Appendix G:

Botanical Analysis

7NC-B-11 Flotation Sample Contexts

Location/Feature Type	Test Unit/ Feature	Strat	Analysis Recommended	Sample Type Present and Quantity
East Porch	TU 55	II		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		III		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		IV		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
	TU 85	II		1.0 g charcoal; Heavy Fraction=<10 g non-botanical
		III		NCM; Heavy Fraction=<10 g non-botanical
		IV		<1.0 g botanical; Heavy Fraction=<10 g non-botanical
		V		<1.0 g charcoal; Heavy Fraction=<10 g non-botanical
	TU 86	II		NCM; Heavy Fraction=<10 g non-botanical
		III		NCM; Heavy Fraction=<10 g non-botanical
		IV		NCM; Heavy Fraction=<10 g non-botanical
		V		<1.0 g botanical
	TU 87	III		NCM; Heavy Fraction=<10 g non-botanical
		IV		<1.0 g botanical; Heavy Fraction=<10 g non-botanical
		V		NCM; Heavy Fraction=<10 g non-botanical
	TU 88	II		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		III		<1.0 g charcoal; Heavy Fraction=<10 g non-botanical
		IV		<1.0 g botanical; Heavy Fraction=<10 g non-botanical
	TU 89	II		1.0 g charcoal; Heavy Fraction=<10 g non-botanical
		III		NCM; Heavy Fraction=<10 g non-botanical
West Wall of Later Kitchen	TU 56	II		2.0 g botanical; Heavy Fraction=<10 g non-botanical
		III		4.0 g botanical, 1.0 g non-botanical; Heavy Fraction=<10 g non-botanical
		VI		<1.0 g botanical; Heavy Fraction=<10 g non-botanical
	TU 57	VI		<1.0 g botanical; Heavy Fraction=<10 g non-botanical
Interior of Later Kitchen, Feature 28 is possible landscaped area (feature encircled with stones), Feature 42 is probable postmold	TU 58	II		3.0 g botanical; Heavy Fraction=<10 g non-botanical
		III		2.0 g botanical; Heavy Fraction=<10 g non-botanical
		IIIA		<1.0 g botanical; Heavy Fraction=<10 g non-botanical
	TU 59	II		1.0 g botanical; Heavy Fraction=<10 g non-botanical
		III		4.0 g botanical; Heavy Fraction=<10 g non-botanical
		IIIA		<1.0 g botanical; Heavy Fraction=<10 g non-botanical
	TU 60, F. 28	II		2.0 g botanical; Heavy Fraction=<10 g non-botanical
	TU 60	II		<1.0 g botanical; Heavy Fraction=<10 g non-botanical
		III		NCM; Heavy Fraction=<10 g non-botanical
		IIIA		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
	TU 61	II		NCM; Heavy Fraction=<10 g non-botanical
		III		NCM; Heavy Fraction=<10 g non-botanical
		IIIA		NCM; Heavy Fraction=<10 g non-botanical
	TU 62	II		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		III		2.0 g botanical, 1.0 g bone; Heavy Fraction=<10 g non-botanical
		IIIA		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
	TU 63	II		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		III		NCM; Heavy Fraction=<10 g non-botanical
	TU 64, F. 42	III		Light Fraction=NCM; Heavy Fraction=NCM
	TU 64	II		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		III		NCM; Heavy Fraction=<10 g non-botanical
	TU 65	II		<1.0 g botanical and charcoal combined, <1.0 g bone; Heavy Fraction=<10 g non-botanical
		III		1 g charcoal, <1.0 g botanical, <1.0 g bone; Heavy Fraction=<10 g non-botanical
		V		Light Fraction=NCM; Heavy Fraction=NCM
		VI		<1.0 g botanical; Heavy Fraction=<10 g non-botanical
	TU 69	II		2.0 g charcoal, <1.0 g botanical; Heavy Fraction=<10 g non-botanical

