy and the relative dating of levels to date a recovered artifact, each artifact must be evaluated on its own as to its date and possible connection with the battle. Thus there is no way currently to determine if recovered fragmentary pieces of iron, cut nails, pieces of harmonica reeds or pocket watch fragments definitively relate to the battle or were deposited in the years that followed. Though tuned metal detectorists can discriminate with some degree of accuracy between military items and “junk” metal, Sterling and Slaughter note that “all hits should be excavated for an accurate survey” (Sterling and Slaughter 2000: 318).

Some artifacts clearly date to after the battle, but their deposition at the site opens up a relatively understudied component of battlefield archaeology – commemoration of the battle. The recovery of items such as a gold plated post-civil war Virginia state seal button, child’s pin with a depiction of the character made popular by Disney, a woman’s

lipstick case from the 1950s or early 20th century 30.06 cartridges all document public commemoration at the site and forge a critical link between the events of 1864 and today.

Other types of artifacts are clearly associated with the battle itself, including fired and dropped Civil War small arms ammunition, artillery shell fragments and metal pieces from uniforms and equipment. Though such items are interesting on their own, as attested to by the large numbers of store that sell Civil War artifacts, the true value of these finds is the specific location of these items on the landscape. Ongoing studies by Glenn Foard indicate that though the location of individual artifacts may be moved through various processes, the finds themselves remain in very close proximity of where they were originally deposited (Glenn Foard, pers. comm., September 2016). Thus, the specific GPS coordinates are the most important non replicable pieces of information that such a metal detecting survey can provide. Once this information is lost, the artifacts become archaeologically irrelevant and are no different from the piles of rusted metal one can find for sale in stores in places like Gettysburg and Fredericksburg.

PETERSBURG CRATER ARCHAEOLOGICAL SURVEY - ALL CIVIL WAR RELATED ARTIFACTS



DISTRIBUTION MAP OF ALL CIVIL WAR ARTIFACTS

ARTIFACT ANALYSIS – THE BATTLE OF THE CRATER

The most common artifacts recovered during the course of the survey were three hundred and ninety pieces of dropped and impacted small arms ordinance (MAP 3). Minié bullets are the most numerous artifact type (XXX examples), but the survey recovered various types of cleaner bullets (XXX specimens), round balls (twenty pieces), Spencer ammunition (four cartridges and four bullets) and an improvised piece of small arms ordinance (one example).

Such a variety of small arms ammunition is often encountered on Civil War sites. A number of new technologies, including breach loading weapons and the growing use of cartridge cases, along with refinements of old technologies, such as the rifled barrel, resulted in a plethora of new weapons being introduced on the battlefield. As with all new technologies, some were more successful and saw were adopted on a large scale, while others disappeared. At times, adoption of new technologies has nothing to do with the inherent quality of the new item, but one of economics, political connections or even perception. The Union's superiority in manufacturing and access to raw materials also influenced the wide spread adoption of weapons, while the southern inability to field the weapons and ammunition needed resulted in the use of older materials.

Compounding the issue was that once the fighting started, the existing arsenal stocks were insufficient for the large armies taking to the field in 1861. Agents from both the North and the South purchased arms from abroad. European governments were more than happy to dump their stocks of older or inferior weapons as more modern weapons developed. Initially, agents purchased weapons that could use standard Union size cartridges, either .58 or .69 caliber (Lewis 1959:3). As the war progressed, Union buyers also purchased other weapons to simply keep from being purchased by the Confederates.

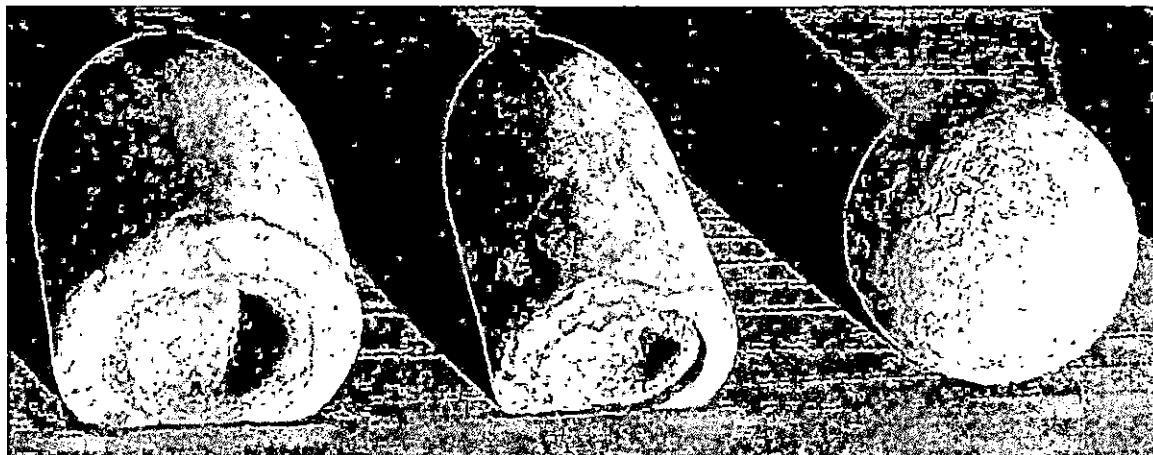
If the weapons used during the course of the Civil War were varied, the ammunition needed to make them function was even more diverse. State and Federal arsenals and depots "often made different cartridges and bullets for the same arms" (Thomas and Thomas 1996:vi). Private manufactures of firearms often produced the ammunition for their weapons, but as they may not always had the means to produce them themselves in the quantities needed, they often would turn to subcontractors.

MAP - Small Arms Ammunition

Minié Bullets

The most commonly recovered pieces of small arms ammunition during the course of this survey were Minié bullets. Minié bullets, often referred to as Minie balls, “Minni” balls, and “Minney” for the sound they make, were developed by Col. Claude-Etienne Minié to solve a century old problem. Since the Renaissance, arms manufacturers recognized that a rifled barrel significantly improved the accuracy of a weapon. However, a rifled weapon traditionally had two inherent limitations that limited their use by the military. Rifled weapons were more expensive to manufacture and in order to maximize the potential of a muzzle loaded rifled firearm, the space between the diameter of the ball and the barrel needed to be as tight as possible. However, attempt to reducing this space, known as windage, required a significant longer period to load the weapon. At a time when most armies focused on the need to quickly load a firearm, rifles saw limited use up on through the Napoleonic Wars.

In 1849, Col. Claude-Etienne Minié designed the Minié bullet. This lead bullet was cylindrical in shape and contained a hollow at its base. At this base, an iron cup or a wooden base was inserted so that when the bullet was fired, the pressure from the weapon’s discharge would force the cup forward and expand the base of the bullet, catching the grooves of the rifled barrel. This action would also serve to seal the bore and prevent the escape of gas past the bullet (Hicks 1964: 34). As a result, the bullet would spin, rather than simply bounce down the barrel of a smooth-bored musket.



British Minie bullet recovered from the Crimean War
Author’s Photograph

Several nations noted the advantages of this new weapon and Great Britain began to manufacture them at Royal Arms Factory at Enfield. Additional testing of the bullet noted that the expander plug was not needed, if the thickness of the walls of the bullet were reduced. As a result, the British developed the P-53 Enfield. This new P-53 Enfield, along with the British P-51 Rifle and the French 1847 and 1853 pattern rifles saw use during the Crimean War, where they proved to be devastating to the large densely packed ranks of Russian infantry battalions. Sent to observe the Crimean War on behalf of the United States, George B. McClellan noted a variety of advances in his report (McClellan 1857).

Although the US military had issued rifles as early as the War of 1812, the Model 1855 rifled musket was developed at the Harper's Ferry Arsenal (Edwards 1962:17). The model 1855 used a Maynard tape primer, a significant improvement over the musket caps used by both the British and French systems, but its additional cost resulted in the Model 1861 musket. Both weapons were 58 caliber, which was significantly smaller than the older 69 caliber muskets stored in national and state armories across the country when the war began in 1861. Powder residue built up after these black powder weapons were fired and soldiers complained that it was difficult to ram bullets down the barrel (source XXX ???).

Bullets for these weapons were manufactured in different facilities on both sides of the border. While soldiers could, in certain circumstances, melt lead and produce specific bullets for their particular weapon, the overwhelming majority of ammunition used in the war was made by arsenals. Lead was often compressed or modified by machines under pressure, as such a process prevented the common mis-formations that occurred, such as layering or the introduction of air bubbles, when lead was poured into molds.

Yet in spite of all attempts to standardize munitions, a significant degree of variation occurred, even among the bullets produced by a single arsenal. Excavations of the *Maple Leaf*, a steamer chartered to the US Army and sunk in April 1864, allowed for a statistical analysis of the bullets recovered from two ammunition crates. The crates were packed at two different arsenals (Watervliet and Frankford) and both included bullets of various diameters (Babits 1995). Ammunition from the Confederate blockade

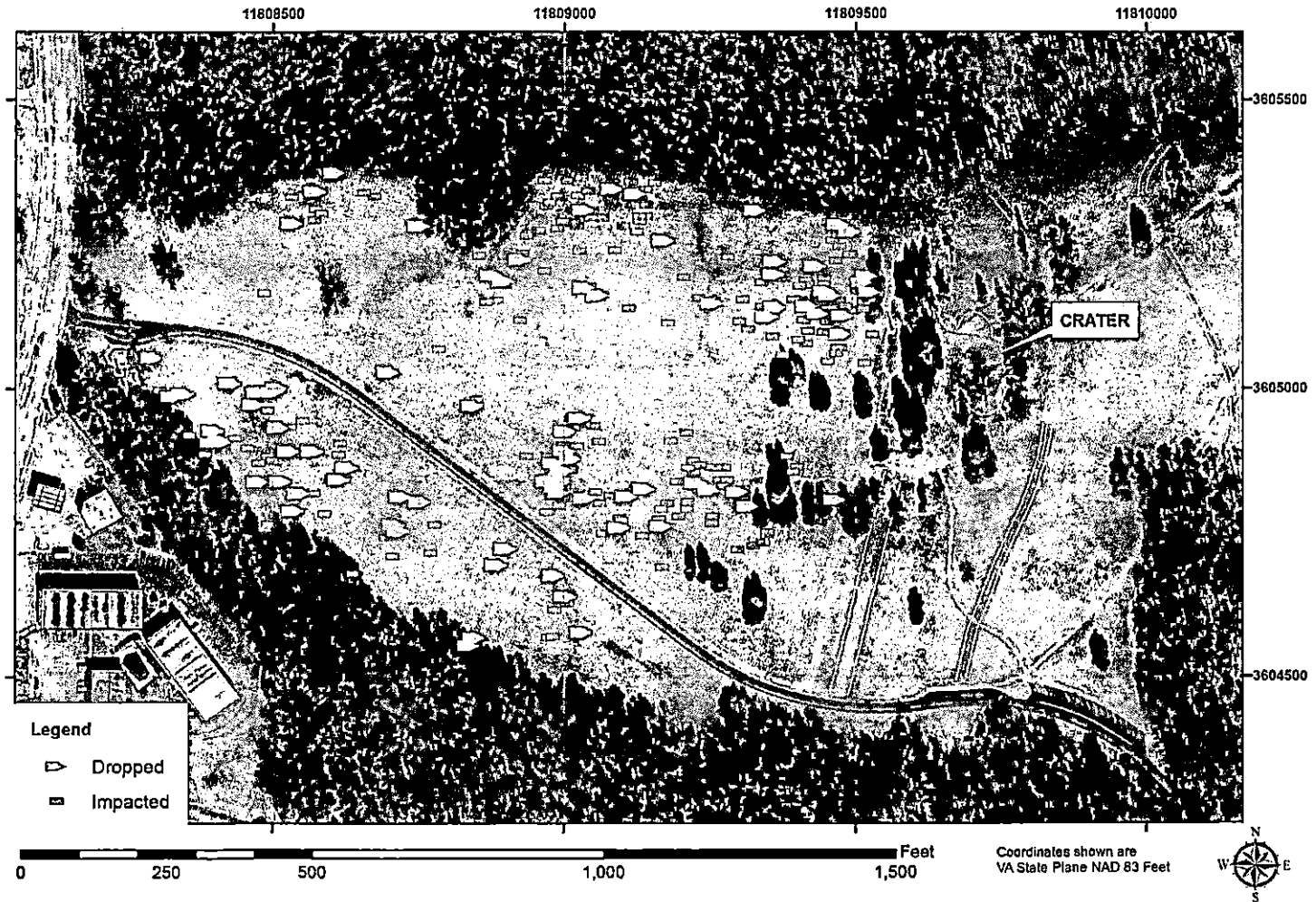
runner *Modern Greece* also indicate that various size ammunition was packed together in the same ammunition crate (Babits 1995:123). Additional analysis of a small sample of ammunition from the *Maple Leaf* indicates that “there was no statistical correlation between weight and diameter” (Babits 1995:123).

