SECTION 5.0 PHASE II ARCHAEOLOGICAL SURVEY AT THE STROUD SITE

The purpose of the Phase II archaeological survey was to delineate the site boundaries, identify spatial patterning of artifacts, gain additional information regarding the cultural associations and time periods of site occupation, determine if the site has integrity (i.e., intact features or artifact concentrations from subsoil contexts), and ultimately determine if the site meets any of the NRHP Criteria of Evaluation.

Phase II field investigations on the one acre (0.4 hectare) Stroud site involved the establishment of a testing grid, close-interval STP, and TU excavation in an effort to evaluate the portion of the Stroud site in the APE for NRHP eligibility (Figures 5.1-5.2). The testing grid was specifically oriented to align with the current road network, which is based on historic corridors, and landscape features to maximize the likelihood of identifying additional cultural features and artifacts. A site datum was established, located in the southeastern portion of the Stroud site core (grid location N 538, E 500).

5.1 Close-Interval Shovel Testing

Close-interval shovel testing resulted in the excavation of 63 STPs across the entire Phase II project area; of these, 51 contained cultural material (see Figure 5.1). Shovel test pits yielded one prehistoric artifact classified as a jasper, Madison-type projectile point, and 450 historic artifacts (Chart 5.1). The Phase II STP assemblage was dominated by ceramic material (41.8 %; n=188), followed by architectural material (30.5 %; n=138). The remaining portion of the assemblage consists of smaller percentages of glass (19.5 %; n=88), lithic material (0.2 %; n=1), metal (2.7 %; n=12), organic material (5.1 %; n=23), and personal items (0.2 %; n=1). Notable artifacts included mortar, white/lime plaster, post-industrial window glass, cut nails with wrought heads (1815–1840), cut nails with cut heads (1840–1890), hand-made brick fragments, creamware (1762–1820), pearlware (1775–1820), whiteware (Post-1820), Jackfield-like earthenware (1740s-1800s), redware, ironstone (1840–2000), clear bottle and vessel glass, aqua bottle glass, and a thimble. Jackfield-like ceramic fragments (N=3) were present in STPs N575/E475, N600/E450, and N650/E450. Creamware vessel fragments (N=22) were most abundant in the southeast portion of the site, southeast of coordinates N600/E475 and N575/E450. Pearlware fragments (N=17) were largely confined to an area between coordinates N550/E450, N550/E500, N625/E450, and N600/E500. Redware sherds (N=88), were found in the highest concentration in the southern portion of the site between coordinates N625/E425, N625/E475, N525/E450, and N525/E500. Whiteware (N=39) was scattered

Figure 5.1:

Phase II Close-Interval Shovel Testing Results.

N
W
E
S
Feet
0
50

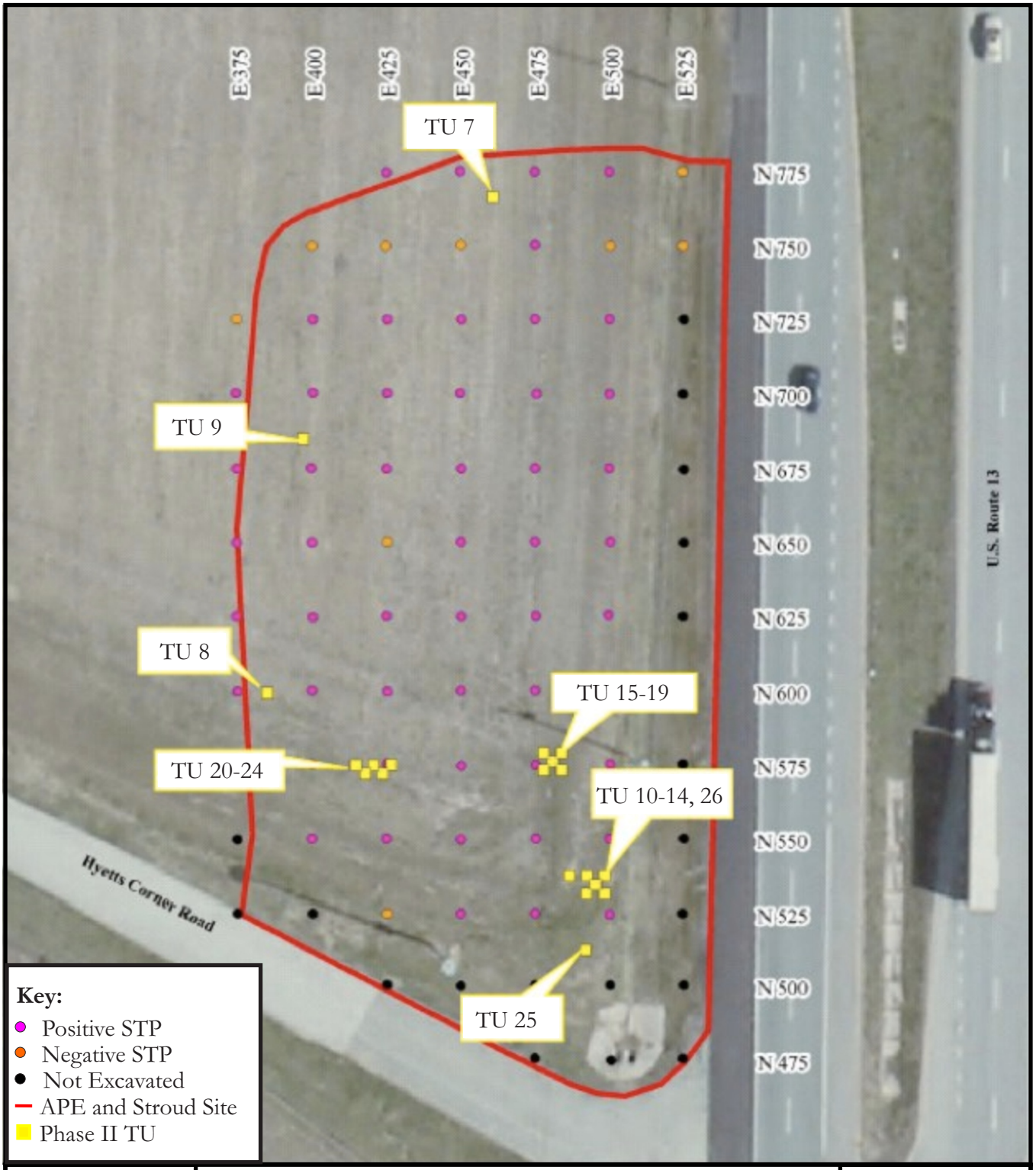


Figure 5.2:

Phase II Test Unit Map.

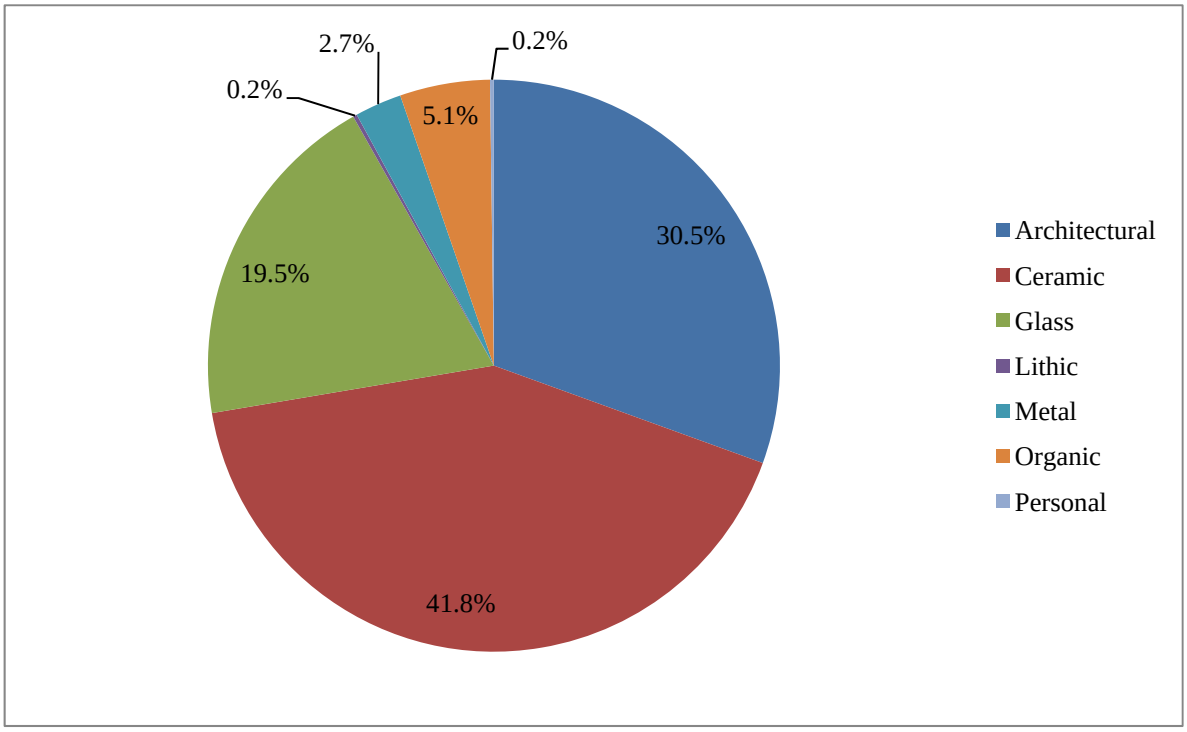
N
W
E
S

Feet

0 50

in a broader pattern than the aforementioned ceramic types, but was found in concentrations in an area similar to that of pearlware.

Chart 5.1: Artifact Group Percentages from Close-Interval Shovel Test Pits.



The soil profiles were relatively consistent within the APE. Differences in stratigraphy were noted in the southeastern portion of the site where an occupation zone/artifact-rich stratum was identified (see Appendix D). The average depth of STPs was 22.8 inches (57.9 cm) with a maximum depth of 42 inches (106.7 cm). The average depth of A-horizon soils throughout the area was 15.8 inches (40.1 cm) with a maximum depth of 25 inches (63.5 cm). Shovel test pits in the southeastern portion of the site generally displayed a modern plowzone stratum of dark yellowish brown (10YR 3/6) silt loam Ap-horizon (Stratum I), which capped a dark yellowish brown (10YR 4/3) sandy loam occupation layer (Stratum II). Beneath this occupation layer was a brownish yellow (10YR 6/6) sandy clay B-horizon subsoil (Stratum III). The rest of the site area, to the north and west, displayed a modern plowzone stratum of dark yellowish brown (10YR 3/4) silt loam Ap-horizon followed by a yellowish brown (10YR 5/6) sandy clay B-horizon subsoil. Artifacts recovered from close-interval STPs were predominately recovered from the lower levels of the Ap-horizon and from the occupation layer in the southeastern portion of the site.

Artifacts were clustered in the southeastern portion of the site, an area identified during the Phase I archaeological survey as the site core (generally south of grid N600 and east of grid E425) (Figures

5.3-5.5). The site core generally contained evidence of an occupation layer. The total artifact distribution pattern reveals two peaks in density, the highest at N575/E475 and a less intense peak at N550/E500. The distribution of all ceramic artifacts is similar to this pattern of all artifacts (Figure 5.4), yet there is an additional ceramic frequency peak to the north at grid location N625/E475. Similar to the horizontal patterning of all artifacts and the ceramic artifacts, architectural materials also peak in density at grid locations N575/E475 (see Figure 5.5). Thus, the Phase II close-interval STP data further substantiated the presence of concentrated cultural activity, such as an occupation layer, in the Stroud site core, yet specific locations of architectural remains or more discrete activity areas could not be delineated from the Phase II STP results.

Not surprisingly, the Phase II STP assemblage is similar to the Phase I STP assemblage. The overall Phase I assemblage was dominated by ceramic artifacts (44.3 percent) (Dovetail Cultural Resource Group 2011). The collection also contains a moderate amount of architectural (23.1 percent) and glass remains (22.9 percent). The remainder of the collection is represented by smaller portions of lithic, metal, organic, and personal items. Additionally, both the Phase I and Phase II STP assemblages showed highest artifact densities in the southeastern portion of the archaeological site.

5.2 Test Unit Excavations

Twenty TUs (TUs 7-26) were excavated across the APE during the Phase II archaeological survey (see Figure 5.2). Six additional TUs (TUs 1-6) were excavated during the previous Phase I archaeological survey. The project proposal dictated that 15 TUs were to be excavated during the standard survey period with a cache of an additional five units to be used upon consultation with the DelDOT. During a September 5, 2011, field meeting between Dovetail and DelDOT archaeologists, it was decided that all 20 TUs would be excavated. Three TUs would be placed in the site periphery as identified during Phase I and II testing and the remaining 17 units would be concentrated within the site core in the southeastern portion of the APE. During both the September 5 and October 14, 2011 field meetings, it was decided that four separate areas within the site core would be sampled with units. The following discussions present the results of the TU excavation plan and summaries of TUs are presented by geographic location within the site periphery (Test Units 7–9) and site core (Test Units 10–26). The discussion of TUs excavated within the site core are further sub-divided by the four discrete sampling locations identified during field consultations.

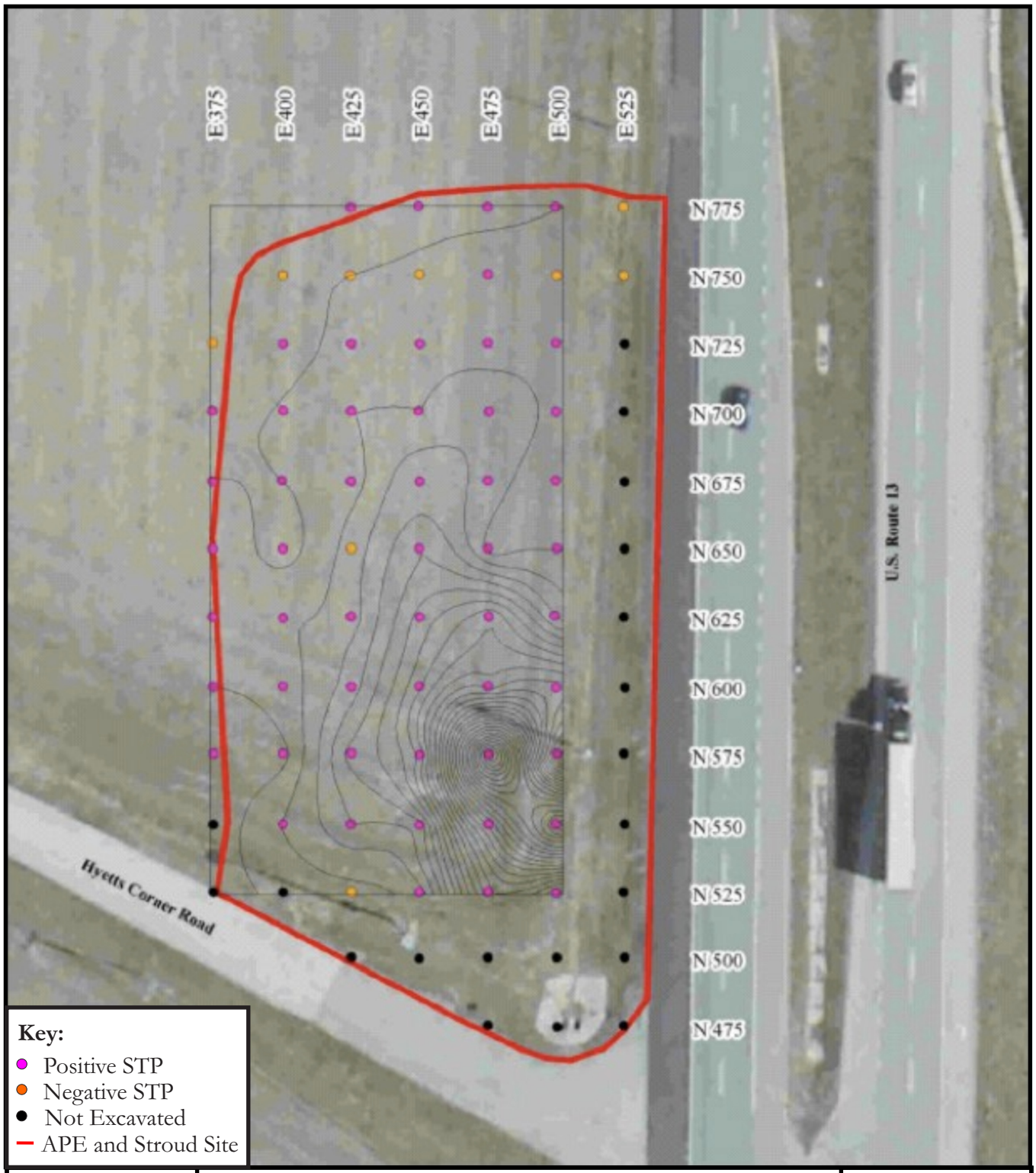


Figure 5.3:

Surfer Overlay showing Phase II Close-Interval Shovel Testing Artifact Density across the Stroud site.

N
W E
S

Feet
0 50

Figure 5.4:

Surfer Overlay showing Phase II Close-Interval Shovel Testing Ceramic Artifact Density across the Stroud site.

