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# Washington Square Park Greenwich Village, New York Phase 3 Construction Field Testing Report

NYS Site Designation: Washington Square Park Potter's Field (WSPPF)  
NYS Site No.: USN A06101.016915

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Photo: J. Geismar 11/8/13

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Prepared for the New York City Department of Parks and Recreation  
Prepared through AAH Construction Corp  
Prepared by Joan H. Geismar, Ph.D., LLC  
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## ABSTRACT

This report presents the methods and findings of archaeological testing and monitoring undertaken intermittently between July 10, 2012, and February 19, 2013, during the third and, final phase of construction of Washington Square Park in Greenwich Village. Joan H. Geismar, Ph.D., LLC prepared the report for the New York City Department of Parks and Recreation through AAH Construction Corp. Shelly Spritzer, MA, assisted in the field and lab. Matthew A. Brown, Ph.D., was the Bioarchaeologist for this phase that included construction of a new combined comfort station and field building located mainly on the site of the former 1968-1970 comfort station.

As during the two previous construction phases, field testing and monitoring followed a scope of work approved by the New York City Landmarks Preservation Commission (NYCLPC) and was based on earlier monitoring reports and a 1A Archaeological Assessment. These had determined the park's potential archaeological sensitivity that included a late-18th-century domestic complex and a late-18th- to early-19th-century Potter's Field. The two previous construction phases had verified that human remains from the former Potter's Field, both from disturbed contexts and as intact burials, were an issue.

WSP3 archaeological oversight, which followed the park's established protocol for testing and monitoring and for addressing human remains, was carried out where construction-related excavation was more than 2 feet (0.61 m) below the 2008 park surface. This third and final phase comprised testing three catch basins (CB18 [which proved to have been installed as CB17 during Phase 2], CB19, and CB20), three light pole locations (LP17, LP18, and LP19), and two geothermal well sites (GTTP2 and GTTP3). Monitoring related to the introduction of a slab foundation for the new building was carried out during excavations between 1.5 and 3 feet (0.54 and 0.91m) below the 2008 ground surface (BGS). Monitoring also occurred during excavation of an 80-foot (24.4-m) long "Y" trench meant to accommodate geothermal well connections to the new building.

Three intact burials, documented or suggested in the field, were not explored but were protected *in situ* and 100 isolated (disturbed) human bones were removed for analysis and later reburial in the park. A minimum number of eight individuals was identified from this bone assemblage. Based on a single tibia (shinbone), one of them was identified as a seven-year-old child, the second child burial to be documented in the Potter's Field. The gender of three individuals was identified from these isolated bones, two being females, the third a male, and all three adults. Pathology was mainly limited to dental issues, some osteoarthritis on one individual, and a vertebral development defect on another. Based on negative evidence, all were of European ancestry.

Artifacts, both those noted in the field and those included in a grab sample comprising fourteen specimens, again document the grading that created the parade ground after the Potter's Field closed in 1825. They also document the disturbance caused by subsequent park renovations and construction, some of them quite recent. And finally, this field effort confirmed yet again that human remains are an ongoing issue within the limits of the former Potter's Field. And, as before, it confirmed that archaeological issues must be considered during any future park undertaking.

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# WASHINGTON SQUARE PARK

## Phase 3 Construction: Field Report

### INTRODUCTION

This report presents the methods and findings of the third and final phase of archaeological fieldwork associated with the reconstruction of Washington Square Park (Block 549) in Manhattan's Greenwich Village (Figure 1). The fieldwork, which comprised testing and monitoring, was undertaken between July 10, 2012, and February 19, 2013, in Quadrant 9c, the site of a new park building that will replace men's and women's comfort stations in a single structure built in 1968-1970. The new building will also house the park's new field office. The New York State Historic Preservation Office (NYSHPO) had designated the archaeological component of this New York City Department of Parks and Recreation (Parks) project as Washington Square Park Potter's Field (WSPPF) during the Phase 1 construction and assigned it the New York State site number USN A06101.016915. However, it is referred to in the associated archaeological reports mainly as "the park" or "WSP," here more specifically, WSP3.

Once again, Joan H. Geismar, Ph.D., directed and took part in the fieldwork and prepared this report, and Shelly Spritzer and Matthew A. Brown participated, the former as field and lab technician, the latter as project bioarchaeologist. The role of the bioarchaeologist was to identify faunal and human bone material in the field, document *in situ* any intact burials that might be encountered, and conduct the analyses of isolated (scattered) human remains in the laboratory. AAH Construction Corporation, the constructors during Phase 1, was again the contractor for this final construction phase. Mainly this entailed erecting a new building partially within the footprint of the demolished 1968-1970 comfort station (see Figure 2 for a rendering of the new building). The eastern half of the building will serve as the park's field office, the western half will house new comfort stations (hereafter, this multifunctional building will be referred to as the "new building"). The Area of Potential Affects (APE), in this instance, the area under construction during this final phase, was located in the southwest portion of the park, an area designated Quadrant 9c for the archaeological study (1A) and subsequent field investigations.<sup>1</sup> While initially defined by two of the park's new paths, the WSP3 APE ultimately was extended north (APE Extension) to include the sites of two geothermal wells to service the new building (see Figures 2 and 3).

In keeping with the two earlier construction phases, George Vellonakis, the park's designer was often on site and always available for consultation, as were Amanda Sutphin, Director of Archaeology at the New York City Landmarks Preservation Commission (NYCLPC) and Robert Egbert, New York City Department of Design and Construction (NYCDDC) Administrative Project Manager. In general, excavation was carried out with a CAT M315 excavator using excavation buckets ranging from 1.5 to 3.0 ft feet (0.5 to 0.91 m) wide. Once again, both testing and monitoring were carried out as warranted.

This third phase of field testing and monitoring was based on the findings of the project's 1A documentary report augmented by the results of WSP1 and WSP2 field investigations,<sup>2</sup> and, like them, it followed a scope of work approved by NYCLPC.<sup>3</sup> As before, the concern was that

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<sup>1</sup> Geismar 2005

<sup>2</sup> Geismar 2009, 2012a

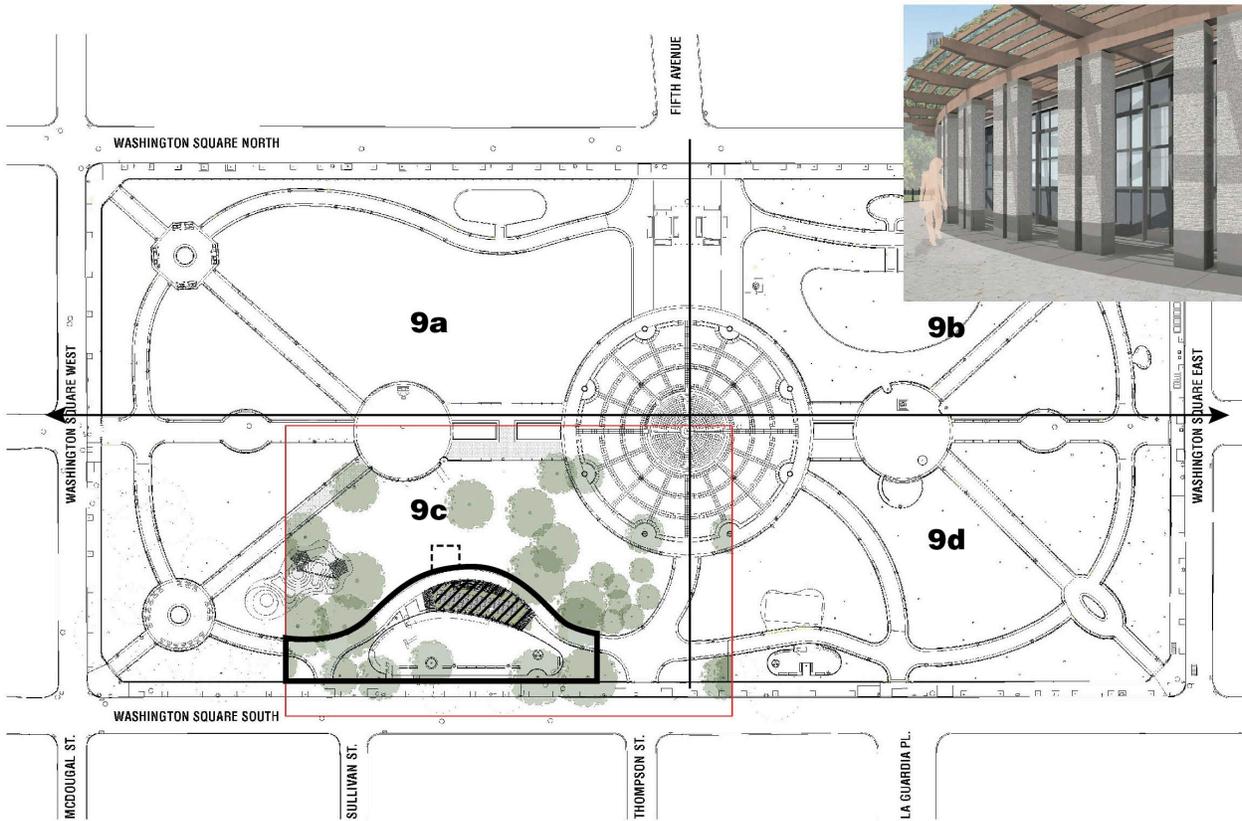
<sup>3</sup> Geismar 2012b



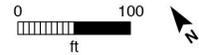
3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS | 500 ft Scale: 1:12,800 Detail: 14-0 Datum: WGS84

 Washington Square Park

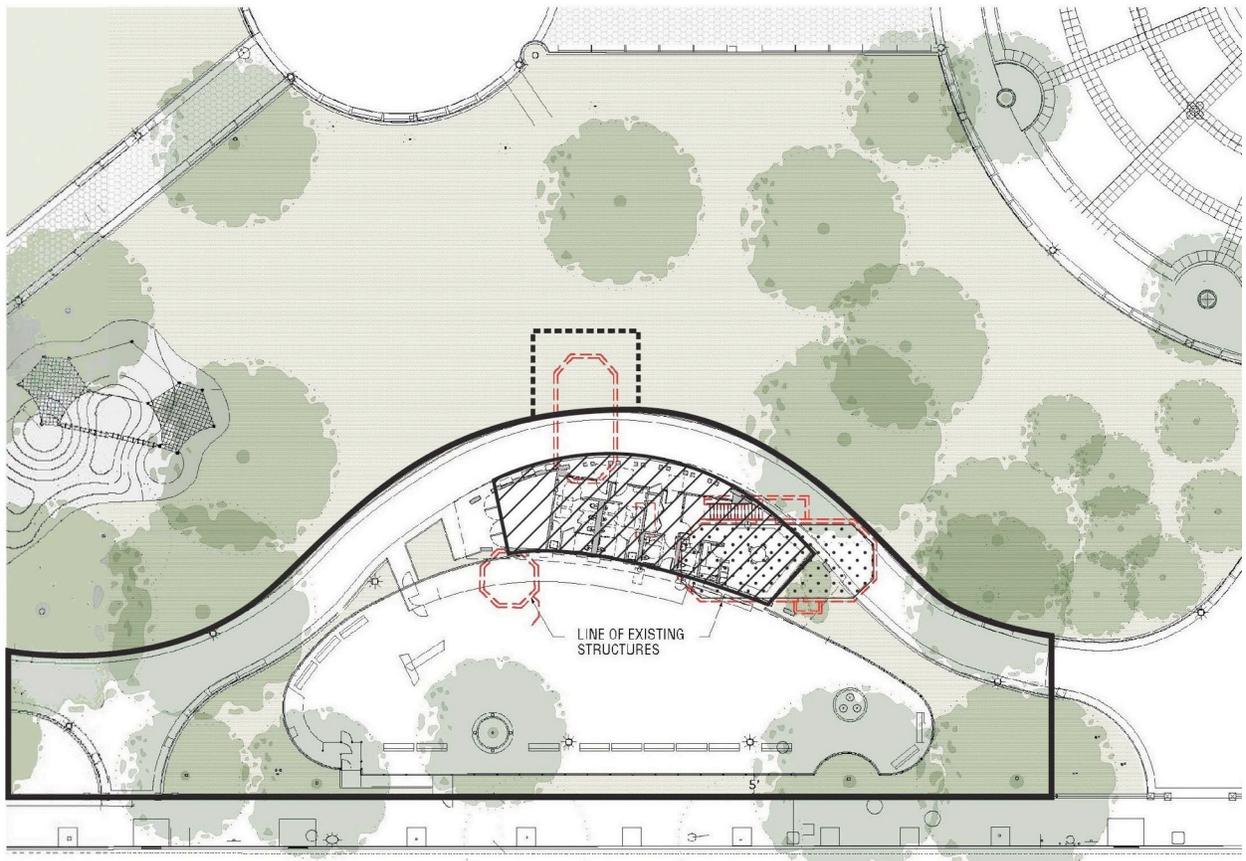




base map courtesy of Vellonakis 2011 (NYC Parks)



-  archaeological core area of potential effects (APE), approx.
-  APE extension, not to scale, approx.
-  new comfort station/field house
-  N-S quadrant line
-  E-W quadrant line, 4.5 ft diam. brick sewer c 21 ft underneath (1880-1892)
- 9a** research quadrant



base map courtesy of Vellonakis 2011 (NYC Parks)



- archaeological core area of potential effects (APE), approx.
- - - - - extended APE, not to scale, approx.
- - - - - 1968-1970 park structures, demolished
- ▤ 1968-1970 comfort station, basement reused
- ▨ new comfort station/field house

new infrastructure might encounter and disturb human remains from the late-18th- to early-19th-century Potter's Field located on most, but not all, of the park site. This public burial ground, arguably the city's second official Potter's Field,<sup>4</sup> was active for twenty-eight years on approximately the eastern two-thirds of what is now Washington Square Park. The concern about burials was verified by the discovery during WSP1 construction of ten intact burials documented *in situ* and 515 isolated (scattered) human bones collected and analyzed in the laboratory by Thomas Amorosi. These human remains comprised a total of sixteen individuals while three intact but only partially documented burials left *in situ* during WSP2, and seventeen isolated bones analyzed in the Brooklyn College laboratory, represented seven individuals.