		III		2.0 g charcoal, <1.0 g botanical; Heavy Fraction=<10 g non-botanical
		IV		1.0 g charcoal; Heavy Fraction=<10 g non-botanical
		V		2.0 g charcoal; Heavy Fraction=<10 g non-botanical
Exterior of Later Kitchen	TU 84	II		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		IIIA		<1.0 g botanical; Heavy Fraction=<10 g non-botanical
		IV		NCM; Heavy Fraction=<10 g non-botanical
Interior of Earlier Kitchen, F. 36 is concrete drainage area, F. 26 is postmold	TU 66, F. 36	II		8.0 g charcoal, <1.0 g botanical; Heavy Fraction=<10 g non-botanical
	TU 66	II		1.0 g botanical; Heavy Fraction=<10 g non-botanical
		III		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		IV		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		V		<1.0 g bone; Heavy Fraction=<10 g non-botanical
		VI		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		VII		Light Fraction=NCM; Heavy Fraction=NCM
	TU 71	II		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		III		<1.0 g botanical; Heavy Fraction=<10 g non-botanical
		IV		1.0 g charcoal, <1.0 g botanical; Heavy Fraction=<10 g non-botanical
		V		2.0 g charcoal; Heavy Fraction=<10 g non-botanical
		VI		Light Fraction=NCM; Heavy Fraction=NCM
	TU 73	II		<1.0 g charcoal; Heavy Fraction=<10 g non-botanical
		III		NCM; Heavy Fraction=<10 g non-botanical
		IV		NCM; Heavy Fraction=<10 g non-botanical
		V		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
	TU 73, F. 26 North half			<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
Exterior of Earlier Kitchen, F. 38 is probable postmold, F. 40 is postmold	TU 70	II		<1.0 g charcoal; Heavy Fraction=<10 g non-botanical
		III		<1.0 g botanical; Heavy Fraction=<10 g non-botanical
		IV		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		V		<1.0 g charcoal; Heavy Fraction=<10 g non-botanical
	TU 70, F. 38 North half			2.0 g charcoal; Heavy Fraction=<10 g non-botanical
	TU 72	II		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		III		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		IV		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
	TU 80	II		<1.0 g charcoal; Heavy Fraction=<10 g non-botanical
		III		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		IV.2 (shell lens)		<1.0 g botanical and charcoal combined, <1.0 g bone and shell; Heavy Fraction=<10 g non-botanical
		V		NCM, Heavy Fraction=874 g non-botanical
	TU 80, F. 40			<1.0 g charcoal; Heavy Fraction=<10 g non-botanical
	TU 81	II		<1.0 g charcoal; Heavy Fraction=<10 g non-botanical
		III		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		IV		<1.0 g bone; Heavy Fraction=<10 g non-botanical
		IVA		<1.0 g charcoal; Heavy Fraction=<10 g non-botanical
		V		Light Fraction=NCM; Heavy Fraction=NCM
East Yard along abandoned utility line	TU 67	II		1.0 g botanical; Heavy Fraction=<10 g non-botanical
		IV		10 g charcoal, <1.0 g botanical; Heavy Fraction=<10 g non-botanical
		V		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		VI		<1.0 g botanical; Heavy Fraction=<10 g non-botanical
East Yard along abandoned drain	TU 68	II		<1.0 g botanical; Heavy Fraction=<10 g non-botanical

ditch		III		<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
		V		<1.0 g botanical; Heavy Fraction=<10 g non-botanical
South Yard	TU 90	II		1.0 g botanical, 1.0 g charcoal; Heavy Fraction=<10 g non-botanical
Postmold	TU 98, F. 51 North half	V to VI		NCM; Heavy Fraction=<10 g non-botanical
Postmold	TU 101, F. 56 East half			3.0 g charcoal; Heavy Fraction=<1.0 g non-botanical
Postmold	Feature 17A Southwest			<1.0 g botanical and charcoal combined, 5.0 g wood; Heavy Fraction=<10 g non-botanical
Postmold	Feature 17A Northeast			<1.0 g botanical and charcoal combined; Heavy Fraction=<10 g non-botanical
Depressed area inside Postmold Feature 17A	Feature 17B Northeast			<1.0 g botanical; Heavy Fraction=<10 g non-botanical
Possible Postmold	Feature 20B			Light Fraction=NCM; Heavy Fraction=<1.0 g
Feature within F. 25	Feature 21 South Half			4.0 g charcoal, <1.0 g botanical; Heavy Fraction=<10 g non-botanical
Sinkhole in East Basement	Feature 25 Level 2 South Half			<1.0 g botanical and charcoal combined; Heavy Fraction=1 g non-botanical artifacts
Postmold	Feature 41 Subsoil			Light Fraction=NCM; Heavy Fraction=NCM
Privy	Feature 49 East Half		YES	195.9 g botanical, 9.4 g bone and shell; Heavy Fraction=860 g non-botanical artifacts
Privy	Feature 49 Level 2 West Half		YES	1.0g botanical; Heavy Fraction=<10 g non-botanical
Privy	Feature 49 Level 2 East Half		YES	12.0g botanical; Heavy Fraction=<10 g non-botanical
Postmold in Feature 49	Feature 49A East Half		YES	1.0g botanical; Heavy Fraction=<10 g non-botanical

Report on the Analysis of Flotation Samples Secured from a Historic Privy, Weldin Plantation Archaeological Site (7NC-B-11), New Castle County, Delaware.