N
W E
S

Feet
0 50

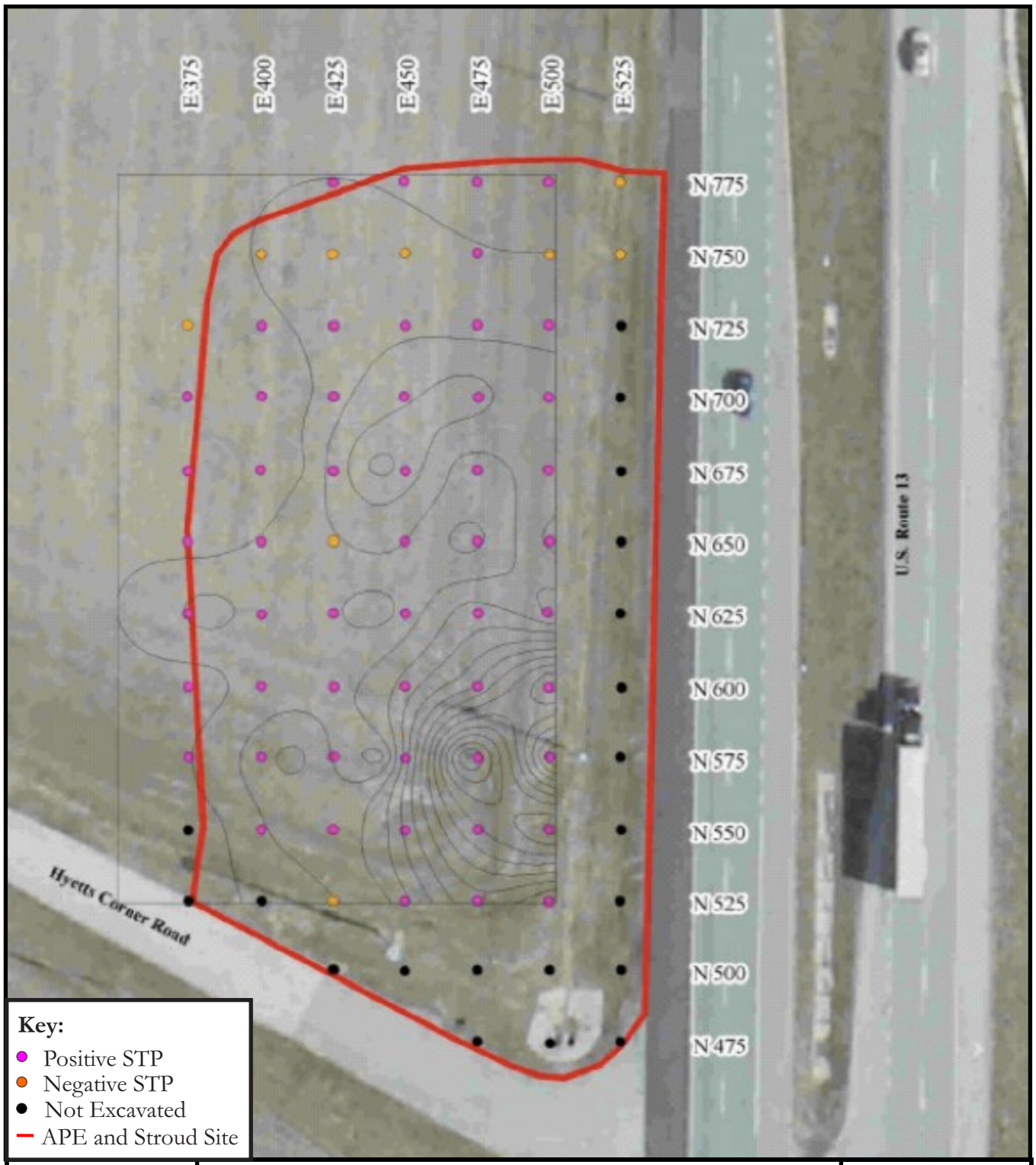


Figure 5.5:

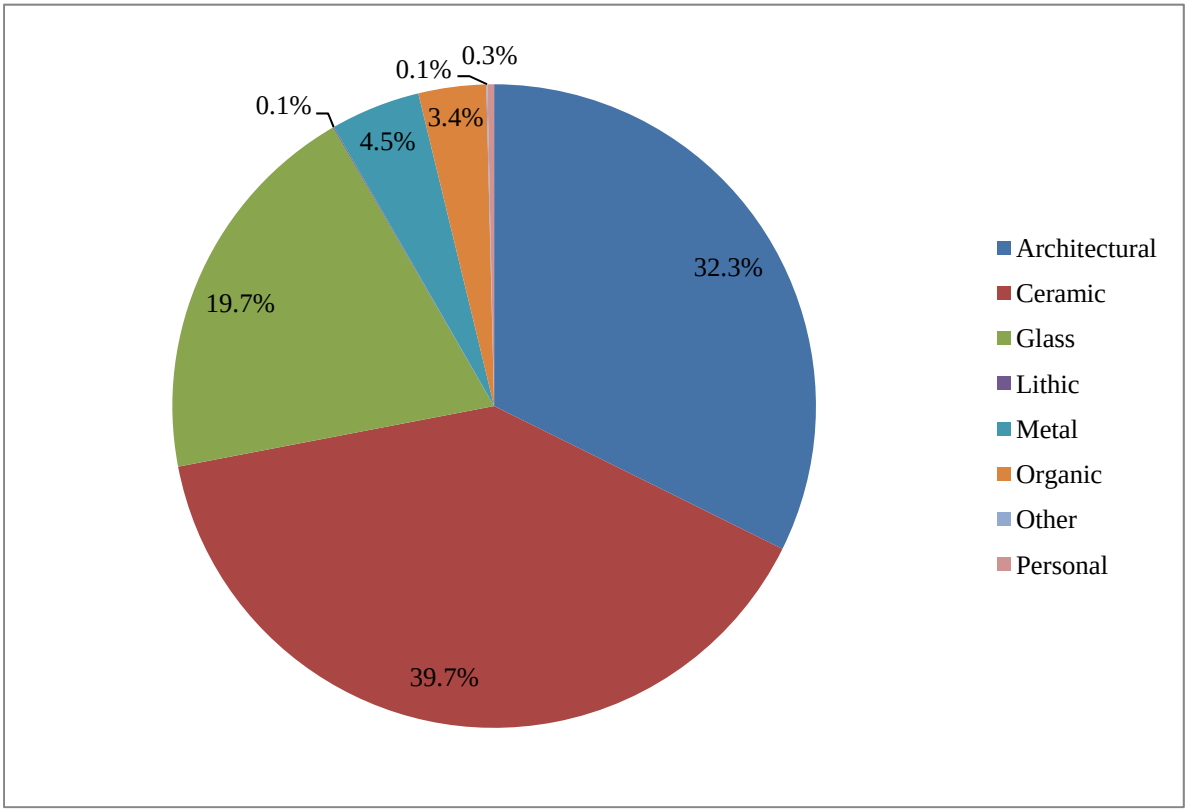
Surfer Overlay showing Phase II Close-Interval Shovel Testing Architectural Artifact Density across the Stroud site.

N
W E
S

Feet
0 50

Test unit excavation at the Stroud site resulted in the collection of 6,252 artifacts (Phase I N=1,094; Phase II N=5,158) (see Appendix G). As seen in the Phase II close-interval STP assemblage, the Phase II TU artifact collection was dominated by ceramic material types, followed by architectural and bottle and vessel glass artifacts (Chart 5.2). Other categories of artifacts recovered included lithic, metal, organic, other, and personal items. Artifacts specific to each TU are presented in the paragraphs and discussions below.

Chart 5.2: Distribution of Artifacts from all Phase II Test Units Excavated at the Stroud site.

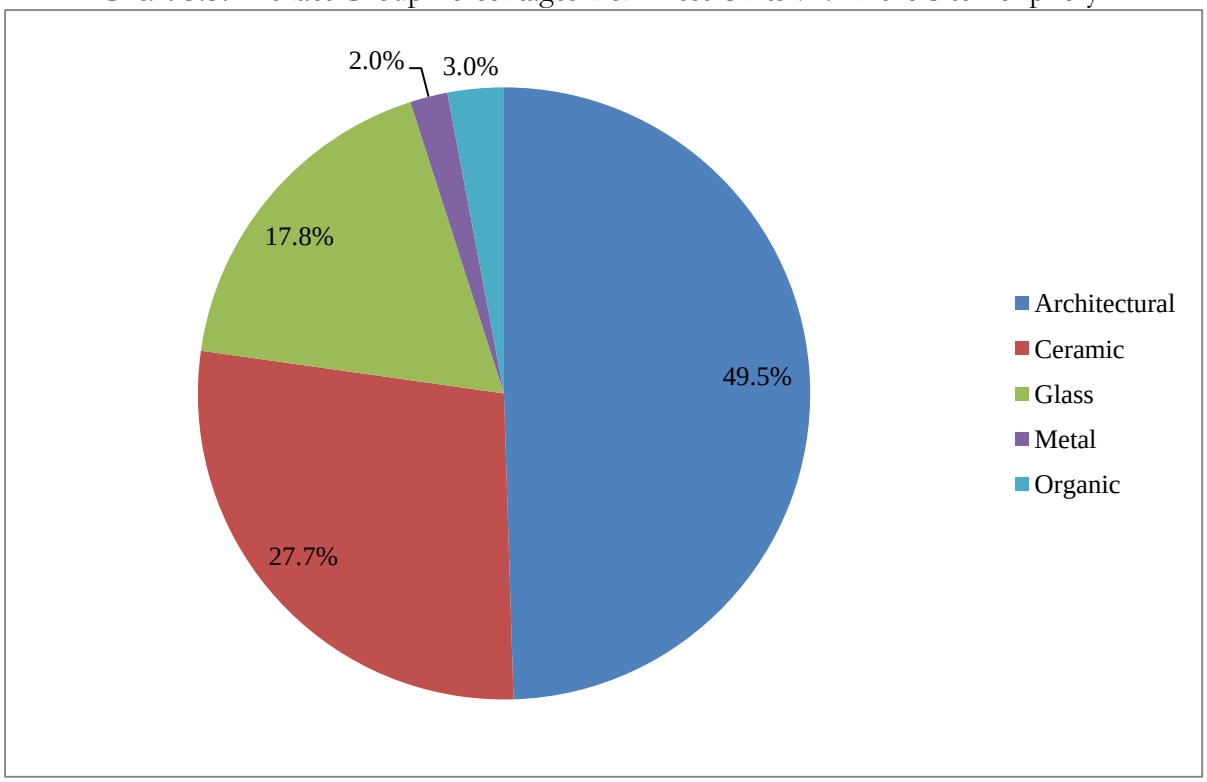


5.2.1 Site Periphery, Test Units 7–9

Test Units 7–9 were located outside the Stroud site core (see Figure 5.2), which is defined by an artifact-rich occupation layer confined to the southeastern portion of the site. Test units 7-9 were placed in the site periphery to confirm the absence of the occupation layer and explore the margins of the site. Combined, these three TUs yielded 101 historic artifacts (Chart 5.3; see Appendix G).

Test Units 7–9 ranged in depth from 20 inches (50.8 cm) to 25 inches (63.5 cm) below ground surface (bgs) (see Appendix E). The stratigraphy was consistent across these units and consisted of a

Chart 5.3: Artifact Group Percentages from Test Units 7–9 in the Site Periphery.



dark yellowish brown (10YR 4/4) silty loam modern plowzone/Ap-horizon overlying a yellowish brown (10YR 5/6) silty clay culturally sterile subsoil (B-horizon). Additionally, TU 8 contained a grayish brown (10YR 5/2) silty loam intrusion into the subsoil that was determined to be a plow divot or truncated root cast rather than an historic cultural landscape modification. The majority of the artifacts encountered from these TUs were recovered from the plowzone.

A total of 101 historic artifacts was recovered from the excavation of TUs 7, 8, and 9 (see Appendix G). Unlike the Phase II shovel testing artifact assemblage, the collection from these units was primarily composed of architectural remains (49.5 %; n=50). Architectural items include hand-made brick fragments, post-industrial window glass, and one cut nail (1815–1890). Ceramic artifacts composed the second highest percentage of the assemblage from these units at 27.7 percent (n=28). These artifacts consist of creamware (1762–1820), pearlware (1775–1820), whiteware (Post-1820), stoneware, Jackfield-like earthenware, and redware. Glass artifacts make up 17.8 percent (n=18) of the site periphery assemblage and include clear, aqua, olive, amber, and green bottle glass fragments. The remainder of the collection consists of small portions of metal (2 %; n=2) and organic (3 %; n=3) artifacts. These items include unidentified metal, coal, and oyster shell.

5.2.2 Site Core, Test Units 10–26

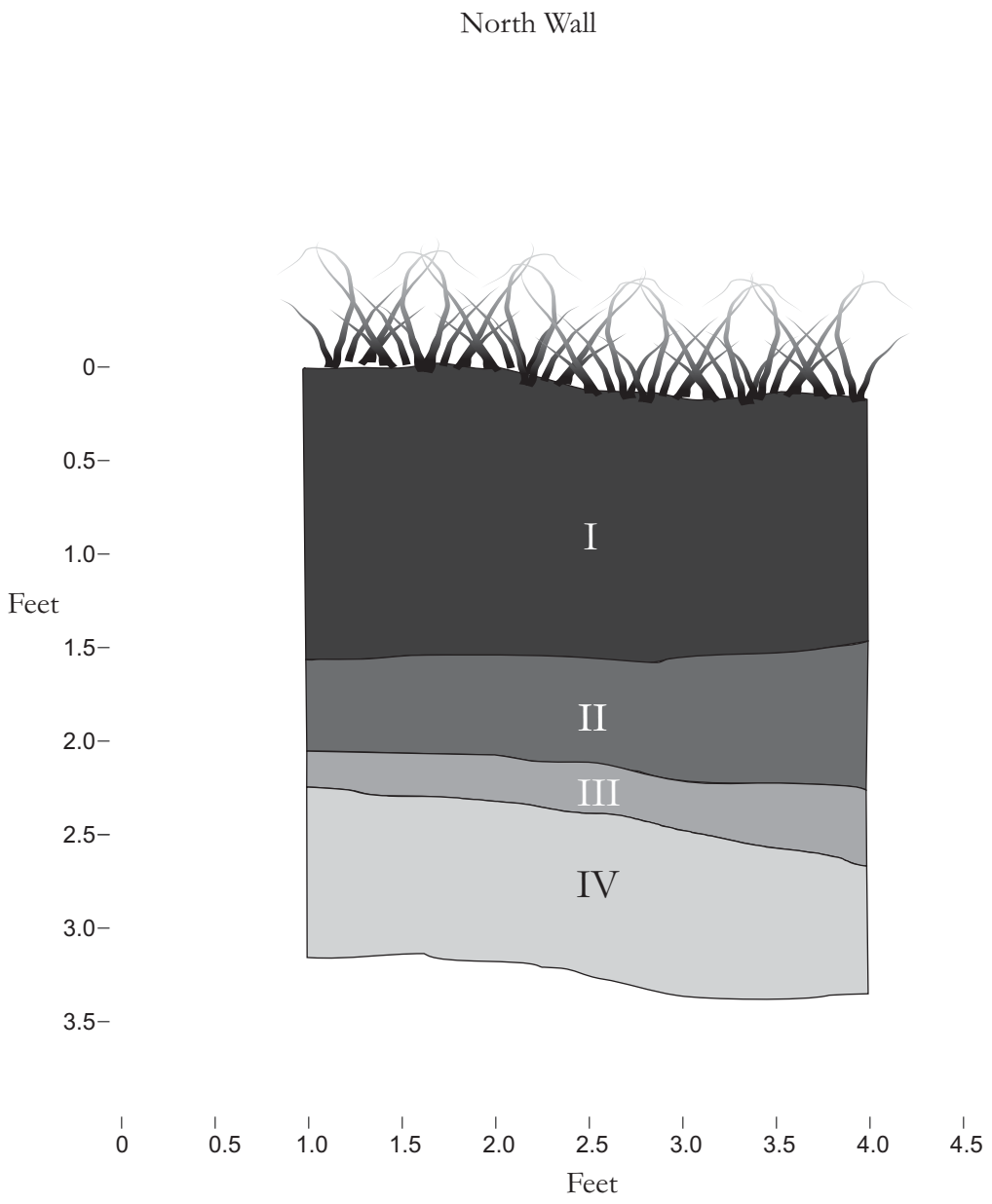
Test Units 10–14 and 26

Test Units 10–14 and 26 were excavated in the site core northwest of gird location N525/E500 (see Figure 5.2). Phase II shovel testing identified this portion of the site core as having a high concentration of ceramic items. As such, six TUs were excavated in a checker board pattern to further explore the origins of these high artifact concentrations.

Test Units 10–14 and 26 ranged in depth from 35 inches (88.9 cm) to 40 inches (101.6 cm) bgs (see Appendix E; Figure 5.6). The stratigraphy was fairly consistent across these units and consisted of a plowzone (Ap-Horizon) overlying the culturally-rich occupation layer, beneath which was culturally sterile subsoil (B-Horizon). Some of these units showed a poorly developed transition of subsoil, but for the purposes of this discussion this transitional horizon was incorporated into the B-horizon. The Ap-Horizon (Stratum I) was characterized as a dark yellowish brown (10YR 4/4) silt loam. North-south trending plowscars were evident at the base of this level in several of these units. The artifact-bearing occupation layer (Stratum II) was a brown (10YR 4/3) silty clay loam with 5–10 percent brick and coal flecking. In this portion of the site core, this the occupation layer ranged from 8 inches (20.3 cm) to 13 inches (33.1 cm) in thickness. The B-horizon (Stratum III) was a culturally sterile yellowish brown (10YR 5/6) sandy clay subsoil.

Non-cultural intrusions determined to be rodent burrows were identified in TU 10. These burrows intruded into the subsoil and eventually connected. Additionally, excavation in TU 12 revealed a truncated post hole beneath the artifact-rich occupation layer. No post mold was evident. The posthole was only evident in excavation beneath the feature stratum, as it had the same soil color and texture. Five artifacts were recovered from this posthole feature: one piece of hand-made brick, one rock shim, one cut nail (1815–1890), and two pieces of redware.

Combined, these six TUs yielded 2,882 artifacts and all were of historic affiliation (Chart 5.4; see Appendix G). As observed in other TUs within the site core, the historic artifact assemblage from TUs 10–14 and 26 is dominated by ceramic items, at 40.2 percent (n=1,158) of the collection. These items include Astbury (1725–1775), creamware (1762–1820), yellowware (1830–1910), ironstone (Post-1842), Jackfield-like stoneware, pearlware (1775–1820), redware, tin-glazed earthenware (1600–1802), wheildon (1740–1775), whiteware (Post-1820), porcelain (both plain and hand painted), porcellaneous (1820–Present), American Blue Grey stoneware (1800–1900), stoneware ginger beer bottle (1820–1900), and white salt-glazed stoneware (1720–1805). The presence of



Key:
I: Plowzone (Ap-horizon)-10YR 4/4 (Dark Yellowish Brown) Silt Loam
II: (Feature-Living Surface)-10YR 3/4 (Dark Yellowish Brown) Fine Sandy Loam
III: (A/B Interface)-10YR 6/6 (Brownish Yellow) Silt Loam m/w 10YR 5/3 (Brown) Fine Sandy Loam
IV: Subsoil (B-horizon)-10YR 6/6 (Brownish Yellow) Sandy Clay

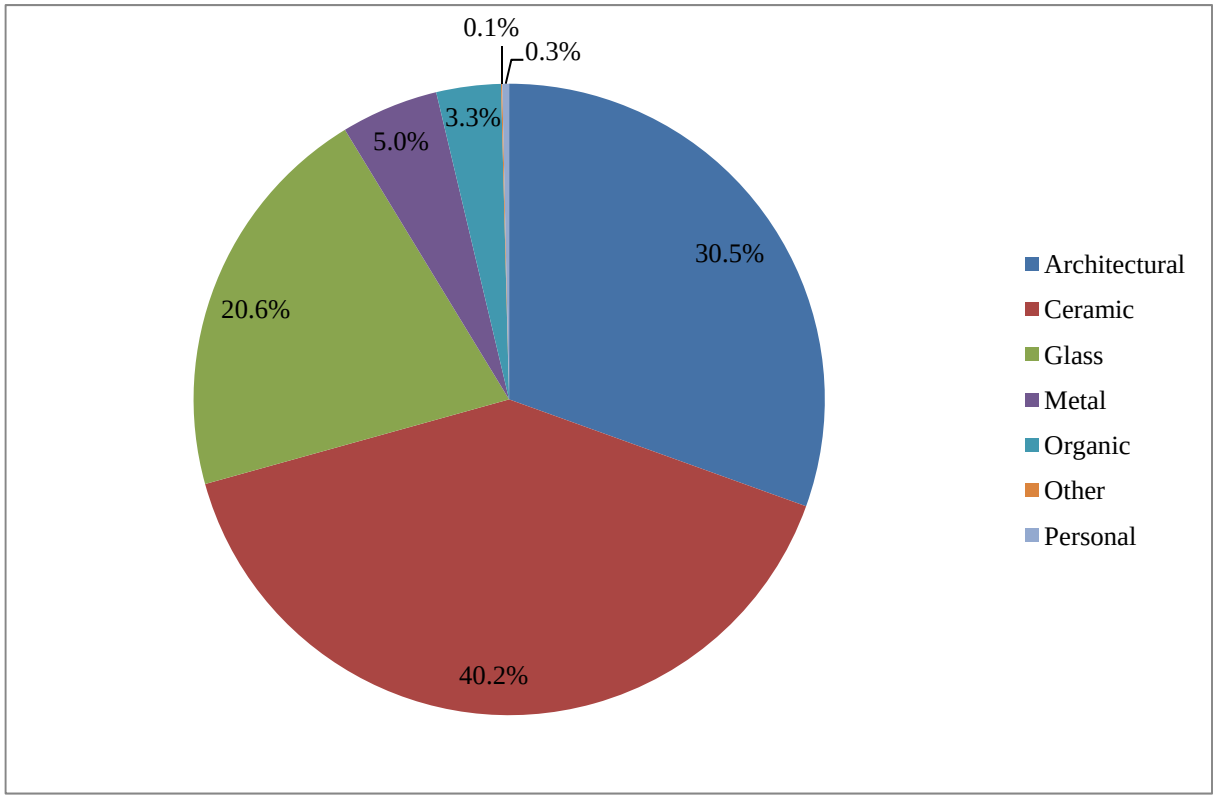
Figure 5.6:

North wall profile of TU 11.

Foot
0 1

Astbury and wheildon ceramics strongly suggests an occupation dating to the second or third quarter of the eighteenth century. In addition, TU 13 yielded several large fragments of a shell-edged whiteware plate (Figure 5.7).

Chart 5.4: Artifact Group Percentages from Test Units 10–14 and 26.



