

**CERAMIC PRODUCTION AND EXCHANGE  
AMONG ENSLAVED AFRICANS ON ST. KITTS, WEST INDIES**

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*Archaeological investigations at Brimstone Hill Fortress National Park on St. Kitts have recovered 665 Afro-Caribbean ware sherds dating 1790–1850. Analysis of 40 sherds and five clay samples by instrumental neutron activation analysis is designed to determine if any of the Brimstone Hill Afro-Caribbean ware sherds were locally manufactured. Contrary to the common belief that Afro-Caribbean ware found on St. Kitts had originated on Nevis where there is a long history of pottery-making, the elemental analysis indicates the majority of the pottery in the sample was made from locally available clay sources. Nevertheless, macroscopic and elemental analysis provide evidence for some inter-island exchange of Afro-Caribbean pottery. Ultimately this research will enhance our understanding of ceramic production and trade among enslaved Africans in the Caribbean.*

On the island of St. Kitts, West Indies, Afro-Caribbean ware is found in a variety of contexts dating from the seventeenth century to modern times indicating that locally-made pottery played an important role in the households of the island's people. Until recently, the origins and history of the Afro-

Caribbean ware from St. Kitts were poorly known, and it was thought that the majority of the Afro-Caribbean ware on the island was likely produced on the nearby island of Nevis where there is a long pottery-making tradition. Archaeological investigations at the Brimstone Hill Fortress National Park

(Brimstone Hill) have recovered 665 sherds of Afro-Caribbean ware from different contexts within the fortress. Macroscopic analysis (Ahlman 2005) suggests that the majority of the Brimstone Hill sherds were manufactured on St. Kitts using locally available clay resources. Comparisons with descriptions of Afro-Caribbean wares found on other islands (Heath 1988; Peterson and Watters 1988; Peterson et al. 1999; Gilmore 2004) imply that enslaved and free Africans on St. Kitts might have participated in a larger inter-island trade network (Ahlman 2005).

Instrumental neutron activation analysis (INAA) data generated at the University of Missouri Research Reactor (MURR) was used to 1) examine similarities in chemical signatures of a variety of sherds from Brimstone Hill, and 2) compare the chemical signatures of these sherds to clays from five sources on the island to study Afro-Caribbean ware production and exchange on St. Kitts. The goal of this study is to learn more about the intra- and inter-island trade networks among enslaved Africans and to discover the role Afro-Caribbean ware played in the daily life of enslaved Africans at Brimstone Hill.

### ***History of Brimstone Hill***

Located approximately 350 kilometers southeast of Puerto Rico in the Leeward Islands (Figure 1), St. Kitts was settled by the British in 1623 and the French in 1625. The two countries jointly occupied the island until 1713, after which the island remained a British colony until it gained independence in 1983. St. Kitts' greatest economic value lay in its fertile soils used to grow sugar cane. Enslaved Africans were the labor source used to plant, cultivate, and harvest cane. By the end of the eighteenth century, Africans and their descendants outnumbered Europeans on

the island 20 to 1 (Hubbard 2003). St. Kitts' intrinsic economic value and strategic location resulted in frequent territorial battles between the British and its European adversaries, especially the French.

Brimstone Hill Fortress was a British fortification situated atop an approximately 222-meter-high volcanic extrusion on the northwest coast of St. Kitts (Figure 2). The British first armed Brimstone Hill in 1690 during a French siege in an effort to provide strategic support for Charles Fort, located along the coast below Brimstone Hill (Smith 1994). The most intensive period of construction at the fort occurred after another French siege and occupation of the fort in 1782 (Smith 1994, 1995; Hubbard 2003). After regaining control of the fort, the British initiated a massive construction and renovation plan that was carried out from the 1780s to the early 1800s, resulting in the configuration of the fort as it stands today. The fort was manned until the British abandoned it in 1854.

There was a distinctive multiethnic community living at Brimstone Hill throughout its occupation (Schroedl and Ahlman 2002; Schroedl 2005). Not only did British army officers and enlisted men live there, but also women, children, and enslaved Africans. Local civilians, plantation owners, and colonial officials were frequent visitors to the fort, and sometimes these individuals lived within its confines. In addition to the British military and the local white militia, military personnel of African descent—including members of the St. Kitts Corps of Embodied Slaves and soldiers of the First, Third, and Fourth West India Regiments—also lived there (Schroedl 2005). Although British military engineers designed the fortress, enslaved Africans undertook the majority of the labor. This included the Corps