Blue Ball Properties Area
Transportation Improvement Project.
Phase III Data Recovery.

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Report on the Analysis of Flotation Samples Secured from a Historic Privy, Weldin Plantation Archaeological Site (7NC-B-11), New Castle County, Delaware.

INTRODUCTION

Recent Archaeological Data Recovery at the Weldin Plantation Site (7NC-B-11) included the excavation of a late nineteenth/early twentieth century privy (Feature 49) associated with the main house on the property. Privy fill was sampled for the recovery of archeobotanical remains, and flotation processing yielded abundant plant artifacts relating to the ownership and operation of the property after 1860. Archeobotanical data secured from privy features contribute to our understanding of the diet and domestic life of site residents, and to a more complete interpretation of the form and function of dependencies and yard features.

Four discrete contexts within the privy (Feature 49) were sampled (see Table 01). An estimated 5.585 liters of privy fill derived from three vessels found within the privy (FN2, FN3, and FN646) as well as from general feature fill (FN1) were processed and analyzed.

Table 01: Summary of contexts sample for plant macro-remains within Feature 49.

Sample Number	Portion	Volume of Sample (liters)	Weight of non-carbonized plant material (grams)
FN1	General feature fill	3.785	103.49
FN2	Contents of fruit jar		6.46
FN3	Contents of redware vessel		0.13
FN646	Contents of tin coffee pot	~1.89	1.97
4 samples		~5.585	112.05

METHODS

Sediment samples from the features were individually processed at the archaeological laboratory of McCormick Taylor, Inc., in Harrisburg, Pennsylvania using water flotation. Samples were individually processed using a Flote-Tech flotation system equipped with very fine mesh fine fraction and 1/16" coarse fraction screens. The Flote-Tech system is a multi-modal flotation system which facilitates the separation and recovery of plant materials from the soil matrix via agitation in water. Processing resulted in two size fractions (heavy and light). Floted portions were air dried. Recovered botanical remains were submitted to archeobotanical consultant Justine McKnight at her Severna Park, Maryland laboratory for analysis.

Samples were individually passed through 5mm and 2mm geological sieves, producing standard size divisions to aid analysis. Organic preservation within the privy was excellent, and abundant uncarbonized botanical remains were extant within the feature. Identifications were routinely attempted on all plant macro-remains recovered within the privy samples following standard procedures (Pearsall 2000). Identifications of all classes of botanical remains were made to the genus level when possible, to the family level when limited diagnostic information was available, and to the species level only when the assignment could be made with absolute

certainty.

Identifications were made under low magnification (10X to 40X) with the aid of standard texts (Kozlowski 1972; Martin and Barkely 1961; Schopmeyer 1974) and checked against plant specimens from a modern reference collection representative of the Coastal Plain flora of Delaware.

RESULTS

A total of approximately 5.585 liters of feature fill were processed, yielding a total of 112.05 grams of archaeological plant material. Identified plant remains were limited to a variety of uncarbonized seed types. An inventory of flotation-recovered plant remains is presented in Table 02.

In addition to identifiable botanical remains, the flotation samples contained an array of small artifacts and natural materials. These included insect egg cases and body parts, bones, roots, coal fragments, eggshells, and sand/gravel.

The flotation samples contained an abundance of uncarbonized seed remains (a total of 128,248 specimens). Nine discrete taxa were represented, including edible fruits (grape, blackberry or raspberry and elder), the seeds of plants with edible "greens" (goosefoot/pigweed, poke), and garden products (squash, tomato) along with weed seeds (nightshade, goosefoot/pigweed, poke). Seeds were recovered from all of the flotation samples analyzed. Photographs of some of the recovered seed types are offered in Figures 01, 02, 03 and 04.