Architectural items comprise 30.5 percent (n=879) of the assemblage and include post-industrial window glass, hand-made brick fragments, cut nails (1815–1890), a cut brad, and lime/white plaster. Glass items primarily consist of bottle glass (amber, aqua, blue-green, brown, clear, dark green wine bottle, green, olive, and solarized in color) and constitute 20.6 percent (n=596) of the total historic assemblage from these units. Metal, organic, other, and personal items make up the remainder of the collection at 5.0 percent (n=144), 3.3 percent (n=95), 0.1 percent (n=2), and 0.3 percent (n=10), respectively. These items include a copper shoe buckle, a variety of bone fragments, buttons, clam and oyster shell, a fragment of a horseshoe, and unidentified metal.

The vertical distribution of artifacts from these TUs indicates that the plowzone (Stratum I) yielded 32.4 percent (n=935) of the total assemblage. Stratum II, designated as an occupation layer, yielded the highest artifact concentration with 63.1 percent (n=1,816). The remaining 4.5 percent (n=131) of recovered artifacts was collected from the upper transitional levels just above the Units 10–14

Figure 5.7:

Mended Shell-Edged Whiteware Plate (TU 13/II-2).

and 26 displayed the thickest occupational layer of any TUs excavated at the Stroud site, with a maximum thickness of 13 inches (33 cm) (see Appendix E). The overlying plowzone was typically 17 inches (43.2 cm) thick (see Appendix E). The artifacts recovered from Stratum II were much larger in size and had obviously not been subjected to repeated disturbance and fragmentation from plowing, as evidenced by the recovery of a near-complete whiteware plate from the middle of this stratum (see Figure 5.7). It is unclear if Stratum II represents an occupation layer or filled depression or shallow cavity, such as a crawlspace below a former building.

5.2.3 Site Core, Test Units 15–19

Test Units 15–19 were excavated in the site core and concentrated north and east of close-interval STP N575/E475 (see Figure 5.2). Grid location N575/E475 was the location where close-interval shovel testing yielded the highest frequency of all artifacts and the highest frequency of recovered architectural items, particularly nails. These five TUs were excavated in a checker board block pattern in an effort to identify the source of high artifact densities and to further understand the nature/origin of the site core.

Test Units 15–19 ranged in depth from 29 inches (73.7 cm) to 38 inches (95.5 cm) bgs. The stratigraphy was fairly consistent across these units. The plowzone/Ap-horizon (Stratum I) consisted of a dark yellowish brown (10YR 4/4) silt loam. This plowzone was excavated in arbitrary 4-inch (10.2-cm) levels, allowing for the identification of what is interpreted as an earlier, historic plowzone towards the base of Stratum I. The delineation between the Ap-horizon and the historic plowzone was based on the presence of yellowish brown (10YR 5/8) silty clay mottling in the lower Ap-horizon excavation levels.

Beneath the historic plowzone was a brown (10YR 4/3) silty clay loam with 5–10 percent brick and coal flecking (Stratum II) (see Appendix E). Stratum II in these units was interpreted as an occupation layer similar to that found elsewhere in the site core. This stratum ranged in thickness from 4 inches (10.2 cm) to 6 inches (15.2 cm); thicker than in the western portion of the site core (TUs 20–24), but thinner than in the southern portion of the site core (TUs 10–14 and 26). Underneath Stratum II was a yellowish brown (10YR 5/6) sandy clay subsoil (B-horizon/Stratum III). In some TUs (namely TUs 15, 16, and 19), the upper portion of Stratum II was identified as a transition to subsoil Stratum, but for the purposes of this discussion this transitional layer has been incorporated into Stratum III.

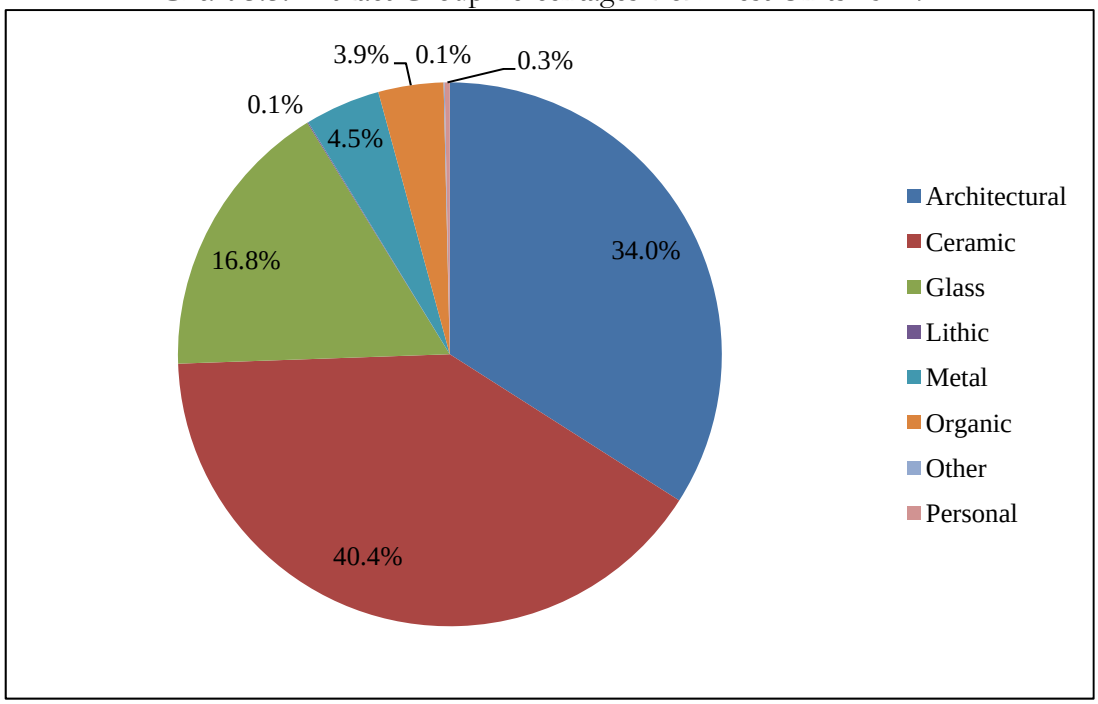
A large rock was identified at the base of Stratum II during the course of excavation of TU 19. A small halo depression surrounding the rock was excavated separately as an intrusion into Stratum III below. During the course of excavation it was evident that the halo intrusion was a continuation of

Stratum II. No mortar or evidence of articulation with other structural elements was encountered during excavation and the origin/function of this stone is unknown. The excavation of the plowzone in TU 17 revealed a modern plastic pipe, likely associated with modern irrigation or farming practices. Given the recent age of this pipe, excavation of TU 17 was halted at the base of the plowzone.

Combined, these five TUs yielded 1,628 artifacts and all but one were of historic affiliation (Chart 5.5; see Appendix G). The single prehistoric artifact was recovered from the plowzone stratum of TU 19 and is a piece of secondary quartz debitage. As observed in other TUs within the site core, the historic artifact assemblage from TUs 15–19 is dominated by ceramic items, at 40.4 percent (n=658) of the collection. Identified ceramic types include creamware (1762–1820), yellowware (1830–1910), ironstone (Post-1842), pearlware (1775–1820), redware, whiteware (Post-1820), tin-glazed earthenware (1600–1802), American Blue Gray stoneware (1800–1900), ginger stoneware (1820–1900), Jackfield-type, and white salt-glazed stoneware (1720–1805). Architectural items composed 34 percent (n=554) of the assemblage and include post-industrial window glass, hand-made brick fragments, cut nails (1815–1890), cut brads, and one fragment of pre-industrial (hand-blown) window glass. Glass items primarily consist of bottle glass (amber, aqua, brown, clear, green, and olive in color) and constitute 16.8 percent (n=273) of the total assemblage from these units. The collection contains 4.5 percent (n=73) metal items, including unidentified metal, wire, a possible kettle fragment, a chisel, and a brace. Coal, oyster shell, clam shell, bone, and teeth represent the organic artifacts which comprise 3.9 percent (n=63) of the collection. The remainder of the assemblage includes personal items (0.3 %; n=5), including a brass button, a comb fragment, two clay pipe bowl pieces, and a bone utensil handle.

Artifacts were fairly evenly distributed between the plowzone and the occupation layer. Just under half of the assemblage, 48.6 percent (n=791) was collected from the plowzone levels. The feature/occupation stratum yielded 50.7 percent (n=826) of the collection. The remaining 0.7 percent (n=11) of artifacts were in low quantities recovered from bioturbation intrusions and/or the upper transitional levels of the subsoil. Although the vertical artifact frequencies are relatively similar between the plowzone and occupation layer, the occupation layer is much thinner than the plowzone. Therefore vertical artifact frequencies by depth increased significantly within this thin cultural layer.

Chart 5.5: Artifact Group Percentages from Test Units 15–19.



5.2.4 Site Core, Test Units 20–24

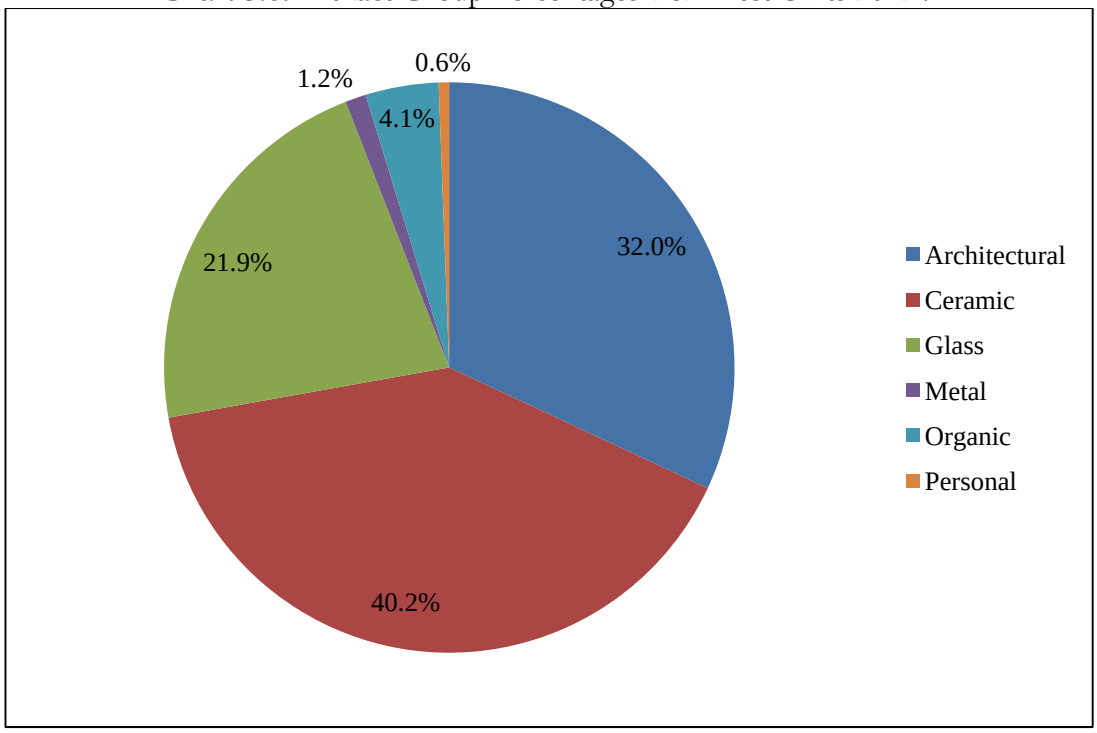
Test Units 20–24 were excavated in the site core, clustered around and west of close-interval STP N575/E425 (see Figure 5.2). This portion of the site core was targeted for further subsurface investigations to explore the western margin of the site core. During the close-interval shovel testing, this location was determined to be the western boundary of the occupation layer and thus part of the site core. In STP N575/E425 this characteristic stratum was only 4 inches (10.16 cm) thick, whereas in the heart of the site core, this stratum averaged 10–12 inches (25.4–30.5 cm) in thickness. These units were plotted in a checker board, linear pattern in an effort to isolate the margin between the site core and periphery.

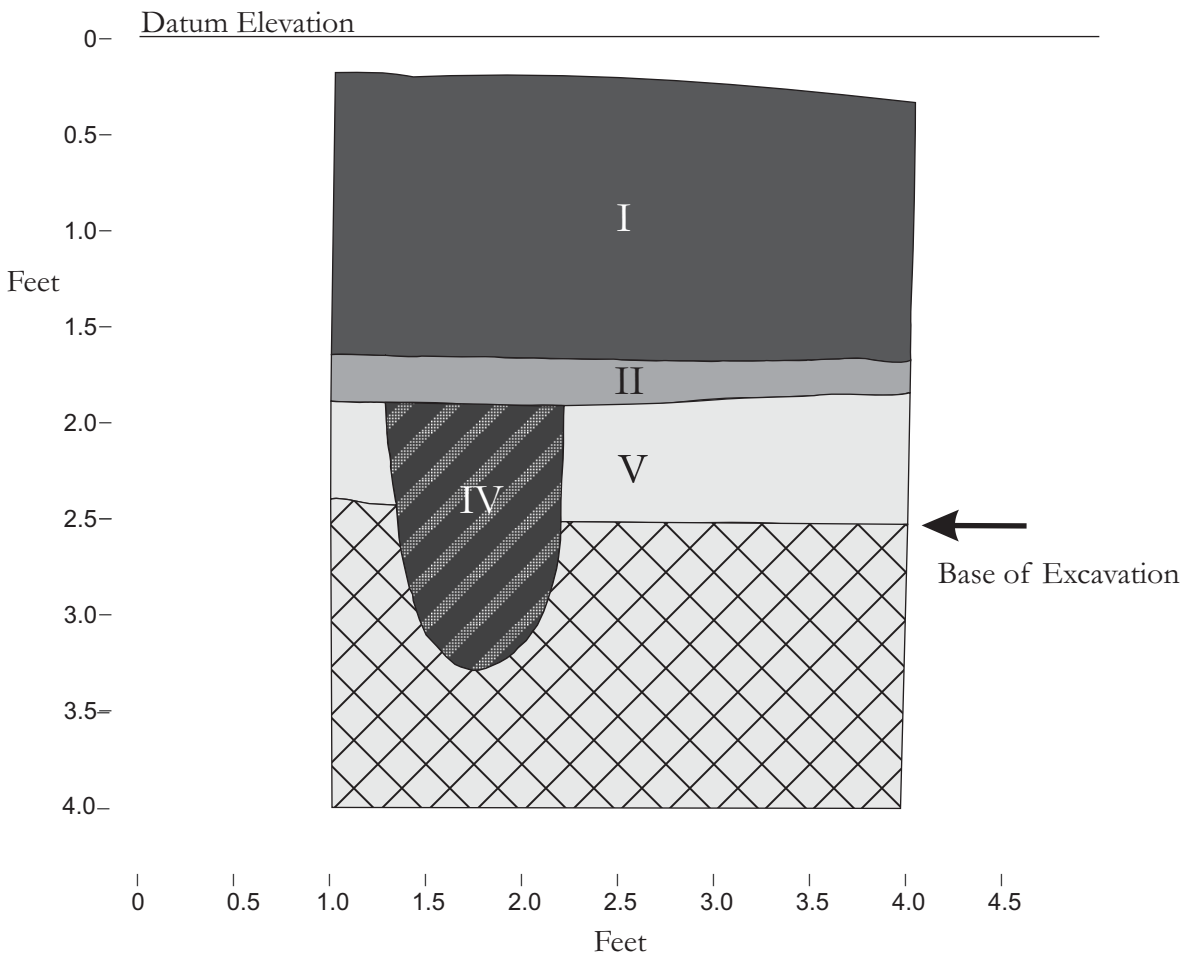
Test Units 20–24 ranged in depth from 24 inches (60.9 cm) to 28 inches (71.1 cm) bgs (see Appendix E). The stratigraphy was fairly consistent across these units and consisted of a dark yellowish brown (10YR 4/4) silty loam plowzone/Ap-horizon (Stratum I). Beneath the Ap-horizon was a brown (10YR 4/3) silty clay loam with 5–10 percent brick and coal flecking (Stratum II). Stratum II in these units was identified as an artifact-rich occupation layer characteristic of the site core. In these units Stratum II ranged in depth from 2.5 inches (6.4 cm) to 4 inches (10.2 cm), much thinner than in other portions of the site core. Underneath Stratum II was a culturally sterile yellowish brown (10YR 5/6) sandy clay subsoil (B-horizon). Non-cultural intrusions identified as rodent burrows were encountered in TUs 21 and 23. In both cases these burrows intruded into the

subsoil. Additionally, excavation in TU 20 revealed a post hole beneath the artifact-rich occupation layer (Figure 5.8; Plate 5.1). No post mold was evident in the post hole. The posthole was only evident in excavation beneath the artifact-rich occupation layer, as it had the same soil color and texture. Four artifacts were recovered from this posthole feature, including one piece of green transfer print whiteware and three hand-made brick fragments.

Combined, these five TUs yielded 340 artifacts and all but two were of historic affiliation (Chart 5.6). The two prehistoric artifacts included a piece of fire-cracked rock from TU 20 and a secondary jasper flake from TU 22. As observed in other TUs within the site core, the historic artifact assemblage from TUs 20–24 is dominated by ceramic items, at 40.2 percent (n=136) of the collection (see Chart 5.6). These items include creamware (1762–1820), yellowware (1830–1910), ironstone (Post 1842), pearlware (1775–1820), redware, whiteware (Post 1820), American Gray stoneware (1800–1900), ginger stoneware (1820–1900), and Jackfield-type (1740s-1800s) earthenware. Architectural items comprised 32 percent (n=108) of the assemblage and include post-industrial window glass, hand-made brick fragments, cut nails (1815–1890), and white mortar. Glass items primarily consist of bottle glass (amber, aqua, brown, clear, green, and olive in color) and constitute 21.9 percent (n=74) of the total historic assemblage from these units. Metal, organic, and personal items make up the remainder of the collection at 1.2 percent (n=4), 4.1 percent (n=14), and

Chart 5.6: Artifact Group Percentages from Test Units 20–24.





Key:
I: Plowzone (Ap-horizon)-10YR 4/4 (Dark Yellowish Brown) Silt Loam
II: Sheet Midden-10YR 3/4 (Dark Yellowish Brown) Silt Loam
IV: Post Hole-10YR 5/4 (Yellowish Brown) Silt Loam with Brick and Charcoal Flecking
V: Subsoil (B-horizon)-10YR 6/6 (Brownish Yellow) Silt Clay Loam
m/w 10YR 5/4 (Yellowish Brown) Silt Loam

Figure 5.8:

South wall profile of TU 20 showing post hole stain.

Foot
0 1

Plate 5.1:

South wall profile of TU 20 showing post hole stain.
Photo view: South
Date: September 19, 2011

0.6 percent (n=2), respectively. These items include a possible ceramic pot fragment, a metal spike, unidentified metal, bone, clam and oyster shell, and two brass buttons.

Unlike the other TUs in the Stroud site core, the majority of artifacts recovered from TUs 20–24 were from the plowzone strata (65.3 %; n=222). The occupation layer characteristic of the site core yielded 33.5 percent (n=114) of the collection, while the remaining 1.2 percent (n=4) was recovered from the post hole feature in TU 20. This change in vertical artifact distribution is likely directly related to the decline in thickness of the occupation zone in these TUs. While the occupation layer in the western margin of the site is thinner than in other portions of the site, it is still evident that this layer represents the remains of concentrated cultural activity.