How does this information apply our analysis of the bullets recovered from the Crater Battlefield? Although the absolute weights and diameter of each bullet is presented in the artifact table, it is clear that it is impossible to propose a valid correlation between Minié bullet and weapon. While we are forced to disregard size and weight to be a determining factor in this analysis, bullets that are fired and impact a target suffer damage, and thus, are visibly different from those bullets which were not fired. A comparison between those bullets which were dropped and those which were fired allows scholars, theoretically, to identify fields of fire and troop movements.

As always, there are some qualification to such an analysis. On some bullets, the damage is very clear, especially if the ball hit its target at a high velocity. Bullets that hit an object at low velocity, such as the ground after overshooting the intended target, often display very little damage. The target itself, which was hit by the bullet, will have an influence on both the type and degree of visible impact.

Photo of dropped Minié Bullet and an impacted Minié Bullet ???

PETERSBURG CRATER ARCHAEOLOGICAL SURVEY - ALL MINIE BALLS



MAP - DROPPED AND IMPACTED MINIE BULLETS

Cleaner Bullets

Black powder, which is made from charcoal, sulfur, and potassium nitrate (saltpeter), has been used as a propellant in military weapons since at least the fourteenth century. Impurities in the raw materials results in a gradual fouling of the barrel, as the unburned residue accumulates after each shot. After a number of shots, it is no longer possible to ram a bullet down the barrel and the firearm becomes useless. In order to avoid fouling up a firearm, soldiers needed to clean their weapon frequently, something difficult to do on a battlefield.

In order to address the issue of fouling, Elijah D. Williams designed a cleaner bullet to use on the battlefield. The cylindrical shaped cleaner bullet included a zinc washer attached by a pin. The cleaner bullet was loaded down the barrel and when the weapon was discharged, the gases flattened the washer, causing it to expand into the rifling. As the cleaner bullet flew down the barrel of the rifle, it scraped away the built up deposits (Thomas 1981: 16).

The potential of this cleaning ammunition was recognized early in the conflict and by early 1862, the Williams cleaner bullet was used by the Federal army. Tests conducted during The War indicated that the Williams bullets were efficient in keeping the bore clean and were as at least as accurate as the standard type ammunition (Lewis 1960:125). Initially, Federal troops were issued one Williams cleaner bullet paper cartridge per ten regular Minié bullet cartridges, but by 1863, this number increased to three Williams to seven regulation cartridges. On 5 August 1864, the ratio of Williams cleaners was increased to six cleaners per bundle of ten cartridges (Thomas 1997:231). “The Federal army, however, stopped using the William’s cleaner bullet in September 1864, due to unsubstantiated complaints that it damaged the rifling” (Hess 2008: 77). Cleaner bullets, however, existed in Federal inventories and bullets already made into cartridges were issued (Lewis 1960:200).

Three types of Williams cleaner bullets are known. Williams Type I bullets had three rings, were cast from the base, and the base had a projecting pin onto which a zinc disk was attached. Type I bullets were patented on 13 May 1863 (Thomas and Thomas 1996:43). The Williams Type II bullet was patented on 9 December 1862 and also had three rings. Williams Type III bullets were slightly smaller and had only two rings. Type

III bullets are not commonly found on Civil War sites dating earlier than 1864 (Thomas 1981:16, 27) Typically, the zinc washers do not survive in the archeological record (Balicki XXXX XXX) and no examples were found at the Crater Battlefield.

Table XXX – Ration of William Cleaner Bullets

	Type I	Type II	Type III	Total
Dropped	XXX	XXX	XXX	XXX
Impacted	xxx	XXX	XXX	XXX

The archaeological literature about the wide spread use of Williams cleaners appears to support, at least in part, the soldiers dislike of this ammunition. Excavations carried out in 1988 at the Carter House in Franklin, Tennessee, provide a window into the 1864 Battle of Franklin. Of the 415 bullets recovered, over half were Williams Type III Cleaners (Smith 1994: 71). Of these, only twelve cleaner bullets were fired, while two hundred and fifteen were unfired (Smith 1994: 73).

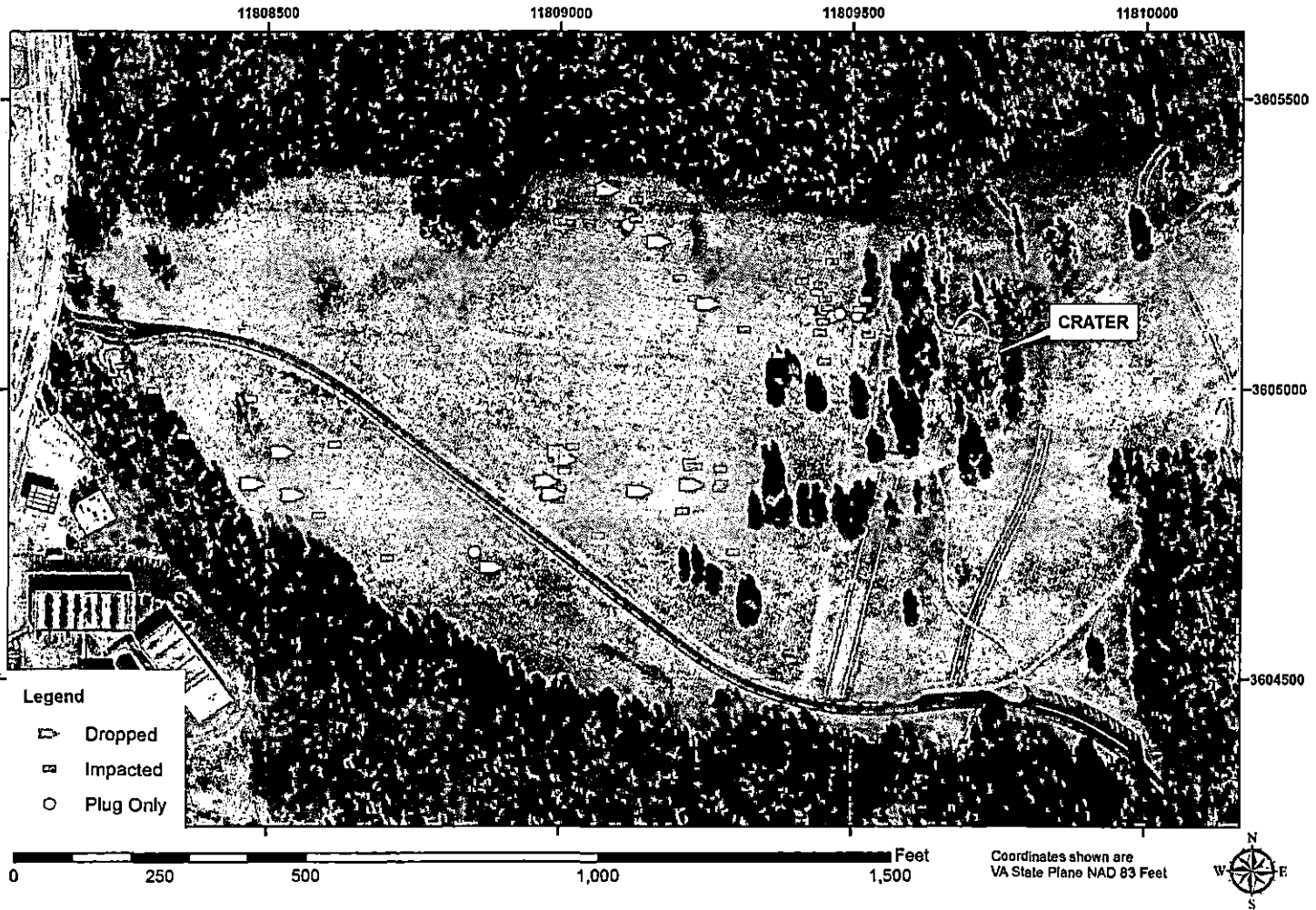
Excavations carried out along the Confederate left flank at the 1864 Third Battle of Winchester noted a slightly more balanced ratio of fired ammunition, with seventy-four impacted Williams cleaners as compared with two hundred and eighty-one impacted .58 caliber bullets (Jolly 2007: 222). A similar ratio was noted among the recovered unfired ammunition, with six Williams cleaners to thirty-two .58 caliber bullets (Jolly 2007: 222). This suggests that three Williams Cleaners were issued in each package of ten paper cartridges (Jolly 2007: 211).

At the Crater battlefield, our survey noted a ratio of XXXX impacted Williams cleaner bullets to XXXX impacted .58 caliber bullets. Among the unfired ammunition, a ratio of XXXX Williams cleaners to impacted .58 caliber bullets was observed.

DISCUSSION of what this means...

PETERSBURG CRATER ARCHAEOLOGICAL SURVEY - WILLIAMS CLEANERS

MAP OF IMPACTED AND DROPPED WILLIAMS CLEANERS



Round Musket Balls

Twenty round musket balls were recovered during the survey. Although the round balls were used for two hundred years before the Battle of the Crater and were commonly used by civilians in hunting, six musket balls have three distinct dimples, which indicates that they were part of a “buck and ball” load. Buck and ball ammunition is a military load, traditionally used by American forces since the War of Independence, and consisted of one large round ball and three pieces of lead shot (Babits 1998:13). Considered obsolete in the early years of the war, by 1864 these rounds were antiquated.