Figure 01: Grape *(Vitis sp.)* seed (FN1). *Scale: 1 mm grid*

Table 02

Inventory of Flotaton-recovered Plant Macro-remains Recovered from Privy Feature 49.

sample number	FN1	FN2	FN3	FN646	4 samples
flotation number		fruit jar	redware vessel	tin coffee pot	
feature	49	49	49	49	
half	east	east		east	
strat			2		
level		all	2	all	
volume (liters)	3.7854	unknown	unknown	~1.89	5.585
weight non-carbonized plant remains (grams)	103.49	6.46	0.13	1.97	112.05
NON-CARBONIZED SEEDS (n of specimens)	118,466	7173	144	2465	128248
total weight (grams)	103.49	6.46	0.13	1.97	112.05
Amartanthus sp. (pigweed)	5				5
Chenopodium/Amaranthus (goosefoot/pigweed)		4	9	1	14
Cucurbita pepo (squash)	2				2
Lycopsersicon esculentum (tomato)	43				43
Phytolacca americana (poke)		2		1	3
Rubus sp. (blackberry/raspberry)	117,013	6988	134	2463	126598
Sambucus canadensis (elder)	2				2
Vitis sp. (grape) entire	918	56	1		975
fragment	465	123			588
SOLACEAE (nightshade)	18				18

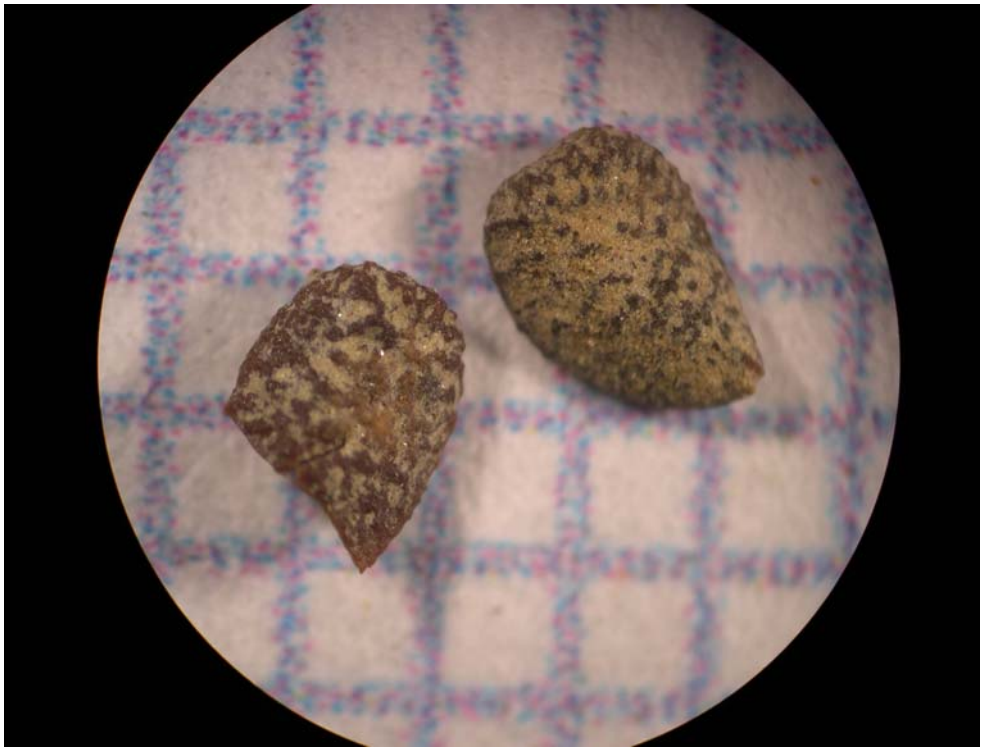

Figure 02: Elder *(Sambucus canadensis)* (FN1). *Scale: 1 mm grid*

Figure 03: Raspberry or blackberry *(Rubus sp.)* was the most common seed type documented within the privy (specimens from FN1). *Scale: 1 mm grid*