5.2.5 Test Unit 25

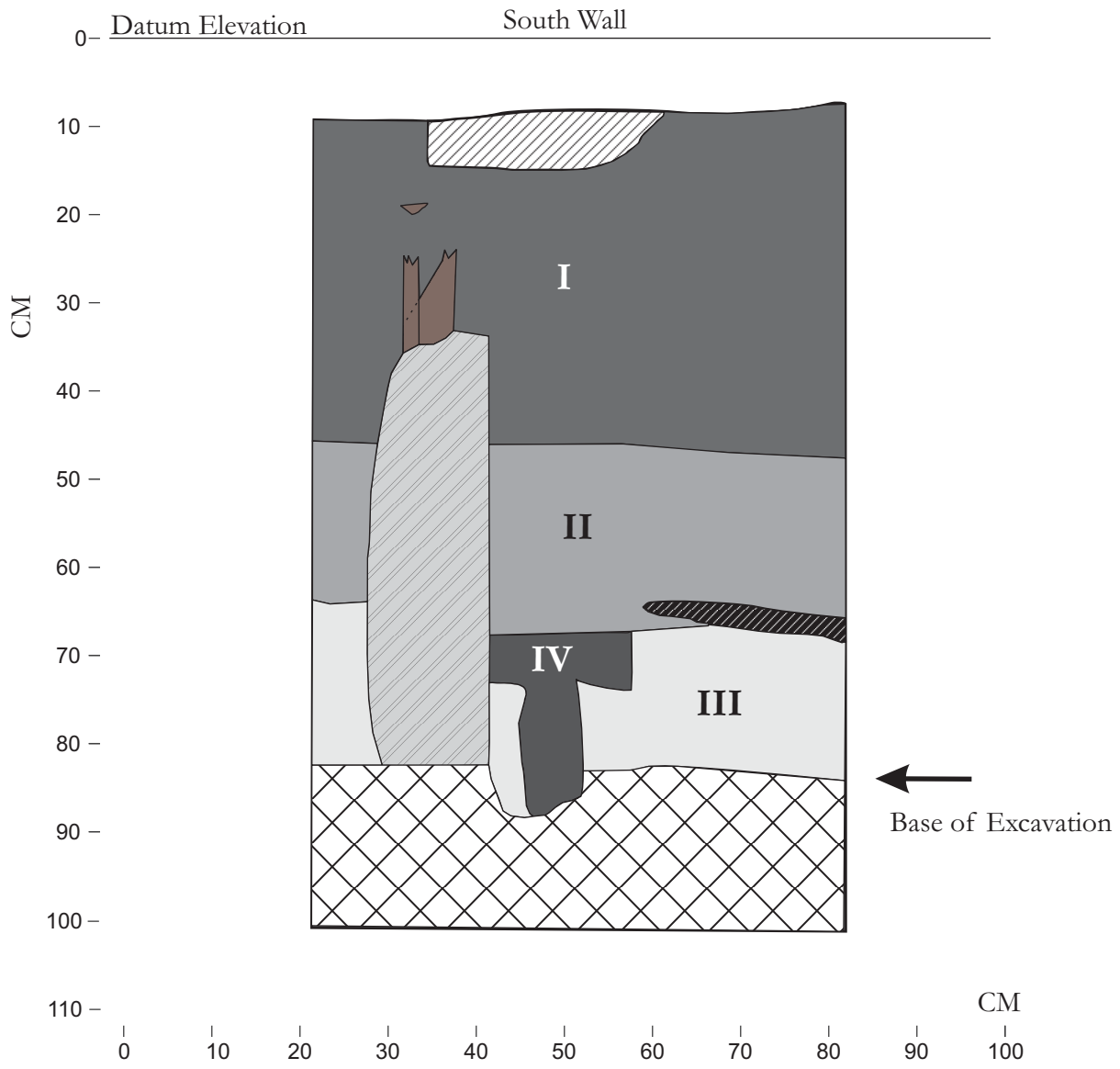
During an October 14, 2011 field meeting, DelDOT archaeologists requested that a TU be excavated in the extreme southeastern extent of the site. Archival research indicated that the two-story house was situated at the corner of King's Highway and Hyetts Corner Road, underneath the current south-bound lanes of the U.S. Route 13. Thus, the area of current investigation is situated in the side/back yard of the dwelling. Placement of TU 25 was intended to get as close to the likely location of the former dwelling as possible while avoiding known disturbances associated with the underground utilities, drainage culverts, and the improved U.S. Route 13 (Plate 5.2; see Figure 5.2).

Test Unit 25 extended to a depth of 45 inches (114.3 cm) bgs. Excavation revealed a thick modern plowzone mixed with utility/fencing disturbance (Ap-horizon) overlying an historic plowzone (Ap2-horizon) and subsoil (B horizon). A modern concrete and wood fence post was revealed in the modern plowzone and it extended to the base of excavation (Figure 5.9; Plate 5.3). Stratum I, the disturbed modern plowzone, consists of a dark yellowish brown (10YR 3/4) silt loam. This stratum extended 24 inches (60.9 cm) bgs. The presence of the overly-thick and disturbed plowzone suggests that the uppermost level consisted of fill soil, likely from modern utility disturbance or the installation of an adjacent culvert. In either case this stratum has been subjected to very recent mechanized plowing. Below the modern plowzone was an historic plowzone, characterized as a dark yellowish brown (10YR 3/4) silt loam mottled with strong brown (7.5YR 5/8) fine sandy clay (Stratum II), under which was a strong brown (7.5YR 5/8) fine sandy clay subsoil (Stratum III). An intrusion into Stratum III was observed adjacent to the modern fence post. This intrusion was a dark brown (10YR 3/3) silt loam and was excavated as modern disturbance (Stratum IV).

A total of 200 historic artifacts was recovered from the excavation of TU 25 (Chart 5.7). The collection from TUs 25 is comprised of 37 percent (n=74) architectural remains, including

Plate 5.2:

Overview of TU 25 location.
Photo view: Southeast
Date: October 26, 2011



Key:

I: Plowzone (Ap-horizon)-10YR 4/2 (Dark Yellow Brown) Silt Loam m/w 7.5YR 5/8 (Strong Brown) Fine Sand, 10YR 3/4 (Dark Yellow Brown) Silt Loam, 7.5YR 5/8 (Strong Brown) Fine Sandy Loam

II: Historic Plowzone (Ap2-horizon)-10YR 3/4 (Dark Yellow Brown) Silt Loam m/w 7.5YR 5/8 (Strong Brown) Fine Sandy Clay

III: Subsoil (B-horizon)-10YR 5/8 (Yellowish Brown) Fine Sandy Clay

IV: Anomaly-10YR 3/3 (Dark Brown) Silt Loam

Concrete | Wood | Charcoal Stain | 7.5YR 5/8 (Strong Brown) Fine Sand Lens

Figure 5.9:

South wall profile of TU 25 showing concrete encased post feature.

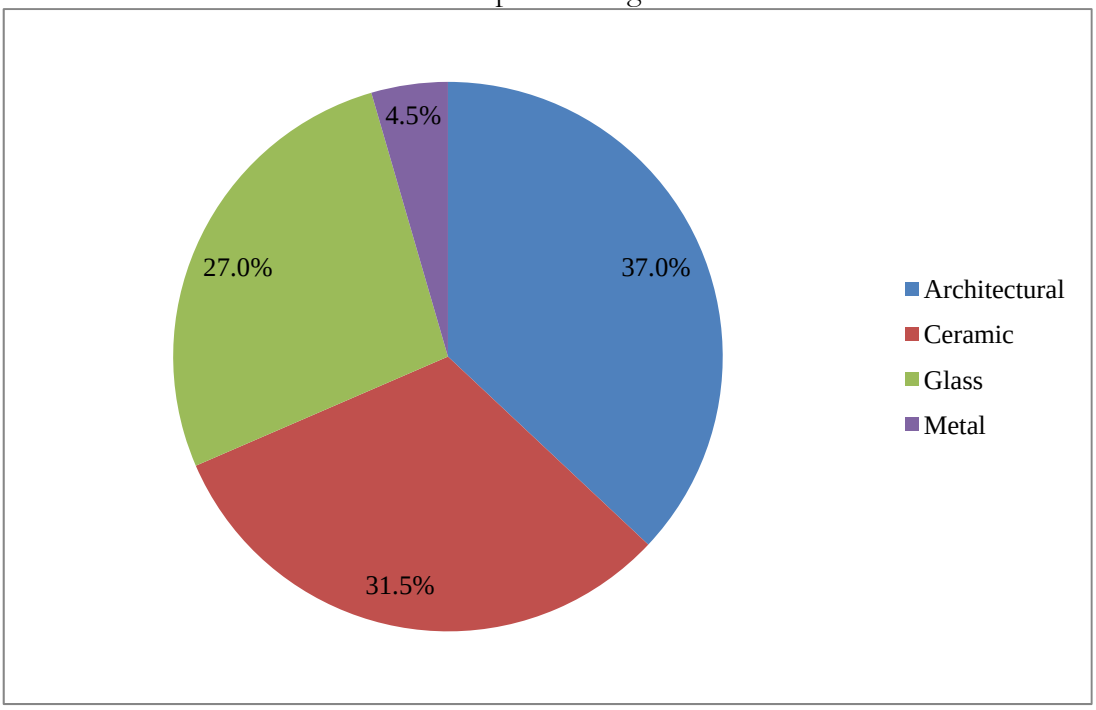
CM
0 20

Plate 5.3:

South wall profile of TU 25 showing concrete encasement around a post.
Photo view: South
Date: October 26, 2011

hand-made brick fragments, post-industrial window glass, cut nails (1815–1890), ungalvanized wire nails (1890–1945), and lime/white mortar. Ceramic artifacts represent the second highest material frequency of the assemblage from this unit at 31.5 percent (n=63). Identified ceramic types include creamware (1762–1820), pearlware (1775–1820), whiteware (Post-1820), white salt-glazed stoneware (1720–1805), ironstone (Post 1842), and redware. Glass artifacts make up 4.5 percent (n=9) of the TU 25 assemblage and include clear, aqua, green wine, amber, milk and light green bottle glass items. The remainder of the collection includes nine pieces of unidentified iron alloy metal (4.5 percent). Almost the entire artifact assemblage from TU 25 was recovered from the plowzone excavation levels (97.5 percent; n=195). Yet, it is important to note that TU 25 lacked the artifact-rich feature stratum characteristic of the site core.

Chart 5.7: Artifact Group Percentages from Test Unit 25.



5.2.6 Soil Survey

Soil texture analysis from three plowzone samples taken at grid coordinates N540/E485, N570/E425, and N850/E455, indicate that the site soils varied from a clay loam in the northern portion of the tested area (N830/E455), to a silty clay loam in the central portion of the site (N570/E425), to a silty clay near the southern portion of the site (N540/E485) (see Appendix F). The percentage of silt and clay in the weakly acidic plowzone suggests the site soil has a strong to moderate potential to retain weakly sorbed anthropogenic geochemical soil residues. Thus, it is probable that migration of geochemical soil residues through the stratigraphic profile was moderate

to low and that anthropogenic geochemical soil residue data quantified from plowzone soil samples may accurately correspond to former site activities.

Statistical analysis of soil geochemical data from the Stroud Site is presented in Tables 5.1-5.4. The descriptives were calculated for three off-site plowzone samples, 15 feature samples, 159 on-site plowzone samples, and 188 site-wide samples, including 11 subsoil samples. While not statistically valid for comparison due to the low number of off-site samples collected, the data weakly suggests the off-site plowzone may have lower anthropogenic soil chemical residues than on-site plowzone samples. As calculated from 10 soil samples which were tested twice, the error range for phosphorus is: ± 32.35 parts per million (ppm), potassium ± 20.45 ppm, and calcium ± 167.45 ppm. Thus, the difference between off-site and on-site plowzone calcium (216 ppm) and phosphorus (84 ppm) levels are greater than the error ranges, indicating that these elements appear to be elevated on-site by human activity in the past. The difference between average off-site and on-site plowzone potassium levels (20 ppm) is within the error range for that element and taken as a whole, the site's potassium levels do not appear to be greatly altered by past human activity, although individual site areas do show elevated potassium concentrations, as discussed below.

A comparison of feature and on-site plowzone samples suggests organic matter percent, Al, K, Mn, P, S, and Zn are lower in feature soils (i.e. occupation layer and post features) compared to on-site plowzone samples. Though feature contexts were expected to be higher, the lower values of these attributes in feature contexts may be influenced by several factors. Plowzone samples may have been collected from plow disturbed feature contexts, particularly in the southeastern portion of the site, resulting in higher geochemical values. Soil texture in feature contexts sampled may have resulted in a greater increase in element mobilization and transfer to deeper strata, such as the B-horizon. Higher CEC in feature soils, however, suggests this latter hypothesis is not likely, further suggesting that the lower densities of organic matter, Al, K, Mn, P, S, and Zn may result from the historic use and deposition of the materials in the feature contexts sampled. Further, the soil texture analysis suggests the plowzone likely has a strong correlation with anthropogenic chemical residues associated with former on-site activities.

Anthropogenic activity is strongly correlated with the proportions of geochemical residues in plowzone soil samples when compared with the proportions in samples from underlying occupational layer and subsoil deposits. Statistical descriptives for occupation layer samples and samples taken from the plowzone above the occupation layer and subsoil below the occupation layer are presented in Tables 5.5-5.7. The data reveal the plowzone had higher CEC, organic matter, Al, Fe, K, Mn, P, S, and Zn, and that these attributes decreased in density in the occupation layer and in the subsoil respectively. The subsoil had higher soil pH, Cu, and Mg, the latter two of which

typically migrate through the soil profiles. Soil pH, Cu, and Mg increased in value with depth. The increase in soil pH in the subsoil may be due to greater clay content in that horizon. Boron and Ca were highest in value in the occupation layer followed by plowzone and subsoil strata. The higher density of Ca in the occupation layer may be the result of highly mobile unbound Ca leaching through the soil profile from the plowzone into the feature. Alternatively, higher Ca in the occupation layer may result from the presence of Ca-rich cultural material like shell, bone, and brick.

Table 5.1: Site-Wide Statistical Descriptives (n=188 samples).

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
CEC	188	6.2	14.3	9.140	1.3561	1.839	.746	.177	1.439	.353
OM	188	.6	3.5	2.123	.4879	.238	-.731	.177	.887	.353
pH	188	5.5	6.9	6.130	.2560	.066	.365	.177	.429	.353
Al	188	781.78	1368.82	1104.6076	113.06794	12784.359	.073	.177	-.015	.353
B	188	.25	1.32	.5484	.19928	.040	1.154	.177	1.919	.353
Ca	188	481.95	2063.91	990.1015	203.31217	41335.839	1.279	.177	4.392	.353
Cu	188	.68	23.23	4.3078	2.15598	4.648	5.298	.177	42.458	.353
Fe	188	75.91	301.18	145.7544	27.14378	736.785	.780	.177	4.933	.353
K	188	48.46	307.23	135.1936	44.35032	1966.951	.641	.177	.449	.353
Mg	188	90.51	262.37	153.5591	37.40512	1399.143	.818	.177	.188	.353
Mn	188	18.57	106.36	67.4928	16.28971	265.355	-.214	.177	.372	.353
P	188	35.39	490.12	284.9447	83.45693	6965.059	-.703	.177	1.072	.353
S	188	3.97	18.86	9.1032	2.44825	5.994	.977	.177	2.106	.353
Zn	188	.67	12.19	5.4682	2.03162	4.127	.205	.177	.682	.353
Valid N (listwise)	188									

Table 5.2: On-Site Plowzone Statistical Descriptives (n=159 samples)

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
CEC	159	6.2	14.0	9.210	1.2769	1.630	.644	.192	1.128	.383
OM	159	1.3	3.5	2.235	.3762	.142	-.064	.192	-.010	.383
pH	159	5.5	6.6	6.073	.2080	.043	-.091	.192	.048	.383
Al	159	781.78	1368.82	1115.0145	117.38609	13779.494	-.100	.192	-.070	.383
B	159	.25	1.32	.5489	.17649	.031	.945	.192	1.848	.383
Ca	159	751.87	1699.90	1003.2789	172.90114	29894.803	1.165	.192	1.882	.383
Cu	159	3.05	19.02	4.4823	1.49918	2.248	6.304	.192	56.731	.383

Table 5.2; cont.

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Fe	159	84.00	204.64	147.1540	23.83197	567.963	-.129	.192	-.234	.383
K	159	48.46	307.23	142.4463	43.35416	1879.583	.583	.192	.510	.383
Mg	159	98.61	253.29	148.5791	33.84689	1145.612	.955	.192	.647	.383
Mn	159	40.55	106.36	69.9621	14.10274	198.887	.387	.192	-.459	.383
P	159	171.22	490.12	303.4801	63.22387	3997.258	.305	.192	-.372	.383
S	159	4.90	18.86	9.4953	2.27628	5.181	1.440	.192	2.718	.383
Zn	159	3.30	12.19	5.8202	1.72002	2.958	.988	.192	.826	.383
Valid N (listwise)	159									

Table 5.3: Off-Site Plowzone Statistical Descriptives (n=3 samples)

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
CEC	3	8.0	8.7	8.433	.3786	-1.597	1.225
OM	3	1.7	2.7	2.033	.5774	1.732	1.225
pH	3	5.7	6.1	5.867	.2082	1.293	1.225
Al	3	969.21	1044.86	1008.9633	37.97217	-.452	1.225
B	3	.27	.35	.3100	.04000	.000	1.225
Ca	3	735.23	854.04	790.3500	59.86683	.631	1.225
Cu	3	3.01	3.54	3.2300	.27622	1.311	1.225
Fe	3	97.90	143.38	123.4133	23.24181	-1.013	1.225
K	3	84.83	158.51	121.1333	36.85172	.131	1.225
Mg	3	90.51	104.84	98.9367	7.49084	-1.344	1.225
Mn	3	60.64	72.41	68.0100	6.42253	-1.636	1.225
P	3	162.87	298.68	218.4633	71.17458	1.370	1.225
S	3	6.87	8.39	7.8300	.83522	-1.661	1.225
Zn	3	2.92	4.90	3.8167	1.00311	.808	1.225
Valid N (listwise)	3						

Table 5.4: Feature Statistical Descriptives (n=15 samples)

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
CEC	15	8.0	14.3	9.853	1.6159	2.611	1.678	.580	3.149	1.121
OM	15	1.4	2.6	1.853	.3044	.093	.813	.580	1.562	1.121
pH	15	6.3	6.9	6.540	.1882	.035	.884	.580	-.219	1.121

Table 5.4; cont.

