



A Phase I Cultural Resources Survey for AHTD Job Number CA0602

Interstate 530 - Highway 67 Widening and Reconstruction
Pulaski County, Arkansas
February 2016



TABLE OF CONTENTS

1.0 Project Description.....	1
2.0 Environmental Setting.....	4
2.1 Geological Setting.....	4
2.2 Soils in Project Area.....	9
2.3 Climate.....	19
2.4 Past Environment.....	19
3.0 Brief Cultural History.....	20
4.0 Background Research.....	29
4.1 Archeological Resources.....	29
4.2 Historic Structures.....	31
4.3 Historic Trails and Routes.....	41
4.4 General Land Office Maps.....	49
5.0 Laboratory and Field Methodologies and Results.....	56
5.1 Lab Methods.....	56
5.2 Field Methods.....	56
5.3 Archeological Work in Segment 1.....	63
5.4 Archeological Work in Segment 2.....	102
5.5 Archeological Work in Segment 3.....	133
5.6 Archeological Work in Segment 4.....	139
6.0 Site Descriptions.....	179
6.1 Newly Recorded Sites.....	179
6.2 Sites Revisited.....	200
7.0 Summary and Conclusions.....	202
8.0 References Cited.....	204

FIGURES

Figure 1. Overview of Project Area on Aerial Imagery.....	2
Figure 2. Overview of Project Area on Topographic Maps.....	3
Figure 3. General location of Project Area on Physiographic Regions of Arkansas Map..	6
Figure 4a. Vicinity of the Project Area on the Geologic Map of Arkansas.....	7
Figure 4b. Detail of the Project Area on the Geologic Map of Arkansas.....	7
Figure 4c. Legend for the Geologic Map of Arkansas.....	8
Figure 5a. USDA Soils Map Overview for Project Area.....	10
Figure 5b. USDA Soils Map: South of the Arkansas River.....	11
Figure 5c. USDA Soils Map Index: North of the Arkansas River.....	12
Figure 5d. USDA Soils Map: North of the Arkansas River.....	13
Figure 5e. USDA Soils Map: North of the Arkansas River – 2.....	14
Figure 6. Map Unit Legend for Soils Map in Figures 5a – 5e.....	15
Figure 7. Bridge 2001 Location.....	35
Figure 8. Bridge 2001 Bridge Record.....	36
Figure 9. Bridge 2001 Bronze Bridge Name Plate – located on the Southeast Corner..	36
Figure 10. Bridge 2001 Roadway – View to the North.....	37
Figure 11. Bridge 2001 Drawing 4419 West Stairway Details.....	38
Figure 12. Bridge 2001 West Elevation Oblique View to the Southeast.....	39
Figure 13. Bridge 2001 West Elevation Oblique View to the Northeast.....	39
Figure 14. Bridge 2001 North End Substructure – View to the Southwest.....	40
Figure 15. Bridge 2001 Recessed Lighting Unit Roadway Elevation – South End View to the East.....	40
Figure 16. 1821 Map Detail Showing the 1818 Treaty Quapaw Cession and Reservation.....	45
Figure 17. 1821 Map Detail Showing the 1808 Treaty of Fort Clark Osage Cession....	45
Figure 18. Overview of Removal Corridors and the Current APE on an 1855 GLO Mosaic.....	46
Figure 19. Overview of Removal Corridors and the Current APE on 2015 Aerial Imagery.....	47
Figure 20. Circa 1855 River Ferry Crossing Relative to the I-30 Bridge.....	48
Figure 21. GLO Map for Segment 1 of APE.....	51
Figure 22. GLO Map for Segment 2 of APE.....	52
Figure 23. GLO Map for Segment 3 of APE.....	53
Figure 24. GLO Map for Segment 4 of APE.....	54
Figure 25. 1864 Map of Little Rock and Vicinity.....	55
Figure 26. Auger Test on Northwest Corner of the I-30 River Bridge.....	58
Figure 27. Auger Test on the Northwest Corner of the I-30 River Bridge at Roughly 3.2 Meters.....	59
Figure 28. Clay Subsoil at Bottom of Auger Test.....	59
Figure 29. Archeological APE Split into Segments 1 through 4.....	62
Figure 30. Area A of Segment 1 (shaded in red).....	64
Figure 31. Transect locations in Area A of Segment 1.....	65
Figure 32. Shovel Test 20 on Transect 1 in Area A of Segment 1 Showing Hydric Soils.....	66
Figure 33. Transect 1 in Area A of Segment 1.....	66
Figure 34. Area B of Segment 1 (shaded in red).....	68

Figure 35. Transect Locations in Area B of Segment 1.....	69
Figure 36. Area C of Segment 1 (shaded in red).....	71
Figure 37. Transect Locations in Area C of Segment 1.....	72
Figure 38. Area D of Segment 1 (shaded in red).....	74
Figure 39. Transect Locations in Area D of Segment 1.....	75
Figure 40. Area E of Segment 1 (shaded in red).....	77
Figure 41. Transect Locations in Area E of Segment 1.....	78
Figure 42. Area F of Segment 1 (shaded in red).....	80
Figure 43. Transect Locations in Area F of Segment 1.....	81
Figure 44. Shovel Test 1 on Transect 3 in Area F of Segment 1.....	82
Figure 45. Area F of Segment 1 (facing south from Transect 3).....	82
Figure 46. Area G of Segment 1 (shaded in red).....	84
Figure 47. Transect Locations in Area G of Segment 1.....	85
Figure 48. Area H of Segment 1 (shaded in red).....	87
Figure 49. Transect Locations in Area H of Segment 1.....	88
Figure 50. Area I of Segment 1 (shaded in red).....	90
Figure 51. Transect Locations in Area I of Segment 1.....	91
Figure 52. Area J of Segment 1 (shaded in red).....	93
Figure 53. Transect Locations in Area J of Segment 1.....	94
Figure 54. Area J of Segment 1 (facing southwest from Transect 1).....	95
Figure 55. Shovel Test 2 on Transect 4 in Area J of Segment 1.....	95
Figure 56. Area K of Segment 1 (shaded in red).....	97
Figure 57. Transect Locations in Area K of Segment 1.....	98
Figure 58. Area L of Segment 1 (shaded in red).....	100
Figure 59. Transect Locations in Area L of Segment 1.....	100
Figure 60. Area A of Segment 2 (shaded in red).....	103
Figure 61. Transect Locations in Area A of Segment 2.....	104
Figure 62. Shovel Test 1 on Transect 1 in Area A of Segment 2.....	105
Figure 63. Area B of Segment 2 (shaded in red).....	107
Figure 64. Transect Locations in Area B of Segment 2.....	108
Figure 65. Area C of Segment 2 (shaded in red).....	110
Figure 66. Transect Locations in Area C of Segment 2.....	111
Figure 67. Area D of Segment 2 (shaded in red).....	113
Figure 68. Transect Locations in Area D of Segment 2.....	114
Figure 69. Area E of Segment 2 (shaded in red).....	116
Figure 70. Transect Locations in Area E of Segment 2.....	117
Figure 71. Area F of Segment 2 (shaded in red).....	119
Figure 72. Transect Locations in Area F of Segment 2.....	120
Figure 73. Area G of Segment 2 (shaded in red).....	122
Figure 74. Transect Locations in Area G of Segment 2.....	123
Figure 75. Area H of Segment 2 (shaded in red).....	125
Figure 76. Transect Locations in Area H of Segment 2.....	126
Figure 77. Area I of Segment 2 (shaded in red).....	128
Figure 78. Transect Locations in Area I of Segment 2.....	129
Figure 79. Area J of Segment 2 (shaded in red).....	131
Figure 80. Transect Locations in Area J of Segment 2.....	132
Figure 81. Area A of Segment 3 (shaded in red).....	134
Figure 82. Transect Locations in Area A of Segment 3.....	135

Figure 83. Area B of Segment 3 (shaded in red).....	137
Figure 84. Transect Locations in Area B of Segment 3.....	138
Figure 85. Area A Segment 4 (shaded in red).....	140
Figure 86. Transect Locations in Area A of Segment 4.....	141
Figure 87. Shovel Test 5 on Transect 1 Area A of Segment 4.....	142
Figure 88. Area B of Segment 4 (shaded in red).....	144
Figure 89. Transect Locations in Area B of Segment 4.....	145
Figure 90. Area C of Segment 4 (shaded in red).....	147
Figure 91. Transect Locations in Area C of Segment 4.....	148
Figure 92. Area D of Segment 4 (shaded in red).....	150
Figure 93. Transect Locations in Area D of Segment 4.....	151
Figure 94. Area E of Segment 4 (shaded in red).....	153
Figure 95. Transect Locations in Area E of Segment 4.....	154
Figure 96. Area F of Segment 4 (shaded in red).....	156
Figure 97. Transect Locations in Area F of Segment 4.....	157
Figure 98. Area G of Segment 4 (shaded in red).....	159
Figure 99. Transect Locations in Area G of Segment 4.....	160
Figure 100. Area H of Segment 4 (shaded in red).....	162
Figure 101. Transect Locations in Area H of Segment 4.....	163
Figure 102. Area I of Segment 4 (shaded in red).....	165
Figure 103. Transect Locations in Area I of Segment 4.....	166
Figure 104. Area J of Segment 4 (shaded in red).....	168
Figure 105. Transect Locations in Area J of Segment 4.....	169
Figure 106. Area K of Segment 4 (shaded in red).....	171
Figure 107. Transect Locations in Area K of Segment 4.....	172
Figure 108. Area L of Segment 4 (shaded in red).....	174
Figure 109. Transect Locations in Area L of Segment 4.....	175
Figure 110. Area M of Segment 4 (shaded in red).....	177
Figure 111. Transect Locations in Area M of Segment 4.....	178
Figure 112. Sketch Map of 3PU969.....	180
Figure 113. Well at 3PU969.....	181
Figure 114. Delineation Shovel Test at 3PU969.....	181
Figure 115. Sketch Map of 3PU970.....	183
Figure 116. Well at 3PU970.....	184
Figure 117. Delineation Shovel Test at 3PU970.....	184
Figure 118. Sketch Map of Site 3PU971.....	187
Figure 119. Decorated Whiteware and Stoneware Collected from 3PU971.....	188
Figure 120. Site 3PU971 (facing southeast).....	188
Figure 121. Shovel Test at Site 3PU971.....	189
Figure 122. Sketch Map of Site 3PU972.....	190
Figure 123. Site 3PU972 (facing southeast).....	192
Figure 124. Shovel Test at Site 3PU972.....	192
Figure 125. Sketch Map of Site 3PU973.....	193
Figure 126. Site 3PU973 (facing south).....	194
Figure 127. Bricks at 3PU973.....	194
Figure 128. Sketch Map of Site 3PU974.....	196
Figure 129. Selected Artifacts from 3PU974.....	197
Figure 130. Shovel Test at Site 3PU974.....	197