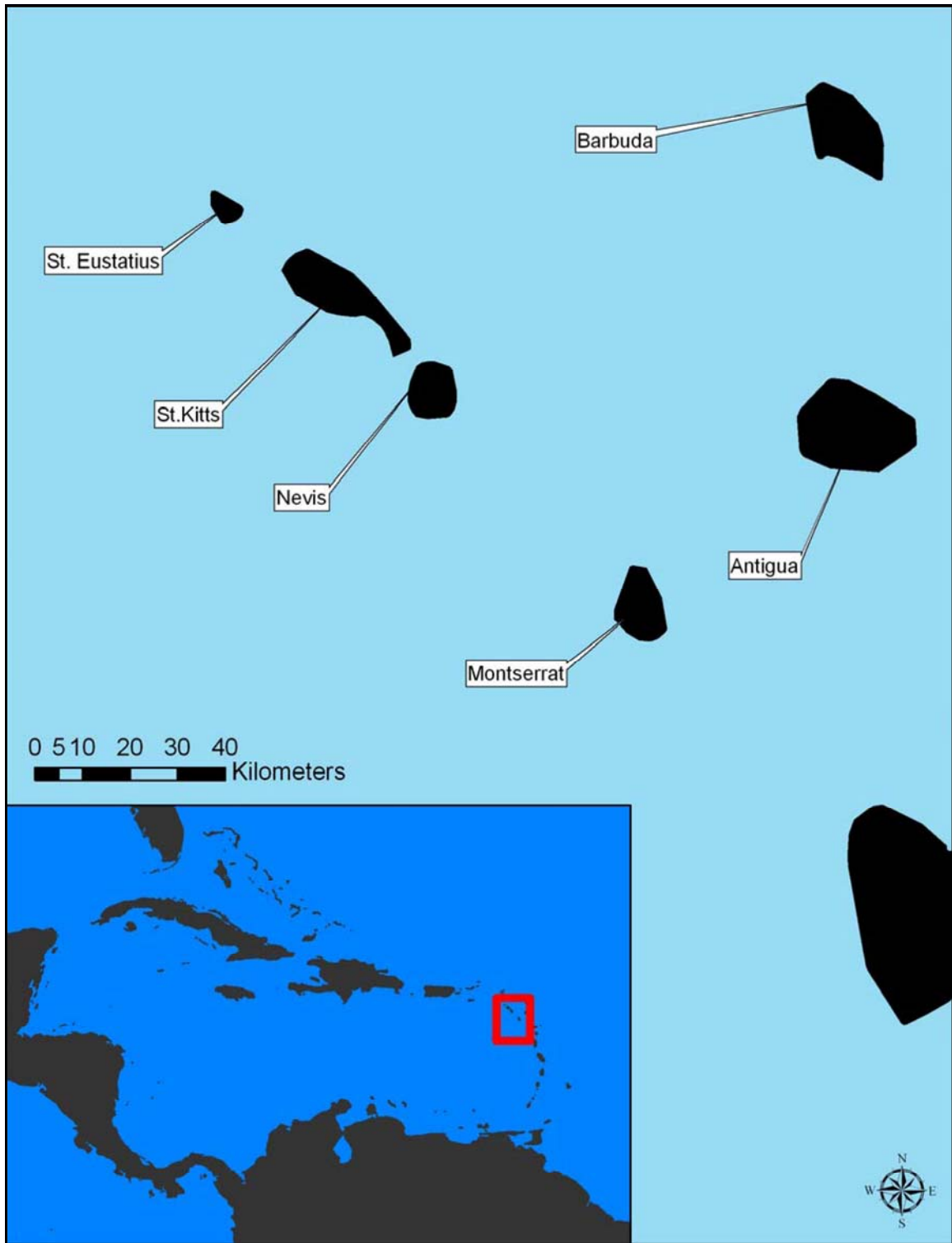


Figure 1. Location of St. Kitts.

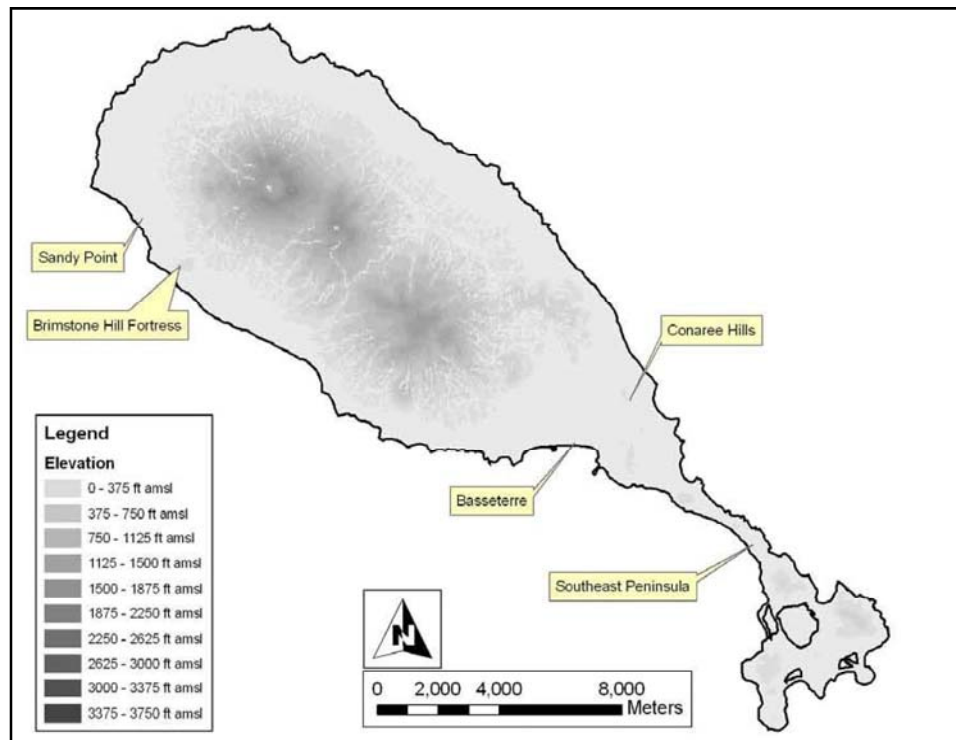


Figure 2. Location of Brimstone Hill Fortress National Park.