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Al	15	960.49	1148.99	1068.2967	61.55378	3788.868	-.575	.580	-.752	1.121
B	15	.41	1.27	.7327	.30774	.095	.603	.580	-1.265	1.121
Ca	15	701.74	2063.91	1109.5660	326.11099	106348.377	1.847	.580	4.806	1.121
Cu	15	1.67	23.23	5.1120	5.16106	26.637	3.499	.580	12.971	1.121
Fe	15	104.00	301.18	156.3620	45.37487	2058.879	2.450	.580	7.949	1.121
K	15	51.94	133.77	87.0187	23.12631	534.826	.583	.580	-.321	1.121
Mg	15	142.22	262.37	190.0967	33.50224	1122.400	.598	.580	-.285	1.121
Mn	15	20.62	90.30	62.3660	19.31536	373.083	-.469	.580	.124	1.121
P	15	141.47	356.33	258.0687	69.41442	4818.362	.009	.580	-1.175	1.121
S	15	4.03	9.79	6.7373	1.87793	3.527	.150	.580	-1.322	1.121
Zn	15	1.86	9.37	5.2353	2.14296	4.592	.305	.580	-.468	1.121
Valid N (listwise)	15									

Table 5.5: Plowzone Above Occupation Layer Statistical Descriptives (n=8 samples)

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
CEC	8	8.0	11.9	9.463	1.2839	1.648	.937	.752	.554	1.481
OM	8	2.0	2.8	2.413	.3399	.116	-.055	.752	-2.508	1.481
pH	8	5.7	6.2	6.025	.2121	.045	-1.033	.752	-.635	1.481
Al	8	1063.37	1125.67	1101.7763	19.34899	374.384	-.930	.752	1.632	1.481
B	8	.36	.62	.4588	.07827	.006	1.181	.752	2.285	1.481
Ca	8	835.47	1178.63	980.1825	122.11193	14911.322	.848	.752	-.571	1.481
Cu	8	3.72	6.03	4.3050	.77831	.606	1.939	.752	3.672	1.481
Fe	8	135.55	204.64	172.9888	23.90944	571.662	-.182	.752	-1.228	1.481
K	8	75.68	247.70	166.2238	70.61710	4986.774	-.130	.752	-1.971	1.481
Mg	8	108.60	233.27	150.5175	40.26229	1621.052	1.212	.752	2.006	1.481
Mn	8	66.74	99.65	85.8113	11.53142	132.974	-.423	.752	-.731	1.481
P	8	171.22	385.50	325.0913	68.47803	4689.241	-1.952	.752	4.192	1.481
S	8	8.46	12.99	10.9013	1.33428	1.780	-.414	.752	1.152	1.481
Zn	8	4.52	8.12	5.9600	1.31094	1.719	.457	.752	-1.276	1.481
Valid N (listwise)	8									

Table 5.6: Occupation Layer Statistical Descriptives (n=22 samples)

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
CEC	22	6.7	14.3	9.191	1.6827	2.831	1.502	.491	2.961	.953
OM	22	.7	2.8	1.736	.6083	.370	-.134	.491	-.439	.953
pH	22	5.7	6.9	6.386	.3226	.104	-.567	.491	.301	.953
Al	22	947.67	1125.67	1070.2659	54.29611	2948.067	-1.345	.491	.694	.953
B	22	.25	1.27	.5682	.29431	.087	1.513	.491	1.212	.953
Ca	22	701.74	2063.91	1003.0618	294.18808	86546.625	2.477	.491	7.737	.953
Cu	22	.71	6.38	3.2386	1.45601	2.120	-.314	.491	-.147	.953
Fe	22	104.00	204.64	150.5564	26.18121	685.456	.172	.491	-.597	.953
K	22	51.94	247.70	108.2159	57.08038	3258.170	1.786	.491	2.159	.953
Mg	22	108.60	262.37	180.3809	43.91044	1928.126	.181	.491	-.830	.953
Mn	22	18.57	99.65	63.8818	23.98675	575.364	-.376	.491	-.919	.953
P	22	46.27	385.50	238.8045	113.46817	12875.025	-.340	.491	-1.277	.953
S	22	4.03	11.86	7.6582	2.61562	6.841	.186	.491	-1.540	.953
Zn	22	.67	8.37	4.3550	2.19172	4.804	-.176	.491	-.775	.953
Valid N (listwise)	22									

Table 5.7: Subsoil Below Occupation Layer Statistical Descriptives (n=11 samples)

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
CEC	11	6.4	8.5	7.355	.6684	.447	.113	.661	-.992	1.279
OM	11	.6	1.2	.891	.1921	.037	.156	.661	-1.065	1.279
pH	11	6.3	6.9	6.464	.1912	.037	1.372	.661	1.638	1.279
Al	11	947.67	1099.95	1029.7791	56.17270	3155.372	-.212	.661	-1.526	1.279
B	11	.25	.50	.3545	.09059	.008	.412	.661	-1.491	1.279
Ca	11	481.95	861.84	691.2009	128.93128	16623.275	-.219	.661	-1.483	1.279
Cu	11	.68	2.03	.9827	.37489	.141	2.514	.661	7.164	1.279
Fe	11	75.91	154.98	117.1518	23.74905	564.017	-.700	.661	.412	1.279
K	11	70.34	136.95	99.8864	17.77737	316.035	.522	.661	1.141	1.279
Mg	11	136.28	253.65	190.6173	40.96559	1678.180	.395	.661	-1.386	1.279
Mn	11	18.57	63.97	38.6500	15.41414	237.596	.574	.661	-.752	1.279
P	11	35.39	157.31	71.8045	38.56706	1487.418	1.230	.661	1.054	1.279
S	11	3.97	13.59	7.0100	2.99951	8.997	1.116	.661	.829	1.279
Zn	11	.67	2.92	1.1482	.64171	.412	2.435	.661	6.653	1.279
Valid N (listwise)	11									

Statistical analysis in SPSS on all on-site plowzone samples was completed using a Pearson's Correlation Coefficient Matrix (Table 5.8) of all soil samples gathered from the site. The on-site plowzone was chosen for a Pearson's correlation matrix given its correlation with former on-site activity areas. The Pearson's correlation indicates CEC has a strong positive correlation with all geochemical attributes except soil pH and Fe. Organic matter percent has a strong negative correlation with soil pH and Fe and a strong positive correlation with CEC and Al, the latter of which also has a strong negative correlation with soil pH indicting that as aluminum increases the soil becomes more acidic. Aluminum corresponds well with CEC, organic matter, B, Ca, Cu, Fe, Mg, Mn, and Zn, but has a strong negative correlation with soil pH. Boron correlates with all attributes save for organic matter. Calcium does not correlate with organic matter. Similarly, Cu does not correlate with organic matter or Al, K, and S. Iron does not correlate with CEC or Al and has a strong negative correlation with organic matter. Potassium has a strong positive correlation with all soil attributes analyzed except for organic matter, soil pH, and Cu. Magnesium has a high positive correlation with all analyzed geochemical data except for organic matter, and Al. Manganese has a high positive correlation with CEC, pH, B, Ca, Cu, Fe, K, Mg, P, S, and Zn. Phosphorous does not correlate with organic matter or soil pH. Sulfur has strong positive correlations with all attributes by organic matter, soil pH, and Cu. Zinc has a strong positive correlation with all attributes except organic matter and Al.

Table 5.8: Pearson Correlation Matrix of On-Site Plowzone Samples (n=159).

	CEC	OM	pH	Al	B	Ca	Cu	Fe	K	Mg	Mn	P	S	Zn
CEC	1													
OM	.328**	1												
pH	.170*	**-.255****	1											
Al	.437**	.249**	**-.253****	1										
B	.463**	-.135	.614**	.211**	1									
Ca	.684**	.029	.580**	.312**	.822**	1								
Cu	.397**	.098	.341**	.177*	.450**	.510**	1							
Fe	.130	**-.313****	.300**	.055	.540**	.521**	.224**	1						
K	.400**	.188*	.117	.266**	.494**	.482**	.199*	.473**	1					
Mg	.574**	-.067	.728**	.117	.774**	.842**	.460**	.381**	.252**	1				
Mn	.397**	-.093	.444**	-.008	.589**	.641**	.248**	.559**	.481**	.584**	1			
P	.462**	.151	.055	.569**	.470**	.636**	.350**	.561**	.438**	.368**	.244**	1		
S	.307**	-.085	.030	.348**	.393**	.413**	.184*	.505**	.364**	.239**	.395**	.580**	1	
Zn	.563**	.078	.483**	.136	.706**	.817**	.537**	.555**	.483**	.697**	.596**	.549**	.320**	1

**Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

Bold cells are strong negative correlation

Grey cells are strong positive correlation

The plowzone distributions of soil pH, Al, B, Ca, Cu, Fe, K, Mg, Mn, P, S, Zn, CEC, and organic matter from standard interval STPs are depicted in Figures 5.10 to 5.23. Test unit geochemical data was not incorporated into the distribution maps, but is discussed in detail below. In general, the highest concentrations of all the geochemical attributes occur south of the N675 transect and east of the E450 transect, an area previously identified as the site core (see Figures 5.10-5.23). Potassium and Mg concentrations appear mainly east of the E450 gridline, while P and Ca concentrations extend further west (see Figures 5.13, 5.17 and 5.19). This overall pattern follows artifact concentrations which suggest that most of the site's cultural deposits occur in the south-east quadrant of site area (see Figure 5.3).

Eight geochemical anomalies (GA)0. (i.e., GA 1-GA 8) were identified in areas containing three or more elevated geochemical levels (see Figures 5.10-5.23). The first, GA 1, is an elongated anomaly situated between transects N555 and N675 along the E410 transect. This anomaly was characterized by elevated CEC, Al, Ca, Cu, Fe (moderately), Mg, Mn (moderately), P, S, and Zn, and low organic matter. Anomaly GA 1 likely represents the location of a former fence line, where disposed refuse accumulated. The quantity of artifacts recovered from STP excavation precipitously decreased west of this transect, strongly suggesting that the E410 transect delineates the western edge of a yard. Excavations at TU 20 identified a post hole near this anomaly, which may be associated with a former fence line. Anomaly GA 2 is situated in the northwest corner of the site at grid location N735/E395. The anomaly is characterized by elevated CEC, pH, Al, Ca, Cu, Mg, Mn, and Zn. The cause of the anomaly is unclear and did not correspond with any notable artifact concentrations. It is possible that the anomaly may be a result of a rodent burrow.

Anomaly GA 3 encompasses coordinates N675/E470, N660/E470, and N660/E485 and corresponds with a moderate spike in architectural material density suggesting that the anomaly may represent the presence of a former building in this portion of the site. The anomaly is characterized by elevated CEC, Al, B, Ca, Fe, Mg, Mn, P, S, and a moderate increase in Zn. Anomaly GA 4 is situated on the eastern perimeter of the tested area at N645/E500, and consists of elevated CEC, Al, Ca, Fe, K, Mg, Mn, S, and Zn, and low organic matter. The cause of the anomaly is unclear based on survey information. Anomaly GA 5 is located at N615/E485 and was identified based on several elevated nutrient anomalies, including pH, B, Ca (moderate elevation), Fe, Mg, P, and Zn. This anomaly is located in an area of moderately elevated artifact density; however, the anomaly's cause could not be determined.

Anomalies GA 6 and GA 7 are located in the southeastern corner of the site in an area that yielded notably high artifact counts, strongly suggesting that this portion of the site functioned as a former

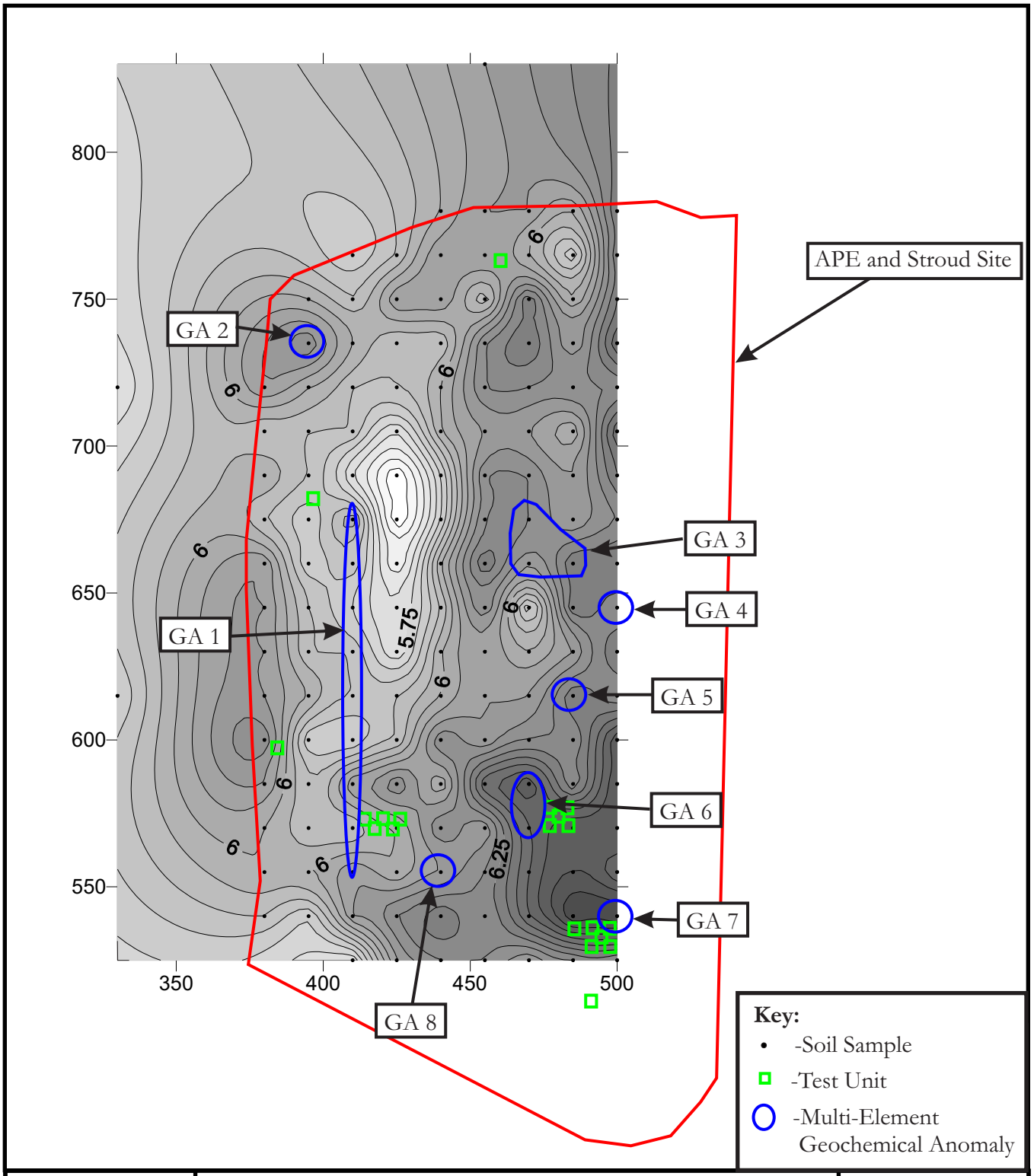


Figure 5.10:

Interpolated Isopleth Soil pH Distribution Map.
GA = Geochemical Anomaly.

N
W
E
S
Feet
0
50

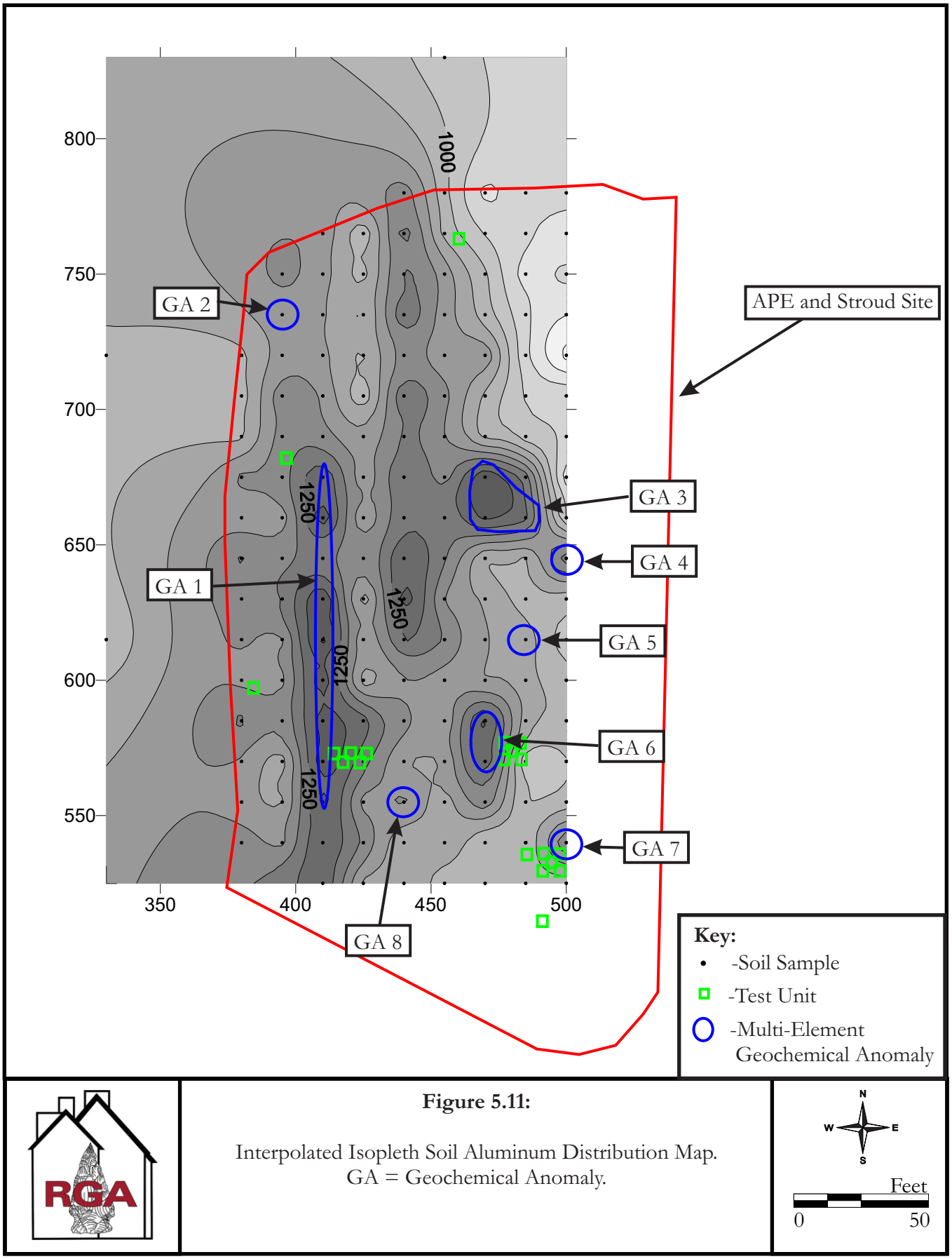


Figure 5.11:

Interpolated Isopleth Soil Aluminum Distribution Map.
GA = Geochemical Anomaly.

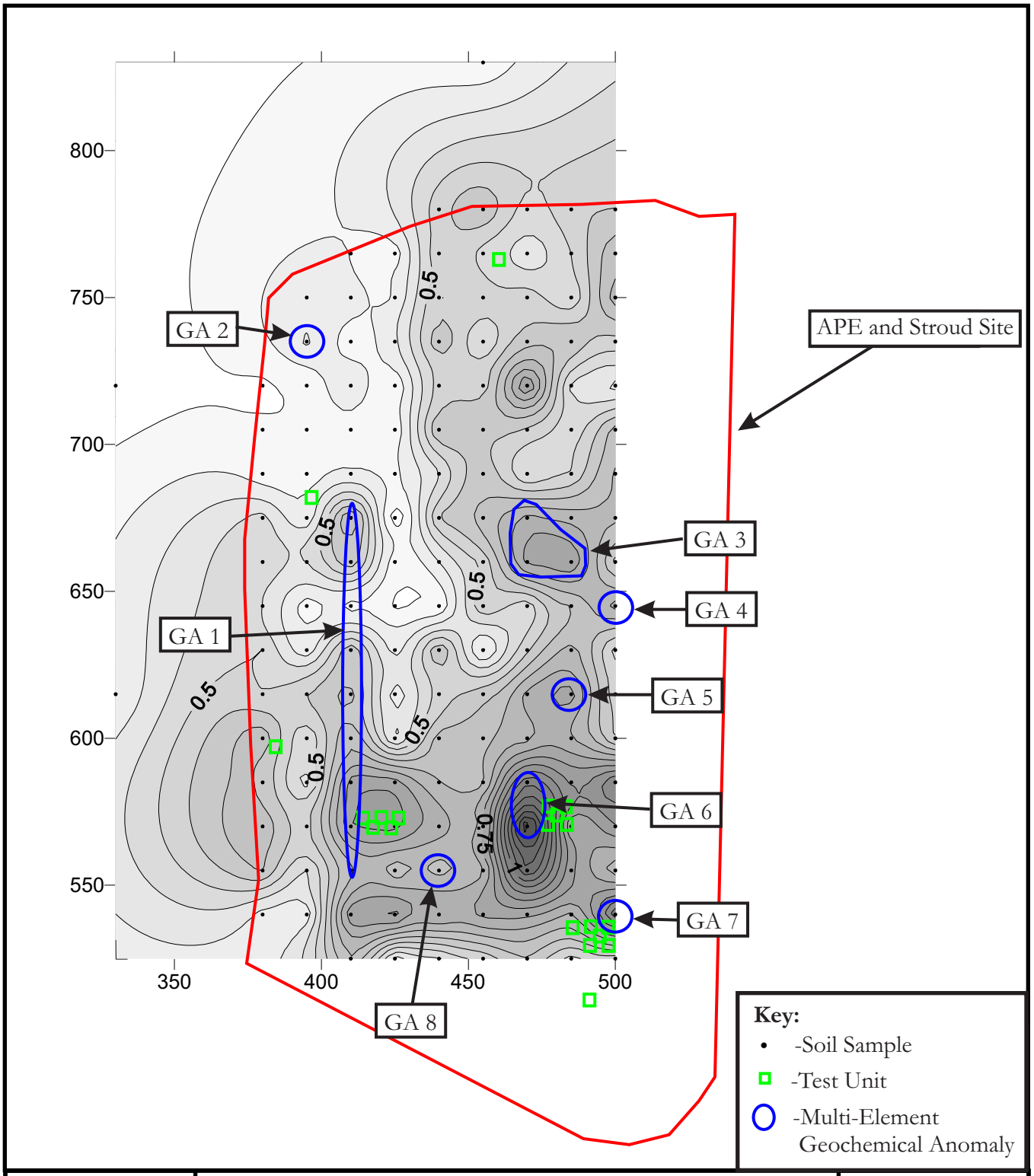


Figure 5.12:

Interpolated Isopleth Soil Boron Distribution Map.
GA = Geochemical Anomaly.