All three construction phases complied with a protocol established by the NYCLPC to address human remains in the park. This entailed archaeological monitoring of all excavations deeper than 2.0 feet (0.61 m) below the park's 2008 surface. As before, the western part of the park, or somewhat less than one-third of the park's total area, was eliminated from this protocol. This privately-owned land was only partially developed by its owner, Thomas Ludlow. It remained private property until it was acquired by the city in 1825 to create a Parade Ground that incorporated the newly-closed burial ground (see Geismar 2005 for details).

The methods and findings of the WSP3 investigation are presented in the following sections of this report and in its appendices.

## METHOD

Early in the park's reconstruction efforts, four quadrants had been established to structure the park's archaeological investigations. These were designated 9a (the northwest quadrant), 9b (the northeast quadrant), 9c (the southwest quadrant), and 9d (the southeast quadrant; see Figure 2). It has been noted that the concern during this third and final construction phase was mainly an untested part of Quadrant 9c (see Figure 2).<sup>5</sup> As it happened, this was not far from where the beautifully engraved headstone of James Jackson, a young man born in County Kildare who died of yellow fever in 1799, and three unrelated burials were discovered during WSP2 construction (see Geismar 2012a). (It should be noted that, despite finding the headstone, Jackson's grave was not found).

The earlier construction phases determined that intact burials could be encountered approximately between 2.5 and 12.0 feet (0.76 and 3.7 m) below the pre-construction (2008) ground surface. Among them were three deep and four shallow burials located within Quadrant 9c.<sup>6</sup> Since the new building was to be partially founded on the basement of the demolished 1968-1970 comfort station and partly on a new concrete slab, it did not require deep foundation excavations. However, associated catch basins, light poles, and geothermal wells and their connections were an archaeological concern, as was the relatively shallow excavation required to accommodate the new building's concrete slab.

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<sup>4</sup> While the city's early almshouse had associated burial grounds, the first "official" Potter's Field was briefly located within the bounds of what is now Madison Square Park. It was closed and replaced by the Greenwich Village site in 1797 (e.g., Geismar 2005:7, fn 12).

<sup>5</sup> Quadrant 9c had been partially investigated during both earlier construction phases (see Geismar 2009 and 2012a).

<sup>6</sup> Geismar 2009, 2012a

Once again, the field method called for monitoring backhoe excavations either in anticipation of, or during, introduction of the planned infrastructure. The aforementioned discovery of several intact burials nearby in 9c, as well as James Jackson's well-preserved headstone, indicted that the WSP3 APE should be considered potentially highly sensitive.

During this third construction phase, three catch basins (CB18,<sup>7</sup> CB19, and CB20), three light pole locations (LP17, LP18, and LP19), and two geothermal well sites (GTTP2 and GTTP3) were tested between July 10, and August 29, 2012 (see Figure 4 for schematic profiles of selected catch basin, light pole, and geothermal well test excavations). On September 20, 2012, excavation between 1.5 and 3 feet (0.54 and 0.91m) below the then current ground surface (BGS) related to introduction of the new building's concrete slab was monitored north and west of the old comfort station. This wide, shallow trench was designated the Comfort Station Foundation (CSF) in the field.<sup>8</sup> And, finally, on February 19, 2013, two sections of an 80-foot (24.4-m) long "Y" trench were monitored for lines to connect the two geothermal wells to the northeastern corner of the new building (see Figure 5 and Photos 1 to 6; a summary of field notes will be found in Table 1).

## FINDINGS

As in the two earlier construction phases, small ceramic fragments noted in the field were mainly related to the early-19th-century filling undertaken to create a new Parade Ground between May 24th, 1825, and sometime in 1829. Also, as during WSP2 construction, no caches of early-19th century ceramics and butchered animal bones were found comparable to those encountered during WSP1 testing on the aforementioned developed portion of land in Quadrant 9a. Although the artifactual material indicated that subsurface conditions were similar to those previously documented, it also clearly indicated extensive disturbance and filling. This was particularly true of soils found in the relatively shallow excavations related to the new building's foundation (CSF). Here the cultural material, such as a "BACARDI RUM" bottle with "[19]69" embossed on the base, a "COCA-COLA" can, and "CALVERT" and "SSBCO" embossed bricks, was indicative of later construction and filling. Two small catch basins were exposed in the excavation trench, both of them inactive. One, north of the former comfort station foundation, was leveled to the new grade, the other, on the west side of the excavation, was left intact. Both probably date to 1934 park construction.

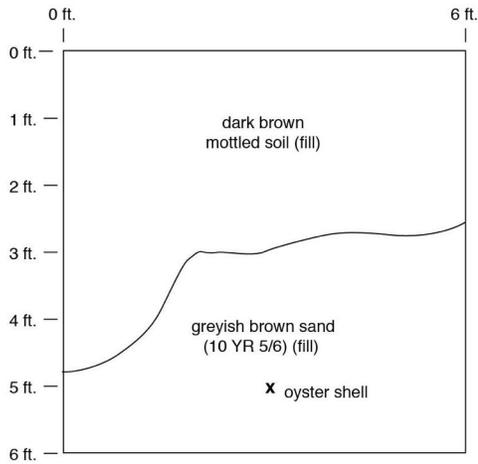
Evidence of a child burial was documented by a single isolated (scattered) bone recovered from the shallow CSF backfill (another isolated bone, the femur of a full term or newborn infant recovered during WSP2 in the park's southeast quadrant [9d], had hitherto been the sole evidence of a child burial). This proved to be the right tibia (shinbone) of an approximately seven-year-old child (see Appendix B, WSP3-2012-SK5-A1). A total of 100 isolated bones were collected for analysis, and two intact burials were documented during this third construction phase (another burial was indicated in GTTP2 but not explored).

The majority of the isolated bones was recovered from excavated soil during testing for GTTP2 located just west of the demolished 1968-1970 field house. Once again, as during the other construction phases, no burial shaft was present to alert excavators to a potential burial.

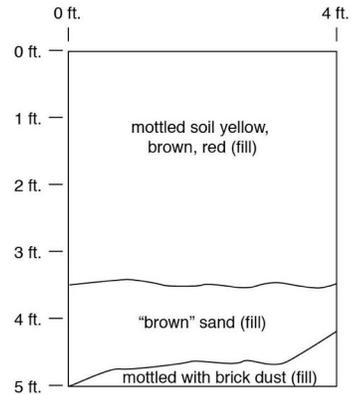
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<sup>7</sup> Excavation quickly indicated that CB18 actually had been installed during WSP2 construction.

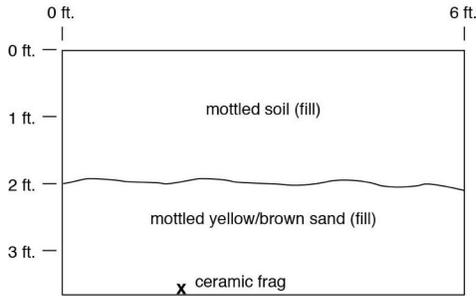
<sup>8</sup> As noted, half of the building will provide new toilet facilities, the other half will serve as the park's field house.



