IV. RESEARCH DESIGN AND METHODOLOGY

A. PHASE III RESEARCH DESIGN

Very little work has been accomplished on intact upland prehistoric sites in Delaware for the purpose of extracting information on subjects such as intrasite activity patterns, subsistence pursuits, season of occupation, and site function. The Drawyer Creek South Site (7NC-G-143) initially showed the potential to contain suitable contexts to address these issues. The data recovery program subsequently followed through in an effort to collect data pertinent to these issues.

The cultural information gained from site excavations at the Drawyer Creek South Site relates to a number of contexts or themes which are outlined in existing statewide management plans for prehistoric cultural resources (e.g., Custer 1986, 1994; Custer and De Santis 1986). These themes, which relate to how specific sites can contribute cultural information of value to the region's prehistory, provide an outline for judging the merits of certain classes of archaeological resources. It can be asked, for example, why these resources need protection, and how new information can be derived from studying these archaeological sites. With regard to the Drawyer Creek South Site, relevant themes in Delaware prehistory include the following topics: (1) chronology, (2) subsistence practices, (3) settlement and community patterns, (4) lithic technology and sourcing, and (5) environmental adaptation.

The data recovery program at the Drawyer Creek South Site was expected to contribute new information regarding these themes. The artifact concentrations identified represent discrete activity areas where hearths and other concentrated material remains were recorded. The recovery of this information from the large block excavations was directed toward the isolation of specific activity and habitation areas within the site, since these areas would provide the most lucid information about the site's prehistoric inhabitants, how they organized their space in the community, what kinds of daily activities they undertook while residing in this location, and how this relates to regional lifeways.

In addition to these issues of general interest in regional prehistory, it was also considered appropriate to address research questions of a more site-specific nature. A brief discussion of these issues and how they relate to the Drawyer Creek South Site follows.

Note: We have little substantive information on upland prehistoric sites in Delaware. The Drawyer Creek South Site presents the opportunity to acquire such information. Questions of particular importance are what kinds of activities occurred within the site over the duration of its use, what types of food gathering and processing activities can be identified from the site's excavations, and what season of the year was the site inhabited. With these issues in mind, large-scale excavations were pursued focusing on several themes relevant to archaeological research in general. These themes allow archaeologists to focus their efforts on basic questions concerning past human behavior and prehistoric lifeways. The relevant themes with regard to the Drawyer Creek South excavations include the following: (1) chronology, (2) subsistence practices, (3) settlement and community patterns, (4) lithic technology and sourcing, and (5) environmental adaptation.

1. Chronology Theme

The chronology theme covers the arbitrarily defined stages in human prehistory. Initial evidence in the form of diagnostic artifacts recovered from the Drawyer Creek South Site during Phase I and II investigations indicated that the site was occupied primarily during the Woodland II (Late Woodland) period, i.e., circa AD 1000 to 1650. The data recovery program retrieved additional supportive data to characterize the time span during which the site was occupied, which includes earlier occupations dating to the Woodland I period.

The Delaware chronology, as developed by Custer (1984), differs somewhat from what has been traditionally utilized in surrounding regions. For instance, four periods are represented in the region's chronological sequence: (1) Paleoindian (ca. 12,000-6500 BC), (2) Archaic (6500-3000 BC), (3) Woodland I (3000 BC - AD 1000), and (4) Woodland II (AD 1000-1650). These periods, as applied by Custer (1984, 1989, 1996), are defined by identifiable changes in prehistoric lifeways and adaptations to the environment, and are subdivided into complexes and phases. Subdivision of this chronology into phases depends on local distinctions in artifact styles, differences in environmental adaptations, and the geographic distribution of cultural groups.

These chronological designations differ from the traditional nomenclature (i.e., Paleoindian; Early, Middle, and Late Archaic; Early, Middle, and Late Woodland; and Contact), which Custer (1996) uses only for identifying time frames based on diagnostic artifacts. By applying the more comprehensive Delaware chronology, prehistoric occupations at the Drawyer Creek South Site can be framed within the Woodland I and II periods. It is apparent that the more intensive occupations transpired during Woodland II. Chronological issues are described below as they relate specifically to the Drawyer Creek South Site, comparable sites in the Coastal Plain, and the diagnostic artifacts recovered from these sites.

Diagnostic artifacts recovered from the site during Phase I and II excavations (Bedell 1995a, 1995b) include Hell Island ware as well as Minguannan ceramics (Custer and Silber 1995). Projectile points recovered from the site include triangles, Brewerton-like points, and stemmed forms. The stemmed points are similar to Late Archaic and Early Woodland stemmed forms (e.g., Bare Island) recovered from a variety of Middle Atlantic region sites (Custer and Silber 1995:177).