Figure 131. Sketch Map of Site 3PU975.....	198
Figure 132. Possible Concrete Foundation at 3PU975.....	199
Figure 133. Sketch Map of Site 3PU415.....	201

TABLES

Table 1. First Land Patent Records.....	49
Table 2. Artifacts Recovered from Site 3PU971.....	186
Table 3. Artifacts Recovered from Site 3PU972.....	191
Table 4. Artifacts Recovered from Site 3PU973.....	194
Table 5. Artifacts Recovered from Site 3PU974.....	196
Table 6. Artifacts Recovered from Site 3PU415.....	201
Table 7. Summary of Archeological Sites.....	203

APPENDICES

Appendix A: Qualifications for Chris Branam, Principal Investigator.....	A-1
Appendix B: Curation Agreement Form.....	B-1
Appendix C: Shovel Test Inventory for Segment 1.....	C-1
Appendix D: Shovel Test Inventory for Segment 2.....	D-1
Appendix E: Shovel Test Inventory for Segment 3.....	E-1
Appendix F: Shovel Test Inventory for Segment 4.....	F-1
Appendix G: Site Location Maps - Separate Attachment (Not for Public Release)	

1.0 PROJECT DESCRIPTION

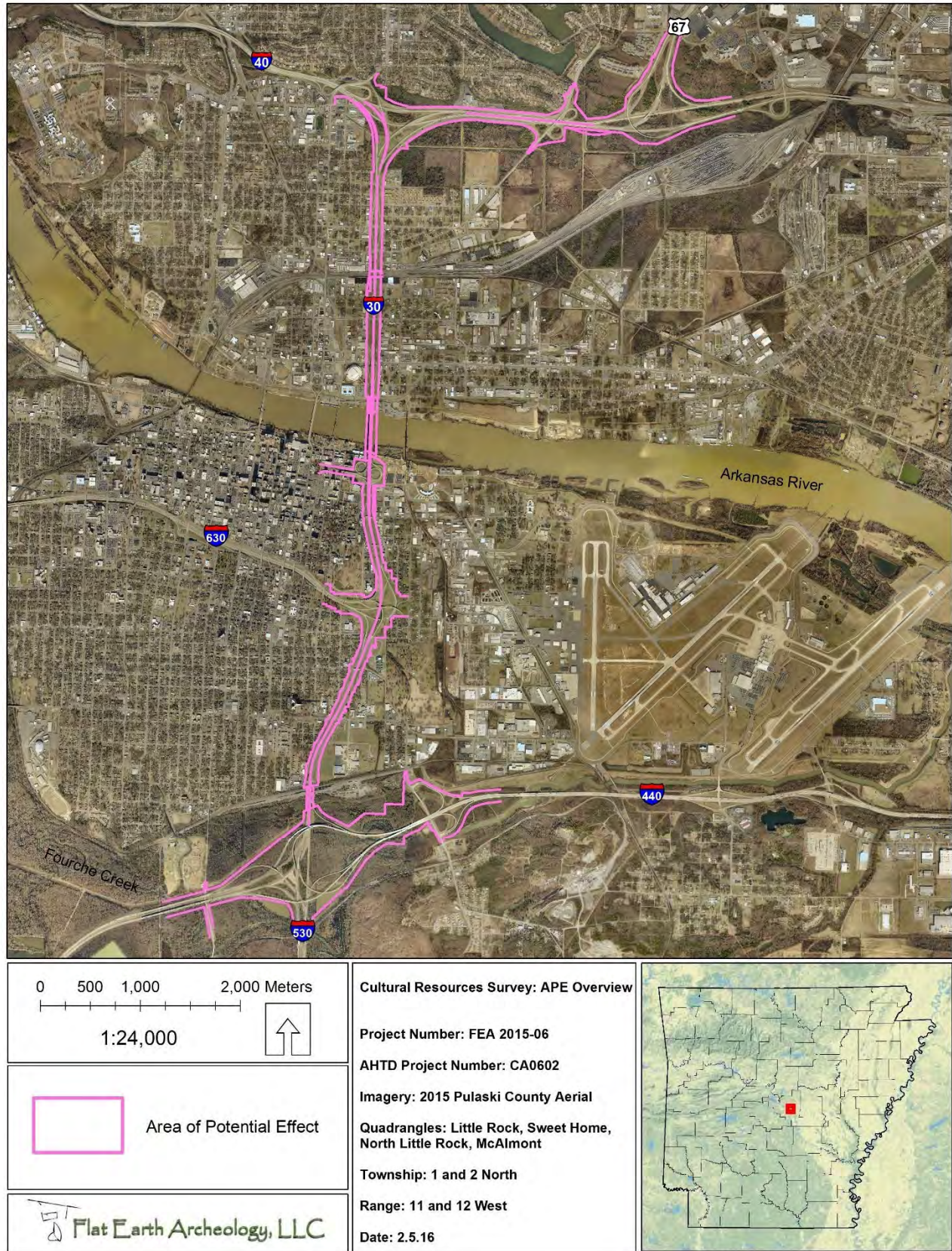
The Arkansas State Highway and Transportation Department (AHTD) Job CA0602 is part of the AHTD State Highway Construction and Improvement Program called the Connecting Arkansas Program (CAP). Job CA0602 will widen and reconstruct Interstate 30 (I-30) from Interstate 530 (I-530) to Interstate 40 (I-40), including the Arkansas River Bridge, and I-40 from County Road (C.R.) 365 (Pike Avenue) to Hwy. 67 for a project length of approximately 6.7 miles (Figures 1 and 2). The 10-lane alternative will add two lanes in each direction to the existing three lane roadway. The 8-lane alternative will add one lane in each direction to the existing three lane roadway. The intent of either alternative is to improve interchanges along I-30 and I-40 from I-530 to the Hwy. 67 interchange in Little Rock and North Little Rock, Arkansas.

In 2014, AHTD department personnel performed an initial archeology background study. The department previously coordinated with the State Historic Preservation Office (SHPO) to determine the Area of Potential Effect (APE) and developed a plan for archeological identification, evaluation, and documentation. This plan (dated January 2015 – Cultural Resources Survey Methodology Memo for CA0602) outlined the defined archeological APE and the areas of archeological/cultural resources concerns. The archeological APE is referred to as the project area in this report.

Flat Earth Archeology conducted the Phase I cultural resources survey in the agreed upon archeological APE, excavating shovel tests in 20 meter intervals (maximum interval) covering the Project Area. A total of 5,004 screened shovel tests were excavated during the survey. Additionally, Flat Earth Archeology conducted auger testing at the bridge widening locations in an effort to determine if deeply buried cultural deposits were present. A total of 80 auger tests were excavated to depths between 1.6 meters and 3.7 meters. Seven newly recorded archeological sites were recorded during the survey and artifacts were collected from an archeological site revisit. Flat Earth Archeology did not recommend further archeological investigations at any of the sites.