N
W
E
S
Feet
0
50

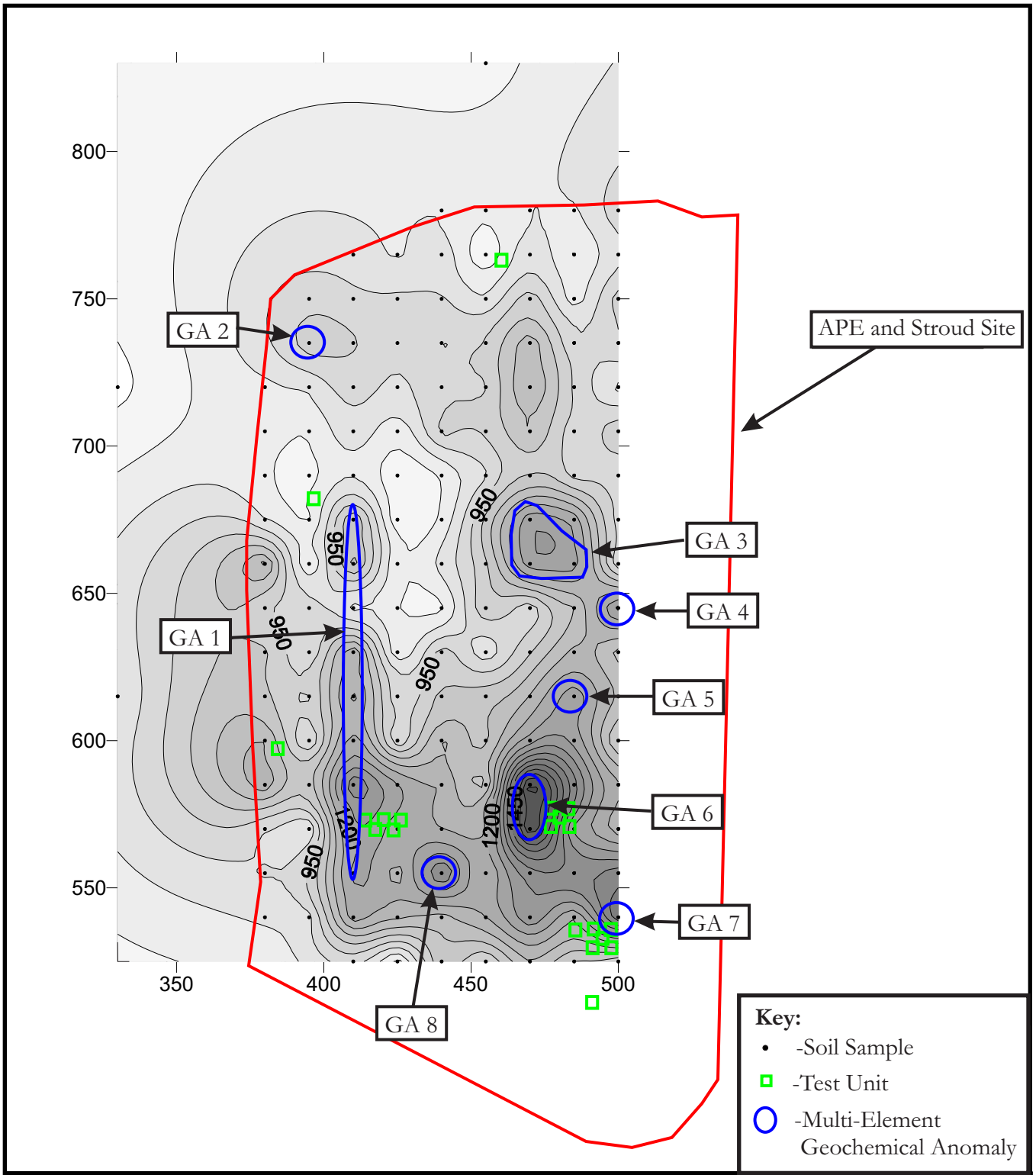


Figure 5.13:

Interpolated Isopleth Soil Calcium Distribution Map.
GA = Geochemical Anomaly.

N
W
E
S
Feet
0
50

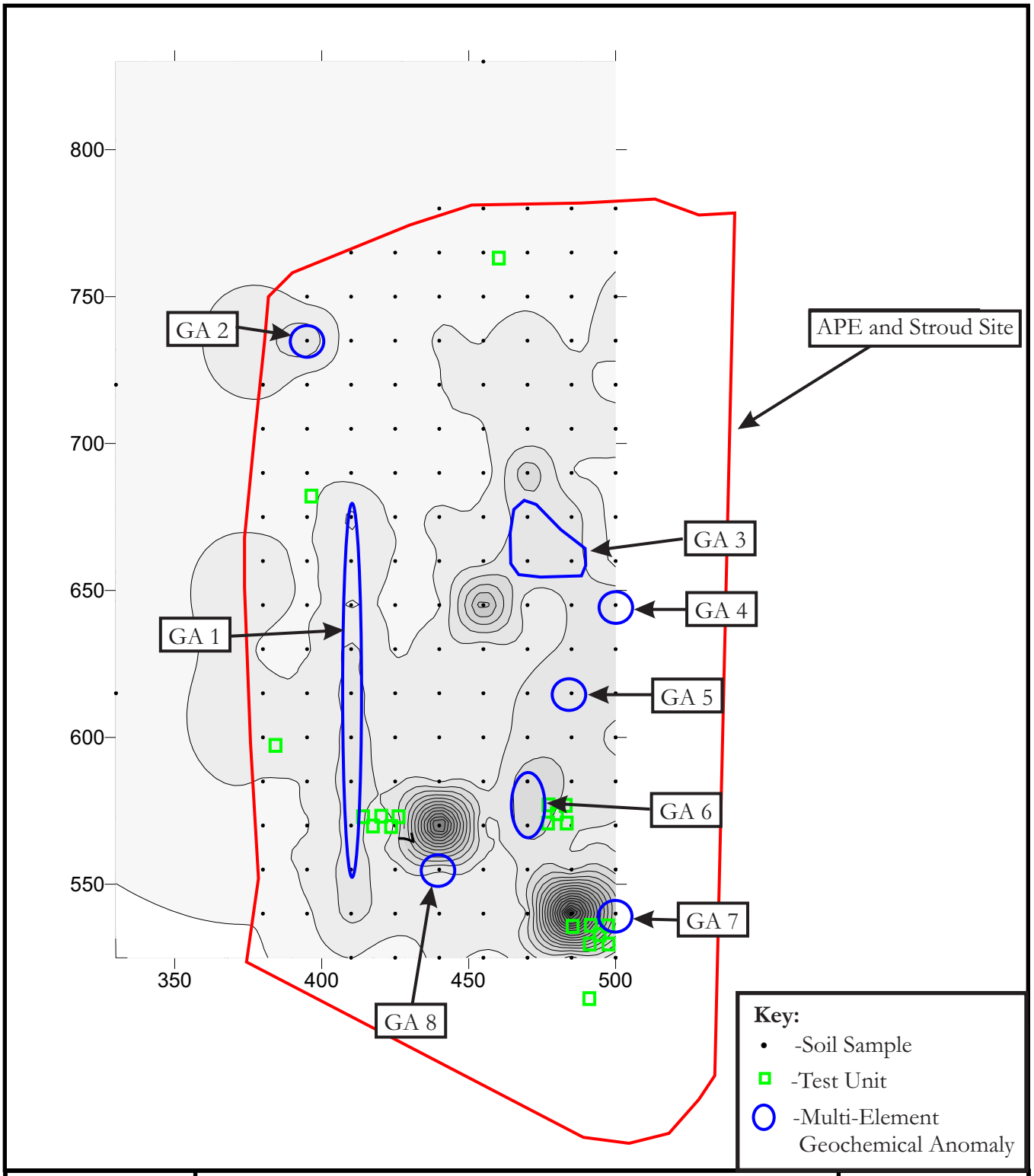


Figure 5.14:

Interpolated Isopleth Soil Copper Distribution Map.
GA = Geochemical Anomaly.

N
W
E
S
Feet
0
50

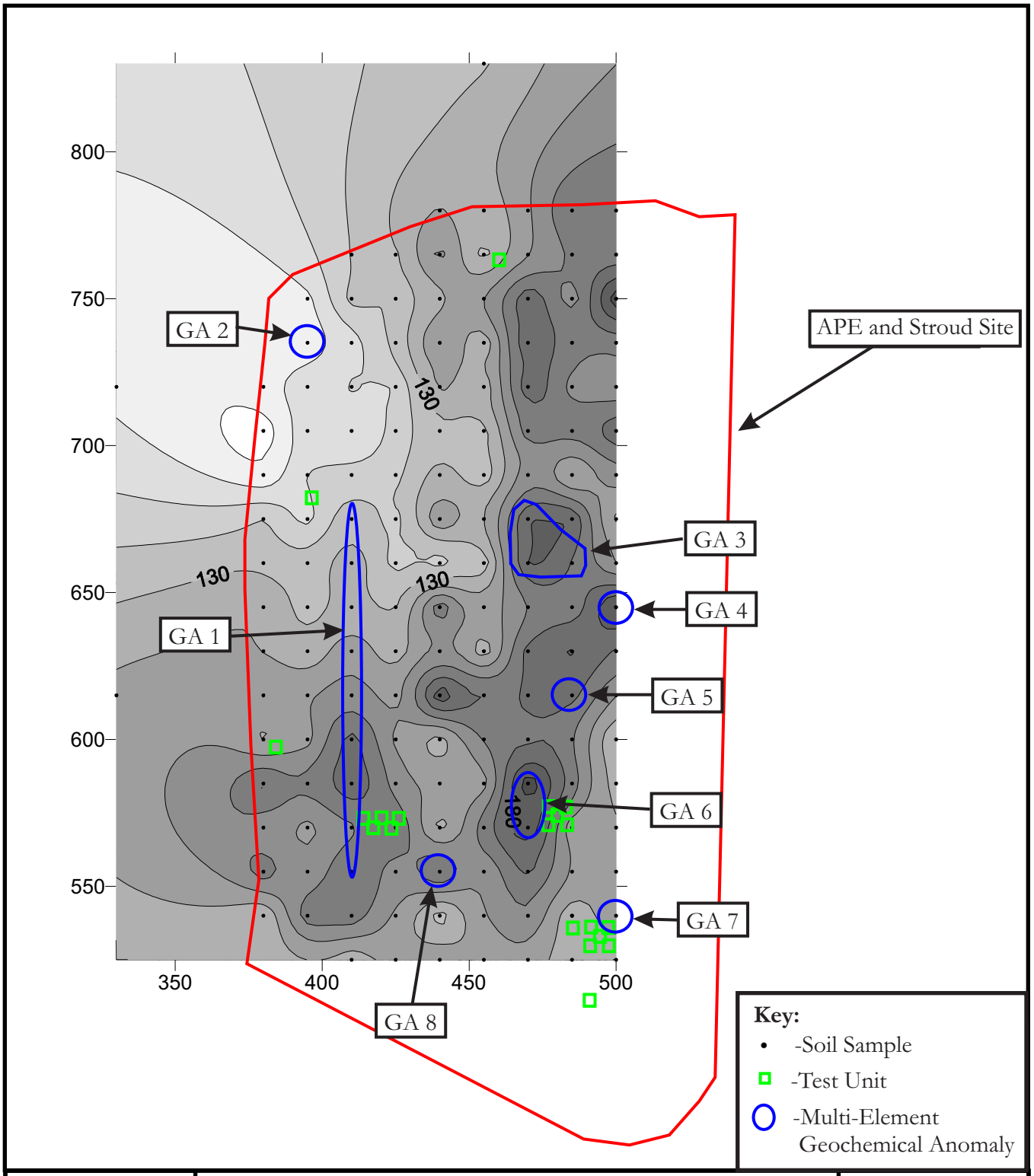


Figure 5.15:

Interpolated Isopleth Soil Iron Distribution Map.
GA = Geochemical Anomaly.

N
W
E
S
Feet
0
50

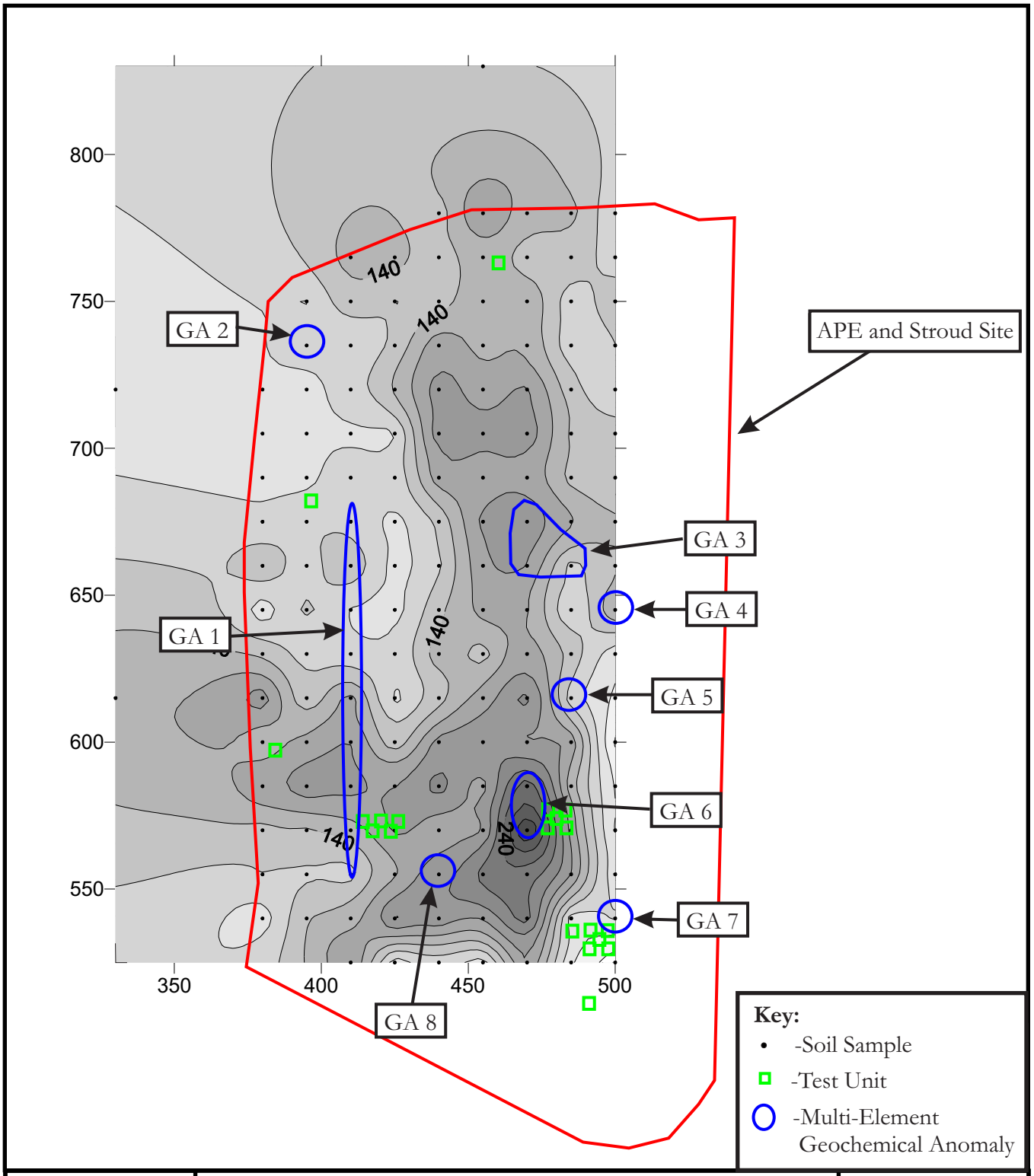


Figure 5.16:

Interpolated Isopleth Soil Potassium Distribution Map.
GA = Geochemical Anomaly.

N
W
E
S
Feet
0
50

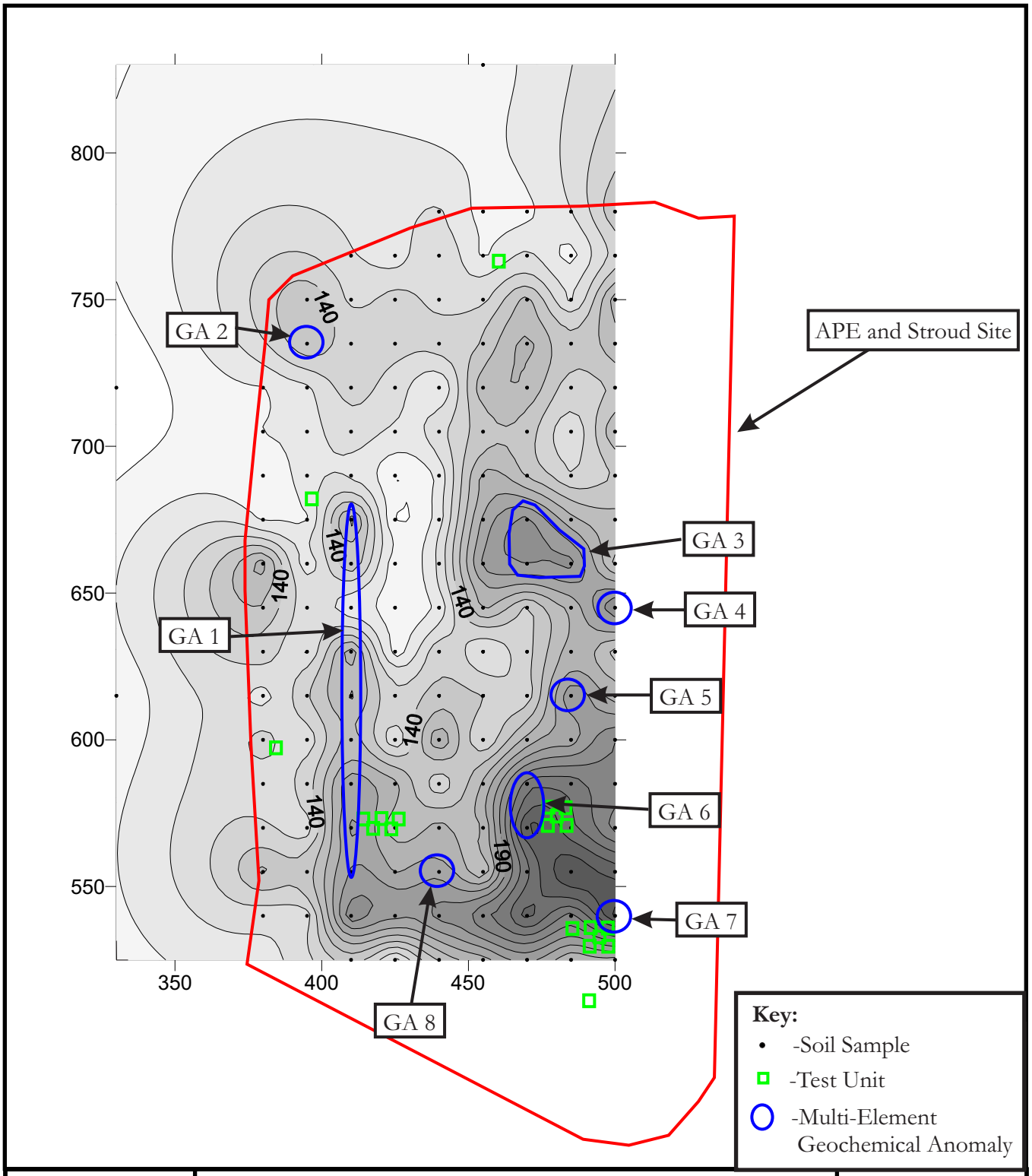


Figure 5.17:

Interpolated Isopleth Soil Magnesium Distribution Map.
GA = Geochemical Anomaly.