Brewerton-like points recovered from the site are characteristic of northern Delaware during the Woodland I period, and although these points are more characteristic of the latter half of the Archaic period, they are also known to be present as late as the middle of the Woodland I period. However, the Brewerton-like point is one style that Custer (1989:147) lists as a "bad" type, i.e., it is sufficiently ambiguous in form to cause considerable uncertainty in identification. Stemmed points, such as that found in Unit 58 at the Drawyer Creek South Site, are also typical of Woodland I occupations. Some of these points may represent earlier intermittent occupations of the site that left behind very few material remains.

Custer (1984:88) notes that Hell Island ceramics are distributed throughout northern Delaware, and, as the terminal Woodland I ceramic type, are viewed as the precursor to the Minguannan series of Woodland II ceramics. The presence of these ceramic wares provides a relatively consistent chronological progression on the site from late Woodland I through Woodland II, although the

earlier ceramic types, which also include the very early steatite-tempered Marcey Creek ware, are very sparsely represented.

In stratigraphic terms, the majority of the occupations identified at the site correspond to Level 2, which is the A/E interface and the upper portion of the E-horizon. Deeper occupations were recorded in Level 3, which corresponds to the base of the E-horizon and the E/B interface. This pattern of stratigraphy was evident across the entire site. Also evident across the site were a series of spatially discrete activity areas defined within the larger block exposures.

There are also clearly defined similarities in Woodland II material culture between northern Delaware and southern New Jersey. Comparable Woodland II manifestations in southern New Jersey include the Indian Head Site (Cross 1941:44; Mounier 1975) on the Maurice River in Salem County; the Osborne Site (Morris 1982), and the Ware Site (McCann 1950; Morris et al. 1996). At the Indian Head Site, high percentages of argillite tools and debitage were recorded, although no sources of this material exist nearby. A number of quartzite triangles recovered from the site indicate use of local raw material sources. The ceramic assemblage from the Indian Head Site is dominated by thin, well-made pottery with fine grit temper, cordmarked surfaces, and decoration characterized by some incising and cord-wrapped stick impressions. This pottery is very similar to the ceramics in the assemblage from the Drawyer Creek South Site. Like the Drawyer Creek South Site and other similar sites in northern Delaware, the Indian Head Site was not a permanent village (Cross 1941:plates 11 and 12; Mounier 1975).

The assemblage from the Drawyer Creek South Site has provided information to facilitate the refinement of the late Woodland I through Woodland II chronology for the upper Delmarva Peninsula (Griffith 1982; see Griffith and Custer 1985). The assemblage can also be compared with the assemblages from other sites, such as the Webb Site (Custer 1985), where both Hell Island ware and Minguannan ceramics dominated the succession of assemblages (Custer 1994:43), and very similar assemblages from sites in southern New Jersey (Morris et al. 1996). Dating of these occupations may be refined by means of radiocarbon sampling, given suitable contexts.

Note: Chronology addresses the sequence of stages in prehistory identified by the artifact types recovered from a particular occupation. In the case of the Drawyer Creek South Site, ceramics and spearpoint styles show that the site spans a time frame from circa 3000 BC to AD 1400.

2. Subsistence Practices Theme

The subsistence practices theme refers to food procurement strategies, food processing and storage, dietary composition, and the tools and structures created for use in conducting subsistence activities. The Woodland I to Woodland II period (Late Archaic to Late Woodland) in the northern Delmarva Peninsula was one in which major changes were taking place in local subsistence economies. During early Woodland I times, the very productive estuarine and riverine resources provided a viable food resource base which was intensively exploited.

Riverine base camps could have been occupied for several seasons of the year by multifamily groups. Resources not available in the vicinity of the camp could have been procured through forays of longer distances. During the winter, such groups may have dispersed as individual family parties.

By late Woodland I times some domesticated plants had been incorporated into a broadened subsistence economy, and this development may have eventually resulted in changing seasonal and area-specific resource procurement strategies. Such changes were expected to be represented in the archaeological record at the Drawyer Creek South Site, despite its appearance as a rather small, creek-edge transient camp.

Late Woodland I sites in the northern Delmarva Coastal Plain include base camps in floodplains and estuarine settings (like the banks of Drawyer Creek) which were most likely inhabited from late summer through the winter and into the early spring (Custer 1996:236). One would expect some storage capacity to have been present on such sites at this time, particularly for the surpluses of seeds, nuts, and other preserved foods needed to ensure winter survival.