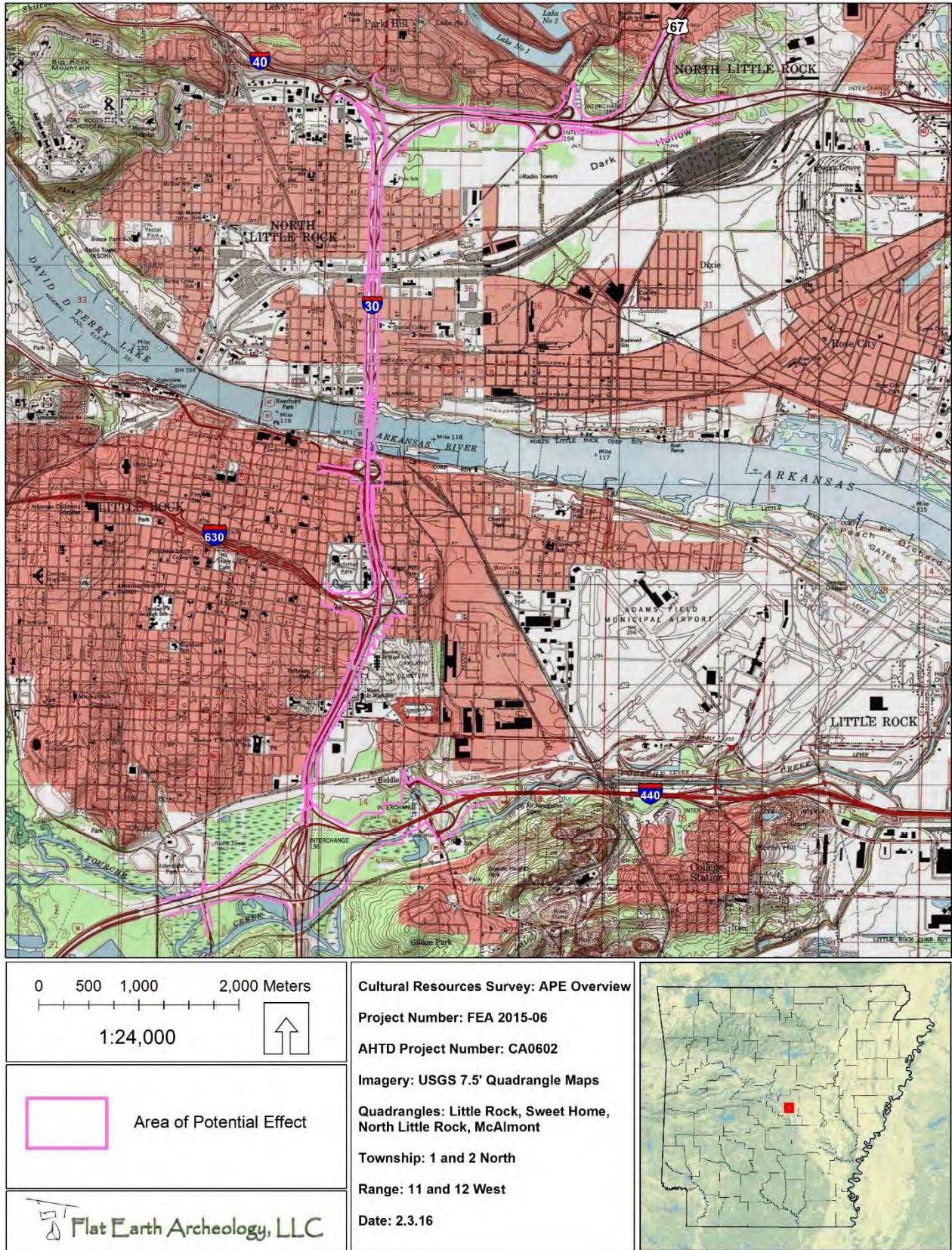
Most of the archeological APE (project area) was inside of existing right-of-way (ROW) and was heavily disturbed from past road construction.

1

Figure 1: Overview of Project Area on Aerial Imagery2
3
4

1

Figure 2: Overview of Project Area on Topographic Maps



2
3
4

2.0 ENVIRONMENTAL SETTING

2.1 Geological Setting

The Project Area is located on the margin of the West Gulf Coastal Plain subdivision of the Lowlands topographic region and the Ouachita Mountains physiographic subdivision of the Interior Highlands topographic region located south of the Arkansas River Valley (Foti 1974:13) (Figure 3). The rolling lowland hills of the West Gulf Coastal Plain consist of Cretaceous and Tertiary formations, differentiated from the older Paleozoic Ouachitas (Foti 1974). The waters of the Gulf of Mexico once covered this area, which left sandy soils and gravels upon their retreat to the present-day position. Much of the prairie land in the Gulf Coastal Plain exhibits deep, dark fertile soils overlaying chalk, a remnant of the former marine environment. These soils proved amenable to agriculture by the Caddo people and subsequent settlers along the Red River and prairies of southwestern Arkansas. The sandy soils and plentiful water in other sections of the region resulted in the growth of pine, a resource long exploited throughout much of southern Arkansas (Foti 2008:27-19).

There are occasional Cretaceous age igneous intrusions extending through the dominant sedimentary deposits of the Gulf Coastal Plain. Consistent with its history as a shallow, marginal marine environment, the geology of the physiographic region includes sandstone, limestone, gravel, clay, chalky marl, sand, shale, and silts (Arkansas Geological Survey 2015). The Project Area is mostly within the Tertiary age subdivision of the West Gulf Coastal Plain, with rocks composed primarily of sand, silts, and clays deposited by streams, rivers, and within a marine environment. Lignite beds (combustible sedimentary rock) occur throughout the Tertiary sequence (Arkansas Geological Survey 2015). Other geologic resources exploited near the Project Area include nepheline syenite and bauxite (Foti 2008:30).

The Ouachita Mountains exhibit faulted structures with rugged east-west trending ridges and occasional expansive valleys, some extending 20 to 30 miles wide. The late Paleozoic orogeny that formed the Ouachita Mountains resulted in the east-west trending complex folding of Paleozoic age, deep marine deposited sedimentary rock. Generally, the Ouachita Mountains are an anticlinorium, with older Late Cambrian and Ordovician deposits exposed at the center or core, and younger Mississippian and Pennsylvanian sedimentary rock found on the margins. The dominant geology consists of shale, sandstone, chert, novaculite, siltstone, alluvium, terrace deposits, quartzite, and limestone (Arkansas Geological Survey 2015).

The natural divisions map presented by Foti (1974:12) shows that the Project Area is located near the Fourche Mountains subdivision and proximal to the margin of the Saline Basin. The Fourche Mountain subdivision lies south of the Arkansas River Valley subdivision, forming a belt about 25 miles wide to the north and south, extending from Oklahoma, to the east, terminating near Searcy, Arkansas in White County. The novaculite uplift of the Central Ouachita Mountains borders the south by southwest edge of the subdivision and the Project Area. Parallel ridges with maximum elevation and topographic relief toward the western end characterize the Fourche Mountains (Foti 1974: 18).

1
2 The Ouachita valley soils are deep, allowing for the growth of agricultural practices by
3 early inhabitants such as the Caddo through early American settlement. Sandstone and
4 shale dominate the geology of the region. The primarily sandy soils contributed to the
5 prevalence of pine growth and the later rise of the timber industry in the region. The
6 orogenic events that created the folded Ouachita Mountains caused the formation of hot
7 springs and a number of valuable lithic and mineral resources. Novaculite is a high-grade
8 lithic recognized for its excellent knapping properties and widely utilized by early peoples
9 in the area for the manufacture of tools. Quartz and barite have also been the focus on
10 historic mining operations in the Ouachitas. (Foti 2008:23-25).

11
12 The Geological Map of Arkansas (Figure 4) shows that the Project Area is located in (Tm)
13 Paleocene Epoch aged Midway Group in the Gulf Coastal Plain physiographic subdivision
14 (Haley 1993).
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

**Figure 3: General Location of Project Area on Physiographic Regions of Arkansas Map
(Reed 2015)**



Figure 4a. Vicinity of the Project Area on the Geologic Map of Arkansas (Haley 1993)