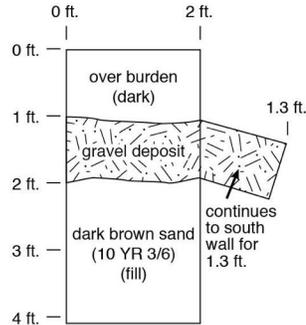
a CB19 South Wall



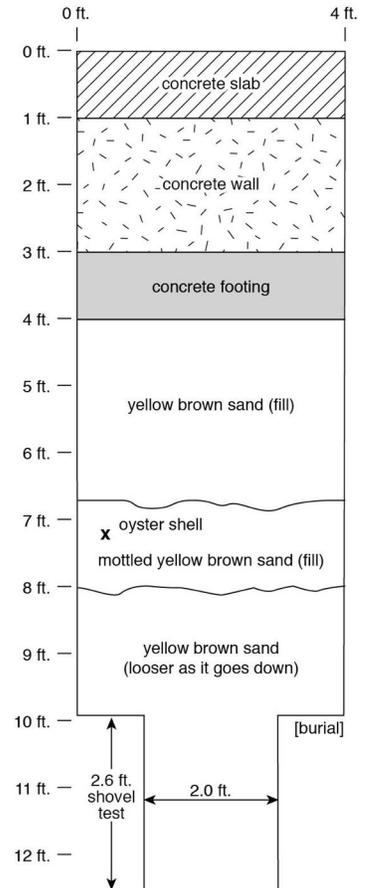
b CB20 East Wall



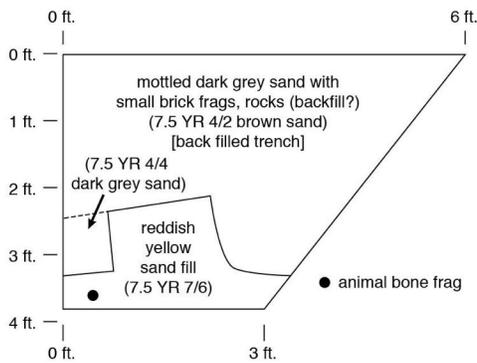
c LP17 East Wall



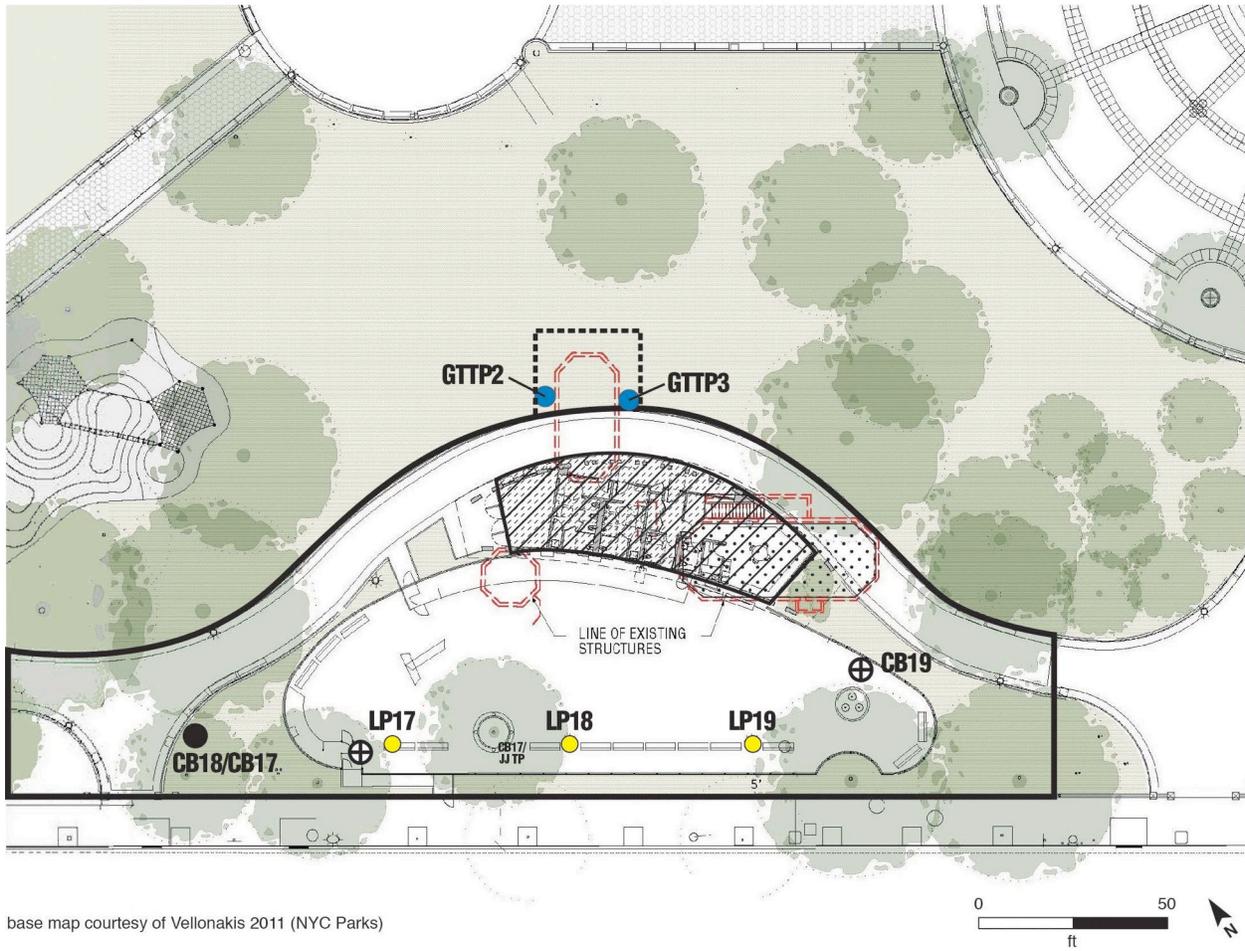
d LP18 East Wall



f GTTP3 West Wall



e LP19 East Wall



- archaeological core area of potential effects (APE)
- extended APE, not to scale, approx.
- 1968-1970 park structures, demolished
- geothermal test pit (GTTP)
- light post (LP)
- existing catch basin (CB)
- new catch basin (CB)
- 1968-1970 comfort station, basement reused
- new comfort station/field house
- monitored between .5 and 3.0 ft BGS

Table 1. WSP 3 CONSTRUCTION Field Summary (see Appendix A for details)

Unit	Date	Location	L x W x D 10ths of ft (m)	Cat No.	Remarks (measurements in 10 <sup>th</sup> of ft and m)
CB18	7/10/12	Near SW limit of the APE	12.5 x 1.2 x 1.5 (3.81 x 0.36 x 0.46)	325	Proved to be a catch basin introduced during recent WSP2 construction; terminated at 1.5 ft (0.46 m) BGS.
CB19	7/10/12	E of 1968-1970 comfort station, c 20.0 ft (6.1 m) N of park curb	9.7 x 6.0 x 6.0 (12.96 x 1.82 x 1.82)	327	Fill throughout.
CB20	7/10/12	Off NE corner of 1968-1970 comfort station	12.0 x 6.5 x 5.0 (3.66 x 1.98 x 1.52)	326	Fill with notable variation in the sands; brick at 5.0 ft (1.52 m) BGS; 1968-1970 comfort station not yet demolished.
LP17	7/10/12	E of CB18	8.0 x 6.5 x 3.65 (2.44 x 1.99 x 1.11)	328	Fill throughout
LP18	7/10/12	Between LP17 and LP19	5.5 x 5.4 x 4.1 (1.67 x 1.64 x 1.25)	330	Gravel deposit at 2.0 ft (0.61 m) BGS. Fill.
LP19	7/10/12	S of 1968-1970 comfort station	6.0 x 6.5 x 3.8 (1.82 x 1.99 x 1.15)	329	Yellow-gray sand 3.0 ft (0.91 m) BGS; terra-cotta drain pipe diagonally across excavation at 3.0 ft (0.91 m) BGS; bricks; bone frag recovered below yellow-gray sand of drain-pipe trench. Fill.
GTTP2	8/28/12	W of old foundation; probably 1928 comfort station	21.6 x 23.3 x 11.0 + ST to 13.0 BGS (6.58 x 7.10 x 3.35 +ST to 3.96)	331	Female skeletal material at c 11.0 ft (3.35m) BGS (in backdirt), at least partially disturbed previously; mixed fill documented to c 11.0 ft (3.35 m) BGS; corroded coffin nails in fill; ST; location marked for W geothermal well.
GTTP3	8/28/12 - 8/29/12	E of old foundation; probably 1928 comfort station	9.0 x 8.0 x 10.0 variable (2.74 x 2.43 x 3.05 variable)	332	8/28/12; pit divided by a 4.0-ft (1.21 m) foundation wall remnant (brick over concrete) from 1928 comfort station; removed; 8/29/12: outline of decayed coffin; skeletal material minimally exposed at c. 10.0 ft (3.05 m) BGS; covered with clean sand and left <i>in situ</i> ; (suggestion of additional burial in E pit wall at same depth; undisturbed); ST identified a location (marked) for E geothermal well.
CSF	9/20/12	Within footprint of new comfort station, N and W of 1968-1970 comfort station basement	c 72 x variable (4.0 to c 25.0) x 3.0 (21.94 x variable 1.21 to 7.62 x .91)	333	Monitored excavation N and W of demolished 1968-1970 comfort station (basement intact); upper 1.5 ft (0.46 m) BGS excavated w/o monitoring; monitored 1.5 to 3.0 ft (0.46 to 0.91 m) BGS; 2 small, abandoned, brick catch basins exposed: N of foundation at c 3.0 ft (0.91 m) BGS, it was left <i>in situ</i> ; higher, shallow catch basin W of 1968-1970 comfort station removed. Fill throughout
GTTR	2/19/13	From E and W geothermal well (a "Y") to SW corner of new building foundation	E part c 51.0 (15.54); W part c 24.6 (7.49) x variable 3.5 to 8.0 at W end (1.06 to 2.43) x 4.0 (1.21) to 6.0 (1.82) graded	334	Trench in 2 parts; 7.0 ft (2.91 m) associated with E geothermal well location previously monitored during CSF monitoring. Fill throughout.

APE = area of potential effects; BGS = below ground surface; CB = catch basin; CSF = 1968-1970 comfort station foundation; GTTP = geothermal test pit; GTTR = geothermal trench; LP = light pole; ST = shovel test



**Photo 1. (above)** East wall of LP19. The gray sand in the upper left corner is evidence of a previously backfilled utility trench. The “yellow” sand next to and below the trench is old park fill (an animal bone was found below the trench fill). See Figure 4e for a schematic profile. (Geismar 7-10-12)

**Photo 2. (upper left)** CB20 looking south, The multi-colored soils reflect fill and include brick rubble c. 3 ft (0.91 m) BGS. See Figure 4b for a schematic profile. (Geismar 7-10-12)



**Photo 3. (lower left)** GTTP2 on the west side of the demolished field house slab. Disturbed human remains were recovered from backdirt (see Photo 4) and others were left *in situ* (see Photo 7). (Geismar 8-28-12)

**Photo 4. (below)** Isolated human remains from the GTTP2 backdirt at a depth of 11.2 ft (3.41 m). A previously disturbed burial, it proved to be that of a young woman (WSP3-2012-SK1-A1). (Geismar 8-28-12)





**Photo 5.** Former comfort station after demolition (foreground). Its foundation and basement (under plywood and tarps) will be incorporated into the new building. Excavation of the shallow trench (CSF) for the new building's slab (right and rear) was monitored. The view is looking west. (Geismar 9-20-12)



**Photo 6.** Same as above looking east toward the floor (concrete) and basement of the demolished 1968-1970 comfort station seen under the arm of the excavator. (Geismar 9-20-12)

A large number of bones (N72) from what proved to be a single individual (see Appendix B, Analysis of Human Remains, WSP3-2012-SK1-A1) were recovered from backdirt. However, the bones came from a disturbed context immediately adjacent to the 1968-1970 field house and its construction may have impacted the grave. Or it may have been disturbed in 1928 when a former comfort station was erected in this vicinity. However, it is also possible that some undocumented park activity caused the disturbance.

While the lack of evidence for a burial shaft, as occurred in this instance, was not unique, burials were usually associated with at least an indication of a decayed coffin (a coffin outline, wood fragments, and/or corroded coffin nails). However, this, too, was lacking although a coffin was suggested that appeared to be associated with what proved to be a second disturbed burial noted in the eastern trench wall. This burial was revealed by exposure of the proximal (upper) end of two tibiae (shinbones). These bones and, therefore the burial they represent, were left undisturbed *in situ* (Photo 7).

The 72 bones collected from the backdirt, although representing a single individual, were lacking a tibia and foot bones, and definitely were not the same individual represented by the two tibiae noted in the trench wall. Moreover, despite the large number of recovered bones from this individual, the upper skull was also among the missing skeletal elements (see Analysis of Human Remains, Appendix B, WSP3-2012-SK1-A1). Despite the burial's great depth (approximately 11.2 feet [3.41 m ] BGS), it is possible the upper skull was a trophy taken during one or more of the earlier discoveries suggested above. This interpretation seems particularly valid given the depth of fill at this location. It appears that filling, for whatever reason, was carried out in the past that caused disturbance to these deeply buried remains. Or, alternatively, that the ground surface was once lower and the burials originally shallower and, therefore, more accessible. Ultimately, a non-sensitive location for the geothermal well in GTTP2 was determined, marked with a pipe, and the pit was backfilled.

Two intact burials discovered in GTTP3 were located east of a buried wall apparently associated with the 1928 comfort station. These, too, were left *in situ* and, therefore are not included in the Analysis of Human Remains (Appendix B). One was indicated by a coffin outline and an exposed long bone (Photo 8), the other by the outline of what appeared to be the western end of another decayed coffin. These intact burials were documented at c. 10 feet (3.1 m) BGS, or about a foot



**Photo 7.** The intact proximal end of two tibiae (shinbones) exposed in the eastern part of GTTP2 (arrow). Although a disturbed burial, the remains were left *in situ*. (Geismar 8-28-12)



**Photo 8.** Outline of a decayed coffin (arrow) in GTTP3 at c. 10 ft (3.1 m) below grade. Long bones (bottom), assumed belonging to this burial, were partially exposed by the backhoe. The burial was left *in situ*. (Geismar 8-29-12)

higher than the assumed location of the disturbed burial in GTTP2. The placement of the GTTP3 burials suggests they were originally located on a slight eastern slope.

A GIS map plotted by Parks locates the general vicinity of these four burials (Figure 6). Since three of them were neither fully exposed nor the bones analyzed, there is no further information. A 2-foot (0.61 m) deep shovel test between the two *in situ* burials in GTTP3 proved devoid of human remains. This location was marked with a vertical pipe that extended above ground to identify a suitable location for the second, more easterly, geothermal well and the pit was backfilled. A summary of field notes from testing and monitoring will be found in Appendix A.

## ARTIFACTS

As noted above, the cultural material observed and only minimally collected in Quadrant 9c included ceramic fragments (sherds) that suggested the filling that created a terrain suitable for a Parade Ground after 1825. However, during this construction phase, these early 19<sup>th</sup>-century ceramics were mixed with later objects that document extensive and ongoing filling in quadrant 9c. For example, the aforementioned Coca Cola can and embossed bricks were associated with early ceramic sherds that were photographed but not collected. Corroded nails—the site’s ubiquitous coffin nails—were also noted in several places with samples recovered from GTTP2 and GTTP3, as were a glass fragment from a deep level in GTTP2 (WSP3 331-1) and ceramic fragments from general fill in LP17 (WSP3 228-1).

All told, only fourteen artifacts, and some wood slivers associated with coffin wood fragments, were collected and processed. Thirteen are shown in Photo 9 (see Appendix C for an artifact catalog). However, the remaining artifact stands out, its provenience unknown except that it was recovered from backdirt on the south side of the shallow CSF excavation. This is a somewhat unusual kaolin clay pipe bowl that depicts what appears to be a meeting among three military men (WSP3 333-1; Photo 10). The pipe’s shape indicates an 1850-1910 manufacture date,<sup>9</sup> and its iconography, particularly the hats worn by its subjects, suggests a Civil War association (see Photos 11 to 13), but this is speculative.