These riverine/estuarine camps would also have been used as staging areas for forays to procure other resources, such as lithic raw material. Depending on the productivity of these settings from year to year, Woodland I base camps would have been subject to periodic fusion and fission in order to permit more efficient exploitation of local resources (e.g., wild rice) in times of maximum productivity, and the redistribution of surpluses during lean times. For instance, in the winter, floodplain settlements were probably more focused later in the period than in earlier (initial Woodland I) times, evidenced by more storage features and perhaps larger pottery vessels (Custer 1996:237-238). In the productive seasons of the year, i.e., spring through fall, Woodland I period groups were perhaps even manipulating wild plant stands to increase production (Custer 1996:240).

The more productive resource zones, such as anadromous fish habitats, would most likely have shifted as sea levels rose along the Appoquinimink River estuary system. The major subsistence activities in base camps established to exploit anadromous fish would have been directly related to the procurement and processing of fish, including the rendering of fish oil and smoke-curing a portion of the catch for storage, as has been hypothesized for Lower Delaware Valley settlements at Abbott Farm, in New Jersey (Cavallo 1987). These activities would have been supplemented by the hunting of mammals and fowl in both the floodplains and the uplands in the vicinity by small groups ranging out of the residential camps.

Current knowledge concerning subsequent Woodland II subsistence and settlement systems in the region is somewhat limited. Much of what is known has been inferred from comparative data derived from surface and plowzone sites, combined with information on the association of such sites with their environmental setting. The presence of intact living floors at the Drawyer Creek South Site provided an opportunity to collect subsistence data from preserved contexts, although because of the nature of the soils at the site, there was limited preservation of botanical materials.

Comparative analyses of related tool assemblages associated with storage, cooking, and food preparation areas was expected to produce data regarding the collection and use of wild plant foods and fibers, as well as information concerning hunting, fishing, and trapping activities. The analysis of stone tools to determine their function provides data on subsistence activities such as hunting, butchering, animal food processing (e.g., bone splitting, cutting, and scraping), and plant food processing (e.g., seed grinding). Information on tool function can be obtained by macroscopic analysis of stone tool forms, edge angles, and use wear, as well as through microwear and blood residue analyses, although the latter methods were not applied in this study.

Site function was also addressed during the Phase III investigation of the Drawyer Creek South Site. Among the questions considered on this topic were the following: What point in the settlement hierarchy does this site represent, and how does this relate to Woodland II period subsistence trends? Was the site used as a procurement camp for seasonally available resources, was it a preferred location for a hunting camp over a long period of time, or was it used as a base camp for staging forays into the surrounding area? Site evidence was also expected to indicate whether the site functioned as a series of short-term camps over a long period of time, or whether the site visits were sporadic.

Another settlement concept, which has been addressed by Custer (1996:206), is the notion of band territories. During initial Woodland I times, such territories may have been loosely defined around preferred lithic resource areas, such as argillite outcrops. Stewart (1992) also notes that it is possible that argillite source areas were held by different prehistoric groups "in common" (Custer 1996:214). The concept of defining territories for such groups builds upon an earlier notion envisioned by Kent (1970) for Archaic groups in eastern Pennsylvania.

Note: The subsistence theme includes all aspects of food acquisition, processing, storage, consumption, and disposal. Research questions address the use of estuaries, stream environments, upland localities, and other areas, from season to season, to sustain hunting and gathering peoples. How did prehistoric peoples take advantage of seasonal abundances, such as fish spawns, and how did they survive lean times in the winter? Did the lack of wild foods and game in the winter cause larger social groups to split up into small family units as a means of survival? Finally, at what point in time did the addition of cultivated plants facilitate greater stability in the food quest?

3. Settlement Pattern/Community Pattern Theme

The settlement/community pattern theme concerns regional man–land relationships and changing cultural adaptations through time (Custer 1986, 1994; Emerson et al. 1986). Regional settlement patterns are based primarily on surface survey; consequently, the existing knowledge of settlement patterning is often preliminary, and somewhat superficial. Data obtained from excavations add substance to settlement models and provide information on internal community organization, and with the addition of good contextual information from features and buried occupation surfaces, can substantially alter hypotheses concerning prehistoric land use.

Much of what is known about prehistoric settlement patterns in the Middle Atlantic region is based on the work of Gardner (1982, 1984), Custer (1984, 1989, 1996), and other researchers working in the Middle Atlantic Coastal Plain region. There is little information on community patterns for small Woodland II camps in the existing literature. A good part of what is known comes from generalizations extrapolated from surface and plowzone assemblages.

Custer (1996:287) notes that Minguannan complex Woodland II settlement patterns include base camps that lack evidence of domestic structures (house patterns), storage features, or middens. Consequently, there is little indication that such sites represent the typical Late Woodland sedentary village pattern found in most areas of the Middle Atlantic. Furthermore, Custer (1996) notes that most of these Woodland II base camps are located on the same productive settings as earlier Late Archaic-Middle Woodland base camps, and they are not focused on fertile soil areas. This type of

pattern initially appeared to fit the pattern of the Drawyer Creek South Site, although perhaps on a smaller scale.