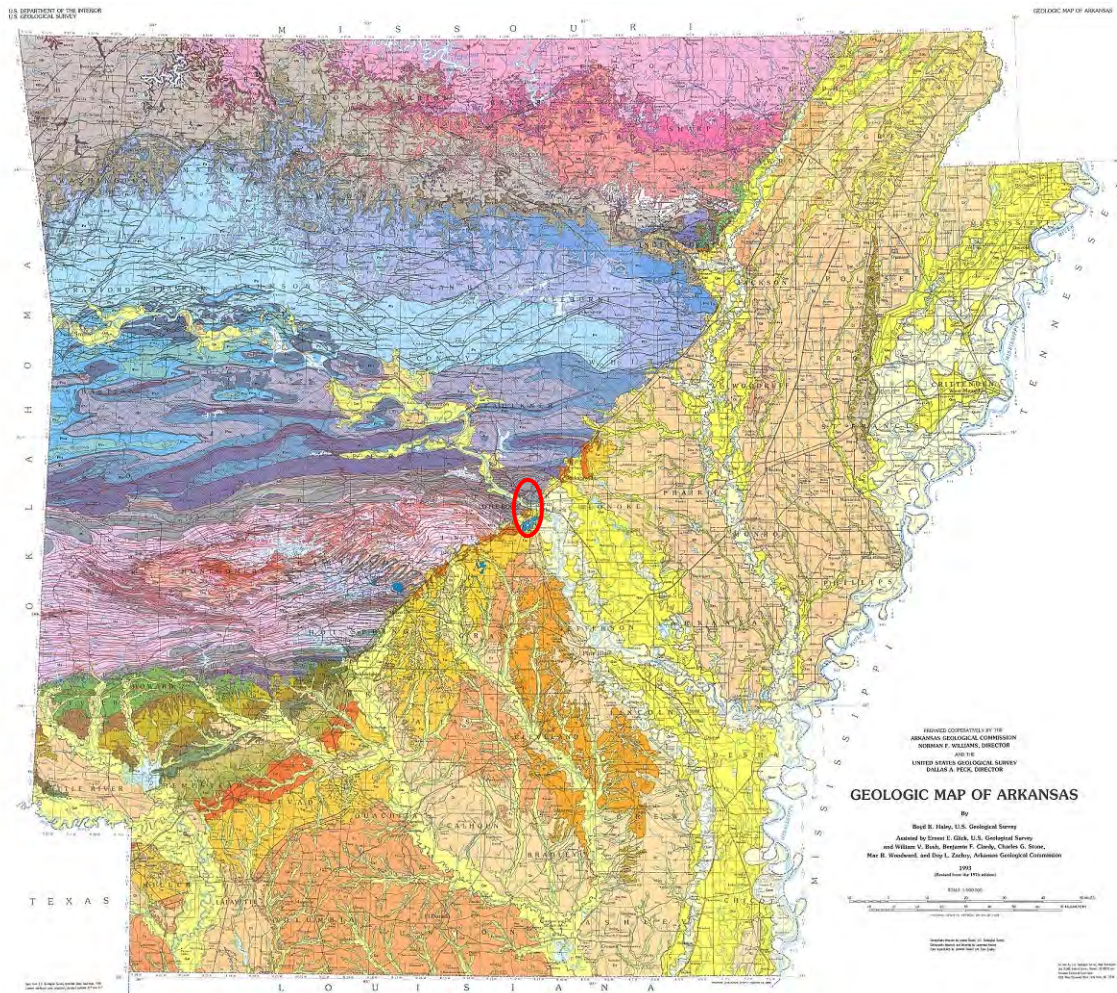
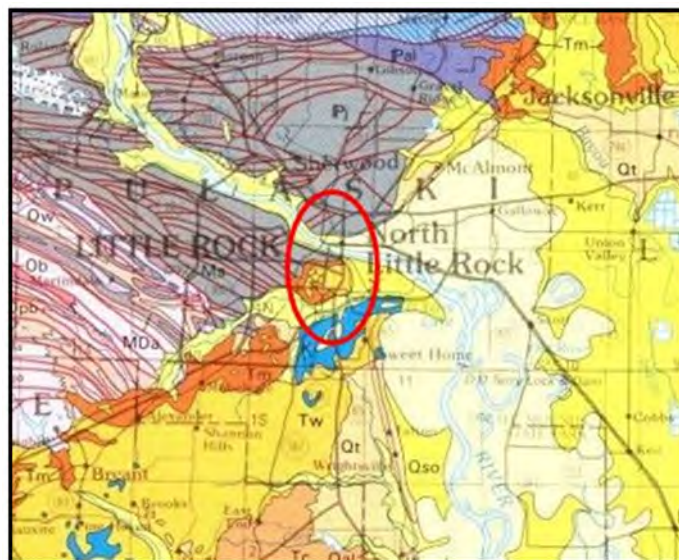
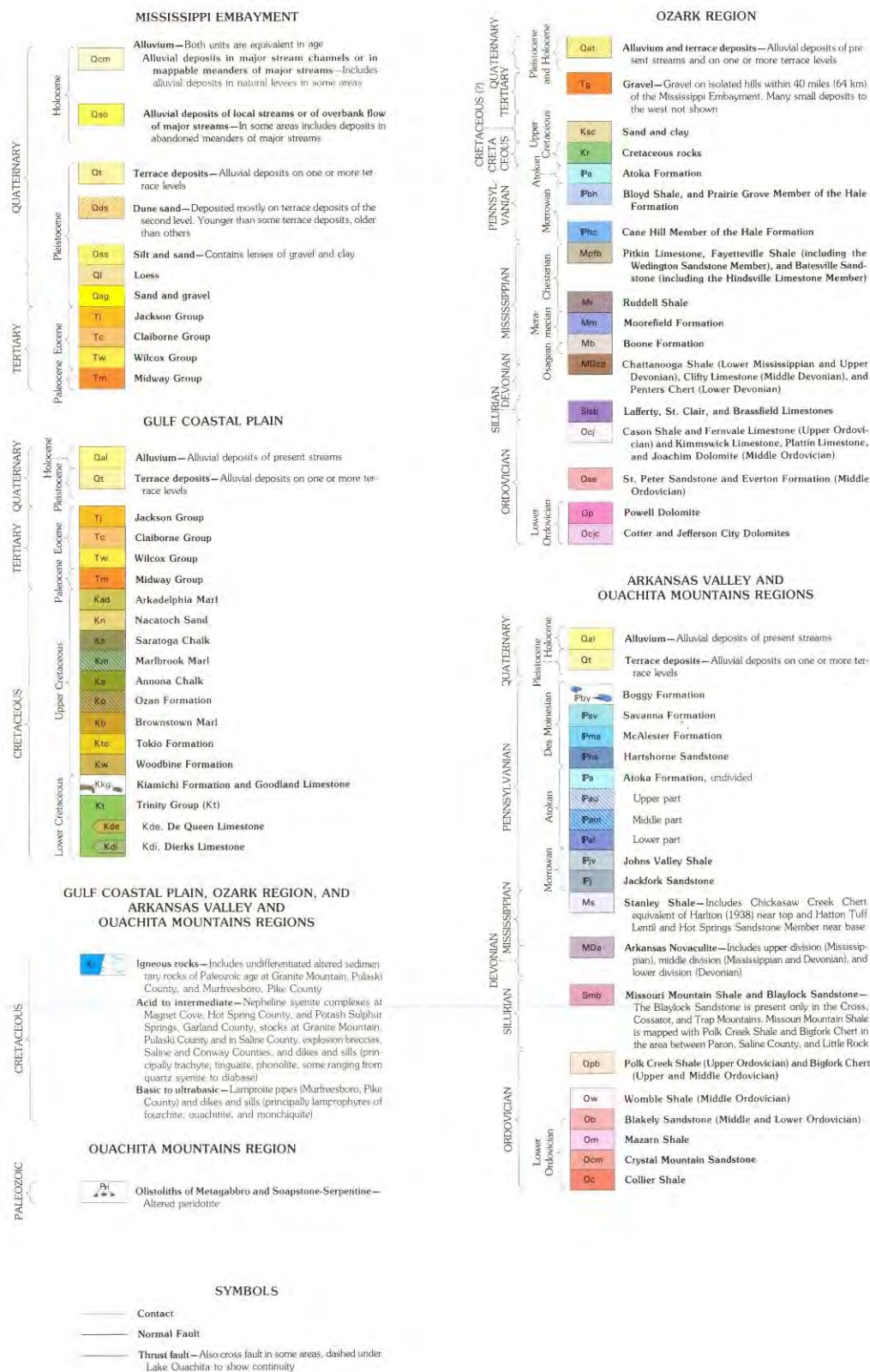


Figure 4b. Detail of the Project Area on the Geologic Map of Arkansas (Haley 1993)



1

Figure 4c. Legend for the Geologic Map of Arkansas (Haley 1993)

2
3
4

2.2 Soils in Project Area

The soil types found within the project area surveyed are varied and the following is a brief overview. The soil types and associated soil descriptions below are taken from the USDA Web Soil Survey. The actual descriptions of soils observed in shovel tests during the current archeological survey are presented within each Segment discussion found in Section 5 of this report.

1 **Figure 5a. USDA Soils Map Overview for Project Area (USDA Web Soil Survey 2015)**

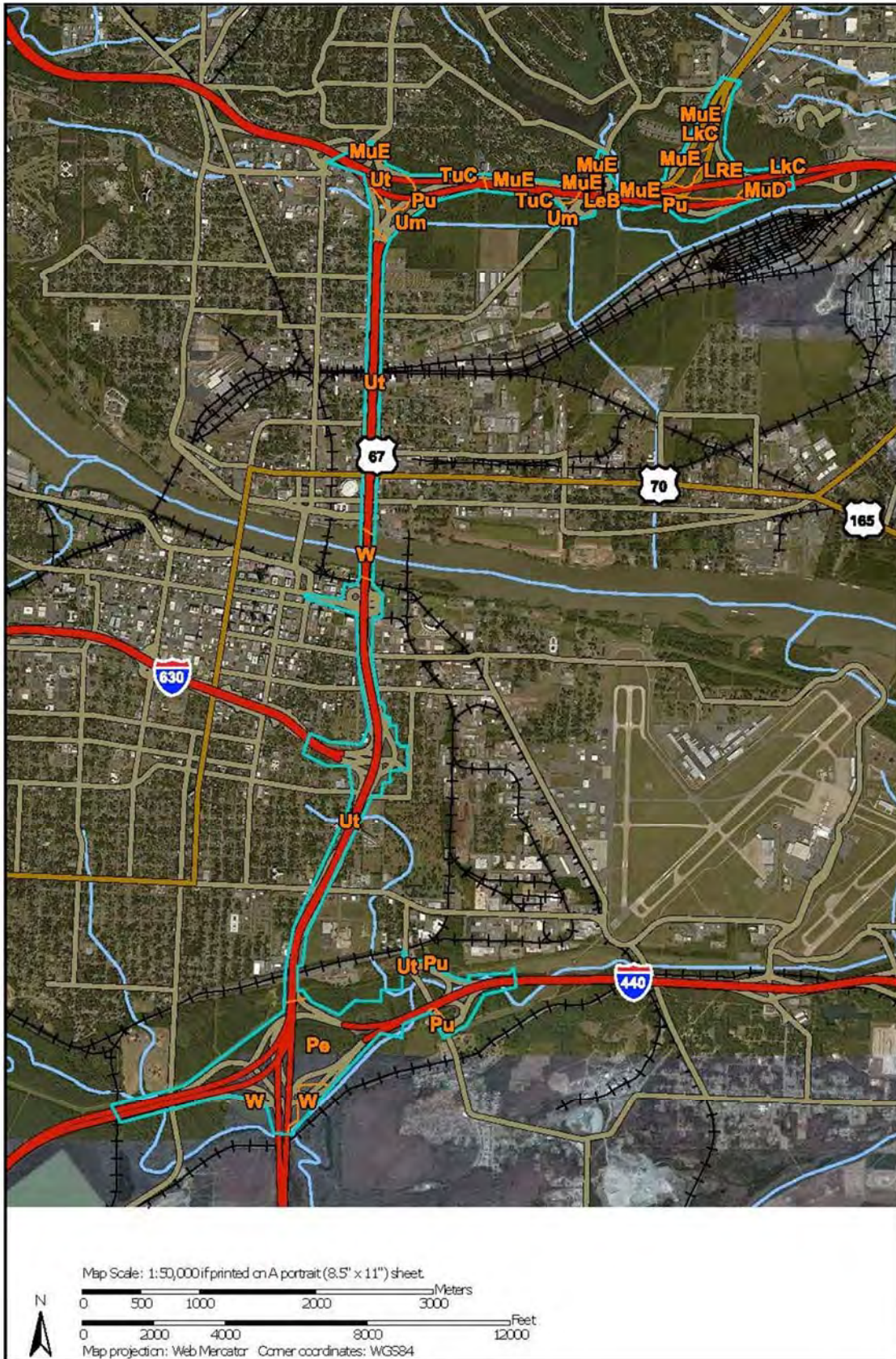


Figure 5b. USDA Soils Map: South of the Arkansas River (USDA Web Soil Survey 2015)