**Photo 9.** A grab sample of thirteen artifacts recovered from four test units. It includes a glass fragment from GTTP2 from a depth of 11.2 ft (3.4 m). Also corroded coffin nails (upper left and right), possible coffin wood fragments, and an early-19<sup>th</sup>-century blue shell-edged pearlware rim fragment (center) and above it the base of a redware bowl or crock. (Geismar 2013)

## HUMAN REMAINS (see ANALYSIS OF HUMAN REMAINS, APPENDIX B)

As mentioned previously, the analysis of disturbed (isolated) human bone recovered during WSP3 construction followed the established protocol for addressing human remains from Washington Square Park. A sample of 100 recovered bone specimens proved to represent a minimum number of

<sup>9</sup> Mallios 2005:96 citing Atkinson and Oswald 1969



**Photo 10.** This kaolin pipe bowl was recovered from backdirt during shallow excavations related to the new building's slab foundation. It appears to depict a Civil War related military encounter, perhaps a peace agreement as suggested by a handshake between the men on the left and the right. (Geismar 2013)



**Photo 11.** Left side of the pipe showing stippling and a fragment of the stem. The conical hat on the soldier to the right is among those associated with the American Civil War (see Photo 13). (Geismar 2013)



**Photo 12.** Enlargement of the pipe bowl image. The variety of hats seem typical of those documented during the Civil War (e.g., see Photo 13 below). (Geismar 2013)



**Photo 13.** Four Union officers of the 4th Pennsylvania Cavalry at Westover Landing, Virginia. While all are officers, three different hat styles are represented. Although officers favored brimmed hats, the billed cap worn by two of them here was worn by both Union and Confederate soldiers. In other words, hat styles were varied. The “slouch hat” on the officer standing in the center is somewhat similar to that worn by the soldier to the right on the WSP pipe (see Photo 12 above). (American Civil War Photo Gallery)

eight individuals; two of the eight were identified as adult females and a third a male. The gender of the five others could not be identified. The additional burial noted in GTTP2 and two others in GTTP3, bringing the total minimum number of individuals (MNI) from WSP3 to eleven, were left *in situ* without further exploration.<sup>10</sup>

It has been mentioned that a child burial was represented by the partial left tibia (shinbone) of a seven-year-old (WSP3-2012-SK5-A1). This bone offered evidence of only the second child burial (the first, also an isolated bone, was the right femur [thighbone] of a prenatal or neonatal baby recovered from fill in Quadrant 9d during WSP2 monitoring [Brown in Geismar 2012:54]). In the WSP3 sample, the child burial represents 9 % of the identified MNI (N11), somewhat less than the 6 % in the WSP2 MNI sample (N16); there were no such burials documented in WSP1. When the two child burials are considered with the MNI from all three construction phases (N32), child burials again represent only 6 % of the sample. This is considerably lower than the sample of child burials in the late period of the African Burial Ground (ABG, c. 1776 to 1795, and, therefore, basically contemporaneous with the Potter's Field) where, of the 114 burials in the sample, 28, or 24.6%, were children under the age of fifteen and, of these, 13, or 11.4%, were under a year.<sup>11</sup>

Excavations in City Hall Park, where the city's 17<sup>th</sup>- and 18<sup>th</sup>-century Almshouse burial ground was located, revealed a cluster of at least 24 burials of children under six years old (London 2004:10).<sup>12</sup> The reason for this cluster is unknown, however the analysts suggest it could be a designated area for child burials or these may be children who died together. If it was the former, it is conceivable that the monitoring and testing in Washington Square Park did not occur where a similar burial cluster might be located. However, "interspersed" child burials were found throughout the African Burial Ground. If this was also the Potter's Field burial practice, it is more than likely that the dearth of child burials documented during the park's three construction phases merely reflects the non-systematic nature of the investigation, as it might also suggest the poor preservation of juvenile bones as mentioned in the ABG report. This is particularly so since at least one mention of Potter's Field burials—a newspaper article from 1799—notes that "a considerable portion" of the 72 burials documented in the Potter's Field's 1799 ledger book from August were children.<sup>13</sup>

Once again, as with the double tooth of a young woman discovered at a great depth during WSP1 testing, and the blackened and filed teeth of another young woman represented by a partial skull found in testing during WSP2, the teeth of a young woman (WSP3-2012-SK1-A1) discovered in Quadrant 9c evidenced tooth issues. These included a dental carie (a cavity), plaque, and crowding—nothing life threatening or revelatory, but very humanizing. Some physical defects, mainly congenital rather than induced, were noted on the spine of SK1, but basically analysis of the WSP3 sample did not provide much new information about the buried population or burial practices. It did, however, confirm yet again that human remains are present in Washington Square Park, both as intact burials and isolated, scattered human bone.

Despite great disturbance in Quadrant 9c, as evidenced by a mixed fill, the potential is high for intact burials. Like those encountered during this WSP3 construction phase and the two earlier

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<sup>10</sup> Given the small area required to install the geothermal well and the site disturbance that safe examination of this deeply buried discovery would have required, the burial was not investigated beyond noting its horizontal and vertical location before protecting it *in situ*.

<sup>11</sup> This was noted in Geismar 2012a:28 with the information from Perry *et al.* 2006:246.

<sup>12</sup> I thank Amanda Sutphin, LPC Director of Archaeology, for calling my attention to child burials in the Almshouse sample.

<sup>13</sup> *New York Gazette* 1799 (see also Geismar 2012a:22); unfortunately this ledger book apparently has been lost.

phases, they may be deeply buried, but as was found in WSP1, they also may be shallow, and isolated bones are a potential issue throughout much of the park.

## SUMMARY AND CONCLUSIONS

The archaeological field investigations undertaken during Washington Square Park's third and final construction phase comprised testing three catch basins (CB18,<sup>14</sup> CB19, and CB20), three light pole locations (LP17, LP18, and LP19), and two geothermal well sites (GTTP2 and GTTP3) and monitoring most if not all excavation between 1.5 and 3 feet (0.54 and 0.91m) below the 2008 ground surface (BGS) to accommodate introduction of the new park building's concrete slab. And, finally, two sections of an 80-foot (24.4-m) long "Y" trench were monitored for lines to connect the two geothermal wells to the new building (see Table 1).

A grab sample of fourteen artifacts, a considerably smaller artifact sample than the two previous phases (77 artifacts from Phase 1 and 166 from Phase 2), again included ceramic fragments (2) and coffin nails (7). Like the artifacts from the two earlier construction phases, those noted in the field but not collected, and even the two ceramic fragments that were collected, suggest the filling and grading that followed the 1825 closing of the Potter's Field. Coffin nails again confirm the site was once a burial ground, in this case, the City's second official Potter's Field. They also indicate that at least some, if not all, were coffin burials, and the many modern bottles, cans, and other recent objects in the fill document the extensive disturbance that subsequently occurred in this quadrant.

The human skeletal material from WSP3 comprised 100 isolated bones studied at the Brooklyn College Zooarchaeology Laboratory and Hunter College Bioarchaeology Laboratory, CUNY, by Matthew Brown, the bioarchaeologist for this third construction phase (see Appendix B for his detailed bone analysis). These bones and bone fragments in fill were determined to represent eight individuals, two of them identified as females, one a male, and one a child (gender not determined). Two intact burials noted in the field and the aforementioned tibiae in GTTP2 that have proved to represent a separate, disturbed burial, bring the minimum number of buried individuals encountered during this final construction phase to eleven and a total for all three construction phases to 32. The two presumably intact burials in GTTP3, which were noted but not exposed during WSP3 investigations, were protected where they were found (*in situ*) and their location flagged to avoid damage during construction of the proposed geothermal wells. In addition, the location of GTTP2 and GTTP3 was documented by a GIS survey conducted by Parks (see Figure 6).

The skeletal sample from WSP3 comprised a larger minimum number of individuals (MNI) than WSP2 (eleven versus seven) but fewer than the sixteen noted in WSP1. Moreover, the 100 analyzed bones from WSP3 were many more than the 17 from WSP2 but many fewer than the 515 from WSP1. Of the eleven MNI from WSP3, a male and two females were identified. All but a seven-year-old child were adults, but younger than the late-middle-aged male and female remains found as stacked burials during WSP2. Once again, when the percentage of child burials from the Potter's Field (9 % in WSP2, 6 % in WSP3, and 0 % in WSP1) is compared with data from the African Burial Ground's contemporaneous late stage, the difference is noteworthy. Yet, as previously mentioned, the WSP2 report notes a 1799 newspaper account that refers to the "considerable" number of child burials that occurred in the Potter's Field during August alone.

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<sup>14</sup> As noted previously, CB18 actually had been installed during the earlier WSP2 construction phase.



Courtesy of NYC Parks; base image predates mapping.

Left yellow triangle is "GTTP2"; right yellow triangle "GTTP3"

Once again, given the small sample size, little can be said about individuals in the WSP3 skeletal assemblage (see Appendix B this report for detailed analysis of this skeletal material). While one individual (WSP3-2012-SK1-A1) evidenced congenital defects on the spine, tooth decay, plaque, and tooth crowding, the analyzed sample of isolated bones from WSP3 mainly reconfirms that human remains are to be found within the boundaries of Washington Square Park, and particularly in and near the eastern portion of the southwest quadrant (9c). It is also possible that the stacked burials encountered during WSP2 near the southern edge of the park indicate that pit burials were placed on the perimeter of the Potter's Field (as described in an 1824 newspaper account noted in the earlier reports),<sup>15</sup> but this is merely speculation given the limited excavation associated with intact burials.

That said, the testing and monitoring carried out during the three phases of Washington Square Park's construction have not only confirmed that burials from the late-18<sup>th</sup> and early-19<sup>th</sup>-century Potter's Field remain, it has also identified several areas of potential sensitivity to ensure that any future park construction in those areas will be on alert (see Figure 7 for all tested areas to date and Figure 8 for GIS mapped locations of trenches with burials). With the discovery of James Jackson's headstone during WSP2 construction, and the research it engendered, it has become clear that not only was the Potter's Field a final resting place for the indigent and unknown—the very definition of a Potter's Field—but also for anyone, no matter what their status, who died of yellow fever in 1799 and apparently during both earlier and later incursions of the disease.<sup>16</sup> This explains previous, seemingly anomalous finds that included heretofore mysterious headstones and coffins discovered during excavation for the Washington Arch in 1890.<sup>17</sup> In addition, it has altered the very concept of this particular Potter's Field and its buried population.