In the Lower Delaware Valley, closer to the fall line region, there are also no known examples of true villages (Stewart et al. 1986:71). Base camps appear to be positioned in the most productive ecological settings. Some of the camps contain large storage pits, but, again, there are no discernible house patterns (Custer 1996:290). The questions to be asked therefore are how long were these base camps occupied, what kind of resident group size inhabited the sites, and how was such a site organized in a basically nonagricultural settlement system that supported what were probably substantial Woodland II (Minguannan) social groups?

Excavations at the Drawyer Creek South Site provided the opportunity to examine the internal functioning of a site that may have been a very small representation of this Woodland II (Late Woodland) pattern, and what also appears to have been a very limited Woodland I (Early and Middle Woodland) occupation within the site. Data recovery was designed to examine the nature and structure of individual and household work areas, with a focus on intact lithic workshop loci, hearth and food preparation areas, habitation areas, and other special-purpose areas of the site. Hearth areas, in both large communities and small transient camps, are focal points for a broad range of activities within the camp. Binford (1983:149) has suggested, on the basis of ethnoarchaeological studies, that hearth-focused behavior is a common cross-cultural phenomenon that appears to be universal in its distribution. At the Drawyer Creek South Site, hearth areas as well as concentrated workshop localities were expected to contain evidence of how Woodland II groups carried out their daily activities. Such activities are represented by the artifacts, tool manufacturing debris, ceramic sherds, residues, soil anomalies, and patterns of discard.

It is impossible to develop settlement models with broad applications across the Middle Atlantic region, given the tremendous variation in physiography and climate. Most subregions within the Middle Atlantic seem to show evidence of some form of tripartite model, consisting of macroband sites (multiple family level), microband sites (individual family level) and procurement sites (limited-activity localities). These would be either pre-village or pre-hamlet community pattern types in some regions, or might encompass the majority of settlement types in other regions, such as in the Middle Atlantic Coastal Plain, including Delaware, and the nearby Piedmont. Even within these two physiographic regions, the spatial configuration of critical resources, habitable surfaces and the geographic distance between them, affects the hierarchy of site distributions. These differences, combined with social factors (intra-group composition, inter-group relations, trade, etc.), create the unique quality of settlement systems from one locality to another.

In northern Delaware, the landscape contains an arrangement of Coastal Plain physiographic features (e.g., bay and ocean features, mid-peninsular drainage divide, interior swamps, and mid-drainage upland zones) compressed within a relatively confined geographic space. The unique features characterizing bay and ocean environments, for example, distinguish this region from nearby fall line and Piedmont zones, where prehistoric settlement systems assumed a slightly different character. So not only does the region contain tremendous variability in landscape types, but the nature of changes in environmental adaptations through time also differs from one locality to another.

Prehistoric settlement patterning in the Drawyer Creek and Appoquinimink River drainages is based on previously recorded site location and survey data (e.g., Custer and Bachman 1986; DeCunzo 1993; Gardner and Stewart 1978). Out of about 60 sites recorded in this area, approximately three-quarters are lithic scatters containing no diagnostic artifacts. The remainder are small procurement sites and base camps ranging in age from Archaic through Woodland II.

The site sample from the area is too limited to draw any conclusions with regard to changes in settlement patterning through time. Instead, it appears that throughout prehistory there has been a tendency for sites to occur on well-drained surfaces overlooking floodplain wetlands and high-order streams. These site concentrations are found along the edge of the heavily dissected uplands overlooking Drawyer Creek and the Appoquinimink River (east and north of Odessa). Most of the sites are found along the breaks in upland surfaces at the interface of upland and floodplain surfaces, i.e., just beyond the break in the slope that descends to floodplain and wetland surfaces. This pattern applies to site locations in the upper Appoquinimink and Drawyer Creek watersheds, although site densities are much lower in these areas due to a lack of survey efforts. The high concentration of sites close to SR 1 is a result of intensive survey work conducted along the highway corridor. The Drawyer Creek South Site fits into this pattern, as it is located on a well-drained surface overlooking Drawyer Creek.

Note: Settlement pattern themes address questions concerning how people used the landscape for various purposes during prehistoric as well as historic times. For example, fishing camps are located along streams, but upland areas contain hunting camps and seasonal camps where nuts and acorns were harvested. Many sites are typically found close to the resource being acquired, such as quarry sites located near high-quality sources of stone for stone tool manufacture. The community pattern theme addresses how people organize their space within an individual settlement such as a small hunting camp or a large village. Where are the houses, the stone tool manufacturing workshops, the cemeteries, the cooking areas, and the disposal areas?