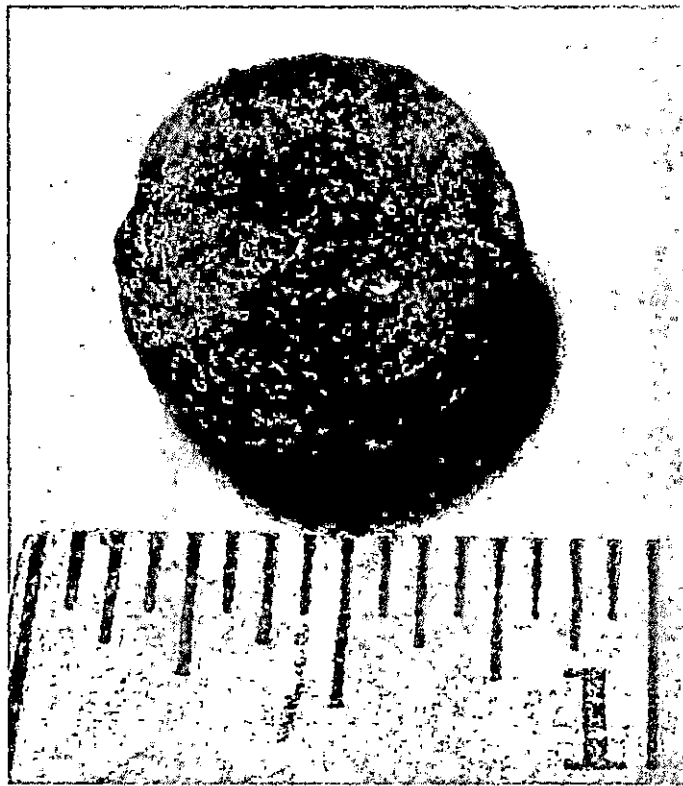
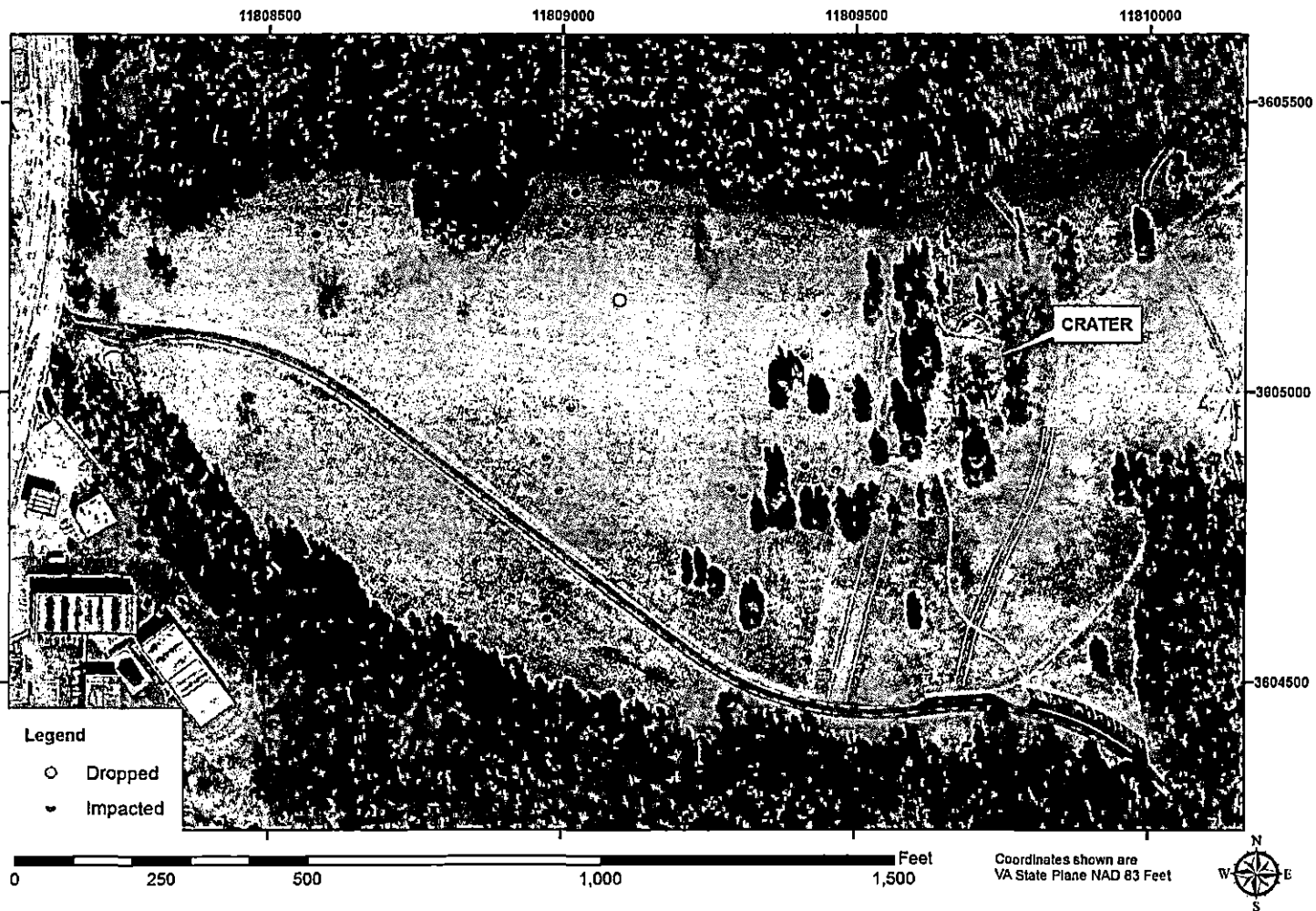


PHOTO – DEPRESSIONS OF BUCK AND BALL

Of these twenty round balls, two were dropped and eighteen were impacted. As it is possible to determine the caliber of fired round balls using the well-established Sivilich formula, fifteen balls were between 64 and 67 caliber, which were most likely fired from a 69 caliber musket, one was 62 caliber and two were between 54 and 55 caliber, which may have been discharged by a 58 caliber musket (Sivilich 1996:104; Sivilich 2016:27).

PETERSBURG CRATER ARCHAEOLOGICAL SURVEY - ALL MUSKET BALLS

MAP OF ROUND MUSKET BALLS



The distribution of the round balls, as noted in the map above, illustrates XXXX. Unit with smooth bore muskets?????

Spencer Ammunition

The survey also recovered four unfired copper Spencer cases and four Spencer bullets. In 1864, the Spencer was a modern, state of the art, seven-shot repeating firearm. What made the weapon so powerful was that it was fed by a removable tube located in the weapon's butt stock. The rate of fire produced by the weapon was truly remarkable for its time and soldiers arms such a weapon could put down an impressive field of fire. Another advantage of the new Spencer technology was that it required specific copper cartridges, which the South could not manufacture.

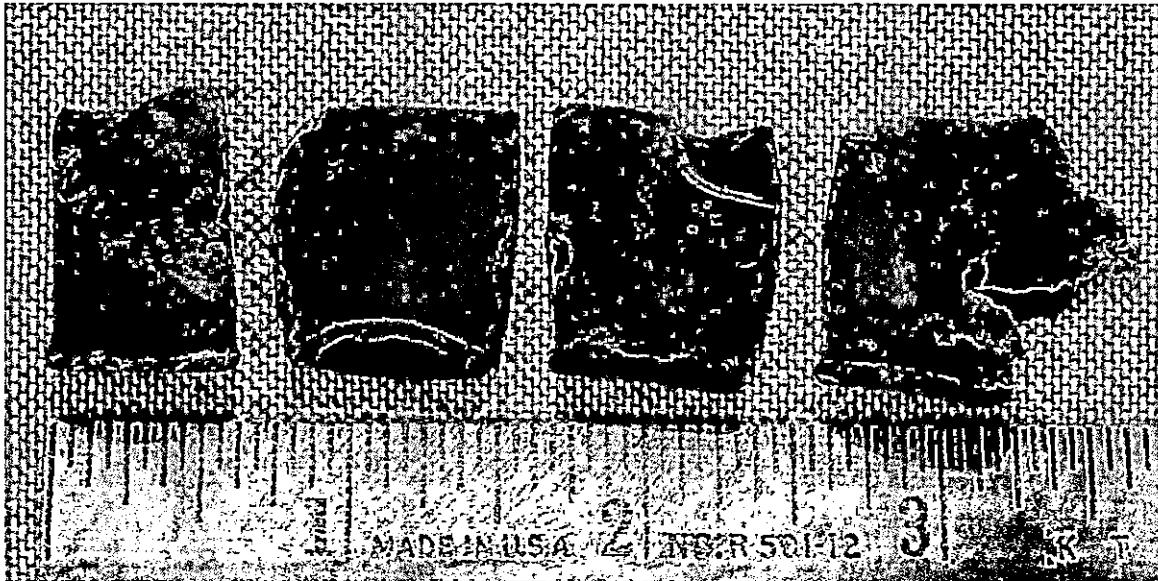


Photo - Spencer cartridges recovered from the Crater Battlefield

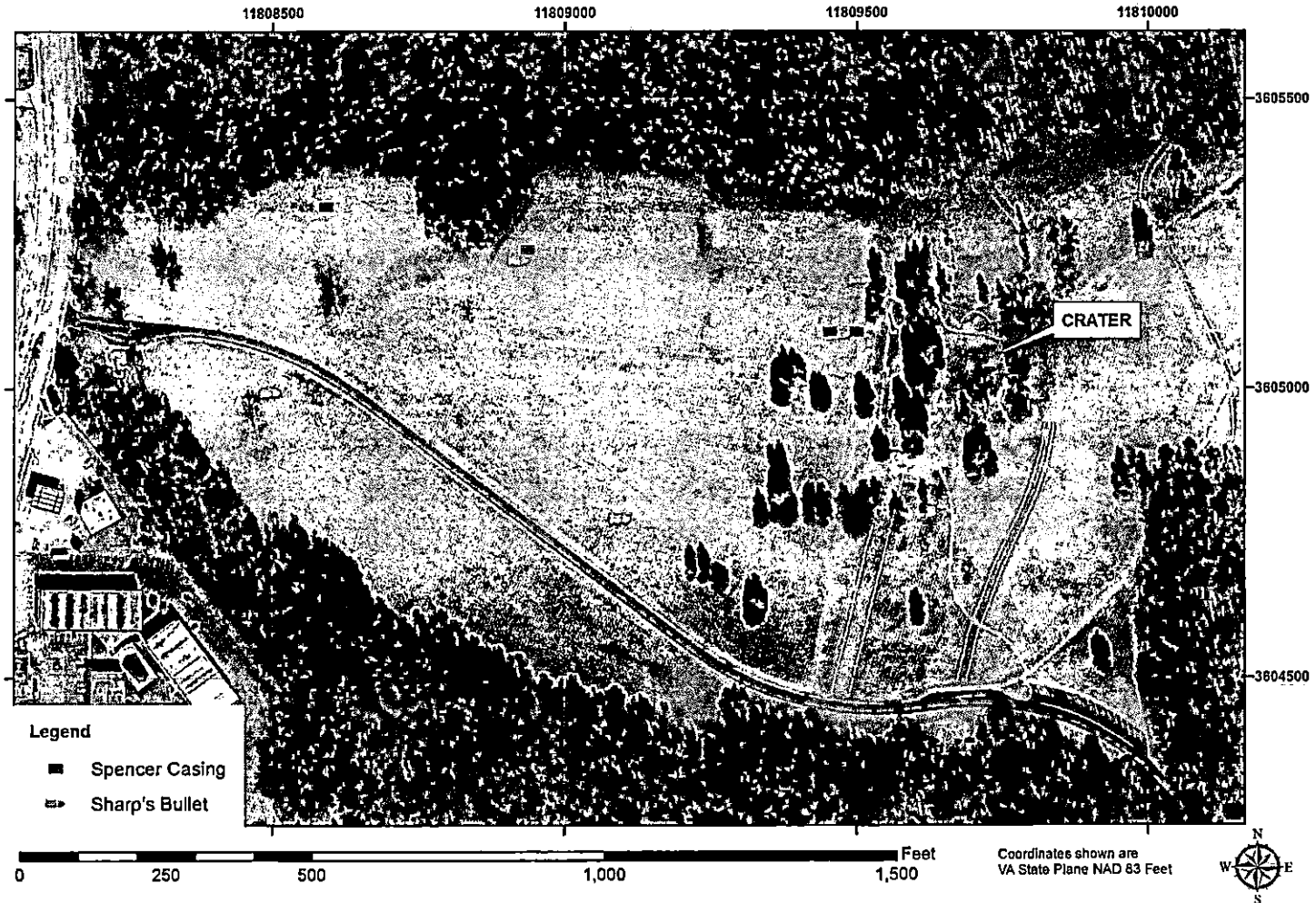
According to an editorial in the *Richmond Sentinel* from 8 December 1864, the lack of ammunition resulted in captured Spencers to be “stacked away in our armories” (Edwards 1962: 156). Though favored by mounted Union troops, who were able to reload and fire while mounted, the cost of the weapon limited its wide-scale adoption. Both rifle and carbine versions of the weapon were produced during The War. At the Battle of the Crater, at least one Federal unit, the sharpshooters of Company K, 57th Massachusetts

regiment, is known to have used this weapon (Anderson 1896:6, 208). Though it is possible an individual, perhaps a junior officer from some other unit also used a Spencer at the Battle of the Crater, it is unlikely as the required ammunition was very specific and difficult to acquire. The lack the recovery of any other copper cartridges used by various other types of modern repeating firearms, also supports the idea that these bullets may have been dropped by members of Company K of the 57th Mass.