of Black Military Artificers and Pioneers, who were enslaved Africans owned by the British government, and also enslaved Africans from local plantations forced to work at Brimstone Hill to fulfill levies placed upon their enslavers. At various times from 1790 to 1815, at least 50 and sometimes more than 200 enslaved Africans lived and worked at Brimstone Hill. Two lists of enslaved Africans compiled in 1791 (St. Kitts Archives), identified more than 118 people conscripted from plantations throughout the island to labor at Brimstone Hill.

### *Archaeological Investigations of Brimstone Hill*

Archaeological investigations at Brimstone Hill were conducted from 1996 to 1999. They resumed in 2004 and are planned to continue through 2008. Four areas, each with its own

site number, have been investigated (Figure 3). These include 1) the lime-kiln area at the base of the hill (Site BSH 1); 2) the area below the defensive wall connecting the Orillon and Magazine bastions where a workshop, two hospitals, and a kitchen were occupied and used by enslaved Africans (Site BSH 2); 3) the Royal Engineers officer's quarters that includes one building occupied by enslaved Africans (Site BSH 3); and 4) the area at the foot of the Orillon Bastion's salient (Site BSH 4).

To date, these excavations have produced nearly 150,000 artifacts consisting primarily of European-made glass and ceramics (Ahlman et al. 1997; Schroedl 2000; Gomez and Ahlman 2005). The majority of the recovered artifacts date to the late eighteenth and early nineteenth centuries during the period when the British were undertaking

major construction and renovation of the fortress. Of particular note are 665 low-fired, hand-made earthenware sherds recovered from excavated contexts at the fortress. These sherds are comparable to Afro-Caribbean ware found throughout the West Indies (Heath 1988; Hauser and Armstrong 1999; Peterson et al. 1999), and they represent the most distinctive class of artifacts indicative of the African presence at the fortress.

### *Previous Studies*

Previous research into the production and exchange of Afro-Caribbean ware on St. Kitts has largely been based on macroscopic analysis of sherds from Brimstone Hill (Ahlman 2005). Ahlman (2005) identified eight different ceramic types based on macroscopic characteristics of inclusions and

paste (Table 1). Types 1 through 4 and 6 generally account for differences in the quantities and sizes of primary and secondary inclusion classes; Types 1 and 3 are the most similar. Inclusions and the pastes of Types 5, 7, and 8 differ greatly from the other types. For example, Type 7 has crushed schist and a micaceous paste and Type 8 contains crushed-quartz inclusions.

The macroscopic study (Ahlman 2005) concluded that the majority of the Brimstone Hill Afro-Caribbean ware was made on St. Kitts because: 1) the mineral inclusions in most sherds are consistent with the volcanic geology of St. Kitts; 2) similar minerals are found as beach sand across most of the island and these minerals occur naturally in the clays at the southeastern peninsula of the island; and 3) clays suitable for pottery