4. Lithic Technology and Sourcing Theme

The lithic technology theme emphasizes the means by which technology has been employed to adapt to environmental constraints and manipulate and exploit resources necessary for providing food and shelter. Understanding the technology used to control certain critical and unevenly distributed resources is also important in explaining patterns of regional exchange, individual status, and forms of social organization among Woodland groups in the area.

Tool assemblages in use during the latter portion of Woodland I are similar to what were commonly used during the beginning of the period or during the Late Archaic. Significant additions during this period include groundstone tools utilized in heavy woodworking tasks, soapstone (Holland et al. 1981) and ceramic vessels, large stemmed points and broadspears, and fishing-related equipment such as net weights. Many of these tools were made from nonlocal raw materials such as argillite and rhyolite, although such materials are only minimally represented in the assemblages from the Drawyer Creek South Site. Some of the cobble tools found in the Woodland I assemblages were obviously used for processing plant foods (e.g., seeds and nuts).

Analysis of lithic technology also provides a key to understanding differential use of lithic raw material sources. During Woodland I and II times, several nonlocal lithic raw material (e.g., rhyolite and argillite) sources were regularly utilized in the region. What factors dictated the intensive use of these materials at some sites and not at others (such as the Drawyer Creek South Site)? One aspect of the lithic analysis conducted on the Drawyer Creek South Site assemblage was the effort to discern evidence of trade in nonlocal materials present at this site and to consider what this evidence might mean in terms of resource procurement, interregional and intraregional contacts, and settlement patterns associated with obtaining such materials. Attention to this question involved the review of other site assemblages in the region to determine what types of exotic materials are represented.

With regard to the stone tool manufacturing and lithic reduction strategies common to sites in northern Delaware, analyses conducted for this study were based upon models developed by Bonnichsen (1977), Callahan (1979), Ericson (1984), Sullivan and Rosen (1985), Hayden et al. (1996), Odell (1996), and others. Analytical evaluations of tools and their technology can indicate, for example, whether certain materials and tool forms have been adapted for specific tasks, or whether instead there was a random or generalized use of both finished tools of specific form and expedient tools (e.g., flake tools) for various camp tasks.

Note: The lithic technology theme includes an emphasis on both stone tool manufacture and use. It also addresses how technology has changed through time in the face of new challenges and environmental opportunities, and how styles of tools reflect tool function. The use of certain raw materials for making stone tools is also important.

5. Environmental Adaptation Theme

With respect to the environmental adaptation theme, environmental changes represented in the stratigraphic record of the Drawyer Creek South Site that could be associated with cultural components were examined. The impacts of minor oscillations in the climate of the region (the Little Ice Age, for example) may have had important implications for settlement shifts and site function on a regional basis as well as an effect on land use at the local level. Changes in seasonally available resources after AD 900 may have significantly affected cultural adaptations on the site. It was expected that environmental data collected during the course of the project would, to a limited extent, help to explain observable shifts in the cultural record. Questions such as the reason behind the infrequent use of the site during its initial occupations and the more intensive use of the site during Woodland II may be explained by changes in the use of critical resources over time, an adaptive response to systemic changes on a regional basis.

As indicated by pollen sequence data and supporting geomorphological analyses of Holocene stratigraphy, the climatic character of the Woodland I period was initiated by a warming and drying trend commonly referred to as the mid-postglacial Xerothermic. This trend lasted from approximately 3000 to 1000 BC, or the first half of Woodland I. As a consequence of this drying trend, xeric vegetation dominated by drought-resistant oak, hickory, and grasslands replaced the mesic oak-hemlock forests. This climatic shift caused drying of interior stream environs, but at the same time, sea levels rose and caused the expansion of resource-rich brackish water marshes in coastal areas. The overall effect on human populations was a shift in settlement strategies to more

viable fluvial, wetland, and estuarine systems to take advantage of more predictable critical resources.

These environmental shifts ultimately created productive settings that were the focus of greater sedentism in later Woodland I and Woodland II times. Major riverine environments and estuaries became primary resource zones supporting large multiseason base camps as well as a variety of short-term transient and specialized procurement camps. A number of these sites, such as Delaware Park, Clyde Farm, Crane Hook, and Naamans Creek, have been investigated in northern Delaware (Crozier 1940; Custer et al. 1985; Thomas 1981; Weslager 1968). These sites contain pit features and large ceramic vessel fragments indicative of storage facilities applicable to a sedentary way of life. In the interior, however, there appears to have been little change in settlement patterning from the preceding initial Woodland I (Archaic) period. The very minor shifts in the distribution of upland/interior resource zones appears to have had little effect on preferred camp locations at that time.