Photo - Spencer bullets recovered from the Crater Battlefield

PETERSBURG CRATER ARCHAEOLOGICAL SURVEY - SHARP'S BULLETS AND SPENCER CASINGS



Discussion of how Union troops advanced???????

Improvised Small Arms Ordinance

In spite of the tremendous work done previously on Civil War sites and Civil War munitions, our survey recovered a complete improvised fired bullet. Given the high density of lead, it is more than likely that the nail was hammered directly through the two lead balls before being inserted into the rifle, or the nail was heated to allow for it to be pushed through the two lead balls. This round was clearly fired, as it displays striations that are commonly found of munitions fired from rifled barrels.

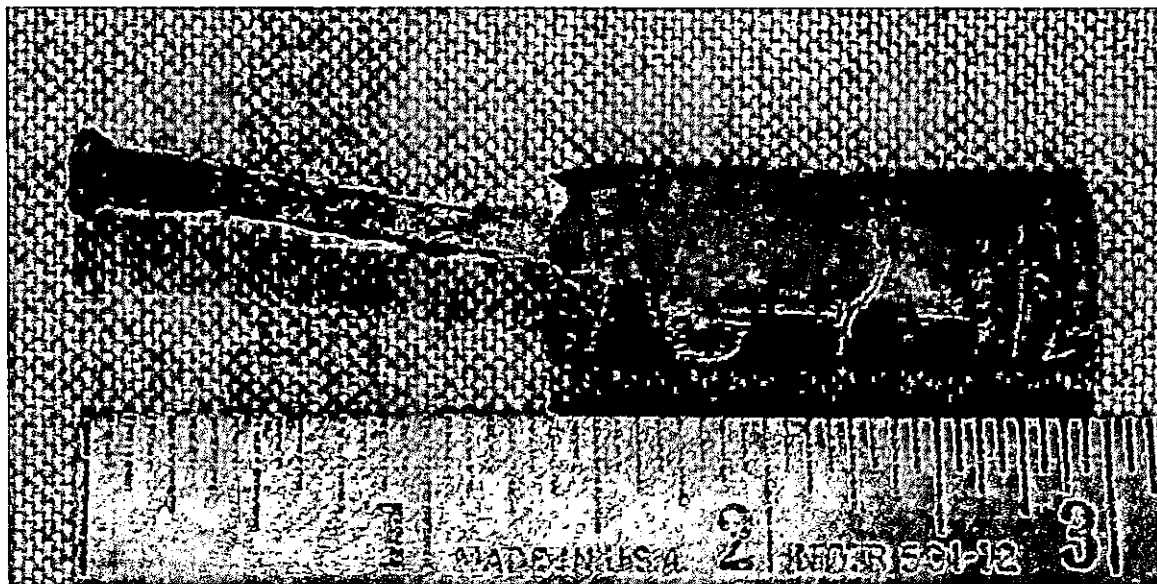


PHOTO OF IMPROVISED BULLET

A significant amount of time, effort and though was devoted to the manufacturing of this ammunition. Why was it made? This type of ammunition clearly did not improve a weapon's accuracy. Previous test firing of 17th and 18th century non-standard ammunition

by the author has demonstrated that similar lead slugs were inaccurate at close range (40 yards) (Mandzy 2016). Adding a nail to the lead shot was extremely dangerous. Not only did this change the trajectory of the ammunition, but there was a high probability that when the rifle was discharged, the nail could get stuck in the barrel and the weapon would explode. Was it because the soldier who made the item did not know better and believed it would give him an edge in combat? This is also unlikely, as the Confederate troops that remained in the trenches of Petersburg were predominantly experienced soldiers and those most devoted to the cause. The historian George S. Burkhardt argues that the Confederate soldiers, like German troops in the last years of WWII, continued to fight when they knew full well that they had lost the war but still continued fighting in order to stop the barbarians from overrunning their homeland (Burkhardt 2007:10).

If George Burkhardt's analysis is correct in pointing out that the remaining Confederates were sacrificing themselves to protect their way of life, then using a projectile that was potentially as dangerous to the shooter as the intended target is understandable. Now again we are asking why was it made and used. Given that at least two such pieces of ammunition were successfully discharged at the enemy, we are left with an unpleasant answer – to inflict greater damage on the enemy.

The use of specialized ammunition to increase the damage on an enemy is not new. In the 16th and 17th centuries, Europeans forbade using square shaped bullets against each for humanitarian reasons, but approved their use against Muslims. During the Age of Sail, navies employed bar shot, also known as chain shot, to damage enemy rigging. During the American War of Independence and the War of 1812, musket balls were periodically made that contained excrement. The idea behind such ammunition was that if the target did not die immediately from the bullet, the excrement would cause the wound to become infected, ensuring that the individual would die from their wound at a later date. Musket balls with nails driven through them were reported used in the early years of the American War of Independence (Sivilich 2016:77), but none have been previously recovered from Civil War sites.

During the Civil War, both side claimed that the other used exploding bullets. While it was unpractical to use exploding bullets in smoothbore muskets, the British army used them in India during the Mutiny (1857). Samuel Gardiner of New York

developed an explosive bullet that was used in the War and relic hunters have recovered Confederate made exploding bullets (Hess 2008:78). Benson Lossing, claimed to have seen wounded Federal troops who were victims of both explosive and poison bullets (Lossing 1868:78).

Additional evidence as to the abandonment of the chivalry of war is noted in the wide-scale development of the use of snipers during the siege of Petersburg. Though sniping and snipers practiced their trade during the American War of Independence, the craft achieved a new level of effectiveness at Petersburg. Early in the siege, the Ninth Corp alone lost 480 men in ten days to sniping and sporadic artillery fire (Hess 2008:190). Union snipers were instructed to first target Confederate snipers, then artillery units, and finally all targets of opportunity (Hess 2008:191). Confederate snipers were expected to pick off officers at long range (Hess 2008:192). According to Daniel Sawtelle, a Union sniper at Petersburg, everyone considered sniping a dirty business but that the Confederates pursued it with immoral relish (Hess 2008:193). Sawtelle is quoted as saying “They always took pride in killing every Yankee they could and boasted to the very last and even after the war closed” (Hess 2008:193).

After the War, a large and illustrated study of war injuries was produced under the Surgeon General of the US Army between 1870 and 1888. This multi-volume study, entitled *Medical and Surgical History of the War of the Rebellion*, focused on soldiers who survived long enough to make it to a hospital for treatment. Though few exploding bullets were noted in this work, individuals who were effected were far less likely to live long enough to receive medical treatment and consequently were far less likely to be included in the study. According to historian Earl Hess, it is difficult to judge the number of men wounded by explosive bullets (Hess 2008:78). Hess notes that “some men claimed to see pieces of tin or zinc fly off the bullets” which the historian interprets the use of Williams bore cleaning round rather than an explosive bullet (Hess 2008:78). Assuming that this analysis is correct, it illustrates the inherent destructive power of the cleaning round. The Williams cleaner was introduced early in the war as a field remedy to help remove the black powder residue that accumulated in a musket barrel after prolonged firing. As designed, the cleaner was issued to the troops to be used after ten

shots, but many Union troops disliked the cleaning bullets and they were later withdrawn from use.

However, there is another possibility for the high frequency of cleaner bullets recovered from Crater battlefield. Accuracy and target damage assessment carried out by the author on reproduction 17th century bullets also tested extended sprue ordinance, which are round musket balls with the casting sprue in place. Though the extended sprue ordinance is somewhat different from cleaning bullets, the author noted that on numerous occasions, the casting sprue would break off when impacting a target and create two wound cavities. Given the common recovery of complete and fragmented cleaner balls from archaeological sites, along with the notation provided by Hess, the large scale presence of these rounds at the Crater battlefield suggests that perhaps the combatants may have been aware of the lethal nature of the cleaner bullets and chose to use them at close range to inflict the greatest amount of damage they could upon their enemy.

In this content, perhaps the continued use of buck and ball ammunition occurred not because of the remaining Confederate troops were unable to gain access to more modern rifles, but it was a conscious decision to use a weapon system that potentially was more damaging than the modern Minié ball. The four projectiles that made up the buck and ball ammunition could potentially be more dangerous at close range than a Minié ball. The target enemy, if not killed outright, would have four resulting wound channels. The likelihood that an individual with four wounds would be able to survive was far less than a person who sustained only one injury.

Documenting how individual soldiers behave in combat has been the focus of various military studies since the Second World War. Some soldiers who were successful in the shift from civilian life to warrior, adopted the trappings of institutionalized violence that went beyond the social norms of what was generally considered to be acceptable behavior. Clearly, as the war progressed, troops became more violent, and if the observations of Union sniper Daniel Sawtelle are accurate, Confederate troops were already predisposed to commit the massacre that occurred at the Crater before the mine was detonated. The recovered ammunition appears to testify to the calculated blood-lust nature of the combatants in the later stages of the war.

ARTILLERY AMMUNITION

Like the evolution of small arms discussed above, artillery was undergoing a major transformation in the second half of the nineteenth century. New manufacturing techniques allowed for larger, more powerful, and more mobile guns to take to the field. By 1860, rifled artillery was beginning to make an appearance, but many old smooth bore barrels remained in service as the war began. Traditionally cannons were loaded at the muzzle but successful breech-loading pieces were also making an appearance on the battlefield.

At the time of the conflict, cannon were usually classified by their use – field, garrison or siege. Field guns included mountain howitzers, which were designed to easily moved in areas where roads were poor, and light artillery pulled by teams of six or four horses. The model 1857 12-pounder smooth-bore Napoleon was a commonly used field piece, as was the rifled Parrot and Rodman. “Field artillery ranged from 6-pounders to 32-pounders in smoothbores and from 2.56 inch Wiard (a 6-pounder) to the 3 inch types” (Lord :20).

Various types of artillery ammunition was used during the conflict. The need for different types of ammunition can be accounted for by the different calibers of the cannon, the need to use specific types of ordinance against different targets, and the different types of guns in use. Among the most commonly ammunition type used during the conflict by non-naval forces were shot, shell, and canister, with grape shot gradually disappearing over the course of the war.