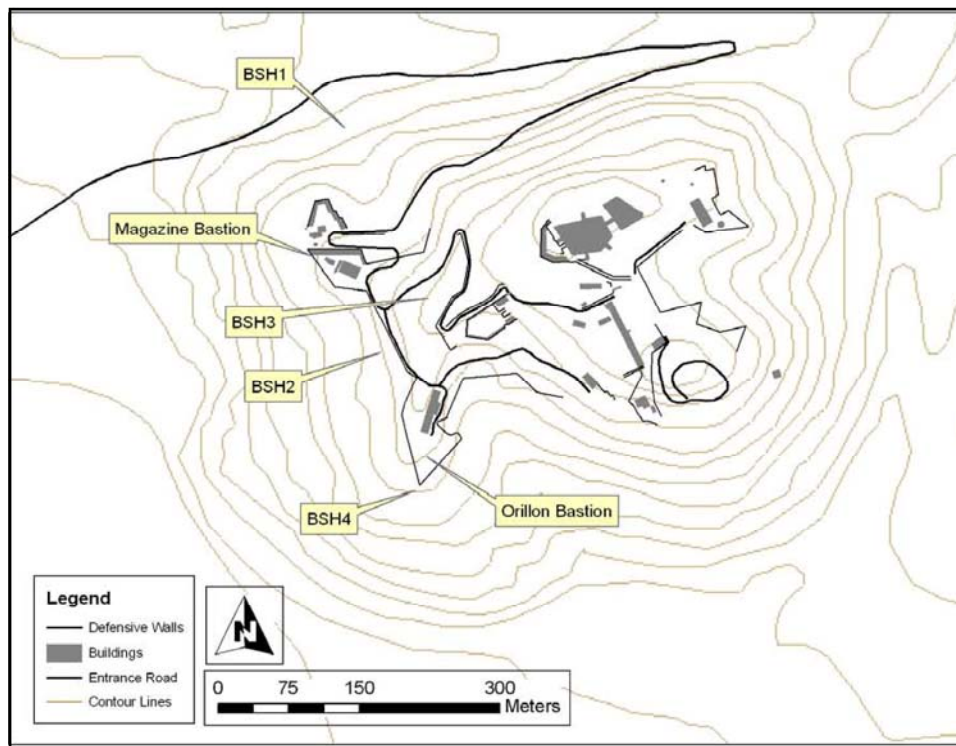


Figure 3. Location of archaeological investigation undertaken at the Brimstone Hill Fortress National Park.

Table 1. Summary of pottery type characteristics (Source: Ahlman 2005).

Type	# Sherds	Primary Temper	Secondary Temper
1	140	Black and Opaque sand	
2	363	Black and Opaque sand	Grog, hematite, limestone
3	111	Black and Opaque sand	Grog, hematite, limestone
4	19	Black and Opaque sand	quartz
5	2	Black sand	
6	21	Grog, hematite, limestone	Black and opaque sand
7	1	Mica and Schist	
8	8	Quartz	

production come from different places on the island. Preliminary petrographic analysis of two sherds from Brimstone Hill and comparisons with contemporary Nevisian Afro-Caribbean ware shows that the Brimstone Hill pottery differs from the Nevisian wares not only in manufacturing method, but also in paste and inclusion characteristics (Elaine Morris, personal communication, 2005).

The Brimstone Hill Afro-Caribbean ware is also similar to wares from other islands based on macroscopic descriptions. All Brimstone Hill Afro-Caribbean ware sherds are similar to sherds from Montserrat and Anguilla that contain black mineral inclusions derived from volcanic materials (Petersen et al. 1999). Analyses of Afro-Caribbean ware from nearby St. Eustatius (Statia), where Heath (1988) identified six types based on temper and one type based on surface treatment, are also comparable to the Brimstone Hill sherds. The Brimstone Hill Afro-Caribbean ware is most comparable to Heath's Type 1, which has black and clear mineral inclusions. Gilmore's (2004) recent petrographic analysis has identified similarities among

many of the sherds from Statia, St. Croix, Nevis, and Antigua. The Brimstone Hill and Statia material appear similar with the exception that some of the Brimstone Hill pottery has limestone inclusions.

Some Afro-Caribbean ware from Statia and Montserrat also has mica and schist inclusions. Mica is present in the paste of several sherds from Brimstone Hill, but this appears to be a natural occurrence, rather than intentional as observed on Statia (Heath 1988:174). Type 7 sherds from Brimstone Hill, however, closely resemble the Statia sherds, and quite possibly may originate from the same, as of yet unidentified, source.

### *Ceramic Samples*

The enslaved Africans who lived and worked at Brimstone Hill had access to, and probably acquired goods (including Afro-Caribbean ware) from, local markets. The enslaved Africans who came to the fort from different plantations around the island brought some of their own supplies including food and ceramic vessels for cooking. This suggests that the Afro-Caribbean ware found at Brimstone Hill originates from multiple

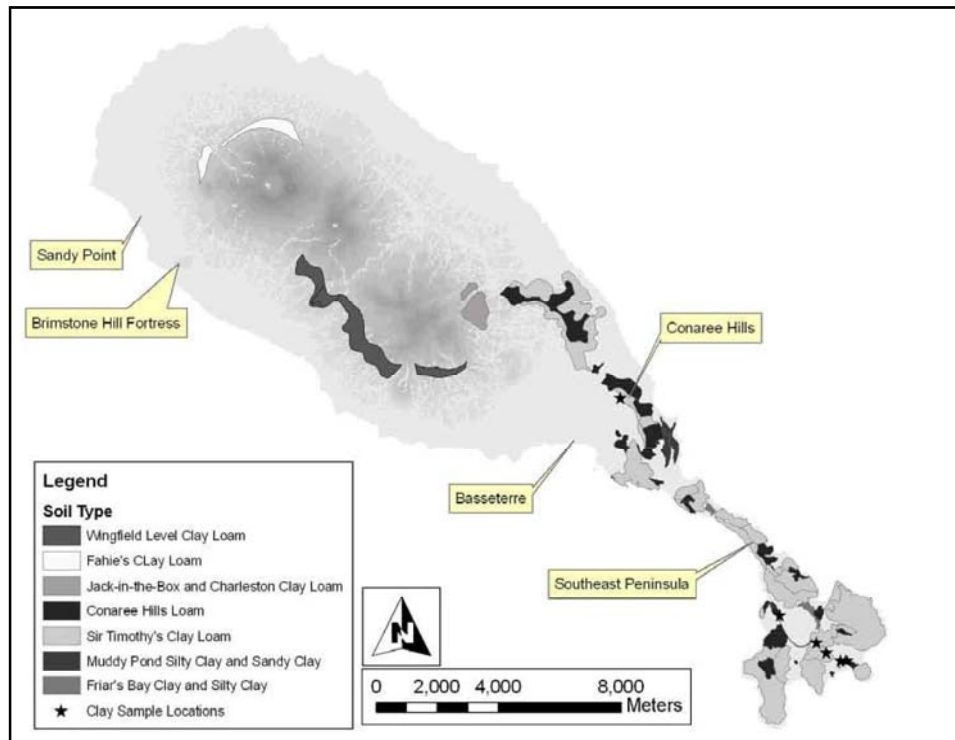


Figure 4. Location of classified soil types containing clay and sources where clay samples have been found.

locations on the island and is a representative sample for INAA analysis.