N
W
E
S
Feet
0
50

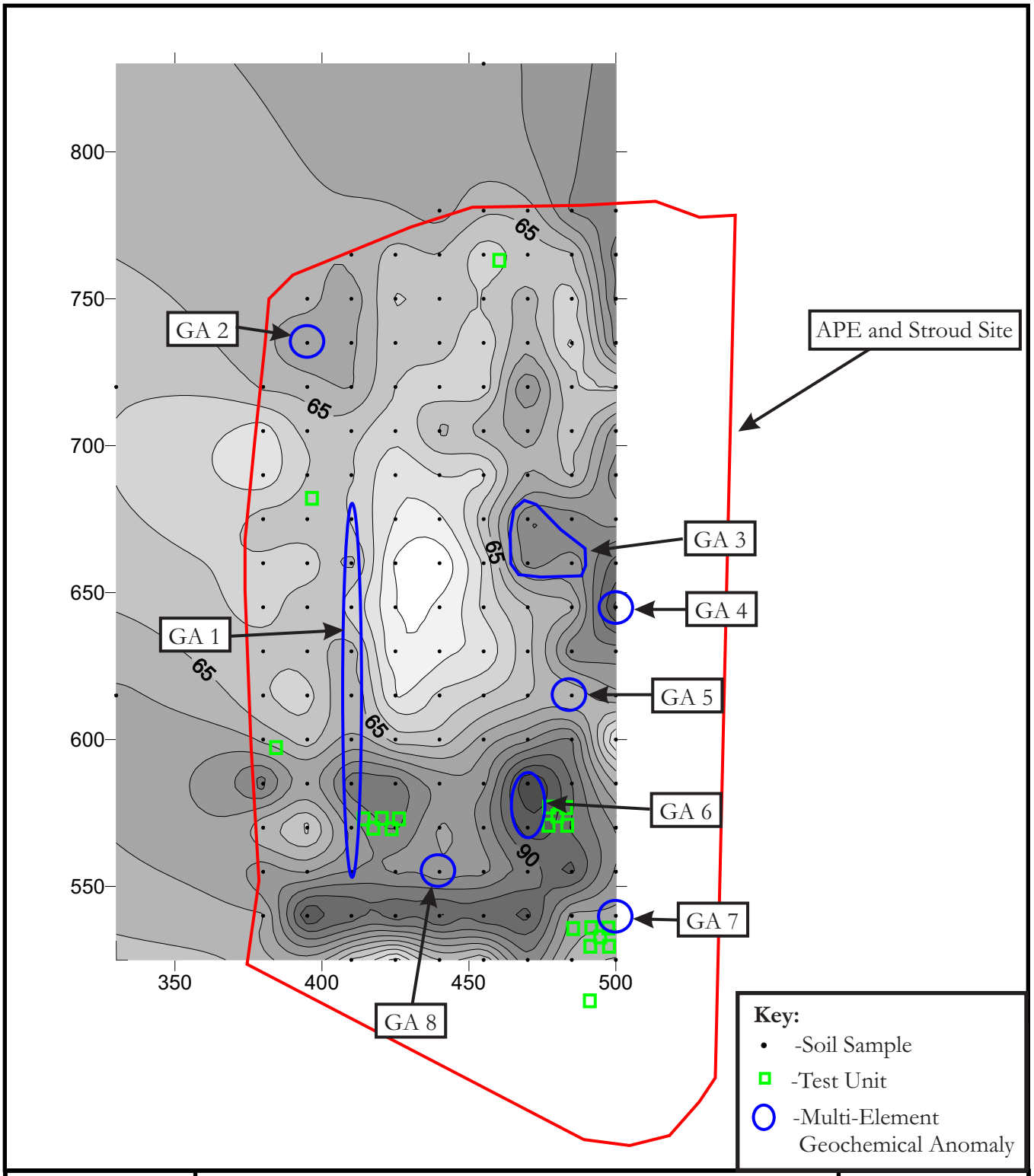


Figure 5.18:

Interpolated Isopleth Soil Manganese Distribution Map.
GA = Geochemical Anomaly.

N
W
E
S
Feet
0
50

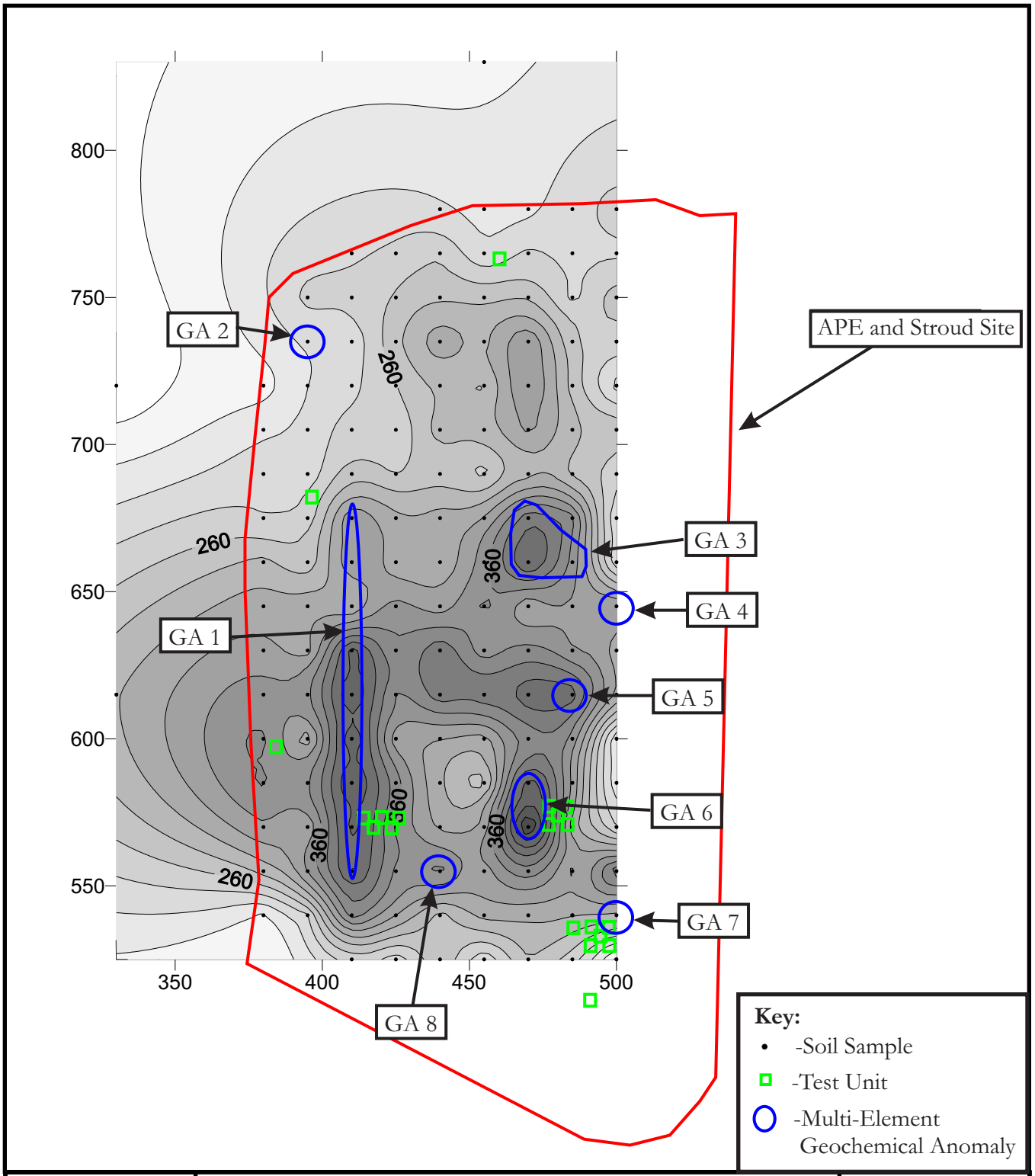


Figure 5.19:

Interpolated Isopleth Soil Phosphorous Distribution Map.
GA = Geochemical Anomaly.

N
W
E
S
Feet
0
50

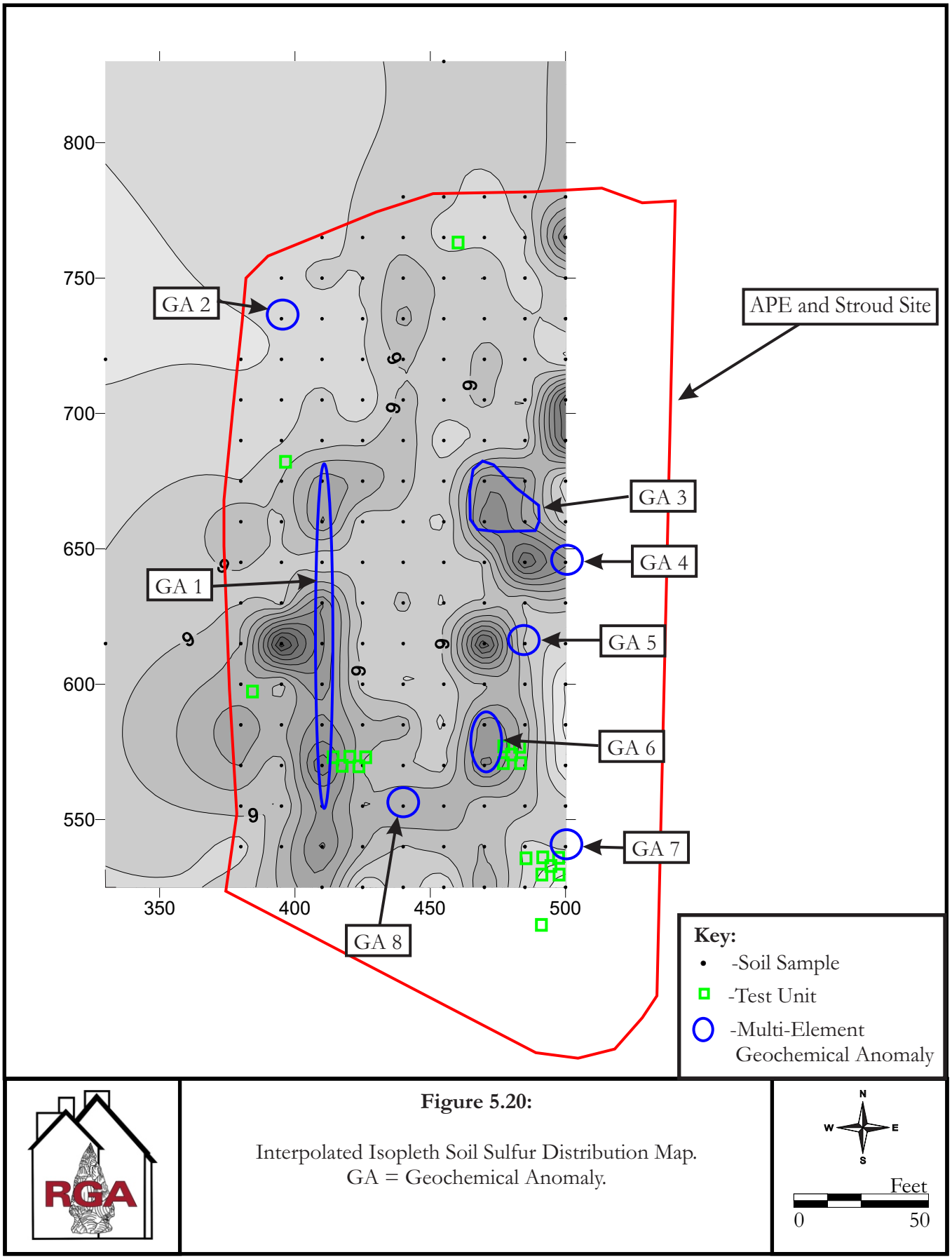


Figure 5.20:

Interpolated Isopleth Soil Sulfur Distribution Map.
GA = Geochemical Anomaly.

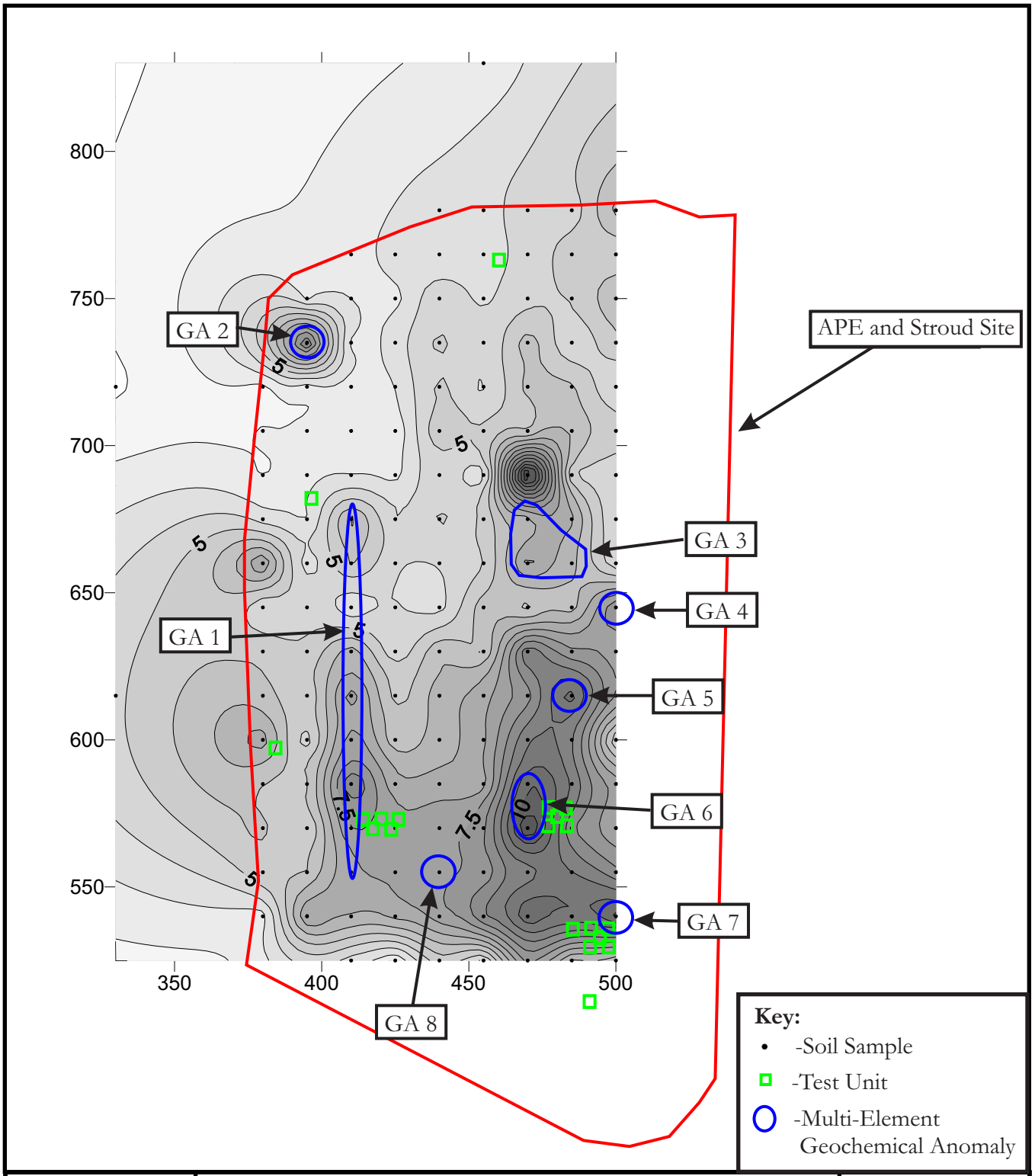


Figure 5.21:

Interpolated Isopleth Soil Zinc Distribution Map.
GA = Geochemical Anomaly.

N
W
E
S
Feet
0
50

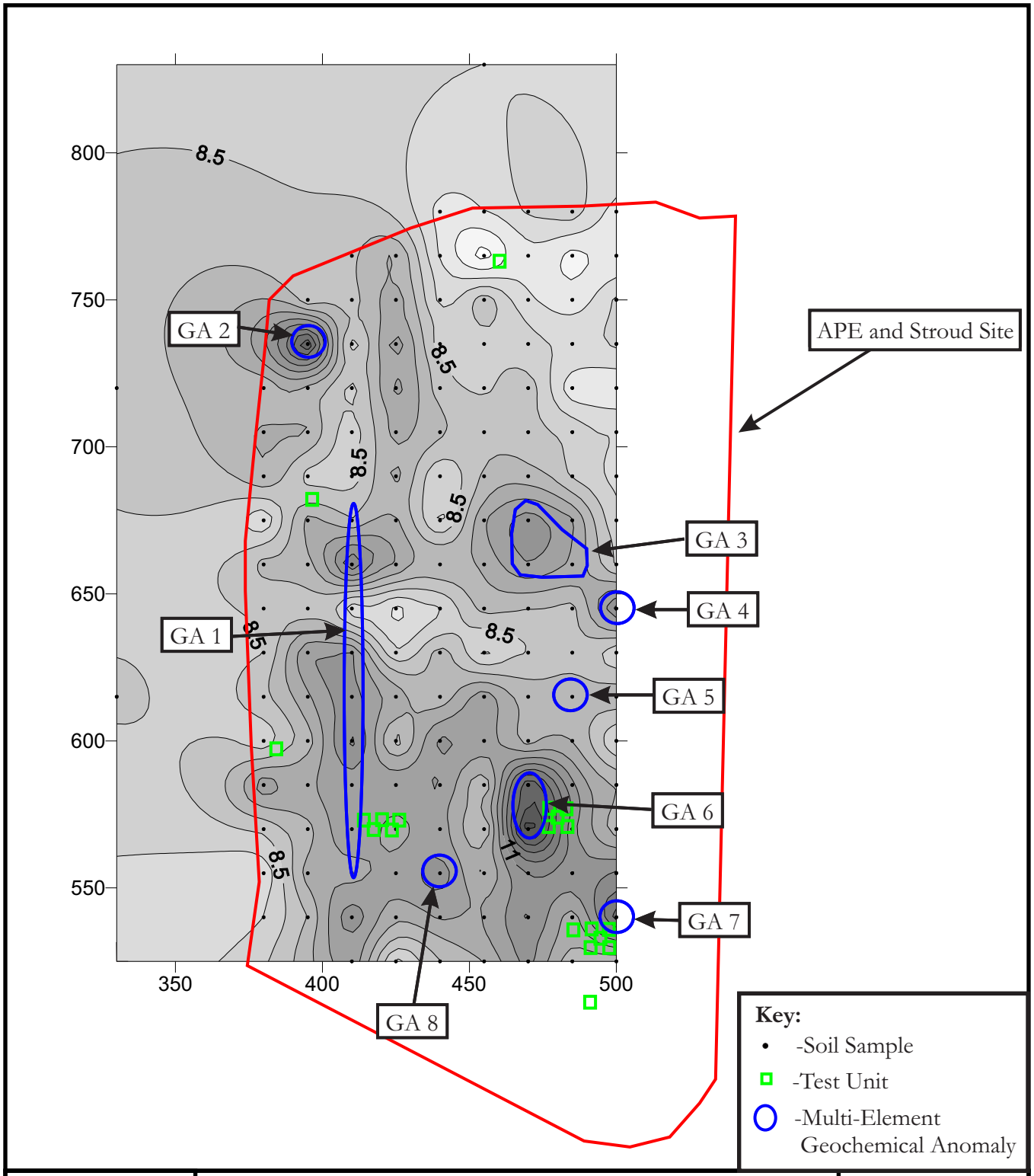


Figure 5.22:

Interpolated Isopleth Cation Exchange Capacity (CEC) Distribution Map.
GA = Geochemical Anomaly.