The traditional cannon ball was known as solid shot and was either a round ball for a smoothbore cannon or an elongated “bolt” for rifled artillery. Solid shot was designed to smash materials and individuals. A skilled artillery crew could set the ball to skip across a field, ricocheting to hit multiple targets.

The common shell was a hollow spherical or conical shell filled with blackpowder. The idea behind the shell was that it was to burst in the air slightly above and ahead of the target, so that the fragments would rain down on the enemy. Case shot developed from the common shell and was filled with small pieces iron or lead. In theory, the walls of case shot were to be thinner than found in the common shell, but this is not

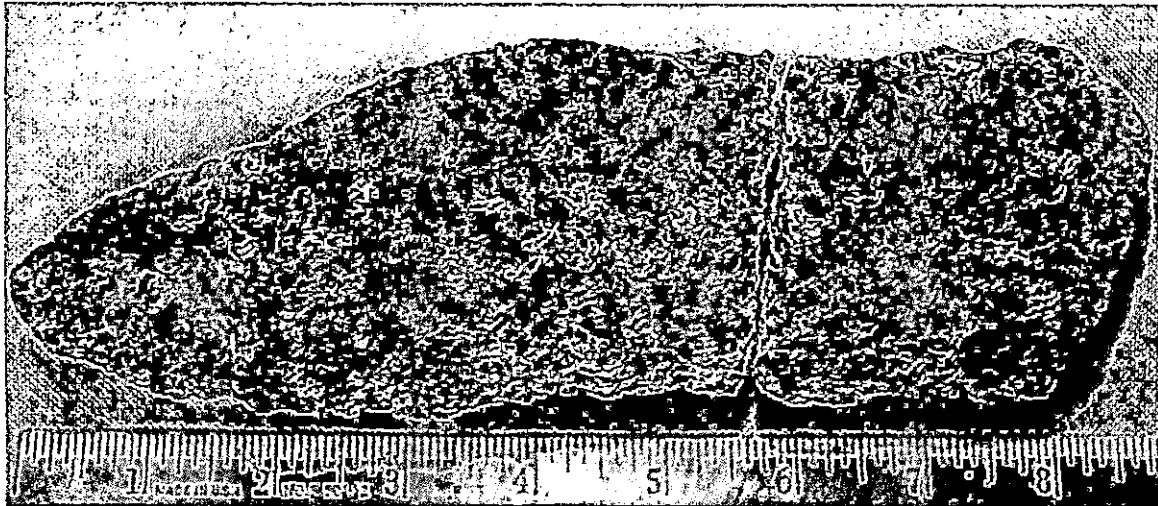
always the case. To ignite the contents of the shell, various fuses were used with varying degrees of success.

Canister was used by artillerymen at close range. A canister shell consisted of a large number of balls packed into a metal cylinder. When the canister round was fired, the metal cylinder disintegrated and the balls fanned out in all directions. In essence, canister it turned the cannon into a giant shotgun. At point blank range, gun crews often loaded two or even three canister rounds. Though such activities were detrimental to the longevity of a gun barrel and could cause premature barrel breaches, especially in iron barreled rifled cannons, it occurred often enough with gun crews using smooth bore bronze barrel pieces.

Grape shot was also used during the war, but consisted of nine small iron balls held between three iron plates. The round was held together by a bolt and a nut, was covered by canvas. This ammunition was more difficult to manufacture and by 1863, was discontinued in the US Army (Lord 1965:198).

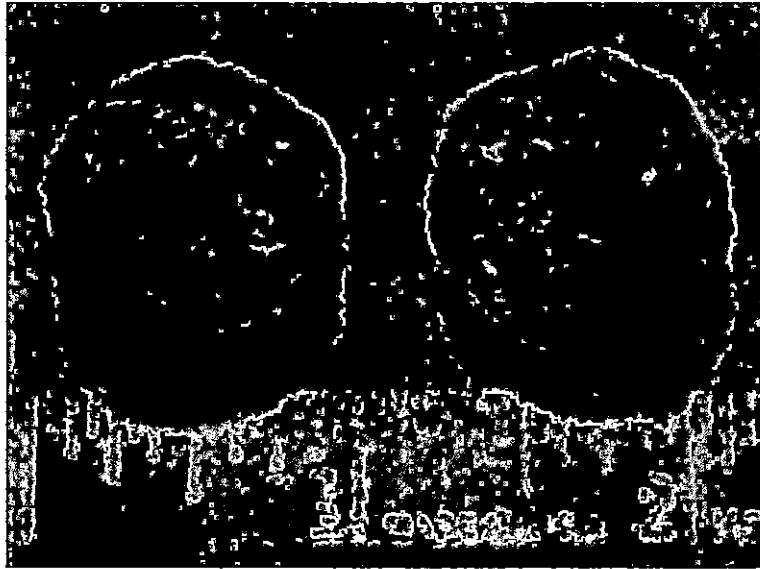
The artillery collection recovered from the Crater Battlefield in Petersburg, Virginia consists of ??? artifacts. The following study of the artillery shell fragments was completed by MSU history student Jesse Read as his senior internship.

Artifacts recovered include twenty-six spherical or conical shell fragments, two cannister shell fragments, five case shot rounds, five indeterminate shell fragments, four possible fuse pieces, remains of a friction primer, two possible sabot remains. Shell fragments were identified as heavily corroded pieces of curved iron with varying thickness. The diameter of the shell fragments was measured but further analysis to determine the caliber of the shells was problematic due to the relatively small size of the fragments and lack of significant features. Seven of the shell fragments have a diameter of 2 inches, thirteen with a diameter of 3 inches, seven with a diameter of 4 inches, and one with a diameter of 7 inches.



30 POUND PARROT SHELL FRAGMENTS

The 2 inch shell fragments recovered are most likely to have been fired from either a 3 inch or 10 inch gun, possibly a Parrot rifle. The remnant of one fragment could identify it as a possible Confederate Reed shell. 3 inch shell fragments could be attributed to 6-pounder smoothbore field guns if the complete shells were spherical in their design. Only one 3 inch shell fragment complete with a fuse hole is readily identifiable as having been spherical as well as a case shot due to its thin wall. Only three additional 3 inch shell fragments recovered together can be possibly identified as a 30 pound Parrot shell based on its shape as well as a ridge in the iron. Two canister shell fragments with a 3 inch diameter are also present. The majority of the 4 inch shell fragments were presumably fired from the common 12-pounder Napoleon field gun as it had a bore diameter of 4.62 inches. The thickness of one fragment may indicate a mortar shell of Union origin, possibly a 300 pounder. The largest shell fragment in the collection has a 7 inch diameter that more than likely belongs to a mortar shell. This shell is partially encased in sediment. The diameter of five shell fragments are indeterminate due to their size, lack curvature, and lack of additional features.



TWO PIECES OF CASE SHOT

The artillery collection also features five case shot rounds. Rounds recovered are approximately 0.5 inches in length. Three are highly corroded with one having lost its spherical shape. These rounds could have either been fired from a canister shell, spherical shell, or conical shell of varying caliber as variations of the latter two also carried these rounds. Sabots for artillery shells were perhaps identified as mangled pieces of lead with one thin piece with grooves and marks matching that of James shell. Three pieces of iron are possible fuse pieces based on their screw like features. One damaged artifact was identified as a water cap time fuse which mostly likely has a Union origin as it began its use under the navy. A used but intact friction primer was noted in the collection.

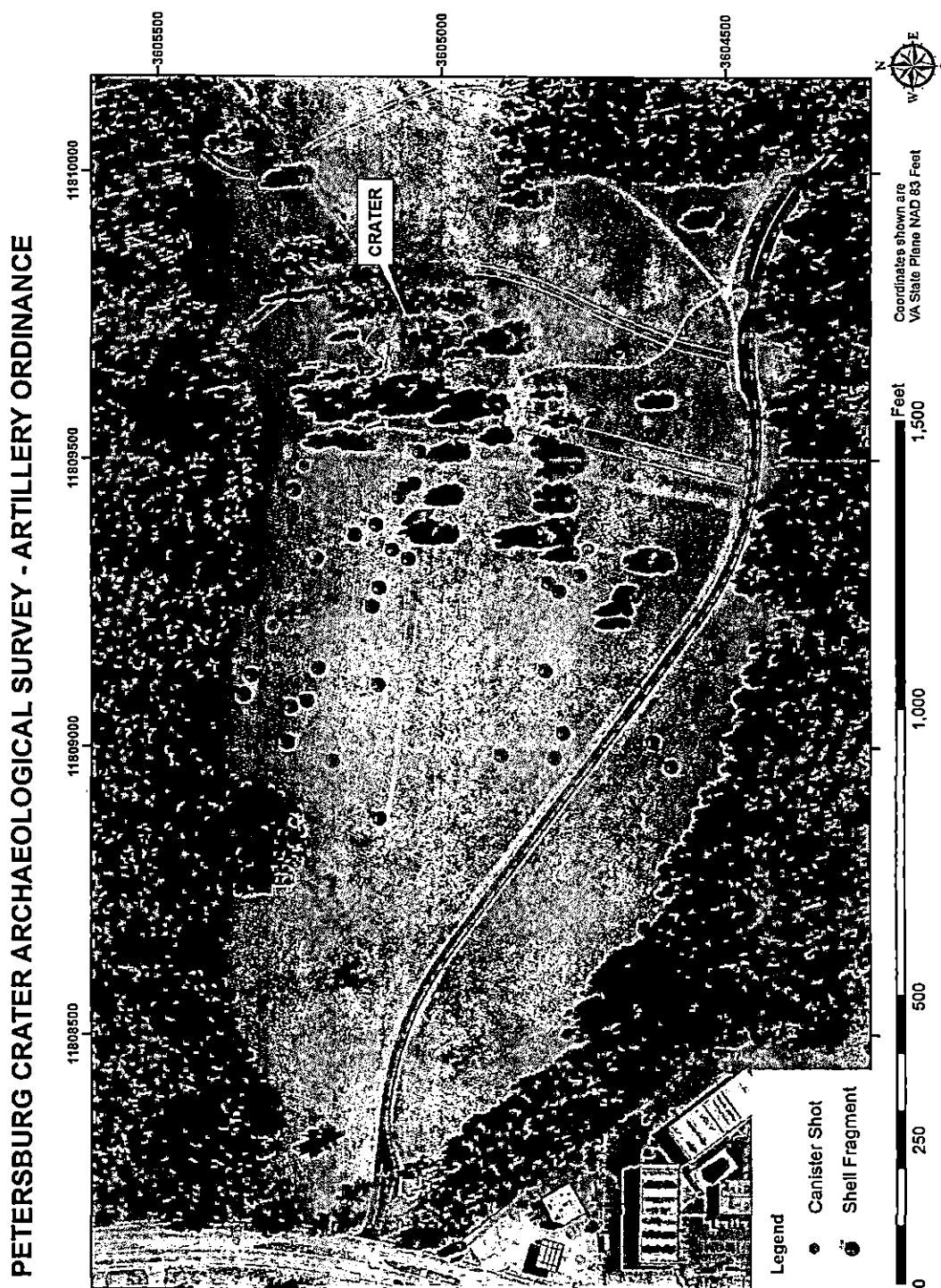
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FRICITION PRIMER

MAP ARTILLERY ORDINANCE



It is difficult to discern a pattern from the artillery shell fragments noted. Unlike conventional battlefields, where troops moved on after the end of the engagement, the Crater Battlefield was part of the Confederate field defenses for almost a year. While it is

highly unlikely that the impacted bullets recovered during the course of the survey, which were found beyond the Union line of sight, were fired after the Battle of the Crater, the same cannot be said of the recovered artillery fragments. Artillery was designed to be used at much longer ranges. Though the use of artillery as an indirect fire weapon was still in its infancy, mortar shells were intended to hit targets not visible to traditional line of sight firing patterns. Moreover, artillery shells were designed to bounce and a few shells were often shot towards the enemy both before and after July 30th. Although the location of the one friction primer and the two noted canister concentrations suggest artillery activity connected with the Battle of the Crater, the sample is too small (two pieces in one location and three in another) to draw even the most speculative of conclusions.