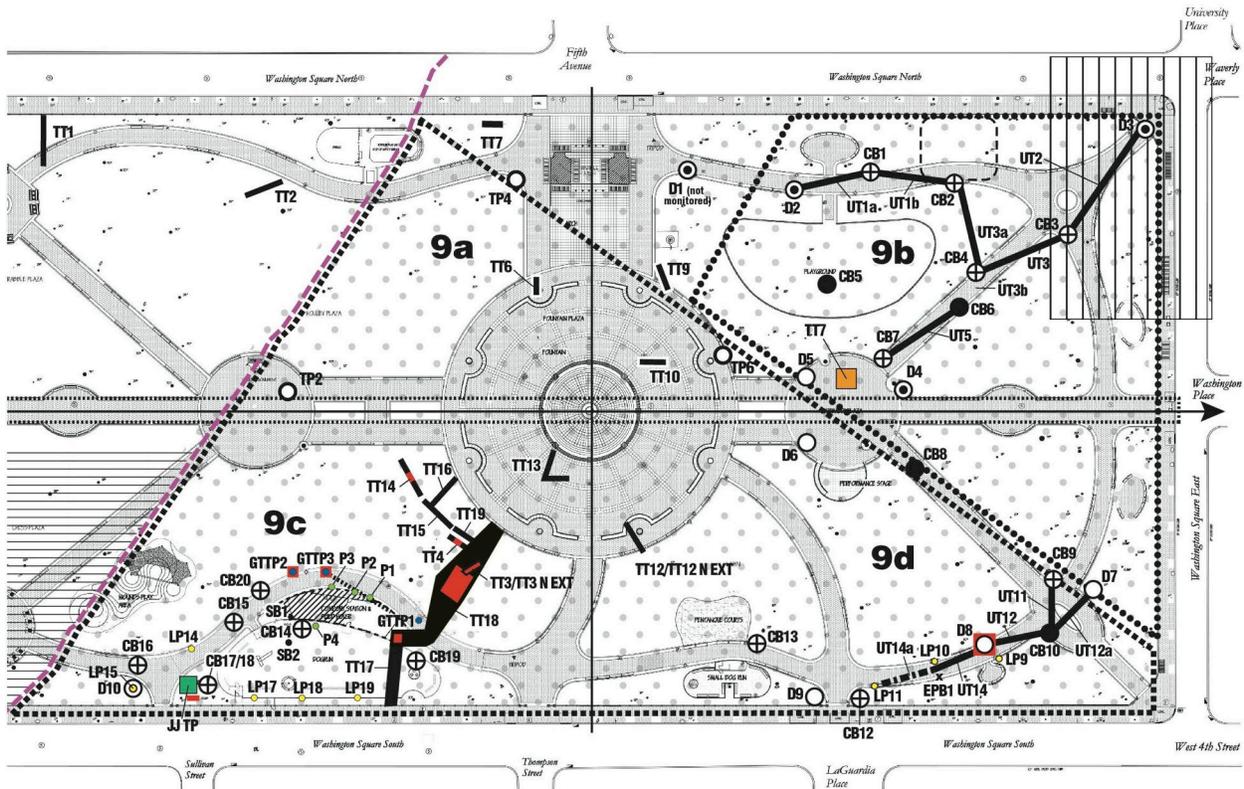
Prior to Washington Square Park's three phases of construction and associated archaeological investigations, data from the African Burial Ground (1665? to 1795), particularly the late burials that were basically contemporaneous with the Potter's Field, were considered valid for comparative purposes. However, this "fit" was compromised by a new awareness that the buried population in the Potter's Field is not, in fact, homogenous. Instead, it includes an unknown number of burials that do not comply with the definition of a Potter's Field. The Potter's Field burials have proved to be a unique collection of the well off and the poor and the known and the unknown of various backgrounds. In other words, it is a historical human resource from the post-Revolutionary War era, with the burials reflecting both the state of social welfare and the fear and madness engendered by yellow fever, at the time a summertime scourge that was little understood. As such, it is a resource that warrants recognition and protection in perpetuity. To this end, the analyzed, isolated bone material from all three construction phases will be respectfully and appropriately reburied within the park. Moreover, James Jackson's headstone, recovered during WSP2 investigations, will be reinstalled in the park, a fitting memorial to those who were, and still are, buried in the Potter's Field, the antecedent to Greenwich Village's historic and beloved Washington Square Park.

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<sup>15</sup> *New York Evening Post* 1824

<sup>16</sup> Francis (1858) tells us that during the "visitations of the Yellow Fever in 1797, 1798, 1801, and 1803...many a victim of the pestilence, of prominent celebrity, was consigned to [the Potter's Field] regardless of his massive gains or his public services." To that can be added the epidemic of 1799 that took the life of James Jackson and 352 others between August 28 and October 21, 1799 (Geismar 2012a:25).

<sup>17</sup> *NY Times* 1890 and as discussed in Geismar 2005, 2009, 2012a.



- N-S quadrant line
- ↔ E-W quadrant line, 4.5' diam. brick sewer c 21' underneath (1880-1892)
- ⊙ Potter's Field (1797-1825) within the park's limits (approx.)
- ⋯ portion of Anthony Portuguese Farm (1645) within Washington Square Park, approx.
- ⋯ portion of Manuel Trumpeter's Farm (1643) within Washington Square Park, approx.
- The Minetta Waters (approx.) and possible wood culvert
- ▭ church cemetery/cemeteries partially or all within Potter's Field (pre 1817)
- ▭ not archaeologically sensitive
- ⋯ disturbance (sewer) documented/assumed
- 9a** research quadrant
- utility trench (UT) or test trench, monitored or tested, nts (Note: TT3/TT3 N EXT. later incorporated into TT18)
- ⋯ shallow trench, monitored
- Garibaldi statue, relocated
- human remains found in area
- James Jackson headstone, unrelated human remain to south
- ⊙ existing drop inlet (D)
- new drop inlet (D)
- existing catch basin (CB)
- ⊕ new catch basin (CB)
- test pit (TP), approx.
- light pole (LP)
- geothermal test pit (GTTP)
- JTP James Jackson test pit
- x electrical splice box (EPB)
- pit (P)
- soil boring test (SB)
- ▨ comfort station foundation (CSF)
- ⋯ geothermal test trench (GTTR)

Note CB 18/17 tested and installed during WSP2



Courtesy of NYC Parks; base image predates mapping.

\* unrelated burials south of headstone

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WASHINGTON SQUARE PARK PHASE 3 - APPENDIX A  
**FIELD NOTE SUMMARY**

**WASHINGTON SQUARE PARK PHASE 3  
FIELD NOTE SUMMARY  
(Note: measurements in 10<sup>ths</sup> of feet)**

**QUADRANT 9c**

**CB18**

**Cat. No. 325 (7/10/12) Length 12.5 Width 10.2 Depth 1.5**

**Existing basin.** Appears to be a new catch basin (installed by Tucci Equipment Rental during Phase 2 Construction). Covered by plywood sheeting. Terminated at 1.5 ft BGS. Photographed.

**CB19**

**Cat. No. 327 (7/10/12) Length 9.7 Width 6.0 Depth 6.0**

East of 1968-1970 Comfort Station. Rocks at c. 1.5 ft BGS, also brick rubble. Yellow sand at c. 2.0 ft with Belgian Block. Relatively clean brown sand from c. 2.0 ft BGS to bottom of excavation.

Oyster shell c. 5.0 ft BGS in brown sand. Fill. Excavation photographed and profiled.

**Note:** Backhoe broke down, excavation halted until mechanic arrived on site.

**CB20**

**Cat. No. 326 (7/10/12) Length 12 Width 6.5 Depth 5.0**

Brick rubble at c. 3.0 ft BGS. Mottled yellow/reddish brown soils to c. 3.5 ft BGS over brown sands to c. 5.0 ft BGS. Bottom along east wall of pit mottled brown soils with brick dust. Rubble intermittent to c. bottom of excavation at 5.0 ft BGS. Photographed and profiled. Fill.

**LP17**

**Cat. No. 328 (7/10/12) Length 8.0 Width 6.5 Depth 3.65**

Fill with stone and brick fragments. Soda can pull tag c. 1.5 ft BGS. Ceramic frag c. 1.8 ft BGS. Organic staining, not burial related. Tiny unidentifiable bone fragment, and long bone epiphysis near surface. Rib fragment also in or near surface debris. 2<sup>nd</sup> epiphysis 2.8 ft BGS in pit's east wall; terra-cotta pipe fragment in fill that also contained coal & brick fragments. Bone material in fill may have come from soils associated with the nearby demolished "mounds." Soil at 3.0 ft BGS became very compact and difficult to dig. Brick and other rubble at 3.0 ft BGS. Shell and ceramic fragments at c. 3.65 ft BGS. Corroded spike at 3.5 ft BGS. Fill. Photographed and profiled.

**LP18**

**Cat. No. 330 (7/10/12) Length 5.8 Width 5.4 Depth 4.1**

West of 1968-1970 Comfort Station, adjacent to asphalt paving (used as datum for BGS). Gravel and debris on east side under gravel deposit. Ceramic and shell fragments at c. 2.0 ft BGS. Ceramic frag c. 2.3 feet under gravel intrusion. Gravel deposit 1.3 ft BGS to c. 2.0 ft BGS above brown sands. Fill.

**LP19**

**Cat No. 329 (7/10/12) Length 6.0 Width 5.5 Depth 3.8**

Light pole across from 52 Washington Square S. Ceramic fragments, small, in upper 1.5 ft. Brown sandy soils with rubble. Small ceramic and clam shell fragments at c. 2.0 ft BGS. Terra-cotta sewer pipe at c. 3.0 ft BGS runs diagonally across trench. Mottled, dark grayish brown soils with rocks & rubble over what appears to be a yellow sand. Bone fragment in deepest yellow sand. The soil appears to be mainly back fill introduced into a trench after the sewer pipe was installed (see Figure 4 and Photo 1 in text).

## WASHINGTON SQUARE PARK PHASE 3

### FIELD NOTE SUMMARY

(Note: measurements in 10<sup>ths</sup> of feet)

#### GTTP2

**Cat No. 331 (8/28/12) Length 21.6 Width 23.3 Depth 11.0 ST 13.0**

West of old park building foundation. Top 3 ft. contains asphalt frags, brick, rocks, shell. Yellow/brown soils at c. 3.5 ft BGS with “Tropicana” bottle (screw top, applied label, “69” on base); plastic sheeting. Yellow/brown soils at c. 4.5 ft. At 5.7 ft. BGS old ceramic frag (tiny). Mortar frags at 6+ ft. BGS. Coffin nail at 6.6 ft. BGS. Cut bone at 7.6 ft. BGS. Fill at 10.3. After conferring with Amanda Sutphin, decided to take excavation down to 12 ft. BGS or sterile soils. Sloped sides back to 45 degree angle. Pit was enlarged for safety reasons. Human remains in backhoe and backfill. Human remains facing ENE in E end of trench extend under park building foundation left *in situ*; covered with geocloth and plywood and reburied. Burial appears to have been disturbed in the past. Excavation halted at c. 11 ft BGS, depth of burial. Shovel test excavated to 13.0 ft. BGS. Pipe inserted into shovel test to mark area devoid of burials for geothermal well. One or more burials appear to be previously disturbed, but possibly at least partially intact.

#### GTTP3

**Cat No. 332 (8/28-29/12) Length 9.0 Width 6.1 Depth 10.5 ft ST 12.6**

East side of old park building foundation. Excavated along E side of demolished building, 1 ft. thick brick wall uncovered 4 ft. E of footing wall at c. 5 ft. BGS. Changed to narrower bucket to access space between wall and footing (see schematic). Brick wall was removed to allow for further excavation and work stopped for the day (8/28/12). Excavation resumed next day (8/29/12). Brick cache in SW corner of trench at c. 5 ft. BGS. Soils yellow/brown at c. 6 ft. BGS. Fill a mottled yellow/sand is relatively clean with only an oyster shell frag at 7.4 ft. Human burial uncovered at c. 10 ft BGS on East side of brick wall. Evidence of decayed wood coffin, corroded nails; body orientation is NE –SW. Possibly isolated bones removed for lab analysis; partially exposed burial left *in situ*; covered with geo cloth, plywood, and clean soils. Evidence of an additional coffin (also left *in situ*) to NE. Shovel Test in NW corner excavated to c. 2.8 ft. below evidence of coffin. Pipe was inserted into shovel test to mark area devoid of burials for geothermal well.

#### COMFORT STATION FOUNDATION (CSF)

**Cat No. 333 (9/20/12) Length c. 110 ft. Width 15 to 25 ft. Depth c. 1.5 to 3 ft**

Taking down soils from 1.5 ft. to 3.0 ft. BGS (current grade). Started on NE side of CSF. Old water pipes in area (artifacts observed: 1 clam shell & 1 brick frag). Soil moved directly to dump truck. Plastic (old water proofing) exposed in N wall of CSF. 20<sup>th</sup> C. bottle (no neck) with embossing on base. Small catch basin (diameter 2.5 ft.) on N side of excavation c. 22 ft N of end of former stairs to basement only partially exposed. Bacardi Rum bottle (color applied label, screw top and embossed on base “69”); marked (“CALVERT” “SSBCO”) and unmarked bricks in fill. E side of catch basin c. 27.5 ft. W of E end of basement stairs. Isolated human bone & bone frags on W side of CSF in association with terra-cotta pipe frag at c. 3 ft. BGS. All in vicinity of the former Park Administration Building. Bones probably disturbed during 1968 – 1970 construction phase. Blue shell-edged Pearlware also in same vicinity (ceramics and pipe stem frag noted). More bone frags mixed with other debris in back dirt. Kaolin pipe bowl (collected) with three embossed figures, from S edge of excavation, found near SW corner of old CS. Catch basin W of CSF removed. Bone material from back dirt examined by Matt Brown in field. Entire excavation in footprint of new park building.