A total of 40 Afro-Caribbean ware sherds from three of the investigated areas at Brimstone Hill were analyzed by INAA (Table 2). The sample represents seven of the eight types defined from inclusion and paste characteristics.

### *Clay Sourcing*

Cursory pedestrian surveys by the senior author have been made on St. Kitts to locate clay sources suitable for pottery production. Survey thus far has focused on the Conaree Hills area near Basseterre and on the southeastern peninsula, where the island soil survey (Lang and Carroll 1966) indicates likely locations of clay soils. Six viable clay sources have been found, one near the Conaree Hills and five on the southeastern

peninsula (Figure 4). The clays are poorly sorted with naturally occurring volcanic mineral inclusions, variable amounts of organic material, and occasional pieces of limestone or coral fragments. Five clay samples were analyzed by INAA with the Afro-Caribbean ware sherds.

One clay sample submitted for INAA is from Conaree Hills (see Figure 4), where a deep bed of clay was recently exposed during housing development activities. Conaree is a term used on Barbados to describe an open-mouthed, straight sided, wheel-turned pot with a glazed interior used to make pepper pot (Edwards and de Verdon 2004:68). The Conaree Hills are named after the nearby estate rather than in reference to pottery making. The Conaree Hills clay required extensive processing because it has considerable numbers of small-to-medium

Table 2. Cross-tabulation of samples submitted for INAA by site and type.

Site	Type								Un-assigned	Total
	1	2	3	4	5	6	7	8		
2	2	11	4	-	-	1	-	-	1	19
3	5	9	1	1	-	1	1	1	-	19
4	2	-	-	-	-	-	-	-	-	2
<b>Total</b>	<b>9</b>	<b>20</b>	<b>5</b>	<b>1</b>	<b>-</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>40</b>
<i>Complete Assemblage</i>	140	363	111	19	2	21	1	8	1	665

sized, naturally occurring andesite and limestone inclusions. It was processed by drying, crushing, and sifting the clay through 1/16-inch hardware cloth. Naturally occurring beach sand was added as temper to some of the Conaree Hills clay and petrographic analysis of this sample found abundant shell within the sand. The clay from Conaree Hills was formed into both pots and tiles and fired in a traditional open-fire method. The sample submitted for INAA did not have any added sand.

Four clay samples from the Southeast Peninsula were submitted for INAA analysis. Three were obtained from the rim of the salt ponds. The fourth was recovered from deposits approximately 20 cm below the surface in a shallow early nineteenth century road cut that may have been known to potters at that time. These four clay samples have subangular sand inclusions that are similar to the inclusions noted in the Afro-Caribbean ware from Brimstone Hill. This clay was formed into bricks and fired without further processing (drying or sifting).

### ***INAA Results***

The INAA of the 40 Afro-Caribbean ware sherds from Brimstone Hill and the five clay samples followed standard MURR

procedures of sherd preparation, irradiation, and counting (Speakman and Glascock 2006). The raw data were transformed to a log base-10 scale to standardize the element concentrations, and missing data were estimated by deriving values that minimized the Mahalanobis distance to the overall sample centroid. Four compositional groups were proposed based on differences among the rare earth elements (e.g., thorium/europium and lanthanum/samarium) apparent in bivariate plots of the element data (Figure 5). Two sherds and one clay sample were not assigned to any of the compositional groups. The validity of the proposed subgroup structure was statistically confirmed by means of Mahalanobis distance and posterior classifications using a cross-validation procedure. The first nine principal components representing over 96% of the cumulative sample variation were used for this analysis (Speakman and Glascock 2006).

Bivariate plots of the rare earth element data (Figure 5) show that Groups 1 and 2 have subtle differences in composition. As the two plots in this figure suggest, Groups 1 and 2 tend to mirror each other with higher concentrations of certain elements (again thorium and lanthanum are used as examples) in Group 2 than in Group 1. Groups 3 and 4,