Note: As the climate changes over the long term, i.e., over hundreds of years of prehistory, the environment and the plants and animals within it also change. Environmental adaptation refers to how human groups cope with these changes through basic adjustments in daily lifeways.

6. Other Research Questions

While some of the research questions addressed pertain to priorities defined in the management plans and thematic overviews prepared by Custer (1986, 1989, 1994), other questions can be derived from implications in the body of literature for the region and the need to bridge obvious gaps in the archaeological record. Other pertinent research issues include the nature of cobble-based lithic technologies, changes in intrasite patterning through time, and implications of small-site occupations for local and regional social organization during the Woodland II period.

B. PHASE III LEVEL OF EFFORT

To mitigate the effects of construction on the Drawyer Creek South Site through data recovery, excavations beyond the Phase II effort were considered necessary. Based on the results of the Phase II investigation, it was clear that there were several concentrations of artifacts on the site, and a few minor concentrations were also evident. Given a site area of approximately 1,500-2,000 square meters, data recovery sufficient to characterize the deposits on the site without redundancy of effort was expected to be achieved with the excavation of initial 3x3-meter blocks around Phase II Test Units 3 and 11, and a 5x5-meter block around Test Unit 6. These blocks were then expanded to follow features and artifact clusters. Some smaller units were placed to sample minor concentrations, and to sample areas which, although low in artifact density, were expected to contain evidence of additional site activities. Cultural deposits initially appeared to be discrete, without the mixed and ambiguous composition usually found on sites containing multiple occupations within shallow soil strata.

C. FIELD METHODS

1. Phase I and II Field Methods

Ten shovel tests were initially excavated in the area of the Drawyer Creek South Site during Phase I. Four of the tests yielded prehistoric artifacts, including chert and jasper flakes and a single sherd of grit-tempered pottery tentatively identified as Minguannan. Close-interval shovel tests were excavated around Shovel Tests 36 and 40, and of these eight additional shovel tests, four yielded additional artifacts. One of the shovel tests located a prehistoric feature (Feature 1) consisting of a concentration of fire-cracked rock. Phase II significance evaluation of the Drawyer Creek South Site was subsequently carried out after consultation with DelDOT and DESHPO staff.

Phase II tests consisted of the excavation of 14 judgmentally placed test units (Figure 2). The soil profile was inspected by a geomorphologist, who confirmed that the soil was unplowed and almost completely undeflated. Across most of the site the artifact density was quite low, yielding less than 10 artifacts per test unit, but two loci of higher artifact density were found. Test Unit 3 yielded 100 quartzite flakes, all apparently from cobble reduction, and Test Unit 13, 5 meters away, yielded more than 30 similar flakes and a cobble chopping tool. Test Unit 10, 5 meters in the other direction from Test Unit 3, yielded 15 potsherds, but no flakes. The potsherds were identified as Minguannan. Thirty meters to the west, on the other lobe of the peninsula, Test Unit 11 yielded more than 20 flakes, five sherds, and a triangular point.

Most of the artifacts were recovered from the E-horizon, designated Stratum B during the excavations. A few artifacts were recovered from the B-horizon, beneath the E-horizon, to a depth of 40 centimeters, but this stratum was considered to be too old to contain *in situ* artifacts. It was speculated that the artifacts had probably moved down through the profile via root or rodent activity (Wagner 1995, see Appendix C of this volume).

2. Phase III Field Methods

Field methods employed during the Phase III investigations were generally geared to facilitate retrieval of data essential for addressing the themes and research questions previously outlined. Rigid stratigraphic controls were maintained wherever possible in order to provide clear observations of any discernible changes in material culture within stratigraphic layers.

All excavations were conducted within natural stratigraphic horizons, and for natural horizons exceeding 10 centimeters in thickness, arbitrary levels were dug within the natural layers. This same strategy was utilized for excavating features. Where possible, diagnostic artifacts and selected tools were plotted with three-dimensional coordinates in order to provide stratigraphic controls.

All soils were screened through ¼-inch mesh for systematic recovery of artifacts. Due to the poor preservation of organics within feature contexts and for the excavations as a whole, limited flotation samples were recovered. All features were mapped on site plans and cross-sectioned. Cross sections were ordinarily done on the long axis of the feature. Features were numbered consecutively in the order of discovery. If no stratigraphy was present in a feature, the contents of the feature were later collapsed into a single provenience unit. Charcoal was collected for radiocarbon dating and for the