PETERSBURG CRATER ARCHAEOLOGICAL SURVEY - ARTILLERY ORDINANCE

MAP OF ARTILLERY ORDINANCE



UNIFORMS AND ACCOUTERMENTS

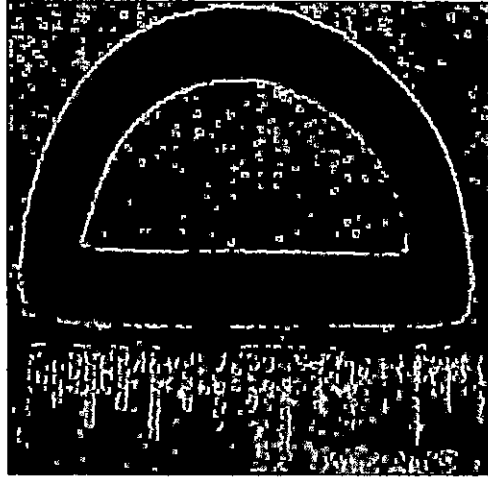
Very few uniform items were recovered from the Crater battlefield. The lack of large items brass items, such as belt buckles, plates, insignia and lettering, suggest that the area may have been looted by a person using an early type of metal detector that was sensitive to large brass and copper items. Such a lack of uniform parts has been noted on other former fields of conflict, as compared to camp sites, where such items have been found in large numbers (Law 2002).

Buttons

Two recovered buttons may relate to either the Battle of the Crater or were lost during the Siege of Petersburg. Both of these buttons are unmarked on the front and are marked on the back. Stan South classifies such buttons as Type 18 and dates the buttons from 1800 to 1865 (Rivers 1999: 33). The first button has traces of gold gilding and is marked on the back with “LEWIS & TOMES” and “RICH PX”. The firm of Lewis and Tomes began in 1819 and made military buttons until the late 1830s. The second button is similar to the first but displays traces of silver gilding. The button is marked on the back “Strong”. The recovery by collectors of such buttons on other Civil War suggests that the buttons were used during the war, but could have been lost either before 1864 or anytime in the years that followed.

Heel Plate

Rivit



BRASS D-RING

Equipment accouterments are noted by the recovery of a brass D-ring. The recovered D-ring could have been used for a variety of purposes and could have supported a leather strap of one to one and a quarter inches. D-rings were also often attached to sword belts.

Horse accouterments and possible wagon parts have also been noted during the survey, but it is unclear if they relate to the on-site post-war agricultural activities, to the siege or less likely, the battle itself. A full description of these artifacts is provided in the artifact catalogue (Appendix 2).

SIEGE ARTIFACTS

Unlike most military engagements, the troops did not move from the area of the Battle of the Crater after the end of the assault. Rather, the Confederate troops remained on the field and Crater battlefield was incorporated into the defensive works for another nine months. Though the area would not see any further major assaults, Confederate troops inhabited the site for almost a year and contributed to impact the landscape. Confederate troops also occupied the ground for a month before the battle and some items recovered during the survey may relate to this event. As the material culture from the battle, the pre-battle siege and the post battle siege are almost indistinguishable, some of the artifacts in this category may relate to the Battle of the Crater, rather than the siege. Artifacts identified with the siege consist of one feature and three artifact types.

One feature believed to be connected with the events of 1864 was uncovered during the survey. However, as the excavation of any features was beyond our scope of work, the location was noted and only the artifacts laying at the top of the feature were recovered. The ten artifacts recovered from the feature consist of three shell fragments, two pieces of canister, four pieces of iron and one brick fragment. Of the three shell fragments, two were noted as having a 7.5 inch circumference, while the third fragment was too corroded to establish the shell's original diameter. The two canister pieces measured two and three inches respectively and may relate to the shell fragments discussed above. Three iron pieces were non-descript, while the four piece was a lump of iron, which may have been subject to a high temperature. It is fruitless to speculate on the feature previous to its excavation, but given the military content of the artifacts discussed, it most likely relates to either the siege or perhaps to explosion at the start of the Battle of the Crater.

Other artifacts types believed to be related to the siege include lamps, harmonicas and melted lead.

Lamps

Harmonicas

Melted Lead

POST BATTLE ARTIFACTS – Early Commemorations

The end of the War ushered in a return to farming and the construction of new facilities which commemorated the Battle of the Crater. Though many of the iron fragments and iron nails recovered during the survey could relate to these activities, three artifacts are most likely from this period – a gold plated button and fragments of four pocket watches.



GOLD PLATED VIRGINIA SEAL BUTTON

The button in question is a gold plated Virginia state seal button. The button was manufactured after the end of the War (Tice 1997: 498) and was worn by Confederate veterans. According to *American Military Button Makers and Dealers*, Jacob Gminder ordered Virginia and North Carolina buttons from Scovill (a major button maker in Waterbury, Connecticut) in 1870-75 (Robert F. Hancock, pers. comm., 2015). Gold plated items were always expensive and were reserved to those who had the means of affording such items. In the years following the conflict, Confederate veterans would often wear stylized representations of southern uniforms. Although arms and surplus dealers, such as Bannerman, would continue to sell such reproductions well into the early

twentieth century (Bannerman 1980:253), it is more likely that the button was purchased and lost, most likely by a wealthier southern veteran, sometime in the late nineteenth century.

During the course of the survey, fragments of four pocket watches were recovered from the Crater battlefield. Though pocket watches were first developed during the 1400s, they remained expensive hand crafted luxury goods that were beyond the financial range of most customers until the second half of the nineteenth century. Among the first successful watch companies that benefited from the development of the Industrial Revolution was the American Watch Company, which was founded in 1859 (Keane 2009). Previously, watchmakers made each part by hand and hand fitted them into a working watch but the American Watch Company copied the techniques used at the Springfield Armory during the Civil War and applied them to pocket watches. By the 1870s, watches had become popular and production numbers were in the millions.

During the last decades of the nineteenth century, pocket watches reflected the modern new world. Time, a vague connotation previously, was now considered valuable and people began to set their agendas accordingly. Like the factories in the growing cities across America, the new world of time demanded precision and control. Not surprisingly, there is a strong connection between railroads and pocket watches as enduring symbols of a Gilded Age.

The trenches of WWI oversaw the demise of the pocket watch. Soldiers engaged across miles of terrain needed to coordinate their activities and time was the mechanism that made it possible. “Rifling through your pocket for a watch was not advisable in the chaos of the trenches” (Freidman 2015). Over the next few years, younger men migrated to wrist watches, while older gentlemen continued to purchase pocket watches. By the 1930s, pocket watches were clearly linked with an older generation and the last American pocket watch company folded in the 1960s (Keane 2009).

As the technology used in pocket watches was virtually unchanged in the beginning of the nineteenth century, it is difficult to specifically date the four pocket watch pieces recovered from the battlefield, but given that these items enjoyed their greatest popularity in the decades following the Civil War, it is most likely that they were lost on the battlefield some years after the fighting had come to an end.

The presence of women at the site at the beginning of the twentieth century is documented by the recovery of an early powder case. The bottom lid is marked in raised lettering “WHITE”, followed by THIS POWDER IS ALSO PUT UP IN BRUNETTE, FLESH and PINK”. At the bottom is the notation that “LARGER SIZES 25c and 50c” indicates that this was a sample size of white powder.



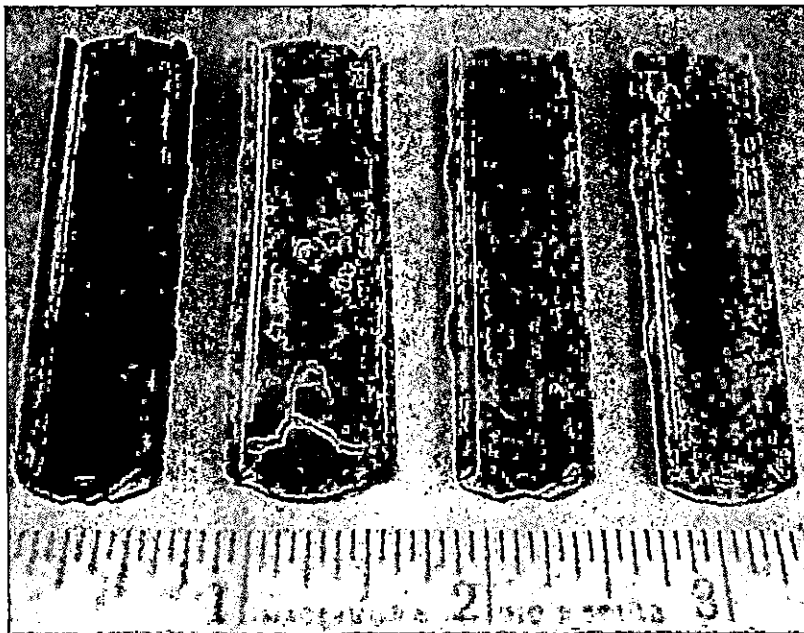
POWDER LID

Such makings are found on Florient face powder, made by Colgate & Co of New York, and first released in 1912. “Florient loose powder was offered in small metal sample boxes but there is no evidence that Florient was offered in compact form” (<http://www.collectingvintagecompacts.com>). White powder continued to be popular in the early decades of the 20th century and advertisements for Florient describes it as “flowers of the orient” and “reminiscent of oriental gardens” (source). On 12 December 1921, the *Richmond Times* ran a full page add, describing Florient as “the perfect Christmas gift” (*Richmond Times* 1921:7). As a fashion statement, face whitening declined in the mid 1920s as colored blush began to be popular.