Figure 04: Squash *(Cucurbita pepo) (*FN1). *Scale: 1 mm grid*

The archeobotanical assemblage analyzed from the Weldin Plantation privy contained an overwhelming abundance of blackberry or raspberry seeds *(Rubus sp.)*. Blackberry/Raspberry seeds were recovered from all contexts sampled within the feature. In a graphic display of the percentage of seed types present within each flotation sample (Figure 05), the predominance of *Rubus* is striking. A feature total of 126,598 blackberry/raspberry seeds (98.7 percent of the total seeds recovered, based on specimen count) were recovered. Grape *(Vitis sp.)* was also abundant, with 975 entire seeds and 588 seed fragments recovered. Grape was present within the flotation samples analyzed from FN1 (general), FN2 (fruit jar), and FN3 (redware vessel). Tomato *(Lycopersicon esculentum)* seeds were recovered from the general privy fill sample (FN1), with 43 seeds recovered. Nightshade *(SOLANACEAE)* (18 seeds), goosefoot/pigweed *(Chenopodium/Amaranth sp.)* (14 seeds), pigweed *(Amaranth sp.)* (five seeds), poke *(Phytolacca americana)* (three seeds), elder *(Sambucus canadensis)* (two seeds) and squash *(Cucurbita pepo)* (two seeds) were also identified.

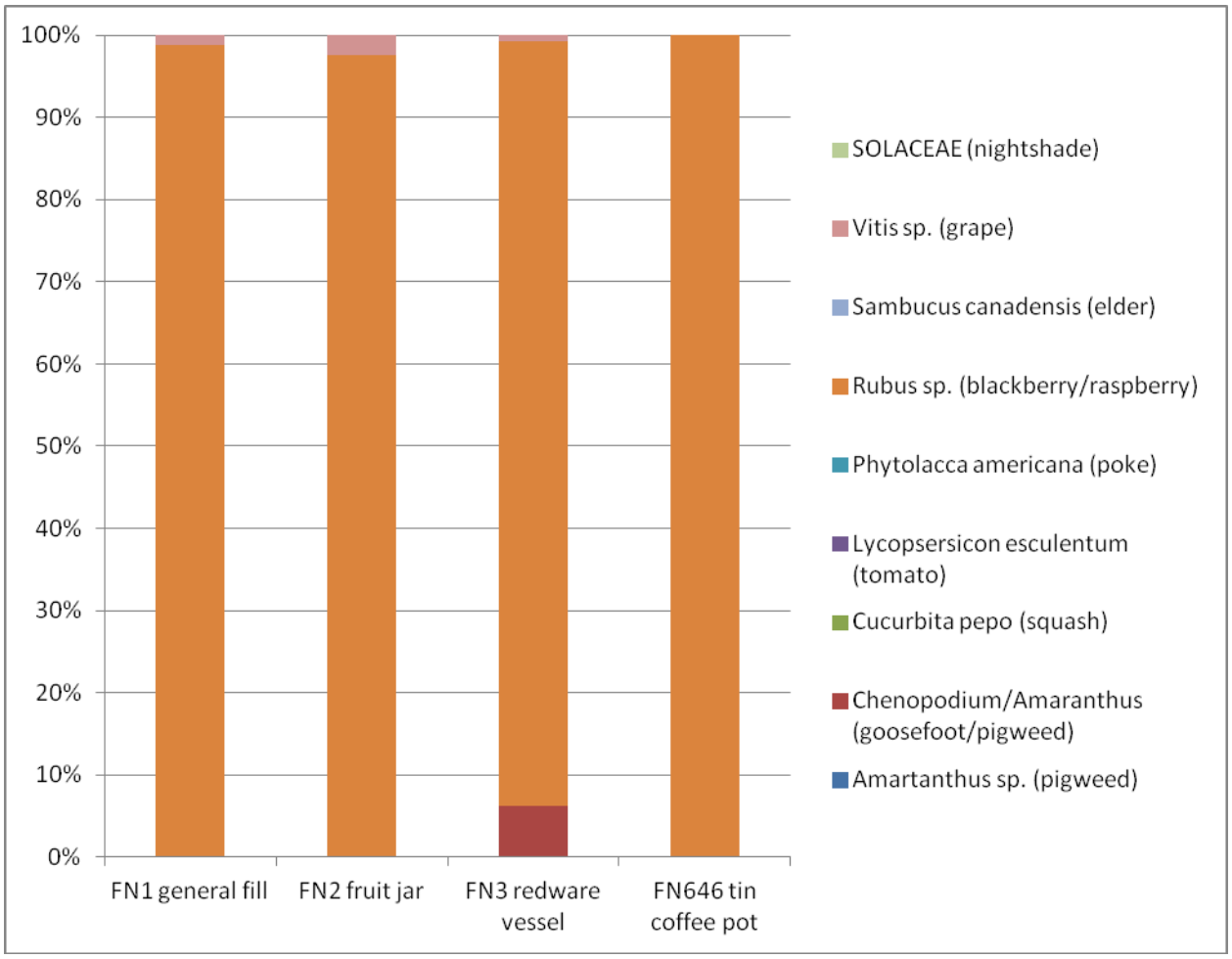

Figure 05: Blackberry or raspberry seeds were the predominant seed type recovered from all sampled contexts within Feature 49.