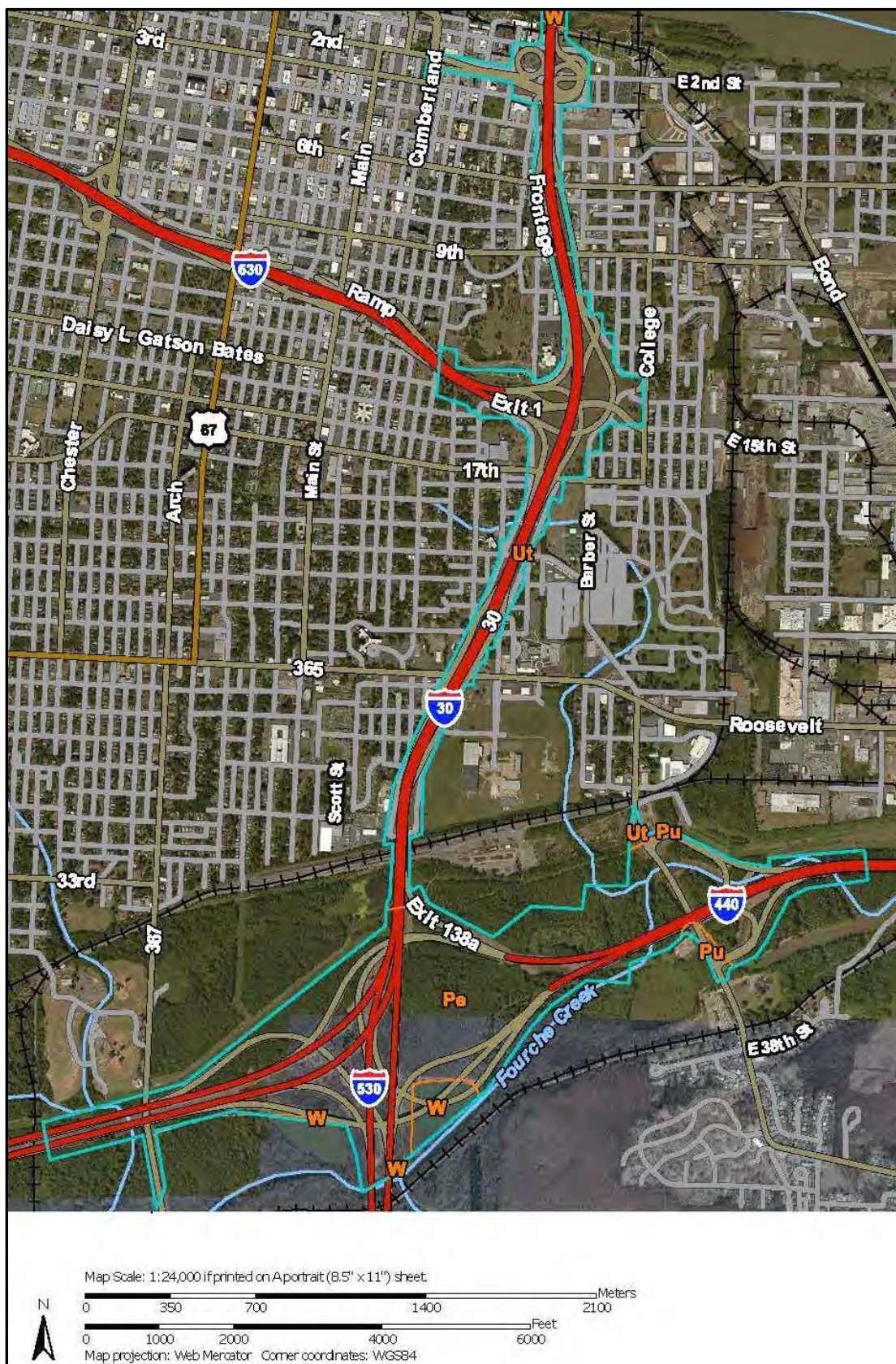


Figure 5c. USDA Soils Map Index: North of the Arkansas River (USDA Web Soil Survey 2015)

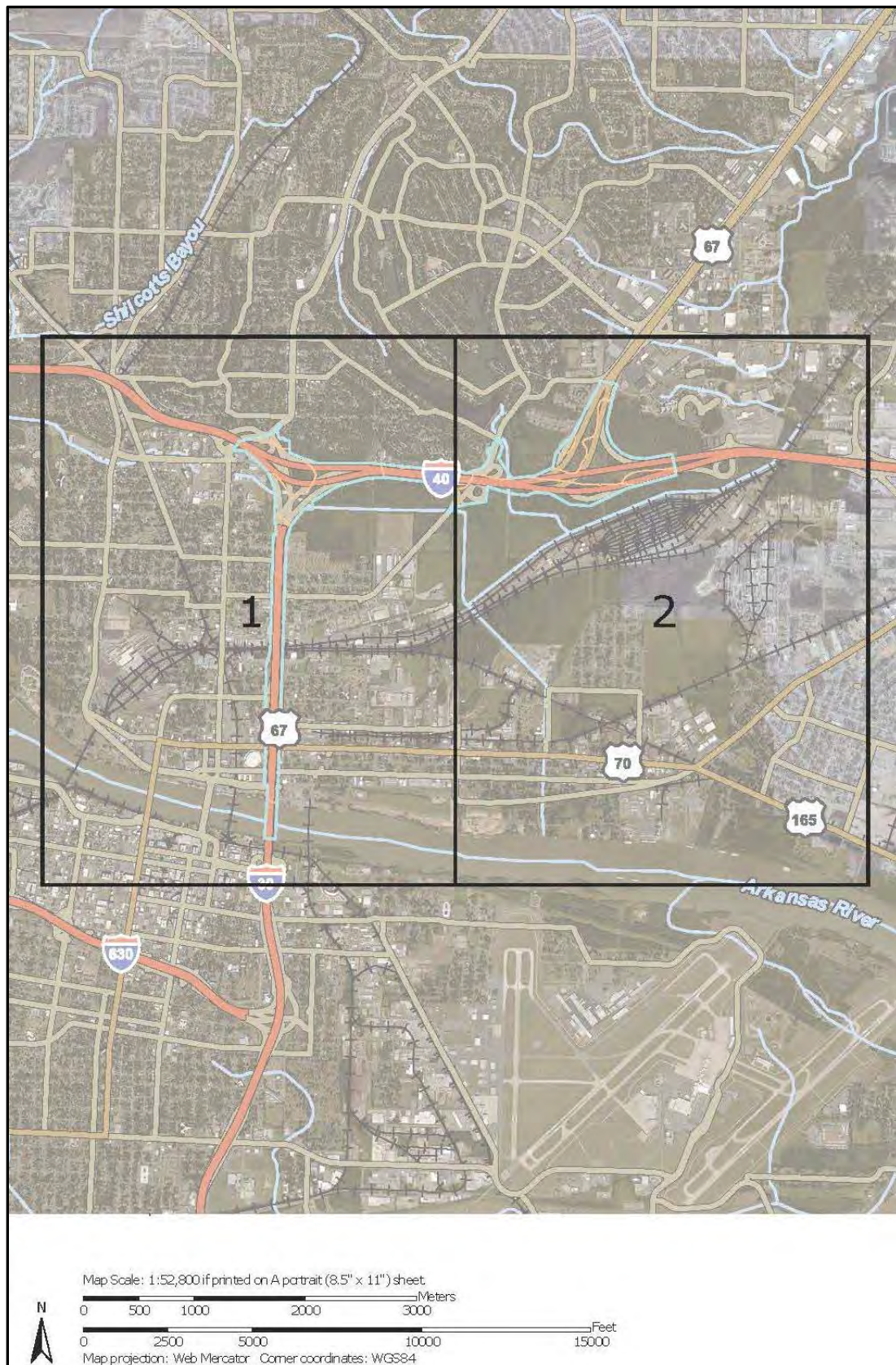


Figure 5d. USDA Soils Map: North of the Arkansas River - 1 (USDA Web Soil Survey 2015)

