3.0 Research Design and Methods

3.0 RESEARCH DESIGN AND METHODS

3.1 Research Design

The purpose of the Phase IB investigation of the SR 1 Little Heaven Grade Separated Intersection project was to identify archaeological resources in the project APE (A.D. Marble & Company 2005b). More specifically, the goals of this study were to identify archaeological-bearing deposits, attempt to determine the integrity of those deposits, and attempt to discover the range of historic and precontact activities that may have occurred within the APE. The methods employed during the survey of the parcels were based on the results of archaeological resource probability assessments conducted between 2003 and 2009 (Table 3-1).

3.1.1 Probability Assessments: November 2003 to December 2007

In 2003, the APE was divided into six study parcels. Parcel 7 was added to the APE in 2007. Each parcel was assigned a level of precontact and historic archaeological potential based on historic maps, known archaeological site locations, and pedestrian reconnaissance (A.D. Marble & Company 2003, 2004). Parcels 1 to 6 engendered more than one level of archaeological resource potential. As a result, individual parcels were divided into areas based their archaeological resource potential (A.D. Marble & Company 2005b). An exception, however, is Parcel 6, which was divided into seven areas (Areas 6-0 to 6-6); these areas were divided according to property owner. Archaeological resource potentials for the properties comprising Areas 6-1 to 6-6 were reassessed in 2007 after DelDOT secured permission to enter the properties.

3.1.2 Probability Assessments: January 2008 to January 2009

A field view attended by David Clarke and Kevin Cunningham (DelDOT archaeologists), Gwen Davis (DESHPO), and Michael Lenert (A.D. Marble & Company archaeologist) and a review of a recent report submitted by Skelly and Loy (2008), historic atlas maps (Byles 1859; Beers 1868), relevant reports, and historic properties and archaeological site records helped to determine archaeological resource sensitivity for Parcels 8 to 22. The archaeological sensitivity of Parcels 23 to 26 was assessed based on historic maps and known archaeological site locations.

Table 3-1. Precontact and Historic Archaeological Resource Potential in the APE.

Parcel Designation	Area	Project APE (Acre)	Archaeological Resource Potential	
			Precontact	Historic
1	1-1	7.2	L	M
	1-2	2.0	L	H
	1-3	0.2	L	H
2	2-1	7.1	M	M to H
	2-2	4.0	M	L
	2-3	2.7	M	L
	2-4	0.5	M	L
	2-5	2.0	M	L
	2-6	0.5	M	H
	2-7	3.0	M	L
	2-8	2.0	L	H
	2-9	2.0	L	L
	2-10	1.0	L	L
	2-11	1.2	M	L
3	-	4.5	L	M to H
4	4-1	6.4	L	M
	4-2	1.7	L	M
5	5-1	3.3	L	H
	5-2	1.7	L	M
	5-3	0.7	L	H
6	6-0	0.6	H	H
	6-1	0.1	M	H
	6-2	0.3	L	H
	6-3	0.7	L	H
	6-4	0.6	L	H
	6-5	0.3	L	H
	6-6	0.2	L	L
7	-	4.9	H	H
8	-	5.0	H	L
9	-	5.0	H	L
10	-	1.1	L	H
11	-	0.4	L	L
12	-	7.4	H	H
13	-	3.4	L	L
14	-	3.0	H	L
15	-	5.8	L	L
16	-	1.7	H	L
17	-	4.3	L	L
18	-	63.8	H	H
19	-	1.4	H	H
20	-	2.6	H	H
21	-	6.0	H	H
22	-	6.0	H	L
23	-	2.0	L	H
24	-	1.2	L	M to H
25	-	8.0	H	H
26	-	11.5	H	L
Test Intervals: (L) Low – 30.5 m, (M) Medium – 22.9 m, (H) High – 15.2 m.				

3.2 Field Methods

This section reviews the field methods employed during the archaeological survey. Archaeological survey was undertaken using: (1) STPs in areas currently not under cultivation (with the exception of the very narrow Parcel 10 area in which the pedestrian survey would have been an inefficient survey method); and (2) pedestrian survey of the areas currently in cultivation.

3.2.1 Pedestrian Survey

Archaeological survey was undertaken via a pedestrian survey in currently cultivated fields. These fields were plowed, disked, and subjected to a washing rain. Archaeologists examined the plowed fields in 2-m transects that traversed the lengths of each field. All artifacts were flagged, and their locations were recorded using a hand-held Global Positioning System (GPS) unit. The artifacts were then collected for subsequent processing and analysis.

When it was obvious that an artifact concentration had been encountered (i.e., the artifact concentration in Parcel 7), the boundaries of that concentration were recorded via GPS and the non-diagnostic artifacts within the boundaries were collected *en masse*. Temporally diagnostic artifacts within the boundaries of artifact concentrations received special attention: their locations were individually recorded using GPS and collected separately.

3.2.2 Shovel Test Pit Survey

In areas currently not under cultivation, testing was conducted via systematic sampling strategy employing high-probability (15-m interval) STP excavations (note: high, medium, and low [see Table 3-1] probability intervals prior to the 2007 fieldwork). Occasionally 30-m intervals were employed at the discretion of the Field Director and in consultation with DelDOT archaeology staff. All STPs were excavated at least 10 cm into culturally sterile deposits. All excavated sediments were sifted through 0.64-cm wire mesh cloth. Excavation data from all STPs were recorded on standard field forms. With the exception of modern debris (plastic, aluminum foil, etc.), which was noted on the field forms, all artifacts recovered from the tests were retained for processing and analysis. The locations of the STPs were recorded on scale maps of the survey parcels. Isolated positive STPs were bracketed with additional STPs excavated at 5-m intervals

in the cardinal directions to better define sites boundaries. The mode of survey (pedestrian or shovel test) is embedded in the parcel reviews that are presented in Section 4.0.

3.3 Laboratory Methods

All artifacts recovered during the Phase I testing were washed, inventoried, cataloged, and prepared for curation according to the most current standards of the DESHPO. Artifacts recovered during the investigation were analyzed according to their relevant attributes; that is, artifacts were characterized as to their type, function, period of attribution, and diagnostic features. Various sources were consulted for identifying the historic materials; these included published works by Nöel Hume (1969, 2001), Jones et al. (1989), Miller (1980), and South (1977). Works by Custer (1989) and Fogelman (1988) were consulted to identify the precontact materials.

Analyses of the field findings included basic numerical and qualitative assessments of the artifacts to evaluate the nature of the artifact assemblages and their depositional contexts. The goal of these analyses was to determine the integrity of the archaeological deposits and their potential to provide new and significant information about local and regional history and prehistory.