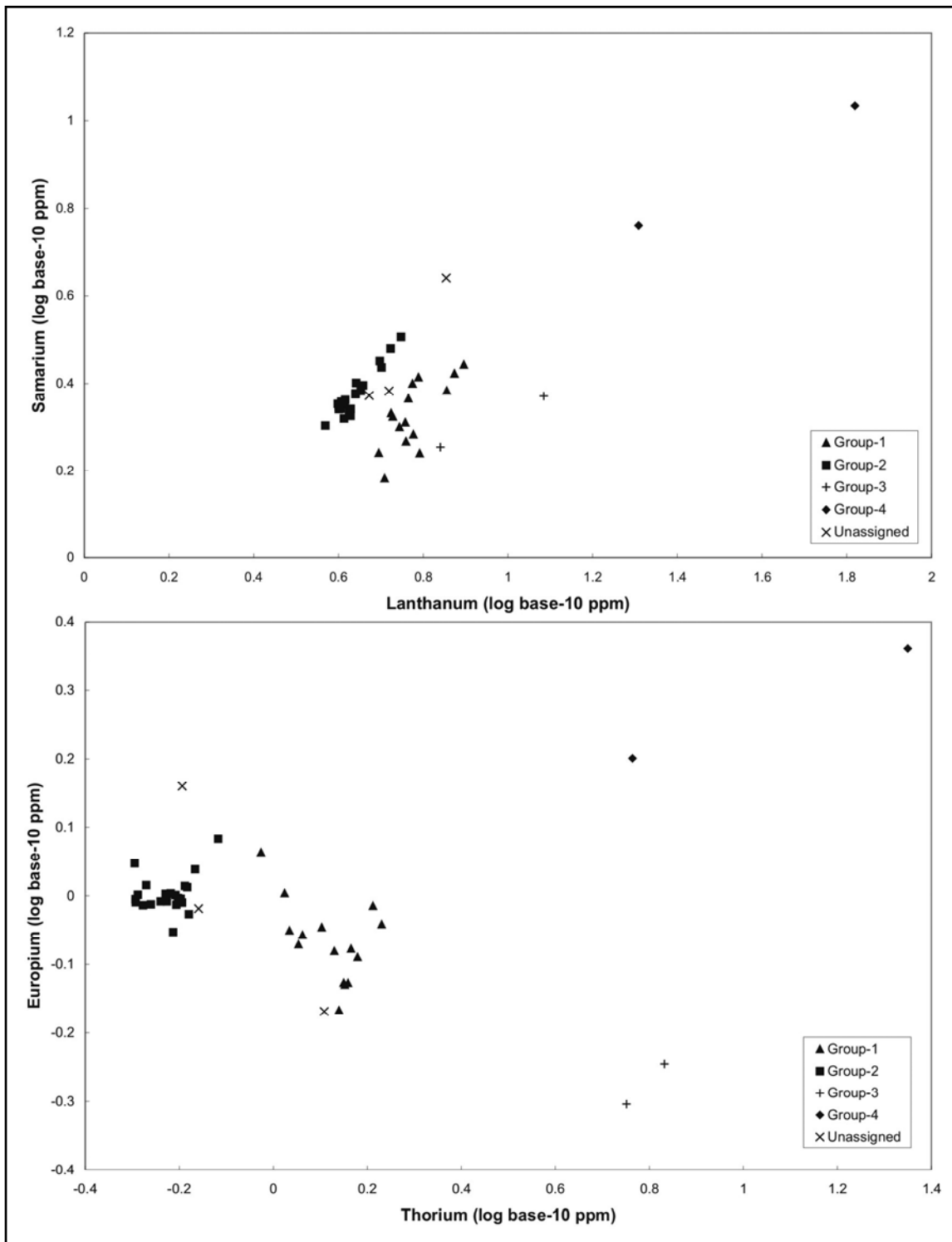


Figure 5. Bivariate plots of selected rare earth elements as base-10 logged concentrations showing the proposed compositional groups.