DISCUSSION

Archaeology and archival research efforts at the Weldin Plantation Site indicate that the Privy Feature 49 corresponds to Jacob Weldin's ownership and occupation of the property post 1860's. The privy is located approximately 45 feet from the southwest corner of the main house foundation. The feature contained stone, brick and mortar debris, and is characterized by a single fill episode bearing predominately domestic and architectural artifacts. Seeds were the exclusive plant material type contained within the privy, and almost all of the identified seeds represent comestible taxa. Wood and wood charcoal were conspicuously absent. The seed assemblage from Weldin's Feature 49 is consistent with those from other historic privies in the Middle Atlantic region (McKnight 1996, 1999, 2001), where the remains of fleshy fruits are also well documented.

The archeobotanical assemblage from the Weldin Plantation privy provides valuable subsistence data. The recovery of abundant fruit seeds attest to the importance of these products in the subsistence economy of the site. The remains of raspberry/blackberry, grape, elder, tomato and squash document that both wild and cultivated fruits and garden products made a significant contribution to site resident's diet. The presence of ruderal weeds (poke, nightshade, pigweed

and goosefoot/pigweed) in the seed assemblage suggests that these plants may have had a cultural application to site residents.

Archeobotanical remains often provide strong markers for seasonality and the data from the privy suggest some seasonal patterns. Based on the botanical remains recovered, it is evident that both grown and gathered plants were important to site residents. Most of the plant species represented in the seed assemblage would have been available for consumption or processing during the summer and early autumn. However, determining seasonality of the privy fill is difficult, as almost all of the comestible plant remains documented at the site constitute readily storable foods, and the specimens recovered from archaeological contexts may represent preserved foods used at any time of the year.

The Weldin Plantation site is located within the Mid-drainage Zone of the Lower Coastal Plain physiographic province. Prior to European settlement of the region, Delaware supported vast forest and marshlands with plant communities largely determined by topography and the permanence of abundant water. The site lies within the Oak-Pine Forest (Atlantic Slope Section) as defined by Braun (1950:192) and the Oak-Hickory-Pine forest association outlined by Kuchler (1964). Native forest cover over the project area was characterized by a medium tall to tall forest of broadleaf deciduous and needleleaf evergreen trees. Dominant species would have included hickory, shortleaf pine, loblolly pine, white oak and post oak. The seed assemblage recovered from the Weldin privy reflects a history of domestic and agricultural land use of the property during the late ninteenth and early twentieth century.

Improvements in urban sanitation at the turn of the nineteenth century included the routine removal of privy fill (Geismar 1993), and it is likely that much of the cultural material examined from the Weldin Plantation privy was episodic fill deposited just prior to feature abandonment. Fruit seeds were the most common elements identified from the privy feature and the assemblage includes many species with durable seed coats which can travel unharmed through the human digestive tract. These species are routinely recovered from historic privies (Geismar 1993; McKnight 1996, 1999, 2001; Dudek et al. 1998). The seeds of comestible fruits and other food remains may also have entered the archaeological record as kitchen trash disposed of in the privy shaft.

SUMMARY

The archeobotanical materials from the Weldin Plantation privy (Feature 49) provide an opportunity to examine late eighteenth through early twentieth century domestic life in northern Delaware. Plant macro-remains reveal details of daily life and the organization and use of space. Specifically, the privy yielded an abundance of plant material relating to waste management, diet, and the historic landscape. Analysis of plant macro-remains from four flotation samples collected from Feature 49 document the importance of of wild-gathered and garden/orchard/farm-grown fleshy fruits to the diet of Jacob Weldin and his family during their occupation of the Plantation. The absence of wood or charcoal within the analyzed flotation samples suggests that the privy fill represents exclusively food preparation/kitchen activities and/or human waste.

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