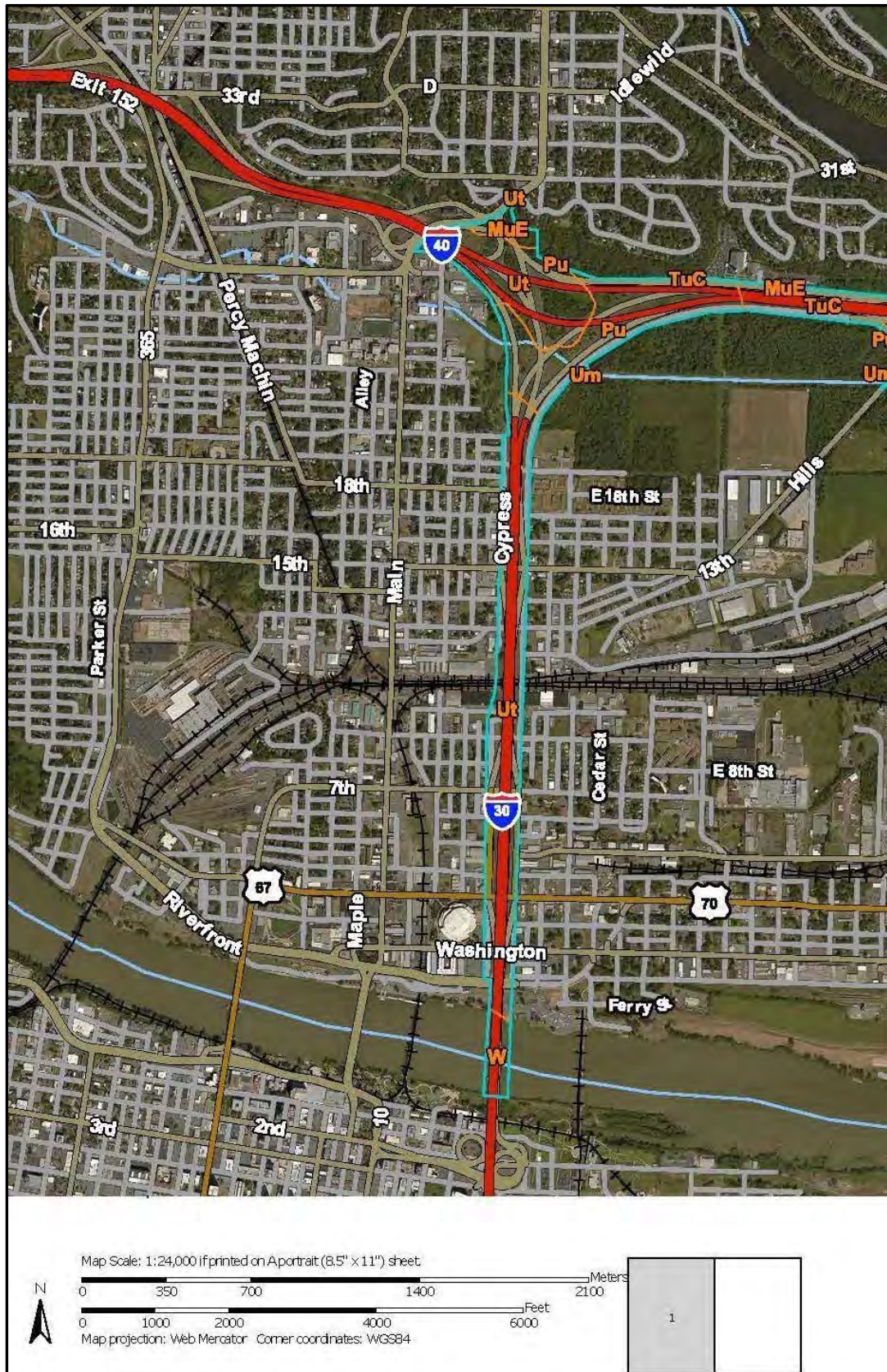


Figure 5e. USDA Soils Map: North of the Arkansas River - 2 (USDA Web Soil Survey 2015)



Figure 6. Map Unit Legend for Soils Map in Figure 5a. – 5e. (USDA Web Soil Survey 2015)

Map Unit Legend			
Pulaski County, Arkansas (AR119)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
LeB	Leadvale silt loam, 1 to 3 percent slopes	19.6	1.3%
LEV	Levee	3.8	0.3%
LkC	Linker gravelly fine sandy loam, 3 to 8 percent slopes	53.5	3.5%
LRE	Linker-Mountainburg association, moderately steep	95.3	6.3%
MuD	Mountainburg-Urban land complex, 3 to 12 percent slopes	20.4	1.3%
MuE	Mountainburg-Urban land complex, 12 to 40 percent slopes	61.3	4.1%
Pe	Perry clay, 0 to 1 percent slopes, rarely flooded	428.3	28.3%
Pu	Perry Urban land complex, 0 to 1 percent slopes	156.1	10.3%
TaB	Tiak fine sandy loam, 1 to 3 percent slopes	0.0	0.0%
TuC	Tiak-Urban land complex, 3 to 8 percent slopes	42.1	2.8%
Um	Umbraqualfs, clayey	9.3	0.6%
Ut	Urban land	570.6	37.7%
W	Water	53.7	3.5%
Totals for Area of Interest		1,514.0	100.0%

2.2.1 Soil Descriptions for Soils in Project Area (USDA Web Soil Survey 2015)

Map Unit: LeB—Leadvale silt loam, 1 to 3 percent slopes

The Leadvale component makes up 85 percent of the map unit. Slopes are 1 to 3 percent. This component is on valleys and upper stream terraces. The parent material consists of old fine-silty alluvium derived from shale and siltstone over residuum weathered from sandstone and shale. Depth to a root restrictive layer, fragipan, is 23 to 31 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 20 inches during January, February, March, and April. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface.

Map Unit: LEV—Levee

Generated brief soil descriptions are created for major soil components. The Levee is a miscellaneous area.

Map Unit: LkC—Linker gravelly fine sandy loam, 3 to 8 percent slopes

The Linker component makes up 85 percent of the map unit. Slopes are 3 to 8 percent. This component is on hills. The parent material consists of loamy residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map Unit: LRE—Linker-Mountainburg association, moderately steep

The Linker component makes up 50 percent of the map unit. Slopes are 12 to 25 percent. This component is on mountains and hillslopes. The parent material consists of loamy residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

The Mountainburg component makes up 35 percent of the map unit. Slopes are 12 to 25 percent. This component is on hills and mountains. The parent material consists of stony, loamy residuum weathered from sandstone. Depth to a root restrictive layer, bedrock,

lithic, is 12 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R118XY007AR Sandstone Ridge ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Map Unit: MuD—Mountainburg-Urban land complex, 3 to 12 percent slopes

The Mountainburg component makes up 50 percent of the map unit. Slopes are 3 to 12 percent. This component is on mountains and hills. The parent material consists of stony, loamy residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, lithic, is 12 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R118XY013AR Sandstone Ledge ecological site. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Map Unit: MuE—Mountainburg-Urban land complex, 12 to 40 percent slopes

The Mountainburg component makes up 50 percent of the map unit. Slopes are 12 to 40 percent. This component is on hills and mountains. The parent material consists of stony, loamy residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, lithic, is 12 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R118XY007AR Sandstone Ridge ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Map Unit: Pe—Perry clay, 0 to 1 percent slopes, rarely flooded

The Perry component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on lower natural levees on Red River delta plains. The parent material consists of clayey alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is very high. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during January, February, March, April, May, June, and December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria.

1 Map Unit: Pu—Perry Urban land complex, 0 to 1 percent slopes

2 The Perry component makes up 50 percent of the map unit. Slopes are 0 to 1 percent.
3 This component is on lower backswamps on Red River and Arkansas River valleys. The
4 parent material consists of clayey alluvium. Depth to a root restrictive layer is greater than
5 60 inches. The natural drainage class is poorly drained. Water movement in the most
6 restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth)
7 is moderate. Shrink-swell potential is very high. This soil is not flooded. It is not ponded.
8 A seasonal zone of water saturation is at 12 inches during January, February, March,
9 April, May, June, and December. Organic matter content in the surface horizon is about
10 2 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria.

11 Map Unit: TaB—Tiak fine sandy loam, 1 to 3 percent slopes

12 The Tiak component makes up 95 percent of the map unit. Slopes are 1 to 3 percent.
13 This component is on interfluvies. The parent material consists of loamy and clayey
14 marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural
15 drainage class is moderately well drained. Water movement in the most restrictive layer
16 is moderately low. Available water to a depth of 60 inches (or restricted depth) is high.
17 Shrink-swell potential is high. This soil is not flooded. It is not ponded. A seasonal zone
18 of water saturation is at 18 inches during January, February, March, November, and
19 December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated
20 land capability classification is 3e. This soil does not meet hydric criteria.

21 Map Unit: TuC—Tiak-Urban land complex, 3 to 8 percent slopes

22 The Tiak component makes up 50 percent of the map unit. Slopes are 3 to 8 percent.
23 This component is on interfluvies. The parent material consists of loamy and clayey
24 marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural
25 drainage class is moderately well drained. Water movement in the most restrictive layer
26 is moderately low. Available water to a depth of 60 inches (or restricted depth) is high.
27 Shrink-swell potential is high. This soil is not flooded. It is not ponded. A seasonal zone
28 of water saturation is at 18 inches during January, February, March, November, and
29 December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated
30 land capability classification is 4e. This soil does not meet hydric criteria.

31 Map Unit: Um—Umbraqualls, clayey

32 The Umbraqualls component makes up 75 percent of the map unit. Slopes are 0 to 1
33 percent. This component is on slackwater areas. The parent material consists of clayey
34 alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage
35 class is poorly drained. Water movement in the most restrictive layer is low. Available
36 water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is
37 very high. This soil is occasionally flooded. It is not ponded. A seasonal zone of water
38 saturation is at 6 inches during January, February, and March. Organic matter content in
39 the surface horizon is about 2 percent. Nonirrigated land capability classification is 5w.
40 This soil does not meet hydric criteria.

Map Unit: Ut—Urban land

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Map Unit: W—Water

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

2.3 Climate

Pulaski County has hot and humid summers and generally mild winters, though short-lived arctic air mass incursions are common. The topography has a limited effect on the climate of Pulaski County. Air moving downslope from the higher elevations warms slightly, resulting in higher temperatures at lower elevations. Higher elevations receive greater rainfall totals due to the lifting effect on moist air imparted by ridges and mountains (Haley et al. 1975:3). For 2013, in Little Rock, Pulaski County, Arkansas, the annual mean maximum temperature was 76.9 degrees Fahrenheit, the annual mean minimum temperature was 51.7 degrees, and the annual mean rainfall was 51.88 inches (National Weather Service 2015).