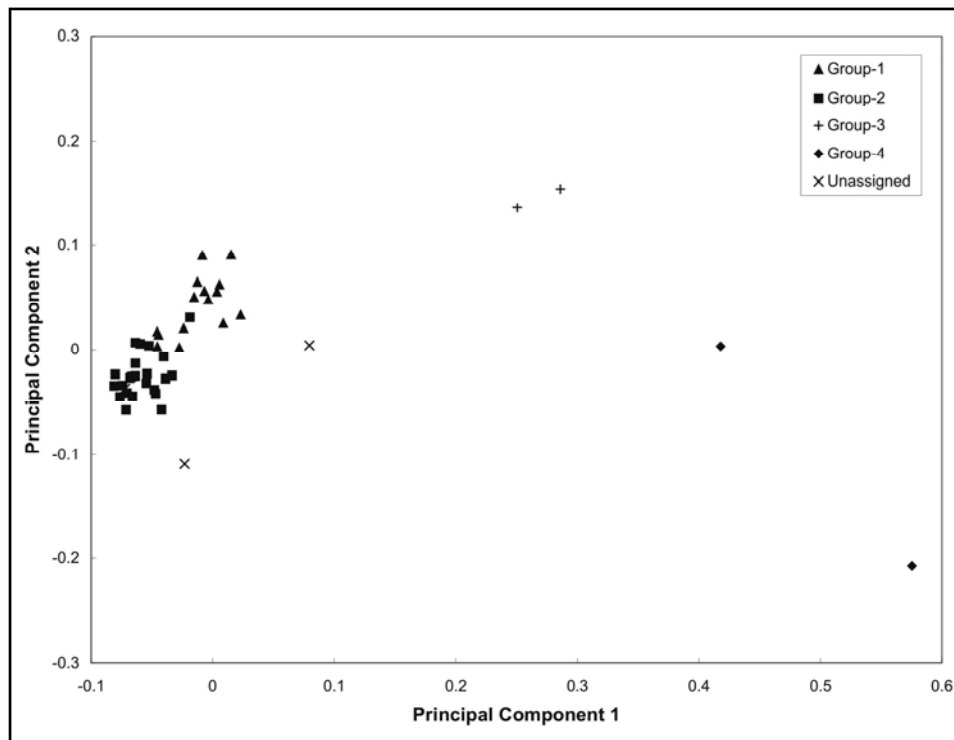


Figure 6. Biplot of the first two principal components showing distribution of the compositional groups. The first two principal components account for more than 75% of the cumulative variance.

however, are distinctive from Groups 1 and 2 and each other. Compositionally, these groups have little in common with Groups 1 and 2. A biplot of the first two principal component scores (Figure 6) illustrates again the distinctiveness of Groups 3 and 4 and the similarity of Groups 1 and 2. As Figure 6 shows, Groups 1 and 2 exhibit some overlap in multivariate space, suggesting that these two groups may derive from geologically similar clay resources.

Group 1 is composed of 12 Afro-Caribbean ware sherds and 3 clay samples suggesting that the sherds within this group were made from local clays. The three clay samples in this group come from the salt pond rims and two samples are from sources in the same general area but located approximately 100 m apart. This group contains 11 sherds from

BSH 3 and 1 from BSH 4 (Table 3; Figure 7). The sherds have been assigned to Types 1 through 3 as defined by Ahlman (2005) (Table 4).

Group 2 is the largest group with 22 Afro-Caribbean ware sherds and 1 clay sample, also suggesting the sherds in this group were made from local clays. The clay sample originates from the road cut identified above and is within 200 m of two of the clays assigned to Group 1. Group 2 includes 17 sherds from BSH 2 and 5 sherds from BSH 3 (Figure 7). The sherds have been assigned to Types 1, 2, 3 and 6, all of which have similar inclusions and paste characteristics.

Group 3 consists of 1 sherd from BSH 3 assigned to Type 4 and 1 sherd from BSH 4 assigned to Type 1 (Figure 7). These sherds are similar, but the Type 4 sherd has quartz as

a secondary inclusion whereas the Type 1 sherd does not. Given that only two samples are assigned to this group, it is obvious that additional sampling is necessary to fully characterize the range of chemical variation within this group. Group 4 consists of two sherds from BSH 3 assigned to Type 7 and 8 (Figure 7). As with Group 3, only two samples are assigned to Group 4. We can state with some degree of certainty that these samples are more similar to one another than to the other pottery analyzed. It seems likely, however, based on chemical differences between the two samples, that Group 4 pottery represents two distinct pottery production locales (e.g., the differences between the samples as illustrated in Figure 4). The INAA and macroscopic analyses suggests Groups 3 and 4 sherds are probably not made from St. Kitts clay. Other than the

one Type 1 sherds, these sherds have quartz and schist/mica inclusions that distinguish them from the rest of the assemblage.

### Conclusion

The compositional analysis of Afro-Caribbean ware sherds from Brimstone Hill demonstrates: 1) that some of the Afro-Caribbean ware found at Brimstone Hill was manufactured on the island and 2) that enslaved Africans on St. Kitts likely participated in inter-island exchange of the ware. The 34 pottery sherds assigned to INAA Groups 1 and Group 2 are clearly derived from local clays. The likely origin of these clays is the southeastern end of the island. The pottery that was produced with clays from the southeastern peninsula appears to have been widely distributed across the island and may have been the least costly and