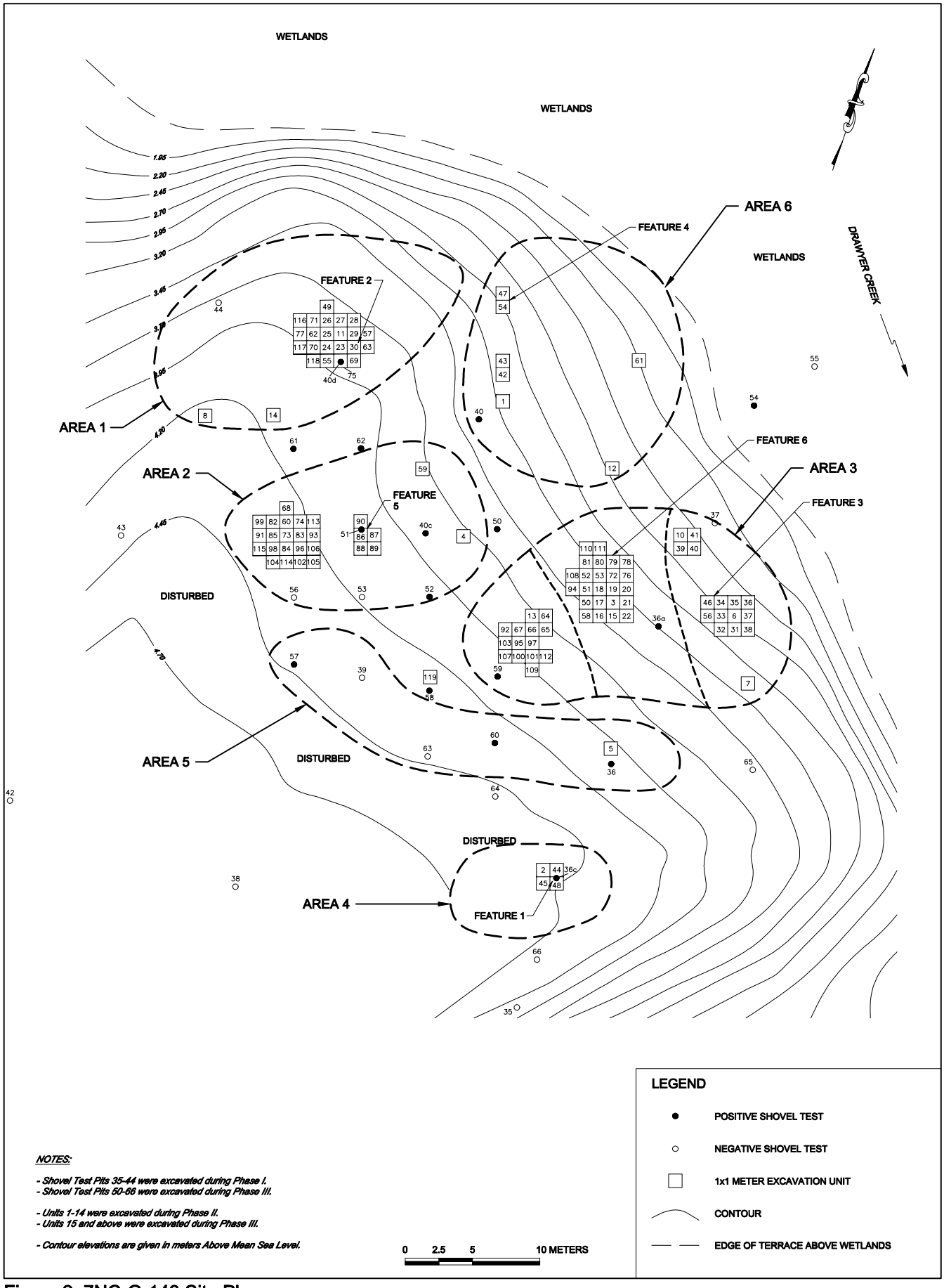

Figure 2: 7NC-G-143 Site Plan

identification of tree species utilized in hearths; however, only a few small samples were considered to be suitable for submission.

Artifacts within all blocks were provenienced within 1-meter square units. This was done to maximize control over the distribution of artifact patterning across the site. Distributional trends in debitage counts for subsequent block expansion were observed during the course of fieldwork.

An average of five 10-centimeter levels below the plowzone were excavated in each unit. Artifact counts were maintained for each level within each block so that information would be readily available if and when expansion within a particular area was being considered. Within each block excavation area, deep tests were excavated adjacent to selected walls for profiling and for more comprehensive pedological analysis.

Standard sampling procedures were employed for collecting soil samples, and charred materials for radiocarbon dating. Photographic records were maintained for each block, especially for features and profiles, and general site shots were taken as well. Photography included both black-and-white photographs and color slides.