ARTIFACT ANALYSIS – THE 1937 REENACTMENT

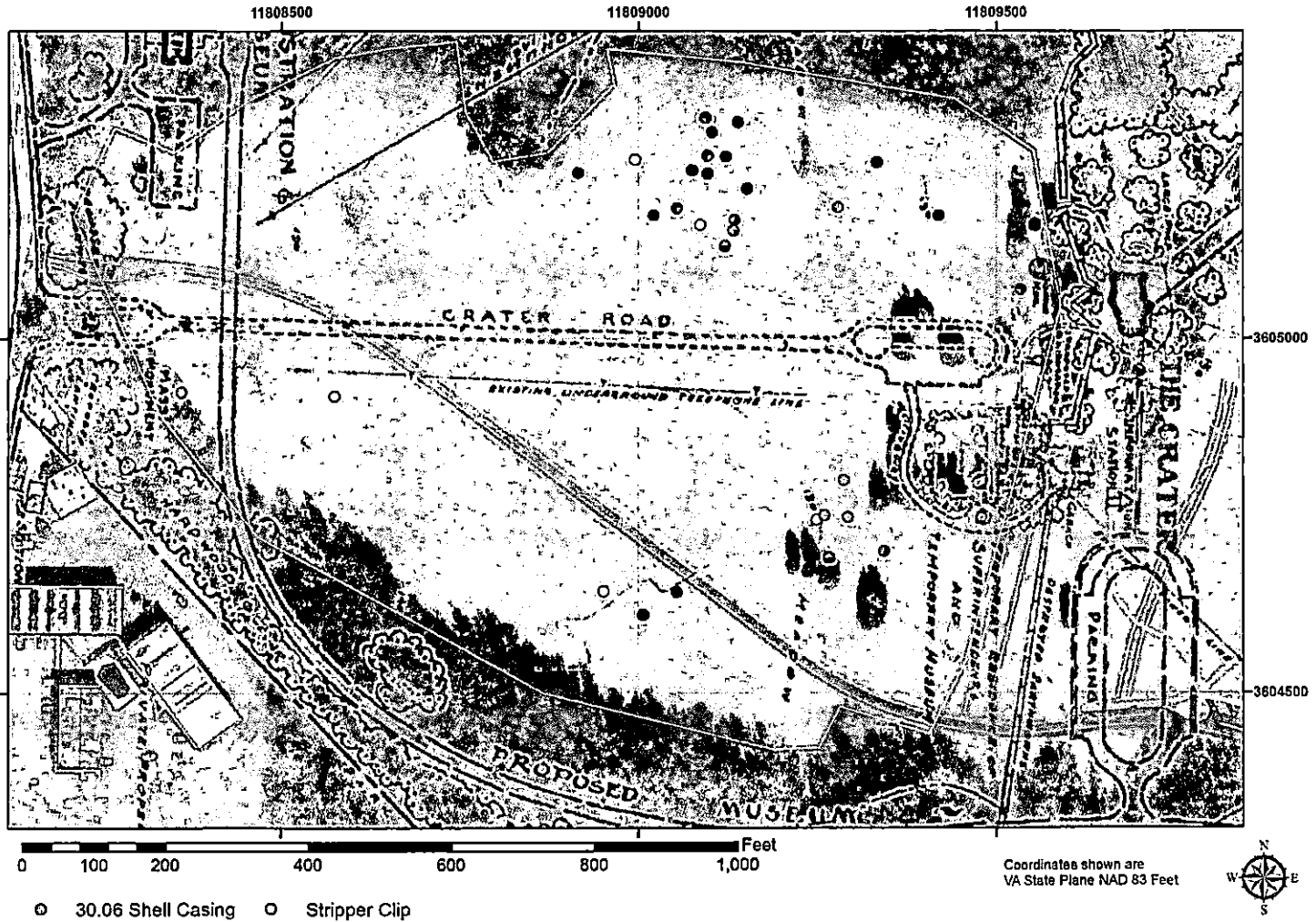
Archaeological evidence of the 1937 reenactment comes in the way of copper 30.06 cartridges and stripper clips. The cartridge was originally developed in 1903, but underwent a modification in 1906 to take a 150 grain bullet and became officially known as the “U.S. Cartridge, Model 1906”. During the Great War, US troops were armed with either 1903 Springfield rifles or Model 17 Enfield, both which used the 30.06 cartridge. With the downsizing of the US military after the War to End All Wars, many Enfield rifles were sold off as surplus while some were placed in long term storage. With the growing tensions of the 1930s, the United States slowly began to develop new weapons, such as self-loading Garand, which made its debut in 1937. Initially, production of the Garand was slow and many US Marines were sent to Guadalcanal armed the 03 Springfield.

The 03 Springfield was a bolt action rifle that could be loaded with individual rounds or by using a five round stripper clip. After the bolt of the rifle was retracted, the clip is placed above the magazine and the lugs of the clip are placed the notches on the 03 rifle receiver. The shooter then forces the five rounds into the rifle’s magazine, bending the small tab that hold the ammunition on the clip. Once the tabs are bent or broken during the loading process, clip is useless and is discarded.



PHOTOGRAPH OF STRIPPER CLIPS

**PETERSBURG CRATER ARCHAEOLOGICAL SURVEY WITH 1940 OVERLAY
 MODERN STRIPPER CLIPS AND 30.06 SHELL CASINGS**



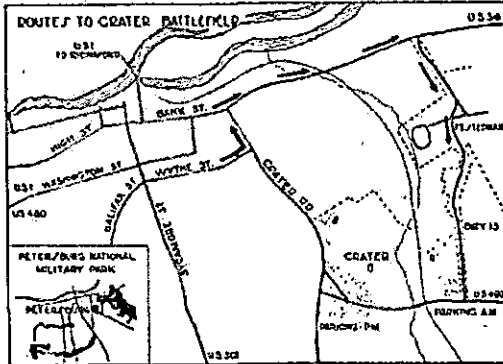
30.06 CARTRIDGES AND STRIPPER CLIPS FROM THE 1937 REENACTMENT

The distribution pattern of the 30.06 cartridges and stripper clips indicates that the reenactors loaded their weapons and then began to advance toward the Crater. From the limited sample, the rate of fire toward the Crater was substantial, with the most intense concentration coming from dip in the terrain, from which the Virginia troops under Mahone launched their charge. Unfortunately, it is impossible to identify an area used by the defenders. This may be because the organizers of the event consciously chose not to show the reenactors portraying the Union troops putting up a significant defense, or that this area was outside the project area. It is also possible that the evidence left by the reenactors closer to the Mahone Monument easier to pick up, either directly after the battle or by tourists over the course of the next few decades.

line, which now held 12,000 Federals. The colored troops, encouraged by their initial success, began reforming to press us toward Petersburg.

Meanwhile General Lee had ordered all available troops of Mahone's Division, stationed on the line south of Petersburg, to march to the threatened point. By the time the Negro troops charged, Mahone had arrived with Weisiger's Brigade, with Wright's and Swain's Brigades following. Finding Weisiger's men in a ravine within one hundred yards of the crater, Mahone ordered them to fix bayonets for a charge. Just then the Negro troops appeared, moving out toward Mahone's men. Mahone at once ordered a counter-attack. His eight hundred Virginians rushed forward and with a close range volley and bayonets, forced the Federals from the position of the Confederate line north of the crater. Many retreated within the Federal lines, but others pushed in with the mass of men in the crater.

Mahone's Second Brigade, Wright's Georgians, having formed in the ravine used by Mahone's men, then charged directly at the crater, but the Federal musketry fire caused a shift in their direction, so that they joined Weisiger's troops. Orders to retire were received by the Federal troops in the crater, but most of the men preferred to remain rather than cross the fire-swept field between the Docks, Mahone's Third Brigade, General Albemarle, attacked from the ravine at about 1 p. m., forcing the Federals from the short sector of Confederate line just south of the crater. The Federals in the crater itself were now practically surrounded; mortars were dropping shells among them at a range of only a few feet. At 2 p. m. hearing Swain's troops forming for a final charge, the Federal survivors, about 1,200 men, surrendered. The Federal loss in this engagement counting casualties of all kinds, was 4,650; the Confederate 1,200.



76 PRINT CO., PETERSBURG

Battle OF THE CRATER

• RE-ENACTMENT •

PETERSBURG, VIRGINIA

Friday, April 30, 1937



... PROGRAM ...

for Exercises Starting at 11 A. M.

Under Auspices of the
PETERSBURG BATTLEFIELD PARK ASSOCIATION

and

THE NATIONAL PARK SERVICE

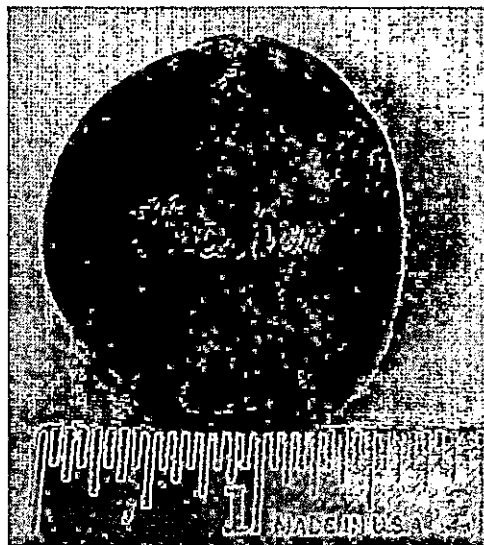
Petersburg National Military Park

PAMPHLET FROM THE 1937 REENACTMENT

ARTIFACT ANALYSIS – HISTORICAL TOURISM AFTER 1945

The end of the Second World War ushered in a new unparalleled economic growth in the United States. Historical tourism blossomed as white Americans celebrated their membership within a greater collective. While not in the same caliber of attraction as Gettysburg or Fort William Henry, in 1954 almost a quarter of a million tourists visited the Crater (Conway 1983: 118). Among the artifacts from this period are personal beauty products (a personalized compact, a lip stick case, an earring and a bracelet) and recreation (a section of a child's 1950s Walt Disney Davy Crockett Frontier Marshall Badge, a bicycle lock, and modern musket caps).

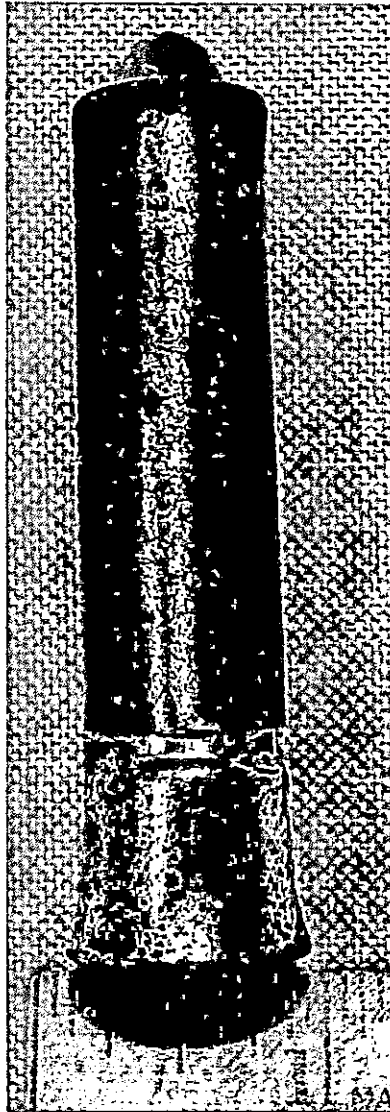
A slightly more recent ladies compact was discovered during the survey. Marked with the name "Heather", this personalized compact was complete. The style of the compact, along with the lettering, suggests that the compact was made in the 1950s.



COMPACT CASE

One of the more colorful artifacts recovered during the survey was a golden lipstick tube. The tube still contains red lipstick and its "color teller tip", though faded, is still attached at the top. The patent for a "color teller tip" was applied for in 1948 and awarded to Helen Neuschaefer in 1952 (Neuschaefer 1952). The company, Helen

Neuschaefer Inc., was based in New York and sold its products in a variety of retail outlets.



HELEN NEUSCHAEFER LIPSTICK

One screw-back earring was discovered during the survey. Made of metal, the earring is in the shape of a flower, in the center of which is what appears to be a rhinestone. The flower is attached to a metal hook, which goes under the earlobe and the earring attaches by a screw that can be adjusted to fit onto the ear lobe. Such earrings allowed women to wear earrings without getting their ears pierced, an activity associated with lower class women. Such earrings became fashionable in the 1890s and significantly dropped in popularity by the 1960s.