2.4 Past Environment

Eighteen thousand years before present (B.P.), an ice sheet covering the northern half of North America (below the Great Lakes ~ 40 degrees north latitude) was one of several continental ice sheets that amassed amounts of water sufficient to lower oceanic levels by 100 – 200 meters below present. Air temperatures were 35 to 42 degrees Fahrenheit colder during summer and winter respectively (Morin 1993:73).

From 18,000 to around 14,000 B.P., vegetation patterns remained generally unchanged. The glaciers receded only slightly to around 40 – 42 degrees north latitude by 14,000 B.P. Boreal forests consisting primarily of mixed species of spruce (white, black, and red) and some intrusions of oak, bordered regions of tundra adjacent to glaciated areas (Morin 1993:76 - 78). Pines (jack/red) were possibly present prior to 14,000 B.P., becoming extinct in the region thereafter. These forests extended down to approximately central Arkansas, and apparently persisted even farther into the southern portion of the continent via the Mississippi Alluvial Plain prior to the Holocene Epoch. From below the boreal forest, mixed conifer and northern hardwoods persisted from 18,000 through 14,000 B.P. About 14,000 B.P. warming climatic changes, including changes in jet stream patterns, began to hasten glacier recession and influence alteration of ecosystems and associated biomasses.

Humans likely first entered the region of the Project Area about 12,000 B.P.; boreal forests may have still been prevalent in northern Arkansas at this time. One theory is that the new arrivals entered the continent following herds of mega fauna via the Bering Land Bridge, an area of land recently exposed by the shrinking ice fields at the end of the

Pleistocene Epoch, when a major climatic change from a glacial to interglacial period began. Glaciers receded and the bulk of southeastern North America, including the proposed Project Area, changed into evergreen forests with increases in oak and southern pine species that extended up to deciduous forests. Mixed conifer/hardwood forests transitioned around 40 degrees north latitude. By 6,000 B.P., most of the ice sheets had receded to, or were approaching, northerly limits roughly in the area they occupy today. Northern pine species dominated the mixed conifer forests north of Arkansas, with southern pine species prevalent in the southeast.

The gradual warming trend resulted in the development of more temperate forests. By 5,000 B.P., conditions had become so warm and dry that grasslands and prairie environments may have been present throughout much of the state. This interval of warmer, drier weather is the Hypsithermal. The modern climate began developing about 4,000 years ago, resulting in the evolution of the current forest types. These climatic changes and their resulting effects on the floral and faunal communities had a direct bearing on human adaptation in the region, as reflected in the diversity and range of artifact assemblages contained in the region's rich archeological record (Miller 2001).

Most animal species typical of the southeastern woodlands were indigenous to the region, including deer, mink, raccoon, bison, squirrel, bear, turkey, cougar, fox, wolf, bobcat, and beaver, as well as a multitude of birds, fish, reptiles, amphibians, and freshwater mussels.

3.0 BRIEF CULTURAL HISTORY

The general sequence of prehistoric cultural development in the Project Area is similar to that defined for the region as a whole and to the stages of cultural development in the southeastern United States. The major cultural stages are Paleo-Indian, Archaic, Woodland, Mississippi, and Historic. *A Cultural Resource Overview of the Ozark-St. Francis National Forests* (Sabo et al. 1982) and *Human Adaptations in the Ozark and Ouachita Mountains* (Sabo et al. 1988) present a more in-depth discussion of each stage.

There is little information about the lifeways of the earliest inhabitants of the region during the Pre-projectile and Paleo-Indian stages (32,000 B.P. to 11,000 B.P.). Lithic or stone tools including large lanceolate-shaped fluted dart and spear points are distinctive markers of this period. Based on ethnographic studies of small-scale societies and paleo-environmental reconstruction, one hypothesis suggests that the small band level societies depended heavily on hunting, fishing, and gathering wild plants for subsistence. Many of the large animal species exploited by big game hunters, such as the mammoth, are extinct. Most of the Paleo-Indian sites found in northeast Arkansas occur on the upper Cache River and on the eastern flank of Crowley's Ridge (Morse and Morse 1983). The fluted Clovis-like points from northeast Arkansas are typically shorter than Great Plains examples.

Toward the end of the Paleo-Indian stage or the beginning of the Archaic period (11,000 B.P. to about 2500 B.P.), the environment became much as it is today. Projectile points dating to this transition include lanceolate forms such as the Dalton and Packard. These artifact types are found in Arkansas and westward to the prairie-woodlands border in

1 eastern Oklahoma (Wyckoff 1984:130-134). During the Archaic period people exploited
2 a wider range of plant and animal resources than their Paleo-Indian ancestors. The
3 numerous types of projectile point styles and a wide range of tools found in Archaic period
4 collections reflect the change in subsistence practices. In northeast Arkansas, the “Hardin
5 and Early Stemmed Period” is associated with an “influx of Plains-like styles,” and dates
6 about 9000-8000 B.P. (Morse and Morse 1983). Hardin points are rare and, again, have
7 a distribution similar to Dalton points. The distribution of Hardin points in east-central
8 Arkansas is described as “confined to the Wisconsin-age terraces east of the White River”
9 (House 1996). Other stemmed points include Searcy, Johnson and Hidden Valley points
10 (Morse and Morse 1983). The distribution of Johnson points extends to the southern
11 portion of the Lower White River (House 1982). Later point types include the Rice points
12 (Morse and Morse 1983). Morse and Morse (1983) proposed that the western lowlands
13 of northeastern Arkansas were largely abandoned ca. 8000-6000 B.P. in favor of the
14 Ozark Plateau.

15
16 The Late Archaic began at the end of the Hypsithermal period with the establishment of
17 the modern climate and ecosystems. There was a dramatic increase in the number of
18 sites in the region, and for this reason Morse and Morse call this period the “Archaic
19 Expansion.” During the Late Archaic, there is an increased human adaptation to riverine
20 environments and the culture appears to be more sedentary than previous periods. In
21 northeast Arkansas Morse and Morse (1983) suggest further subdivision of the Late
22 Archaic into three sub periods: Big Creek (5000-4000 B.P.), Burkett (4000-3000 B.P.) and
23 Weems (3000-2500 B.P.).

24
25 Settlement patterns were primarily oriented toward river valley settings but sites occurred
26 in most topographies and appear to reflect a wide variety of activities centered on
27 seasonal exploitation of the environment. By the end of the Archaic period, the evidence
28 suggests some base camp sites became relatively permanent year round habitations
29 (Miller 2003). There is evidence that sites had specialized uses during the Late Archaic
30 period. Bluff shelters, such as Rodgers (Kay 1982) and Albertson (Dickson 1991) appear
31 to have been hunting and/or food processing sites. Some open-field sites such Elk Track
32 (Lafferty et al. 1988), also exhibit floral evidence, suggesting seasonal occupation. Other
33 large camps suggest permanent settlement was occurring near major rivers. While
34 evidence is still lacking to indicate what sorts of structures the people occupied, the
35 presence of hearths and pits suggest more than temporary occupation.

36
37 One site for which there is reliable information from the Late Archaic period in the
38 Ouachita Mountains is the Standridge Site. Late Archaic artifacts from Standridge include
39 Bulverde, Donaldson, Yarborough, and Gary point types, along with lithic debris and
40 sandstone cobbles. Ann Early stated that the lithic artifacts found and the absence of
41 recognizable Archaic features (e.g. pits and hearths) suggest:

42
43 *. . . the Archaic period occupation(s) were transient encampments related*
44 *to hunting and to the collection and transport of novaculite from quarries in*
45 *the surrounding mountains. The association of these non-diagnostic lithics*
46 *with Archaic activities is only tentative, however, because succeeding*
47 *Woodland period occupations are closely intermixed with, and immediately*
48 *overlying, the Archaic materials (Early 1988:157).*

1
2 It is probable that although social groupings were more complex, band levels of social
3 integration persisted throughout the Archaic period. The band divided into several family
4 units for hunting and foraging activities. The scarcity of artifacts on Archaic period sites in
5 most upland regions suggests that very small groups, consisting perhaps of a family or a
6 few individuals, stopped temporarily while hunting or foraging.

7
8 The Woodland period (2500 B.P. to A.D. 1000) is identified by the presence of pottery
9 and in some areas the beginning of horticulture and agriculture. Horticulture is the
10 cultivation of species of native weeds (e.g. Amaranth, Chenopodium). Agriculture is the
11 cultivation of tropical cultigens (e.g. corn, beans, squash, etc.), introduced into the region
12 from Meso-America. The correlation of agriculture, pottery, and burial mounds suggests
13 an increase in social and ceremonial activities during the Woodland period. Siltstone
14 hoes, indicative of horticulture/agriculture, are associated with this period. The most
15 commonly occurring diagnostic artifacts for the period are the Big Creek, Burkett, and
16 Weems points and are likely carryovers from the preceding Archaic period. Other artifacts
17 include adzes, celts, grooved axes, plummets, and choppers (Morse and Morse 1983).
18 The development of ceramic vessels appears during this period as well, indicating a
19 greater reliance on food storage and preparation as well as more sedentary lifestyles.