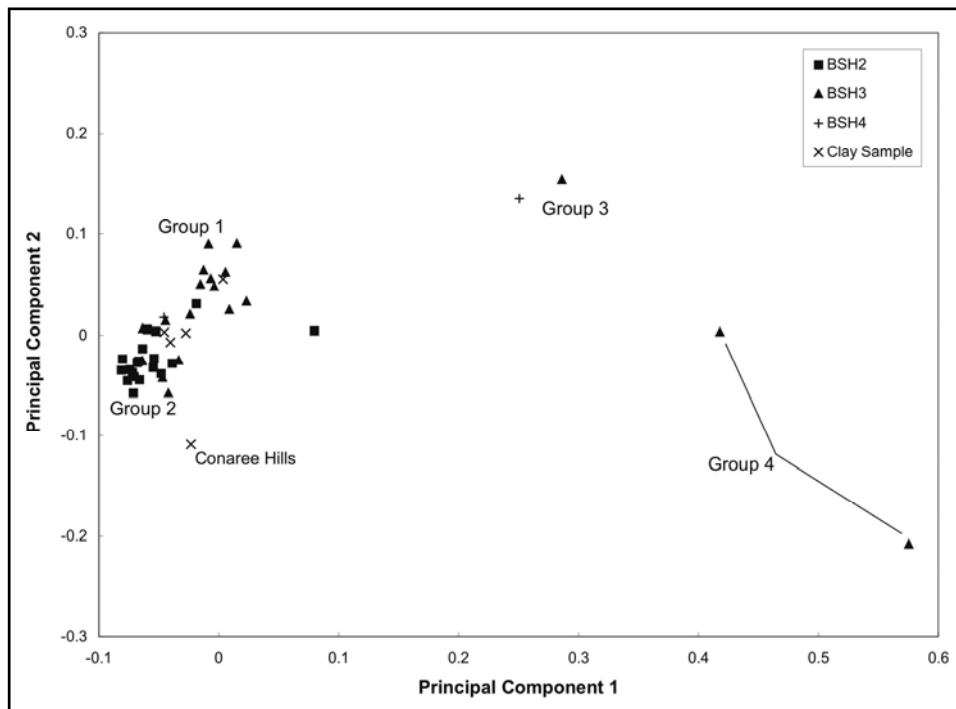


Figure 7. Biplot of the first two principal components showing the BSH site association for each sherd and the clay samples. The first two principal components account for more than 75% of the cumulative variance.

most widely available wares on the island. These data also demonstrate that the clay from this area was preferred over other clays for making the pottery on the island. There is no evidence, either chemical or petrographic, that clays from Conaree Hills were used to manufacture any of the pottery found at Brimstone Hill. The clays from the southeastern peninsula are approximately 40 km from Brimstone Hill. Prior to modern times, the best access to the southeast peninsula was by boat given that the road to this location was often treacherous. It is unknown whether enslaved Africans from the southeast peninsula brought the raw clays or finished pottery to various markets, or whether potters from around the island went to that location and acquired what they needed from the source. In either case, significant amounts of time were needed to transport either the clay or finished pots to the island's markets.

The BSH 2 assemblage, consisting of Group 2 sherds only, was likely created by government-owned slaves, as well as slaves from island plantations who may have had limited access to markets and funds for purchasing pottery. By extension, these

enslaved Africans had limited access to pottery produced from other clays. The assemblage at BSH 3 includes sherds assigned to all four groups and was generated by enslaved Africans who were likely government-owned and continuously lived at the fort. Because these individuals worked directly for the British Royal Engineers (who controlled the organization and conduct of work), these slaves likely had greater access to and greater purchasing power at the island's markets than plantation slaves conscripted to labor at the fortress. At the markets where these government slaves visited, potters or merchants were either selling or reselling raw clay or finished pottery made with clay from the southeast peninsula as well as pottery made from likely non-local sources.

It is also possible that some members of the Brimstone Hill community, who had relatively greater freedom, were making their own pottery from clay they acquired from either a market or directly from the southeast peninsula.

The idea of inter-island exchange of Afro-Caribbean ware among enslaved Africans is widely accepted (Heath 1988; Hauser and

Table 3. Cross-tabulation of INAA composition groups and Brimstone Hill site contexts.

Group	Site			Clay Sample	Total
	2	3	4		
1	-	11	1	3	15
2	17	5	-	1	23
3	-	1	1	-	2
4	-	2	-	-	2
<i>Unassigned</i>	3	-	-	1	4
<b>Total</b>	<b>20</b>	<b>20</b>	<b>5</b>	<b>5</b>	<b>40</b>

Armstrong 1999; Petersen et al. 1999; Ahlman 2005), but poorly documented. The inclusions and paste characteristics of one sherd in Group 4, made from a clay that is likely not from St. Kitts' southeast peninsula, is similar to descriptions of pottery found on Statia and Montserrat suggesting the pottery was made on either one of these islands or elsewhere. Its infrequent occurrence in all the assemblages, however, indicates that it was not widely traded and, as it is 'finely' made, this ware may have been considered high quality and expensive compared to pottery made from local clays.

The results of the INAA of 40 Afro-Caribbean Ware sherds from Brimstone Hill and five clay samples supports Ahlman's (2005) hypothesis that the majority of the Afro-Caribbean ware found at Brimstone Hill was made from locally-available St. Kitts clay. In addition, a small number of the sherds are likely made from non-local clays, indicating both intra- and inter-island trade networks among enslaved Africans. The analysis also suggests the possibility of socio-economic differences among enslaved Africans living and working at Brimstone

Hill. It appears that slaves who undertook specialized tasks may have had the ability to purchase non-local pottery, which was likely more expensive than the locally-produced pottery, because they had greater purchasing power than did unskilled laborers like local plantation slaves.

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Table 4. Cross-tabulation of INAA groups by petrographic 'type' groups.

Group	Type								Clay Sample	Total
	1	2	3	4	5	6	7	8		
1	5	6	1	-	-	-	-	-	3	15
2	2	14	4	-	-	2	-	-	1	23
3	1	-	-	1	-	-	-	-	-	2
4	-	-	-	-	-	-	1	1	-	2
<i>Unassigned</i>	1	-	-	-	-	-	-	-	1	3*
<b>Total</b>	<b>9</b>	<b>20</b>	<b>5</b>	<b>1</b>	<b>-</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>40*</b>

\* = includes the sherd unassigned to a specific type

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