D. LABORATORY ANALYSIS

Except for diagnostic artifacts, all artifacts were first washed upon arrival at the Berger laboratory in East Orange, New Jersey. They were then sorted into general classes: pottery, debitage, cores, bifaces, unifaces, cobble tools, groundstone tools, and cracked rock. The next level of analysis divided the artifacts into specific tool or debris types and raw material types.

The analytical approach applied to the lithic assemblage can be described as technomorphological. The lithic artifacts were first grouped into general classes and were then further divided into specific types based upon key morphological attributes which are linked to or indicative of stone tool production (reduction) strategies. Function was inferred from morphology as well as from use wear. Surfaces and edges were examined for traces of use polish and damage with the unaided eye and with a 10X hand lens. Data derived from experimental and ethnoarchaeological research were relied upon in the identification and interpretation of artifact types. The works of Binford and Quimby (1963), Callahan (1979), Cavallo and Kondrup (1986), Clark (1986), Crabtree (1972), Flenniken (1981), Gould (1980), Hayden (1980), Hayden et al. (1996), Odell (1996), Parry (1987), and Whittaker (1994) were drawn upon most heavily.

In the analysis of edge damage, edge angles, use wear, and breakage patterns, usable margins with angles of 50 degrees or less are viewed as most efficiently used for cutting and scraping soft materials such as skin, hide, sinew, and some woods; margins with angles greater than 50 degrees are best employed in the working of hard materials such as bone, antler, and hardwoods (cf. Crabtree 1973; Gould et al. 1971; Tainter 1979; Wilmsen 1970). Types of edge damage and wear are also thought to correlate with specific activities (cf. Brink 1978).

Bifacial reduction strategies were examined using guidelines developed by Callahan (1979) in conjunction with the analysis of flaking patterns on artifacts, debitage frequencies, and debitage morphology. As noted below, the staged reduction sequences defined by Callahan (1979) are very

appropriate for characterizing tools and implements. In this study, an early-middle-late-stage biface reduction sequence is utilized. The correlation of biface distributions with the distribution of various types of debitage was also considered in evaluating the lithic fabrication that may have occurred on the site.

As lithic artifacts were analyzed, information was recorded on analysis sheets as a series of codes; the codes were then entered into a computer database program (R:BASE). Artifact types were quantified by count and weight. Descriptions of the tool and debris types are presented in Appendix B.

E. CERAMICS ANALYSIS

All ceramic sherds recovered were counted, weighed, and cataloged on the basis of temper type. Sherd weights, rather than counts, are employed as a more meaningful way of mapping the distribution of ceramics. It should be noted that despite the small ceramic assemblage retrieved from the excavations, all of the methods described below were employed. Consequently, some of the analytical procedures were more useful than others in sorting, classifying, and grouping artifacts.

Preliminary assessments of surface treatment and decoration of ceramic sherds in the assemblage were made. Sherds were then sorted into groups exhibiting similar rim treatments, tempers, surface treatments, and decoration in order to facilitate crossmending. Crossmending efforts were concentrated on previously created sherd groups and then progressed to attempting mends between individual groups. The crossmending of ceramics helps to link contemporaneous features and contexts with a precision not possible through any other means, and serves as a cross reference for the validity of radiocarbon dates and spatial associations. Mending also produces larger segments of ceramic vessels for typological and technological analyses. Although very few mends were made, distinguishing separate vessels based on sherd characteristics was accomplished within each block of units.

F. OTHER SPECIALIST ANALYSES

Some of the data collected from the Drawyer Creek South Site are geomorphic/pedogenic in character. These data were subjected to analysis to clarify the depositional history and pedogenic character of the landform as it relates to the archaeology of the site. Comprehensive geomorphological studies on the site were accomplished by Dr. Daniel Wagner. The profiles examined by Dr. Wagner are described in Appendix C. Soil chemistry analyses performed by A&L Eastern Agricultural Laboratories are presented in Appendix D.

The recovery of archaeobotanical remains associated with the site's prehistoric occupation was considered to be an important element of the site interpretation. During excavation, two-liter soil samples were collected for flotation processing. These standard samples were taken from the northeastern corner of every fourth unit, from each undisturbed level that contained prehistoric material. Also, samples were taken from features. Off-site samples were taken from locations away from the site area to provide information regarding the spatial dispersal of plant remains throughout the site.

Twenty-seven two-liter soil samples were collected from contexts within the site, including samples from feature contexts. A minimum of 50 percent of the non-feature samples as well as the feature samples were analyzed initially to assess microfloral and microfaunal preservation. Selected soil samples were subject to flotation processing depending on their contexts and their potential to contribute data to the site analysis. All processed samples were visually examined for microlithic items prior to packaging for submission to the floral-faunal analyst, Dr. Kathryn Egan-Bruhy of Lake States Archaeological and Ecological Consulting. The analyst's report is provided in Appendix E.