**WASHINGTON SQUARE PARK PHASE 3  
FIELD NOTE SUMMARY**

(Note: measurements in 10<sup>ths</sup> of feet)

**GEOTHERMAL TEST TRENCH (GTTR)**

**Cat No. 334 (2/19/13) Length c. 80 ft. Width 3.5 to 4 ft. Depth c. 5 ft.**

Excavation for line from western Geothermal well to NE corner of the new building. Two-part (to and from eastern Geothermal well). Initially excavated c. 20 ft from SW to NE, then turned around to start at NE end and move SW. Fill contains brick frags, rubble, plastic, concrete and clam frags (concrete block in first 25 ft.), rebar, wood and isolated bone, coffin nails at c. 3 ft BGS. Ashy sand near top, yellowish brown below. Note: c. 4 ft. of fill on N side of trench c. 10 ft W of E cut. Dug through fill from foundation excavation monitored 9/20/12. Yellow soils (under fill) included oyster shell, ceramic frag (spalled). Mortared brick (unmarked) wall fragment (trash) c. 25 ft. W of E end of trench. Stone foundation c. 25 ft W of E end of trench in N trench wall. Trash and rubble in fill. Marked brick (“SSBCO”) near previously broken terra-cotta drain pipe c. 37.2 ft SW of NE corner of trench. Most bricks unmarked. Large rock/concrete mass c. 45 ft. W of E end. Great deal of disturbance noted. Small portion of trench previously excavated between N & S sections not monitored. Paving stones in fill near W end of W segment, also foundation stones, possibly from demolished 1928 comfort station.

APPENDIX B: WASHINGTON SQUARE PARK PHASE 3 (WSP3)  
**Analysis of Human Remains (Isolated Bone)**  
**(Matthew A. Brown)**

## **WASHINGTON SQUARE PARK PHASE 3 (WSP3) Analysis of Human Remains (Isolated Bone)**

Between July 10, 2012, and February 19, 2013, with archaeological oversight, excavations conducted in Quadrant 9c during Phase 3 construction of Washington Square Park uncovered the partial remains of at least eight individuals, ranging between seven and 45 years of age. The analysis of these skeletal elements is the subject of this report. Both males and females are represented. Due to previous disturbance in the area of construction, there was a large range of skeletal completeness with some individuals represented by a single bone while another was represented by approximately 75% of the skeleton. Post-mortem damage and loss of skeletal material limited the amount of demographic information attainable as well as overall interpretation of the skeletal remains. After the project archaeologist, Joan Geismar, consulted with the Manhattan Medical Examiner's Office, all recovered skeletal material, that is, isolated or disturbed bone, was sent to the Brooklyn College Archaeology Laboratory for analysis. This report presents the findings of the analysis conducted on these isolated human remains.

### **Skeletal Analysis – Methodology**

All material was subjected to basic skeletal identification and analysis. Macroscopic assessment and in some cases low power magnification was employed. No destructive techniques were used. Demographic information, including identification of age, sex, stature, and pathology was collected based on Buikstra and Ubelaker (1994), Bass (2005), Scheuer and Black (2000) and Ortner (2003). The fragmentary state of most of the material made it impossible to use macroscopic methods for calculating ancestry. Additionally, the limited quantity of material prevented the collection of comprehensive demographic data for each individual.

### **Skeletal Analysis – Recording**

All skeletal material was recorded on standard data forms (hard copy) and then entered into a Microsoft Access Database created by the author. In addition, photographs were taken to create a permanent record of all recovered skeletal material. Copies of these images are available upon request. To facilitate extraction of information from the database through direct searches, each individual skeleton or group of bones was assigned an Inventory Number (INV No.), a Specimen Number (SP No.) and a Sub-Specimen Number (SubSP#).

### **Statement of Ethics**

The analysis of human remains has been and still is a highly sensitive issue that often leads to polarized views regarding the rationale for excavation and examination of skeletal material. All skeletal material analyzed for this report was done ethically and responsibly, in accordance with the Society for American Archaeology Statement Concerning the Treatment of Human Remains (See [www.saa.org](http://www.saa.org)).

### **Report Format**

Each set of human remains collected during the WSP3 construction of Washington Square Park is discussed in separate sub-reports followed by a general summary of the findings. Figure and table numbers are associated with each specific sub-report. Relevant bibliographic references appear at the end of this document.

## **WSP3-2012-SK1-A1**

### Summary Overview

SK1 (2012) is represented by the partial remains of a 26 to 44-year-old adult female. The skeletal material was removed from GTTP2 on 8-28-2012 at approximately 11.2 feet (3.4 m) below the ground surface (BGS). There was no evidence of a grave cut or shaft leading up to the removal of the remains. If this individual was in a grave at the time of excavation, based on the missing elements, it is likely the burial was disturbed prior to its recent exposure. There is evidence for post-mortem (PM) damage to some of the long bones that may have occurred during monitoring, but the recovered bones are generally in good condition. It should be noted that cranial elements were among those missing.

A total of 72 bones were recovered from SK1. These include two cranial elements (a mandible and an occipital bone) and 70 postcranial (non-skull) elements. In addition, 12 teeth associated with the mandible were collected. Some post-mortem damage and/or post-mortem loss to specific regions of the skeleton that offer the most accuracy for specific demographic analyses (i.e., determination of ancestry), made it impossible to recreate a complete biological profile. The sex and age of SK1 were determined based on information from the mandible and occipital bone, and metrics of the femur, dental eruption, dental attrition, fusion, and degeneration of joint surfaces following standards found in Buikstra and Ubelaker (1994), Bass (2005) and Scheuer and Black (2000). Measurements of the SK1 long bones were used to calculate a stature between 5 feet 1.5 inches (1.56 m) and 5 feet 3.5 inches (1.6 m) (the range accounts for a female of white or black ancestry). Pathological conditions for both bone and dental remains were identified (see below).

### ***Bone Inventory and Pathology***

As noted, SK1 is represented by 72 bones. The majority of skeletal elements from the postcranial skeleton is represented by the vertebrae, ribs, upper and lower limb bones and some of the hand and wrist bones. All that remains of the skull is a mostly complete mandible (jaw bone) and a partial occipital bone. *WSP3 Appendix B: SK1: Table 1* lists all the bones associated with this individual in addition to specific information pertaining to each bone. Two of the 72 bones exhibited pathological changes, both from the postcranial skeleton. The right humerus displayed abnormal bone growth approximately 62.5 mm (2.5 inches) from the distal end on the anterior surface of the shaft (see *WSP3 Appendix B Photo 1*). The bony extension is approximately 28 mm (1.1 inches) proximal-distal, 2.4 mm (0.09 inches) wide and extends approximately 6 mm (0.24 inches) above the normal bone surface. This growth could be associated with the partial ossification of the tendon associated with the brachioradialis muscles of the arm which attaches to the humerus, in the area of the growth, proximally and distally to the radius. This abnormal growth could have a variety of origins including myositis ossificans progressiva, osteochondroma, bony exostosis, or myositis ossificans traumatica. Based on the morphology of the growth commonly only associated with osteochondromas and bony exostoses and the lack of extensive changes to the rest of the skeleton associated with the congenital disorder of myositis ossificans progressive, it is most likely SK1 suffered from myositis ossificans traumatica. While there is no evidence of skeletal trauma (i.e., fractures) at the location of the growth, Aufderhelde and Conrado (1998) point out that in some cases, ante-mortem skeletal trauma may be absent in cases of myositis ossificans traumatica.

**WSP3 Appendix B Table 1: SK1 Bone Inventory**

BONE	SIDE	COMP	PATH	M1 (mm)	CNT	COMMENTS
HUM	L	1	NO	302	1	Bone in good condition missing the medial epicondyle and the posterior 1/3 of the head. No pathology.
HUM	R	1	YES	303	1	Bone in good condition. Abnormal bone growth in form of ligament or tendon ossification located approximately 62.5 mm from the distal end.
RAD	R	1	NO	225	1	Bone is complete and in good condition. No pathology.
RAD	L	1	NO	227	1	Bone is complete and in good condition. No pathology.
ULN	L	1	NO	243.5	1	Bone is complete and in good condition. No pathology.
ULN	R	1	NO	243	1	Bone is complete and in good condition. No pathology.
FEM	R	1	NO	437	1	Bone is complete in fair condition. PMD to the distal 1/3 shaft broken No pathology.
FEM	L	1	NO	NA	1	Bone is complete in fair condition. PMD to the distal 1/3 shaft broken PM. No pathology.
TIB	L	4	NO	NA	1	Bone in poor condition missing the distal 3/4 of the bone PM. The prox 1/4 is damaged PM. No pathology present.
OCC	L	3	NO	NA	1	Bone in poor condition. All that remains is Q1. All other sections missing PM. No pathology.
MAN	L&R	2	NO	NA	1	Bone in fair condition missing fragments from the right and left side of the bone.
C2	NA	2	NO	NA	1	Bone in fair condition. No pathology.
C1	NA	4	NO	NA	1	Bone in poor condition missing the right side and 75% of the left side.
T1	NA	1	YES	NA	1	Bone incomplete and in good condition. The left and right arches are not fused. Congenital disorder.
T2	NA	1	NO	NA	1	Bone is complete and in good condition. No pathology.
T3	NA	1	NO	NA	1	Bone is complete and in good condition. No pathology.
T4	NA	1	NO	NA	1	Bone is complete and in good condition. No pathology.
T5	NA	1	NO	NA	1	Bone is complete and in good condition. No pathology.
T6	NA	1	NO	NA	1	Bone is complete and in good condition. No pathology.
T7	NA	3	NO	NA	1	Bone in fair condition missing the body. No pathology.
T8	NA	3	NO	NA	1	Bone in fair condition missing the body. No pathology.
T9	NA	3	NO	NA	1	Bone in fair condition missing the body. No pathology.
T10	NA	1	NO	NA	1	Bone is in fair condition missing frags from bod and transverse process. No pathology.
T11	NA	1	NO	NA	1	Bone is in fair condition missing fragments from the left body. No pathology.
T12	NA	1	NO	NA	1	Bone is in fair condition missing fragments from the left body. No pathology.
L1	NA	1	NO	NA	1	Bone is complete missing fragment from body. No pathology.
L2	NA	2	NO	NA	1	Bone in fair condition missing 75% of the body No pathology.
L3	NA	2	NO	NA	1	Bone in fair condition missing over 75% of the body. No pathology.
L4	NA	2	NO	NA	1	Bone in fair condition missing over 75% of the body PM. No pathology.
L5	NA	1	NO	NA	1	Bone in fair condition missing the superior surface of the body PM. No pathology.
S1	NA	1	NO	NA	1	Bone is complete and in good condition. No pathology.
S2	NA	1	NO	NA	1	Bone is complete in good condition. No pathology.
S3	NA	1	NO	NA	1	Bone complete in good condition. No pathology.
S4	NA	2	NO	NA	1	Bone mostly complete in good condition. No pathology.
CLA	R	1	NO	NA	1	Bone is complete in good condition missing fragments.
CLA	L	1	NO	NA	1	Bone is complete in good condition missing fragments.
SCA	R	2	NO	NA	1	Bone in fair condition missing 50% of the blade and all of the acrom process. No pathology.

**WSP3 Appendix B Table 1: SK1 Bone Inventory (continued)**

BONE	SIDE	COMP	PATH	M1 (mm)	CNT	COMMENTS
SCA	L	2	NO	NA	1	Bone in fair condition missing 50% of the blade and part of the acrom process. No pathology.
MANU	NA	1	NO	NA	1	Bone is complete in good condition. No pathology.
STE-BOD	NA	2	NO	NA	1	Bone is mostly complete in fair condition missing fragments from the lateral edges.
R1	L	1	NO	NA	1	Bone is complete and in good condition. No pathology.
R1	R	1	NO	NA	1	Bone is complete and in good condition. No pathology.
R2-12	R	NA	NO	NA	5	Ribs are in fair condition exhibiting evidence for PMD.
R2-12	L	NA	NO	NA	7	Ribs are in fair condition exhibiting evidence for PMD.
CAP	L	1	NO	NA	1	Bone is complete and in good condition. No pathology.
SAC	L	1	NO	NA	1	Bone is complete and in good condition. No pathology.
LUN	L	1	NO	NA	1	Bone is complete and in good condition. No pathology.
TRAP	R	1	NO	NA	1	Bone is complete and in good condition. No pathology.
TRAP	L	1	NO	NA	1	Bone is complete and in good condition. No pathology.
HAM	L	1	NO	NA	1	Bone in poor condition missing over 75% of the bone.
TRP	UKN	1	NO	NA	1	Fragment of the trapezoid. SND.
MC1	R	1	NO	NA	1	Bone is complete and in good condition. No pathology.
MC1	L	1	NO	NA	1	Bone is complete and in good condition. No pathology.
MC3	L	1	NO	NA	1	Bone is complete and in good condition. No pathology.
MC4	L	1	NO	NA	1	Bone is complete and in good condition. No pathology.
MC2	L	1	NO	NA	1	Bone is complete and in good condition. No pathology.
PHI	?	1	NO	NA	1	Bone in fair condition suffered from PMD to the external surface of the bone.
PHI	?	1	NO	NA	1	Bone in fair condition suffered from PMD to the external surface of the bone.
PHP	L	1	NO	NA	4	Bone is complete and in good condition. No pathology.