N
W
E
S
Feet
0
50

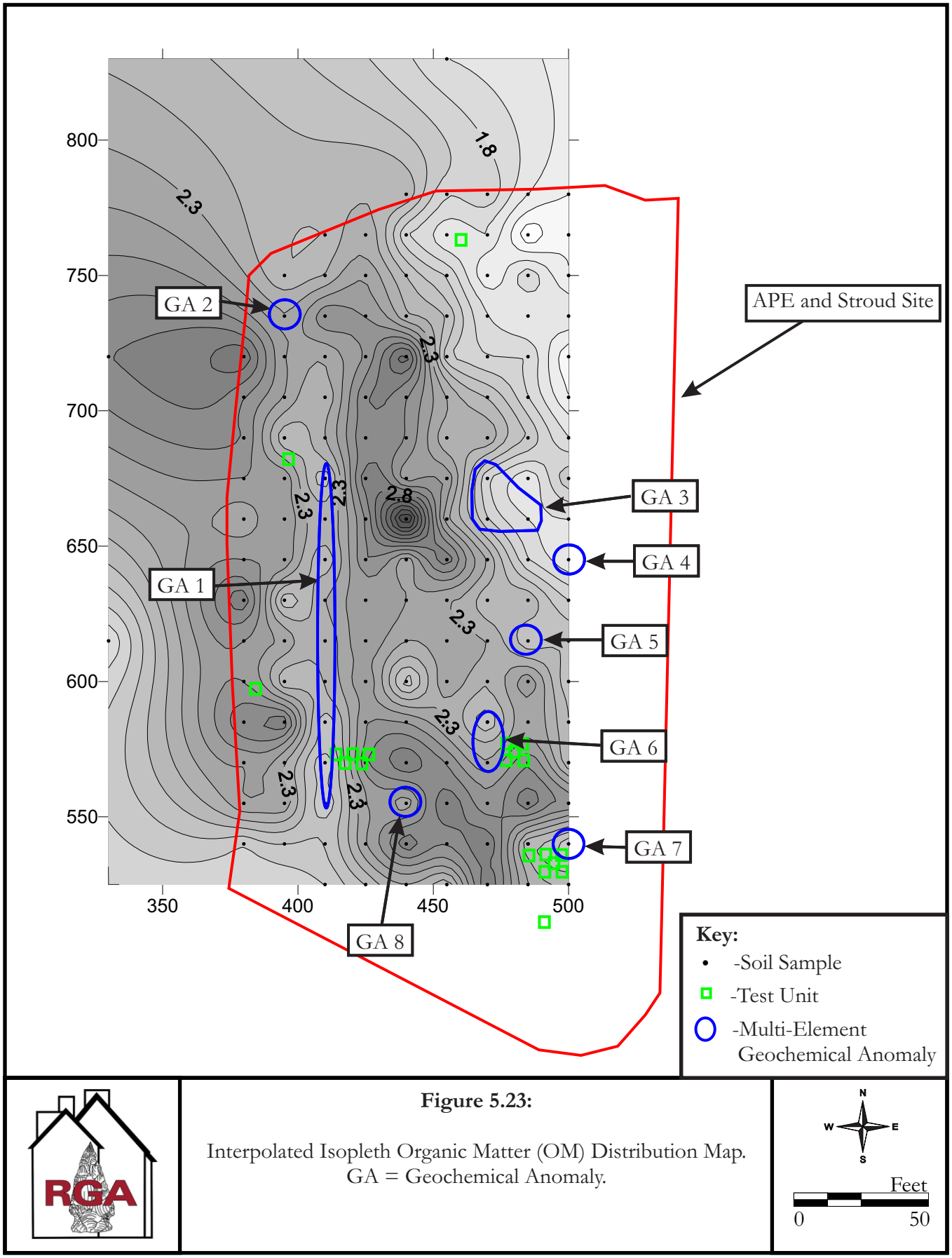


Figure 5.23:

Interpolated Isopleth Organic Matter (OM) Distribution Map.
GA = Geochemical Anomaly.

activity area, possibly a side yard and refuse midden in proximity to a former home. Anomaly GA 6 encompasses coordinates N585/E470 and N570/E470 and is characterized by elevated CEC, pH, Al, B, Ca, Cu, Fe, K, Mg, Mg, P, S, and Zn, and has low organic matter. Anomaly GA 7 is present at grid location N540/E500 and consists of elevated CEC, pH, Al, B, Ca, Cu, Mg, and Zn, and has low organic matter, as well. West of these two anomalies is GA 8. Located at N555/E440, GA 8 consists of elevated Al, Ca, Fe, and P. Anomaly G8 also has moderately elevated CEC and low organic matter. This anomaly is located near the edge of an artifact scatter; however, current data does not reveal the anomaly's cause. In addition to the eight above listed, multi-element elevated anomalies, a distinct area of low element concentration is present in the center of the site, just east of the possible fence line, which generally encompasses grid coordinates N675/E425, N660/E425. The low element concentrations in this area may be the result of limited use by the former occupants, or may represent an area that was actively kept clean of refuse, such as a large pathway. Similarly, it is possible that a break exists in the suspected fence line at N645/E410 based on low element levels at that location. This area may have also served as a heavily utilized path that granted access to a farm area. It may also be speculated that low element levels 15 to 30 feet west of anomaly GA 6 could mark the location of a former building, the presence of which would have limited nutrient deposition into the soil.

A stepwise discriminant function analysis of soil samples taken within TUs was completed (Chart 5.8). The discriminant function analysis was restricted to soils encountered in TUs to better account for stratigraphic context sampling. This analysis indicates the ranks assigned to soil contexts identified during TU excavation (.i.e., Rank 6=Occupation Layer in Test Unit; Rank 7=Subsoil Below Occupation Layer; Rank 8=Post Feature in Unit; Rank 9=Plowzone Above Occupation Layer) are statistically valid and distinct geochemically (100% of group cases correctly classified; 83.9% of cross-validated grouped cases correctly classified). The first three canonical discriminant functions were used in the analysis. The first function had an eigenvalue of 60.736, the second function eigenvalue was 5.061, and the third function had a 3.308 eigenvalue. The plowzone above the occupation layer (Rank 9) generally exhibited slightly higher elevated element densities and higher soil pH compared to the occupation layer (Rank 6) and the subsoil below the occupation layer (Table 5.9). The plowzone likely contained anthropogenic geochemical residues from cultural features/disturbed living surfaces truncated during plowing, and the quantified averages suggest that the anthropogenic geochemical residues remained relatively stable in the soil profile with minimal leaching due to weakly acidic soil pH and soil texture (i.e. silty clay to clay loam). The greater quantity of elevated nutrients in the plowzone above the occupation layer (N=6 elements) compared to the occupation layer (N=4 elements) may be influenced by higher organic matter content in the plowzone and soil texture differences.

Chart 5.8: Canonical Discriminant Function Analysis. (Rank 6=Occupation Layer in Test Unit; Rank 7=Subsoil Below Occupation Layer; Rank 8=Post Feature in Unit; Rank 9=Plowzone Above Occupation Layer)

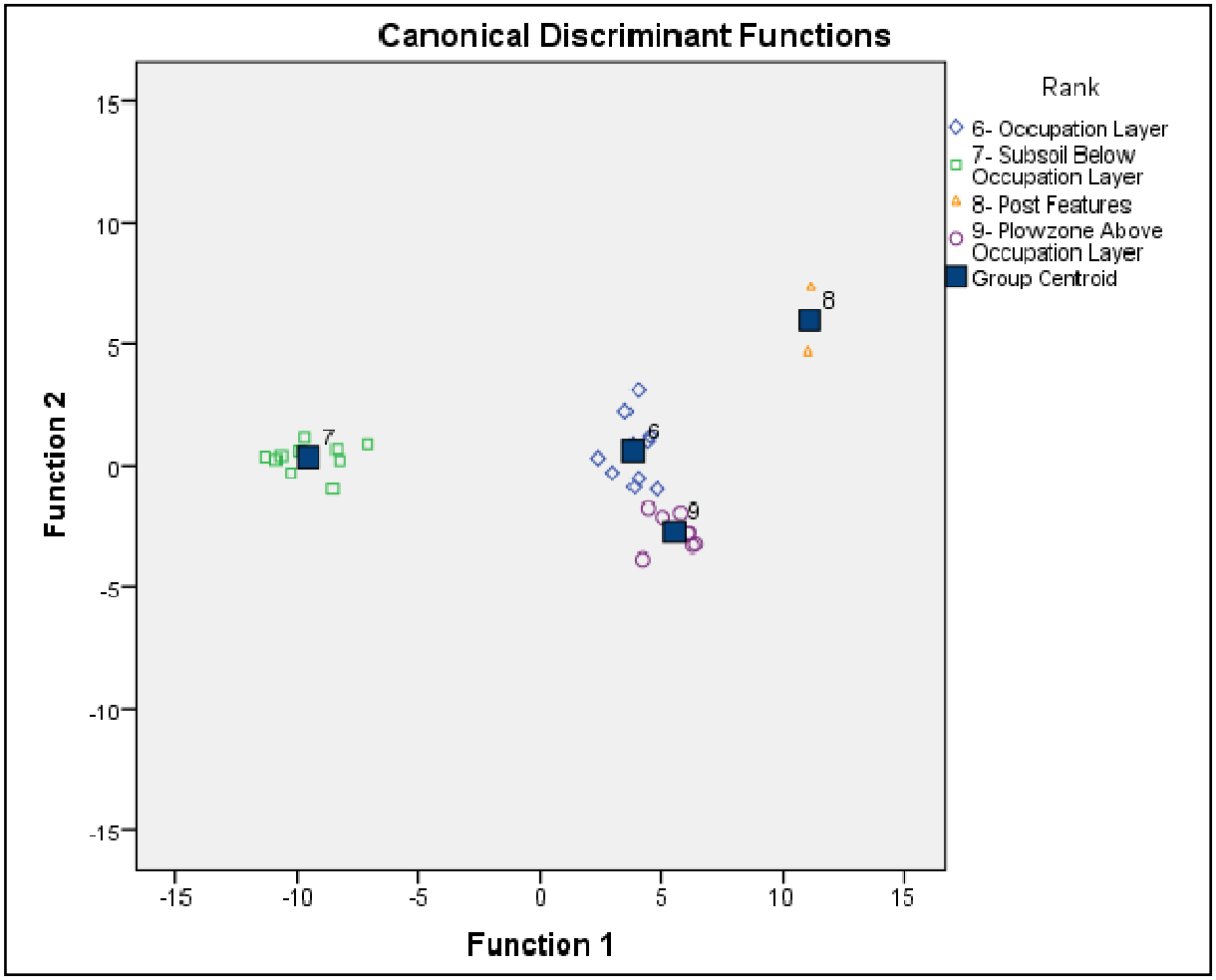


Table 5.9: Quantified Geochemical Averages by Rank from Test Unit Soil Samples.

Rank*	CEC	pH	Al	B	Ca	Cu	Fe	K	Mg	Mn	P	S	Zn
6	10.1	6.58	1048	0.74	1138	4.00	147	74	193	63	252	7	5
7	7.4	6.45	1030	0.35	691	0.98	117	100	191	39	71	7	1
8	8.8	6.45	1122	0.5	869	1.86	217	92	162	51	215	4	2
9	9.5	6.02	1102	0.45	980	4.3	173	166	151	86	325	11	6

*Rank 6 (N=10), Rank 7 (N=11), Rank 8 (N=2), Rank 9 (N=8)

5.3 Interpretations and Evaluation of Site Significance

Overall, the archival research, archaeological testing, and soil chemistry analyses conducted at the Stroud site revealed details about the history and evolution of the site. The site was evaluated in regards to Criterion A, for its association with events that have made a significant contribution to

the broad patterns of Delaware history; Criterion B, for its association with people significant in our nation's history; Criterion C, for its embodiment of the distinctive characteristics of a style; and Criterion D, for its potential to yield information important in history. Investigations and research determined that the site was established during the Period of Transformation from Colony to State (1770–1830) and then likely abandoned during the Period of Industrialization and Capitalization (1830–1880) (De Cunzo and Catts 1990). Phase II close-interval shovel testing confirmed the archaeological site encompasses one acre (0.4 ha) (Dovetail Cultural Resource Group 2011). Additionally, an identified artifact-rich occupation layer confirmed the presence of an archaeological site core situated south of grid transect N600 and east of grid transect E425. Subsurface investigations adjacent to the intersection of U.S. Route 13 and the former Hyett's Corner Road showed evidence for extensive vertical disturbance in the form of buried utilities and modern drainage channels and culverts. Despite this localized disturbance, the vast majority of the site displayed intact stratigraphy including the preservation of an early nineteenth-century occupation layer identified during close-interval STP and TU excavation.

Archival analysis indicates that the parcel encompassing the Stroud site was owned by the Vandergrift (1708-1755), Humphries (?-1755), See (1755-1757), Butcher (1757-pre-1787), Hyatt (pre-1787-1813), Stroud (1813-post 1818), Hyatt (Post 1818-1846), Newbold (1846-1847), Smith (1847-1849), Corbit (1849-1849), Vandergrift (1849-1889), and Craven (1889-1922) families, with clear evidence indicating the construction of at least one dwelling on the property prior to 1738. In 1738, the two-story dwelling was occupied by Jacob Vandergrift. After purchasing the property from Leonard Humphries in 1755, John See sold the tract to John Butcher in 1757. Humphries owned the parcel for an unknown duration between 1752 and 1755. Butcher owned and occupied the dwelling on or near the Stroud site until his death in 1774, after which time the property was owned by John's widow Jane and his son Thomas, Sr. prior to 1787. Archaeological data, such as recovered Whieldon ware (1740s-1770s), Asturby ware (1720s-1750), Jackfield (1740s-1760s), plain (1720-1805) and scratch blue decorated (1744-1775) white salt-glazed stoneware, and tin glazed earthenware, supports documentary information that the site was settled during the mid-eighteenth century.

Between the late 1780s and 1792, the Stroud site served as Peter Hyatt's residence. Hyatt put the property up for rent between 1793 and 1800, although the identity of the specific tenants was not determined. After Peter's death in 1800, his son Samuel Hyaat was appointed the estate's administrator. Samuel sold the tract encompassing the archaeological site to Peter Hyatt's mother-in-law and his widow, Jane Stroud, who together owned the tract from 1813 until the late 1810s or early 1820s as absentee landlords. It appears that the property containing one old wood dwelling may have reentered into the Hyatt family's holdings through Samuel Hyatt or his wife Mary Stroud Hyatt. After her husband's death in 1824, Mary Stroud Hyatt granted her son, Samuel Hyatt, Jr., the

property in 1826. It is unclear if Samuel Sr. or Samuel Jr. resided on the tract during the 1820s. The dwelling on or near the Stroud site is not depicted on 1828 survey map, suggesting that Samuel Hyatt Sr. or Jr. may have razed, removed, or dismantled the old wood dwelling prior to that date. The property was eventually sold to William Newbold in 1846, who owned the tract for six months prior to selling it to George Smith. An 1849 map of New Castle County indicates that a home once again stood in or near the Stroud site in 1849. Owned by George Smith at that time, it is unclear if Smith resided in the dwelling or simply rented the building to tenant farmers or laborers. Further, while this property does not seem to have reaped many benefits during the "Rebuilding St. Georges Hundred," it does appear to have succumbed to the system of farm tenancy that prevailed in supporting Central Delaware agricultural pursuits during the nineteenth century. Later owners included Daniel Corbit, James M. Vandergift, and Thomas Craven. The home on or near the Stroud site was occupied by tenants between the mid- and late nineteenth century. The tenants' identities could not be determined through archival research. The home was razed, removed, or dismantled prior to 1906 (U.S.G.S. 1906).

Despite the dwelling's depiction on several eighteenth and nineteenth century maps, archaeological and geochemical soil analyses did not show evidence of the home within the Stroud site boundaries. Instead, the data suggest that the Stroud site is largely composed of a broad organic and non-organic occupation layer situated in a side-yard or kitchen garden associated with the former home(s). The occupation layer ranged in thickness and was most heavily concentrated at grid location N525/E 500 and extended to the southeast into a disturbed area of the APE. It is likely that the former dwelling(s) associated with the site existed southeast of the site boundary. The occupation layer thinned toward the north and west. The occupation layer, however, contains material dating from the mid-eighteenth to the late nineteenth century, spanning several occupation periods.

Phase I and II archaeological testing at the site resulted in the recovery of 6,805 artifacts from both close-interval shovel testing and TU excavation. The overall artifact assemblage from the Phase I and II archaeological surveys was dominated by ceramic artifacts (40.66 percent; n=2,767) (Figure 5.24). The collection also contains a moderate amount of architectural (30.58 %; n=2,081) (Figure 5.25) and glass remains (20.22 percent; n=1,376) (Figure 5.26). The remainder of the collection consists of smaller portions of lithic (0.09 percent; n=6), metal (4.07 percent; n=277), organic (3.92 percent; n=267), other (0.09 percent; n=6), and personal items (0.37 percent; n=25) (Figure 5.27).

Ceramic artifacts (n=2,081) recovered from the site during the Phase II archaeological survey range in manufacture date from approximately 1600 to the late nineteenth century. The recovery of wheildon ware (n=2), white salt gazed stoneware (n=3), Asturby ware (n=2), Jackfield (n=21), tin-

Figure 5.24:

Sample of Historic Ceramics from the Stroud site.

Figure 5.25:

Sample of Architectural Artifacts from the Stroud site.

Figure 5.26:

Sample of Glass Artifacts from the Stroud site.

Figure 5.27:

Sample of Personal Items from the Stroud site.

glazed earthenware (n=4), and scratch blue white salt-glazed stoneware (n=2) from the mid-eighteenth century indicates site occupation pre-dating 1775. This early site occupation may coincide with John Butcher's ownership of and residence on the property between 1757 and 1774. It is possible that the site's occupation extends earlier to Jacob Vandergrift's ownership of and residence on the site between approximately 1738 and 1757. The lower percentage of recovered architectural remains compared to ceramic and glass artifacts suggests the principal residence shown on eighteenth and nineteenth-century maps may have been located outside the Stroud site boundaries within the current footprint of U.S. 13. Recovered cultural material suggests that the Stroud site represents the remains of a side yard to the former dwelling. This assessment is also supported by geochemical site soil analysis.

Overall, the site's plowzone soil chemistry suggests significant deposition of organic refuse in the southeastern portion of the site in association with high artifact concentrations. A smaller, moderately intense concentration of Ca, K, Mg, and P near grid location N675/E475 suggests the presence of another potential activity area in this portion of the site. A ceramic and architectural artifact concentration was present just north of the aforementioned geochemical anomaly, suggesting the former presence of an outbuilding or localized activity area in this portion of the site.

Additionally, soil analysis suggests a linear concentrated deposition of plant and animal matter along a possible fence or other landscape boundary near the western portion of the site. This boundary is most clearly defined in phosphorous distribution patterns as a north/south oriented anomaly. Coincidentally, two post holes were identified in TUs in the general vicinity of this suspected fence line. The post hole identified in TU 14 was located at grid location E425, approximately 5 feet (1.5 m) east of the suspected fence line. The post hole identified in TU 6 was located at grid location E497, approximately 15 feet (4.6 m) east of the suspected fence line. Further the lack of intact structural remains and the low proportion of architectural items relative to combined ceramic and glass artifacts indicates that these post hole features are not likely directly associated with a dwelling.

Given the quantity of recovered materials, the unique qualities of the assemblage, and the presence of intact cultural deposits below the modern plowzone, this site is recommended eligible for listing on the NRHP under Criterion D. The site has the potential to contribute significant information on domestic life, social context, subsistence/agriculture, and/or settlement patterns in New Castle County during the Period of Transformation from Colony to State (1770–1830), and the Period of Industrialization and Capitalization (1830–1880) (Criterion D). The presence of an occupation layer and post holes below the plowzone suggest the high potential for additional intact archaeological deposits within the site. As such, this site is recommended Eligible for the NRHP under Criterion D.