SCREW-BACK EARRING

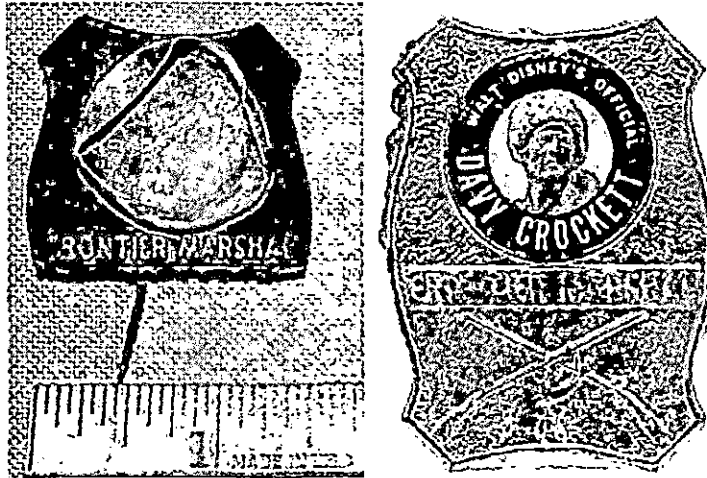
Though the earring is not dated, it is possible to suggest a date range for the artifact. Rhinestones become popular in the 1920s when Coco Chanel began to incorporate them into her designs (Keane and Marks 2010). Rhinestone continued to be popular and remained in use during the 1940s and 1950s. The flower motif became in the 1940s and continued to be used throughout the 1950s (n.a. 2015). This would suggest that the earring was lost at the battlefield sometime in the middle of the twentieth century.

One complete copper woman's bracelet was recovered during the course of the survey. An almost identical bracelet was noted as being manufactured by the Bell Trading Post of Albuquerque, New Mexico. The Bell Trading Post was founded in 1932 by Jack Michelson and his wife Mildred Bell. The company was in operation from the mid 1930s until 1972 and sold its wares at tourist locations in the southwestern part of the US (n.a. 2011).



NON EXCAVATED AND ARCHAEOLOGICAL BRACELET

A presence of a child on the battlefield is noted by the recovery of the upper half of a Walt Disney Davy Crockett Frontier Marshal Badge from the 1950s. The badge itself was stamped out of metal and has a straight pin attached on the reverse. The photograph of Fess Parker has disappeared, but the letter on the pin remains legible.



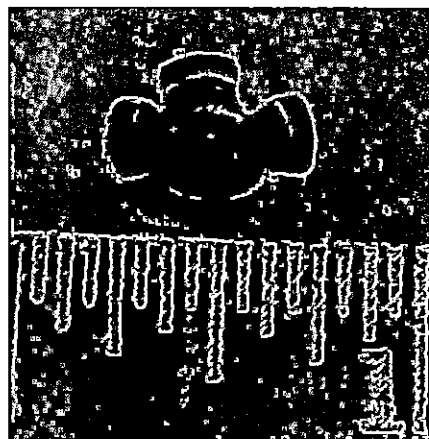
FRAGMENT OF PIN AND COMPLETE EXAMPLE

In 1954, Disney took the historical figure of Davy Crockett, played by Fess Parker, and created the first television mini-series. The series was incredibly popular and Disney began a merchandizing craze for all things related to Davy Crockett. Coonskin Caps remain the most iconic symbol of this fad, but by the end of 1955, “American children had their choice of more than 3,000 different Davy Crockett toys, lunch boxes, thermoses and coloring books” (Severo 2010).



BICYCLE LOCK

One bicycle lock was recovered during the survey. The front face of the lock very prominently displays the company logo “Slaymaker” and the word “Rustless”. On the back the lock is marked “Made in the USA”. Founded in 1888, the Slaymaker company used a variation of logos during the company’s existence. This particular logo entered circulation in the 1930s or 1940s (Hennessy 1976). A court case from 1938, Slaymaker Lock Co. vs. Reese, reveals that this was a type of “warded padlock” that entered production around 1934 without a patent attached. Such locks continued to be produced until the early 1960s.



MODERN MUSKET CAP

During the course of the survey a number of fired modern musket caps were noted from the Crater battlefield in close proximity of the Mahone Monument. The lack of any discernable corrosion on the caps indicates that these artifacts do not relate to the battle. As the caps were less than fifty years old, only seven caps were collected as a sample. Since the National Parks Service no longer allows for reenactments to take place on battlefields, these caps were most likely used in a commemorative ceremony.

Though the caps in questions were still shiny and could not easily be confused with caps dropped during 1864 or 1865, over time these new items will corrode and may become visible indistinguishable from their historical originals. For this very reason, many historical parks now limit the use of modern musket caps in commemorative services.

CONCLUSIONS

The survey indicates the presence of large quantities of archaeological resources connected with the events of 1864. This material allows use to hypothesis lines of battle and avenues of assault. Though the lack of large items brass items, such as belt buckles, plates, insignia and lettering, and caps suggest that the area may have been looted by a person using an early type of metal detector that was sensitive to large brass and copper items, the Battle of the Crater is an archaeological site with significant integrity. Since any metal detecting survey only recovers a very small fraction of the materials present, further fieldwork would provide additional data from which to plot how the battle was developed.

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APPENDIX I

Order of Battle for the Battle of the Crater

Federal Forces:

General-in-Chief Lieutenant General Ulysses S Grant

A. Army of the Potomac-MG Geo. Meade

a. IX Corps-Maj. Gen. A. Burnside

1. First Division-Brig. Gen. James H. Ledlie

I. First Brigade-Bartlett/Barnes

- . 21st Massachusetts
- . 29th Massachusetts
- . 56th Massachusetts
- . 57th Massachusetts
- . 59th Massachusetts
- . 100th Pennsylvania

II. Second Brigade-Marshall/Robinson

- . 3rd Maryland
- . 14th New York Heavy Artillery
- . 179th New York
- . 2nd Pennsylvania Provisional Heavy Artillery

2. Second Division-Brig. Gen. Robert Brown Potter

I. First Brigade-Bliss

- . 36th Massachusetts
- . 58th Massachusetts
- . 2nd New York Mounted Rifles
- . 45th Pennsylvania
- . 48th Pennsylvania
- . 4th Rhode Island

II. Second Brigade-Griffin

- . 31st Maine
- . 32nd Maine
- . 2nd Maryland
- . 6th New Hampshire
- . 9th New Hampshire
- . 11th New Hampshire
- . 17th Vermont

3. Third Division-Brig. Gen. Orlando B. Willcox

I. First Brigade-Hartranft

- . 8th Michigan
- . 27th Michigan
- . 109th New York
- . 13th Ohio
- . 51st Pennsylvania
- . 37th Wisconsin
- . 38th Wisconsin
- II. Second Brigade-Humphrey
 - . 1st Michigan Sharpshooters
 - . 2nd Michigan
 - . 20th Michigan
 - . 24th New York Cavalry
 - . 46th New York
 - . 60th Ohio
 - . 50th Pennsylvania
- 4. Forth Division-Brig. Gen. Edward Ferrero
 - I. First Brigade-Sigfried
 - . 27th U.S. Colored Troops (Ohio)
 - . 30th U.S. Colored Troops (Maryland)
 - . 39th U.S. Colored Troops (Maryland)
 - . 43rd U.S. Colored Troops (Pennsylvania)
 - II. Second Brigade-Thomas
 - . 19th U.S. Colored Troops (Maryland)
 - . 28th U.S. Colored Troops (Indiana)
 - . 23rd U.S. Colored Troops (Maryland/Virginia)
 - . 29th U.S. Colored Troops (Illinois)
 - . 31st U.S. Colored Troops (New York)
 - III. Artillery Brigade-Monroe
 - . 2nd Battery Maine Light Artillery
 - . 3rd Battery Maine Light Artillery
 - . 7th Battery Maine Light Artillery
 - . 11th Battery Massachusetts Light Artillery
 - . 14th Battery Massachusetts Light Artillery
 - . 19th Battery New York Light Artillery
 - . 27th Battery New York Light Artillery
 - . 34th Battery New York Light
 - . Battery D, Pennsylvania Light Artillery
 - . 3rd Battery Vermont Light Artillery
 - . Mortar Battery
- B. Army of the James-Maj. Gen. Benjamin F. Butler
 - a. XVIII Corps-Maj. Gen. Edward Ord

1. Second Division-Brig. Gen. John W. Turner
 - I. First Brigade-Curtis
 - . 3rd New York
 - . 112th New York
 - . 117th New York
 - . 142nd New York
 - II. Second Brigade-Coan
 - . 47th New York
 - . 48th New York
 - . 76th Pennsylvania
 - . 97th Pennsylvania
 - III. Third Brigade-Bell
 - . 13th Indiana
 - . 9th Maine
 - . 4th New Hampshire
 - . 115th New York
 - . 169th New York
-

Confederate Forces:

- A. Army of Northern Virginia- General Robert E. Lee
 - a. Third Corps-Lieut. Gen. A.P. Hill
 1. First Division-Brig. Gen. Wil. Mahone
 - I. First Brigade-Weisiger/Rogers
 - . 6th Virginia
 - . 12th Virginia
 - . 16th Virginia
 - . 41st Virginia
 - . 61st Virginia
 - II. Second Brigade-Sanders
 - . 8th Alabama
 - . 9th Alabama
 - . 10th Alabama
 - . 11th Alabama
 - . 14th Alabama
 - III. Third Brigade-Hall
 - . 3rd Georgia

- . 22nd Georgia
- . 48th Georgia
- . 64th Georgia
- B. Department of NC and Southern Virginia-Gen. P.T.G. Beauregard
 - 1. First Division- Brig. Gen. B. Johnson
 - I. First Brigade-McAfee
 - . 24th North Carolina
 - . 25th North Carolina
 - . 35th North Carolina
 - . 49th North Carolina
 - . 56th North Carolina
 - II. Second Brigade-Elliott/McMaster
 - . 17th South Carolina
 - . 18th South Carolina
 - . 22nd South Carolina
 - . 23rd South Carolina
 - . 26th South Carolina
 - III. Third Brigade-Goode
 - . 26th Virginia
 - . 34th Virginia
 - . 46th Virginia
 - . 59th Virginia
 - 2. Second Division-Maj. Gen Rob. Hoke
 - I. First Brigade-Clingman
 - . 61st North Carolina
 - II. Second Brigade-Colquitt
 - . 6th Georgia
 - . 19th Georgia
 - . 23rd Georgia
 - . 27th Georgia
 - . 28th Georgia
- C. Confederate Artillery Units
 - a. Units from DNC/SV and ANV
 - 1. Col. Hilary Jones
 - I. Branch's Battalion-Maj. James Coit
 - . Halifax Battery-Wright

- . Petersburg Battery-Pegram
- 2. Brig. Gen. Pendleton
 - I. First Corp-Lt. Col. Frank Huger
 - . Haskell's Battalion- Maj. John Haskel
 - i. Branch Battery-Flanner
 - ii. Nelson Battery-Lamkin
 - . 13th Va. Light Art.-Maj. Wad Gibbs
 - i. Comp A Otey Battery-Walker
 - ii. Comp B Ringgold Battery-Dickerson
 - iii. Comp C Davidson's Battery-Chamberlayne
 - iv. Mortar Battery-Langhorne
 - II. Third Corp. Col. Reuben Walker
 - . Pegram's Battalion-Lt. Col. Will Pegram
 - i. Crenshaw's Battery-Ellett
 - ii. Letcher Light Art.-Brander

APPENDIX 2
Artifact Inventory