Key: COMP=Completeness; PATH=Pathology; M1=Measurement 1; CNT=Count; HUM=Humerus; RAD=Radius; ULN=Ulna; FEM=Femur; TIB=Tibia; OCC=Occipital; MAN=Mandible; C=Cervical Vertebra; T=Thoracic Vertebra; L=Lumbar Vertebra; S=Sacral Vertebra; CLA=Clavicle; SCA=Scapula; MANU=Manubrium; STE-BOD=Sternum Body; R=Rib; CAP=Capitulum; SAC=Scaphoid; LUN=Lunate; TRAP=Trapizum; HAM=Hamate; TRP=Trapozoid; MC=Metacarpal; PHI=Phalange Hand Intermediate; PHP=Phalange Hand Proximal

The second region of bone pathology is evidenced by the lack of fusion of the left and right vertebral arch of the first thoracic vertebra (see *WSP3 Appendix B Photo 2*). The lack of fusion between the left and right side of the vertebral arch is likely the result of a minor developmental delay according to Barnes (1994). This, however, is not likely related to the more severe disorder of spina bifida occulta. None of the other vertebra exhibited any evidence of development abnormalities.

***Dental Inventory and Pathology***

Twelve of the sixteen permanent mandibular teeth were present and observable for analysis, and all exhibited some evidence of pathology (see *WSP3 Appendix B Table 2: SK1*). Minimal to moderate dental wear was found in all teeth and was non-pathological and likely due to normal attrition and age. All of the teeth were in good condition showing minimal evidence for post-mortem damage.



Photo 1. Right humerus ossified tendon  
(photo M. Brown)



Photo 2. No fusion of the posterior arc  
(photo: M. Brown)

**Dental calculus** (CAL) or mineralized plaque was found to affect, with varying severity, all observable teeth (n=12). In some cases (two of seven) calculus was found below the CEJ, suggesting that SK1 could have had early stages of periodontitis (no reduction of the alveolar bone was found). All five tooth surfaces were affected with calculus of varying frequency. The build-up of calculus dentition is the result of numerous variables including, diet, malocclusion, ante-mortem loss of teeth, genetics (over-production of saliva), basic dental hygiene (culture), or trauma (see *WSP3 Appendix B Photo 3* for an image of the SKI mandible with teeth displaying calculus and crowding).

**Enamel hypoplasia** (EH), is the result of the reduced production of enamel during tooth development from periods of physiological stress. EH cannot form after the crown is complete and therefore, barring post-mortem, ante-mortem loss or heavy dental wear, enamel hypoplasia is a permanent record of extended periods of stress during the crown formation. Of the 12 teeth that were complete enough for EH assessment, two exhibited enamel defects. The left and right mandibular canines each exhibited a single linear horizontal enamel hypoplasia. Measurements of the distance between the LEH and the CEJ suggest that this individual suffered a period of stress around the age of four years which is approximately one year after the weaning period. This suggests it is possible that some stress other than weaning was linked to the development of the EH found on T22 and T27.

### **Dental caries**

Dental Caries are the result of a demineralization of dental tissues resulting from the acidic byproduct of plaque bacteria fermentation of carbohydrates. SK1 exhibited caries on four of the 12 teeth that were observable for analysis. Of the four affected teeth, three were molars and one was a premolar (see *WSP3 Appendix B Table 2*) with each tooth exhibiting a single lesion. The caries located on three of the four teeth were found on the mesial surface of the crown while the remaining tooth exhibited a carie that destroyed 99% of the crown and most of the root.

**WSP3 Appendix B Table 2: SK1 Dental Inventory and Dental Pathology**

T#	T-SCR	Path	CAR	CAL	HYPO	WEAR	CNT	NOTES
17	6	NA	NA	NA	NA	NA	0	Missing-Never formed-congenital
18	1	Yes	Yes	Yes	No	Yes	1	Tooth in good condition. Minimal WEA. Minimal CAL Single CAR.
19	1	Yes	Yes	NA	NA	NA	1	Tooth has been destroyed by carie(s). The entire crown is missing.
20	1	Yes	No	Yes	No	Yes	1	Tooth in good condition. MIN-MOD CAL present.
21	1	Yes	No	Yes	No	Yes	1	Tooth in good condition. MIN-EXT CAL present.
22	1	Yes	No	Yes	Yes	Yes	1	Tooth in good condition. MIN-MOD CAL present. Single LEH present. 4.19mm from CEJ.
23	1	Yes	No	Yes	No	Yes	1	Tooth in good condition. Moderate WEA. MIN-MOD CAL
24	1	Yes	No	Yes	No	Yes	1	Tooth in good condition. MOD WEA. MIN-MOD CAL. CAL below the CEJ. Crowding.
25	1	Yes	No	Yes	No	Yes	1	Tooth in good condition. MOD WEA. MIN-MOD CAL. CAL below the CEJ. Crowding-Angled
26	1	Yes	No	Yes	No	Yes	1	Tooth in good condition. MOD WEA. MID-MOD CAL. Crowding-Angled
27	1	Yes	No	Yes	Yes	Yes	1	Tooth in good condition. MOD WEA. MIN-MOD CAL. Crowding-Angled. Single LEH (3.73mm from the CEJ).
28	5	NA	NA	NA	NA	NA	0	Tooth lost PM
29	1	Yes	Yes	Yes	No	Yes	1	Tooth in good condition. Single CAR present. MIN-MOD CAL present.
30	1	Yes	Yes	Yes	No	Yes	1	Tooth in good condition. MOD WEA. CAR present. MIN-MOD CAL.
31	4	NA	NA	NA	NA	NA	0	Tooth lost Antimortem.

Key: T-SCR=Tooth Score; PATH=Pathology; CAR=Caries; CAL=Calculus; HYPO=Hypoplasia; CNT=Count



Photo 3. Anterior view of mandible with evidence of calculus and crowding affecting the anterior surfaces (photo: M. Brown).

*Age determination* was largely based on the complete fusion of the long bones in addition to completion of the eruption of the permanent teeth. Together these developmental changes suggest an age greater than 25 years. In addition the amount of dental wear, while present but with dentin exposure on the anterior teeth that was not significant, suggests that this individual was not of advanced age. Dental attrition, however, is related to a number of variables, including diet, that are not known for this particular individual that ultimately limit the confidence of statements made regarding age using dental wear as the criterion. Furthermore, articular surfaces exhibited significant evidence for degeneration or osteoarthritis (OA), a phenomenon that is more likely to be present in individual of more advanced age (see Waldron 2009).

**Sex determination** was based on the morphology of the mental eminence and sacrum and the maximum diameter of the head of the femur (see *WSP3 Appendix B Table 3*). The calculation of biological sex using these regions is based on methods found in Buikstra and Ubelaker (1994) and Bass (2005). The morphology and measurements taken suggest that SK1 was female.

**WSP3 Appendix B Table 3: SK1 Sex Determination**

SKL-SD	MEE	FEM-SD	LFEM	LFEM-SD	RFEM	RFEM-SD	SD-SKL	SD-FEM	SD-COMPOSITE
YES	1	YES	41.35	FEMALE	42.4	FEMALE	FEMALE	FEMALE	FEMALE

KEY: SKL=Skull; SD=Sex Determination; MEE=Mental Eminence; FEM=Femur; LFEM=Left Femoral Head; RFEM=Right Femoral Head

**Stature reconstruction** was based on long bone maximum length of all complete upper and lower limbs bones (see *WSP3 Appendix B Table 1* for measurements). As ancestry could not be determined based on the recovered skeletal material from SK1, the stature formulae (see Bass 2005 for specific formulae) used were for female white and female black. As noted above, SK1 suggested a range of 5 feet 1.5 inches (1.56 m) to 5 feet 3.5 inches (1.61 m).

### **WSP3-2012-SK2-A1**

#### **Summary Overview**

SK2 (2012) remains comprise a single partial left tibia from a non-child/adolescent recovered from the back dirt pile on 9/20/2012 in association with the former comfort station at a depth of about 3.0 feet (0.91 m) BGS. This single bone was not found in association with any other human remains or identifiable grave shaft.

WSP3-2012-SK2-A1 is in fair to poor condition. The external surface of the shaft shows flaking of the cortex, and the proximal epiphysis and ¼ of the shaft are missing post-mortem. Damage to the bone is likely the result of pre-excavation events. There is no evidence of abnormalities or pathology. Stature reconstruction was not calculated due to the fragmentary status of this bone.

**Age determination** is based solely on the complete fusion of the distal end and comparison to other laboratory specimens. No specific age could be assigned. Determination of sex based on morphology could not be performed.

### **WSP3-2012-SK3-A1**

#### **Summary Overview**

SK3 (2012) comprises a single partial left tibia from a non-child/adolescent found in fill associated with wood and rebar at a depth of 3.0 feet (0.91 m) BGS on 2/19/2012. This single bone was not found in association with any other human remains or an identifiable grave shaft. WSP3-2012-SK3-A1 is in poor condition and is missing the proximal and distal ends. The outer cortex of the shaft suffered post-mortem damage and has started to flake off. There is no evidence for pathology.

#### ***Age and Sex Determination and Ancestry***

A specific numerical age could not be assigned due to post-mortem damage. Comparison to laboratory specimens of approximately the same size and thickness suggest that this bone belonged to a non-child/adolescent. Information to determine sex based on morphology or of ancestry was unavailable.

## WSP3-2012-SK4-A1

### Summary Overview

SK4 (2012) is represented by a partial upper and lower limb and a single hand bone. All material was removed from mixed fill between 1.5 and 3.1 feet (0.46 and 0.94 m) BGS on 9/20/2012. These bones were not associated with any other human remains or an identifiable grave shaft. All of the material associated with WSP-2012-SK4-A1 is in poor condition.

### *Post-Cranial Bone Inventory and Measurements*

These remains comprise a partial left femur, right tibia, left ulna and hand phalange (*see WSP3 Appendix B Table 4*). The tibia and femur are missing the proximal and distal ends and the ulna and hand phalange are both missing the proximal ends of the bones. Due to post-mortem damage to all the long bones, stature could not be calculated. There is no evidence for pathology affecting the skeletal material associated with SK4.

**WSP3 Appendix B Table 4: SK4 Bone Inventory**

BONE	SIDE	COMP	PATH	M1 (mm)	CNT	COMMENTS
FEM	Left	2	NO	346	1	Bone in fair condition missing prox-dist ends. MxL estimated. No pathology.
TIB	Right	2	NO	198	1	Bone in fair condition near prox-dist ends. MxL shaft-no estimate. No pathology.
ULN	Left	3	NO		1	Bone is in poor condition missing 75% of the proximal end. No evidence for pathology. No measurement due to PMD.
PHP	SND	2	NO	NA	1	Bone in fair condition. No prox end. No pathology.

Key: TIB=Tibia; FEM=Femur; ULN=Ulna PATH=Pathology; COMP=Complete; M1=Measurement 1; CNT=Count  
Scoring: 1=75%-100% complete; 2=50%-75% complete; 3=25%-50% complete; 4=<25% complete

### *Age and Sex Determination and Ancestry*

A specific numerical age could not be assigned to these remains due to post-mortem damage. This material, however, appears to be from a non-child/adolescent based on comparison to laboratory samples. Determination of sex based on morphology could not be performed. None of the bones present permitted the assessment of ancestry.

## WSP3-2012-SK5-A1

### Summary Overview

SK5 (2012) is represented by a single partial right tibia from a child approximately seven years old excavated in the vicinity of the new comfort station/administration building. There was no indication of a grave shaft or other bones associated with this single tibia. No depths were recorded for SK5, but excavations were limited to 3 feet (0.91 m) BGS.

### *Cranial and Post-Cranial Bone Inventory and Measurements*

The single right tibia is in fair condition missing the proximal and distal ends post-mortem. There is no evidence of pathology. A maximum length measurement was taken and compared to a complete tibia of similar size from the laboratory's comparative collection in order to estimate the true length of the tibia. Based on a corrected M x L of 236 mm (0.77 feet), SK5 was determined to be approximately seven years of age. Sex determination and ancestry were not calculated.

## WSP3-2012-SK6-A1

### Summary Overview

SK6 (2012) is represented by group of bones that could not be completely verified as a single individual nor could they be separated into more than one individual. While no depth was recorded, these remains were excavated within three feet (0.91 m) of the original ground surface

associated with the 1968-1970 comfort station and extended slab foundation of the new building. They were not associated with a grave shaft and lacked orientation. All but the left humerus exhibited evidence of significant post-mortem damage.

***Cranial and Post-Cranial Bone Inventory and Measurements***

SK6 comprises a total of five bones of which four are post-cranial and one represents the cranium (see *WSP Appendix B Table 5*). Long bones are represented by the complete left humerus and a very fragmented fibula. Maximum length measurement of the humerus provided a stature estimate between 4 feet 11 inches and 5 feet 1 inch (1.49 and 1.55 m). The range is for males and females of white and black ancestry. The remaining post-cranial bones represent a fragmented scapula and rib of no diagnostic value. The partial occipital bone is represented by the nuchal crest. There was no evidence for pathology affecting any of the bones associated with SK6.

**WSP3 Appendix B Table 5: SK6 Bone Inventory**

BONE	SIDE	COMP	PATH	M1 (mm)	CNT	COMMENTS
HUM	Left	1	NO	276	1	Bone is complete and in good condition.
FIB	UKN	4	NO	NA	1	Bone in poor condition missing the proximal and distal end. All that remains is the partial mid shaft. No evidence of pathology.
SCA	?	4	NO	NA	1	Bone in poor condition. All that remains is a fragment of the blade.
R2-12	?	4	NO	NA	1	Bone in poor condition. Fragment of the shaft only. No pathology.
OCC	NA	3	NO	NA	1	Bone in poor condition missing above the superior nuchal line.

Key: HUM=Humerus; FIB=Fibula; SCA=Scapula; R2-12=Rib 2-12; PATH=Pathology; COMP=Complete; M1=Measurement 1; CNT=Count  
 Scoring: 1=75%-100% complete; 2=50%-75% complete; 3=25%-50% complete; 4=<25% complete

***Sex and Age Determination***

Sex determination was based solely on the nuchal crest of the occipital which exhibited male type morphology (SCR 5). Age determination is based on the complete fusion of the epiphyses of the humerus suggesting that SK6 was an adult older than 22 years of age.

**WSP3-2012-SK7-A1**

**Summary Overview**

SK7 (2012) is represented by two bones not associated with any other material or a grave shaft. The bones were recovered at a depth of 1.5 feet (0.46 m) BGS in LP17. The rib fragment and complete talus that represent SK7 were from a non-child/adolescent of indeterminate sex and ancestry. There is no evidence for pathology affecting these bones.

**WSP3-2012-SK8-A1**

**Summary Overview**

SK8 (2012) comprises a partial skeleton representing a single adult female approximately 45 years of age of unknown ancestry. The material was removed from GTTP3 approximate 10 feet (3.05 m) BGS with no defined grave cut or grave orientation. The lack of characteristics of an *in situ* burial suggests that SK8 was disturbed.

A total of 14 bones was associated with this individual. Former post-burial disturbance appears to have resulted in the loss of skeletal elements as well as post-mortem damage to some of the individual bones. As a direct result of the damage suffered and the loss of specific bone and dental elements, full demographic assessment could not be performed and some of the results must be viewed with caution.

***Post-Cranial Inventory and Measurements***

All 14 bones representing SK8 were postcranial and exhibited some post-mortem damage but in most cases the damage was minimal and did not significantly limit analysis. Elements from the lower lumbar and sacral vertebra were the only segments of the vertebral column present (*see WSP3 Appendix B Table 6*). The lumbar were generally in good condition with some post-mortem damage. The sacrum, however, was in poor condition, missing sacral vertebra 3-5 and part of S2. All vertebrae (lumbar and sacral) exhibited complete fusion of all epiphyses suggesting that SK8 was not a juvenile at the time of death. The pelvis is represented by the almost complete left innominate showing some post-mortem damage to specific regions (sub-pubic region) used for sex determination. The damage, however, does not affect the surface of the pubic symphysis or the auricular surface used for determination of age. The greater sciatic notch was complete enough to determine the sex of SK8. The lower limb is represented by the left femur, right tibia, and a non-diagnostic fragment of a fibula (*see WSP3 Appendix B Table 6*). Maximum length measurement (MxL) was taken of the femur and tibia and used to calculate an approximate stature. Based on the MxL, depending on the ancestry of SK8, the stature of this female was between 5 feet 1 inch and 5 feet 2 inches (1.55 and 1.57 m). The remaining bones included some of the hand phalanges and tarsal. All were in good condition with limited post-mortem disturbance.

**WSP3 Appendix B Table 6: SK8 Bone Inventory**

BONE	SIDE	COMP	PATH	M1 (mm)	CNT	COMMENTS
TIB	R	1	NO	343	1	Bone is complete and in good condition. No pathology.
FEM	L	1	NO	412	1	Bone is complete and in good condition showing some minor PMD to the distal shaft. No pathology.
FIB	L	2	NO	NA	1	Bone in fair condition missing the prox end of bone. No pathology.
L3	NA	1	YES	NA	1	Bone in good condition. Bone shows evidence for osteoarthritis.
L4	NA	1	YES	NA	1	Bone in good condition. Bone shows evidence for osteoarthritis.
L5	NA	1	YES	NA	1	Bone in good condition. Bone shows evidence for osteoarthritis.
S1	NA	2	YES	NA	1	Bone is almost complete missing some of the right side of the body (PM). Evidence for some OA affecting the superior left articular facet.
S2	NA	3	NO	NA	1	Bone in fair condition missing the left and right arches. No pathology.
PHP	NA	1	NO	NA	1	Bone is complete and in good condition. No pathology.
PHP	NA	1	NO	NA	1	Bone is complete and in good condition. No pathology.
PHP	NA	1	NO	NA	1	Bone is complete and in good condition. No pathology.
INN-C	L	1	NO	NA	1	Bone is complete and in good to fair condition missing some fragments from the ilium. Female type pelvis.
TAL	R	1	NO	NA	1	Bone is complete and in good condition. No pathology.
CUN3	R	1	NO	NA	1	Bone is complete and in good condition. No pathology.

Key: TIB=Tibia; FEM=Femur; FIB=Fibula; L=Lumbar; S=Sacral; PHP=Proximal Hand Phalange; INN-C=Innominate Complete; TAL=Talus; CUN3=Cuneiform 3; COMP=Complete; M1=Measurement 1; CNT=Count; TAL=Talus. Scoring re completeness: 1=75%-100%; 2=50%-75%; 3=25%-50%; 4=<25%

### ***Sex and Age Determination***

The sex of SK8 was determined by the pelvis and the femoral head. The post-mortem damage to the sub-pubic region did not allow for the use of the Phenice method for sex identification. The greater sciatic notch was scored according to the system found in Buikstra and Ubelaker (1994). WSP3 Appendix B Table 7 presents the results from the sex assessment. All of the regions assessed show characteristics associated with female type morphology.

**WSP3 Appendix B Table 7: SK8 Sex Determination**

PEL-SD	SPC-L	GSN-L	FEM-SD	LFEM	LFEM-SD	SD-PEL	SD-FEM	SD-COMPOSITE
YES	3	1	YES	40	FEMALE	FEMALE	FEMALE	FEMALE

KEY: PEL=Pelvis; SD=Sex Determination; SPC-L=Subpubic Concavity-Left; GSN=Greater Sciatic Notch; FEM=Femur; LFEM=Left Femoral Head

SK8 was aged to be approximately 45 years old. This assessment was based on the morphological changes of the pubic symphysis (48.1 years) and the auricular surface (42 years) of the left innominate. Scoring for the pubic symphysis and the auricular surfaces are based on methods found in Buikstra and Ubelaker (1994) and Lovejoy *et al.* (1985), respectively.

***Bone Pathology***

Evidence for bone pathology was restricted to the lumbar and sacral vertebra. Osteoarthritis (OA) was identified on the articular facets of lumbar vertebra 3-5 in the form of marginal osteophytes and macroporosity. In addition to the osteoarthritis found on the lumbar articular facets, the left superior articulation of the first sacral vertebra showed evidence for OA in the form of marginal osteophytes and macroporosity. No other material from SK8 exhibited evidence of pathology.

**WSP3 HUMAN SKELETAL REPORT  
SUMMARY**

The human skeletal material (isolated human bones) recovered during WSP Phase 3 construction is described in detail above. A total of 100 bones and 12 teeth representing a minimum of eight individuals was recovered and analyzed (see *WSP3 Appendix B Table 8*). All of the material removed during this renovation was found to be disturbed, with no evidence of proper grave shafts and largely incomplete with the exception of SK1. As a consequence of the highly fragmented nature of the skeletal remains, broad comments regarding this sample and the original population are neither advisable nor obtainable.

Based on morphological characteristics of the skull and pelvis as well as metric analysis using the femoral head, biological sex was identified for three of the eight individuals. Of these two were females and one was a male. All remaining individuals either lacked the specific regions used for sex determination or, in the case of SK5, were too young. Age determination was calculated for all individuals with varying accuracy based on the skeletal elements available for assessment. Using various methods, all individuals with the exception of SK5 were most likely adults. Based on long bone metrics, SK5 was determined to be a child approximately seven years old.

Evidence for pathology was found on two of eight individuals. Of the two affected, osteoarthritic joint surfaces were identified on the vertebra of SK8 and evidence for vertebral developmental defect affecting the first thoracic vertebra and possible ossification of the Brachioradialis tendon, likely the result of trauma, were found on SK1. No other material exhibited bone pathology. Dental pathology was restricted to SK1 as no other individual retained teeth. Hypoplasia, caries, and calculus were identified on the teeth of SK1 as well as clear evidence for crowding of the anterior teeth.

**WSP3 Appendix B Table 8: Summary of Results**

SP No.	Age Determination	Sex Determination	No. of Bones	No. of Teeth	MNI
WSP3-2012-SK1	A 26-40	Female	72	12	1
WSP3-2012-SK2	ADULT	?	1	0	1
WSP3-2012-SK3	ADULT	?	1	0	1
WSP3-2012-SK4	ADULT	?	4	0	1
WSP3-2012-SK5	7	?	1	0	1
WSP3-2012-SK6	A-26-40	Male	5	0	1
WSP3-2012-SK7	A 26-40	?	2	0	1
WSP3-2012-SK8	45	Female	14	0	1
TOTAL			100	12	8

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APPENDIX C: WASHINGTON SQUARE PARK PHASE 3 (WSP3)  
**Artifact Catalog**

**WASHINGTON SQUARE PARK POTTERS FIELD (WSPPF) PHASE 3  
(NYS SITE NO: USN A06101.016915 ARTIFACTS (GRAB SAMPLES)  
SECTION 9c**

**Lamp Pole Pit 17 (LP17) 7/10/12**

Cat No.	Art No.	Depth (10 <sup>ths</sup> of ft) BGS	Material	No. Pcs	Ware/ Color	Description	Date	Remarks/Sources
328	1	3.65	Ceramic	1	Pe	Rim sherd, blue shell edged	c.1800-1835	Well made
	2	3.65	Ceramic	1	R	Bowl (?) base frag; Albany slip interior & exterior	---	Small base; little or no wear

**Geothermal Test Pit 2 (GTTP2) 8/28/12**

Cat No.	Art No.	Depth (10 <sup>ths</sup> of ft) BGS	Material	No. Pcs	Ware/ Color	Description	Date	Remarks/Sources
331	1	c. 11.2	Glass	1	Clear	Bottle? body frag, small	Modern ?	Indicates deep fill no matter what the age of the frag
331	--	c. 11.2	Wood/nails	Nails (2); wood slivers	--	Coffin wood with associated (?), highly corroded nails	---	Approx depth of human bones recovered from backdirt
331	--	??	Nails	1		Coffin nail? (large), highly corroded	---	No information

**Geothermal Test Pit 3 (GTTP3) 8/29/12**

Cat No.	Art No.	Depth (10 <sup>ths</sup> of ft) BGS	Material	No. Pcs	Ware/ Color	Description	Date	Remarks/Sources
332	--	c. 10 ft	Wood/nails	wood (5+); nails (2)	---	Wood slivers with associated corroded coffin nails	---	Same depth as coffin outline and associated burial [burial left <i>in situ</i> ]

**Comfort Station Foundation (CSF) 9/20/12**

Cat No.	Art No.	Depth (10 <sup>ths</sup> of ft) BGS	Material	No. Pcs	Ware/ Color	Description	Date	Remarks/Sources
333	1	c. 2.0 ft	Ceramic	1	Kaolin	Smoking pipe bowl, molded, 3 figures and a flag	c. 1860s?	From backdirt in the SW corner of the shallow trench excavated for the new park building.

BGS - below ground surface at time of recovery