20
21 The principal Late Woodland period culture in the Ouachita Mountains is called Fourche
22 Maline. In Spears et al. (1993:13) the culture is summarized as follows:

23
24 *Fourche Maline cultural traits were established and well defined by deposits*
25 *at sites in southwestern Arkansas (Schambach 1982). Sites of this period*
26 *have dark, organic middens that developed due to increased sedentism.*
27 *The ceramic industry is characterized by thick-walled, u-shaped decorated*
28 *bowls and jars, with bone, clay, or grit tempering agents (Schambach and*
29 *Early 1982:SW38). Stone tools include contracting stem Gary projectile*
30 *points, single and double bitted chipped axes, ground and polished boat*
31 *stones, pitted cobbles, and siltstone hoes. Arrow point technologies are not*
32 *associated with this period. The Fourche Maline culture was an important*
33 *transitional link between the hunter-gatherer/foragers of the Archaic period*
34 *with the more agriculturally oriented Mississippi period (Schambach 1982).*
35 *Another important distinction of Fourche Maline sites concerns mortuary*
36 *practices and village size, which Schambach (1982:133) states as*
37 *"cremation burials, burial mounds, evidence of a concept of honored dead,*
38 *burial of most of the dead in the village middens in flexed or extended*
39 *positions in shallow graves with few or no offerings, and small villages*
40 *generally covering 0.8 to 2.0 h.a."*

41
42 There does not appear to be a great difference between Archaic adaptations and Fourche
43 Maline middens in terms of subsistence patterns. "There is no direct evidence of
44 gardening in the form of charred domesticated plants or seed remains . . . deer, fish, small
45 mammals, birds, turtles, and mollusks contributed meat to the diet; and nuts, particularly
46 hickory, were also consumed" (Sabo et al. 1988:75). By the end of the Woodland period,
47 essentially modern climatic conditions prevailed although fluctuations occurred. The
48 Ouachitas probably exhibited the same distributions of trees, plants, and animals that

1 were present before the region was cleared for agriculture and timber.

2
3 During the Marksville period, pottery became more diverse and mound building began at
4 some of the more prominent sites. Emblematic of burial ceremonialism are rich graves
5 placed in central log tombs and covered by conical mounds. Trade of exotic artifacts,
6 mound building, and ceremonial burial practices indicate participation in the Hopewell
7 Interaction Sphere. Populations coalesced in small villages. Diagnostic artifacts include
8 Marksville pottery, corner-notched and stemmed projectile points, blades and cores, and
9 exotic materials such as copper, mica, galena, obsidian, pearl beads, ear spools, and
10 platform pipes (Jeter 1989).

11
12 During the Baytown period, a clear-cut distinction between sand-tempered (Barnes
13 phase) pottery and grog-tempered (Baytown phase) pottery reached its peak. This
14 distinction in modes of tempering suggests a possible division based on political or
15 cultural boundaries. Pottery is predominantly plain but some cord marking does occur.
16 The most common site type is a single structure probably occupied by an extended family.
17 There are some examples of larger villages (Morse and Morse 1983).

18 Mound building continued throughout the Baytown period although there was less
19 emphasis placed on burial ceremonialism than in the previous Marksville period. At many
20 sites, lithics are rare. Diagnostic point styles include Steuben points and Gary points.
21 There are occasional examples of plummets, boat stones, celts, and pipes. Hunting and
22 gathering comprised the primary subsistence practices, although there is evidence of
23 nascent horticulture. While maize or other definite cultigens have not been identified
24 within Baytown Period features, persimmon, grape, hickory nuts, acorns, and
25 chenopodium have been recovered within flotation samples (Morse and Morse 1983).

26
27 The type-site for this period is the Baytown (also known as Indian Bay) site in southern
28 Monroe County. Phillips, Ford, and Griffin designated the site. This site was not excavated
29 under controlled conditions. Only one Baytown period site has been adequately studied:
30 the DeRossitt site (3SF49) in north-central St. Francis County produced 164 trash pits
31 and 500 post molds.

32
33 By A.D. 1000, there is an increased reliance on domesticated plants and a more complex
34 social organization as evidenced by status differentiation, specialized labor, etc. These
35 changes mark the beginning of the Mississippi period. Material culture includes arrow
36 points and shell tempered pottery. This tempering technique allowed for the manufacture
37 of a wider variety of vessel forms and decorations. Exotic materials and artistic artifacts,
38 often decorated with religious and ritual symbols, were traded throughout the region. After
39 death, important or high status individuals were interred with their possessions in sacred
40 burial sites. Other characteristics often associated with Mississippian culture include
41 villages with palisades, temple mounds, an increasing dependence on agriculture, and
42 the development of complex social systems. The bow and arrow arose during the early
43 part of the period and largely replaced the atlatl and dart common to the preceding
44 periods. Pottery evolved from jar and bowl forms common in Early Period Mississippian
45 sites to a variety of compound effigy and bottle forms characteristic of Late Period
46 Mississippian and Proto-Historic sites. By about A.D. 1000, a number of individual
47 chiefdoms developed, each generally consisting of a fortified ceremonial center, several
48 fortified villages, and numerous farmsteads. Villages often followed planned designs, with

1 houses usually arranged in rows.

2
3 In the Ouachita Mountains, the Mississippi period is represented by the Caddo I-V cultural
4 units (Early 1982). In this period, people lived in small dispersed farms or hamlets, and
5 several such hamlets were affiliated with a ceremonial center exhibiting one or more
6 mounds. These people continued to focus on the exploitation of a wide variety of wild
7 plants, but they were also maize agriculturalists. Bioarcheological data from Middle
8 Ouachita sites indicates that the “. . . Caddo were full blown agriculturalists with a large
9 portion of their diet constructed of maize, indicated not only by the high caries rates, but
10 also by the presence of maize” (Burnett 1988:149). Excavations at the Standridge Site
11 have produced much information about the lifeways of the Caddo people in the Ouachita
12 Mountains (Early 1988). Standridge, a small hamlet, is located in the upper Caddo River
13 Valley in Montgomery County. The main Caddo component dates to the 14th and early
14 15th century. The site has one small mound which contained five structures, an elaborate
15 human burial, and small sheet middens or occupation areas. Initially the site functioned
16 for habitation, but it developed into a local socio-religious center that served the
17 neighboring populations (Early 1988). Habitation sites are thought to be small, more
18 dispersed, and merely extensions of the more populated sites and societies downstream
19 and on the larger rivers. It has also been suggested that occupations in the mountains
20 are distinctive and different from the cultures downstream, such as along the lower
21 Ouachita River (Early 1988).

22 There are 21 federally recognized Native American tribes culturally affiliated with
23 Arkansas. Among these tribes, the Quapaw, Osage, Caddo, Tunica, and Cherokee are
24 the most commonly associated with Arkansas. Historically, the Quapaw occupied the
25 region near the confluence of the Arkansas and Mississippi Rivers (Sabo et al. 1990).
26 The Osage lived throughout the prairie regions of northwest Arkansas and southwest
27 Missouri (Chapman 1975). The Caddo occupied much of southwest Arkansas, eastern
28 Oklahoma, and northeast Texas. The Tunica lived along the lower Arkansas River
29 between present day Little Rock and the Mississippi River. The Cherokee lived in
30 Arkansas during the late 18th and early 19th centuries and occupied reservation lands
31 to the north of the Arkansas River (Sabo et al. 1990).

32 From 1793 to 1867, tribes such as the Shawnee, Delaware, and Kickapoo relocated to
33 reservations in extreme southwest Missouri and eventually to Oklahoma. Although
34 these tribes were in close proximity to Arkansas, none of these three tribes are believed
35 to have officially resided in Arkansas (Sabo et al. 1990:127-128). The Creek, Choctaw,
36 Seminole, Chickasaw, and Cherokee, among others, passed through Arkansas during
37 the Trail of Tears removals in the 1830s.

38 Quapaw ancestral origins extend east to the Ohio River Valley, where they lived as one
39 people with other Dhegiha Sioux speaking people that included the Quapaw, Osage,
40 Ponca, Kaw (Kansa), and Omaha. By the mid-seventeenth century, the Quapaw
41 relocated to lands south of the Ohio River. The Quapaw name derives from Ogazpa,
42 translated as “downstream people” due to the southerly journey of their ancestors
43 through the Mississippi River Valley to the confluence with the Arkansas River.
44 (Quapaw Tribe 2015). In 1673, French explorers encountered five villages at the

1 confluence of the two rivers: Tourima, Osotory, Tongigua, Kappa, and Imaha or
2 Southois (Quapaw Tribe 2015; Sabo et al. 1990:122-123).

3 According to early ethnographic accounts, the Quapaw were village farmers that lived in
4 permanent settlements. Like many southeastern tribes, Quapaw villages were
5 composed of houses arranged around a central plaza. Each village had a communal
6 structure, and an open sided covered structure constructed on a platform. Quapaw
7 houses were constructed of arched poles covered in bark (Sabo 1992).

8 The Quapaw farmed and hunted, with the women largely responsible for the farming
9 and men responsible for the hunting (Sabo 1992). Agriculture centered on squash,
10 beans, corn, pumpkins, and tobacco. Deer, Bear, and Buffalo were hunted year-round
11 with seasonal hunting of fowl and fish. Quapaw society was largely patriarchal, led by a
12 hereditary chief and a council of male advisors (Sabo et al. 1990, Sabo 1992). The
13 Quapaw divided into 21 clans each divided into a "sky" and "earth" division, each clan
14 was named after animals, natural phenomenon, or heavenly bodies; each clan division
15 had a specific set of ritualistic responsibilities (Sabo 1992).

16 The Quapaw were close allies of the French, and tried to maintain peaceful relations
17 with the United States after the Louisiana Purchase of 1803. Quapaw ownership of
18 lands along the Arkansas River were recognized by early treaties. However, following
19 the Louisiana Purchase, they were forced to repeatedly move, before they voluntarily
20 settled among the Creek Indians in Oklahoma in 1839 and in the 1860s groups joined
21 with the Shawnee, Osage, and Ottawa (Quapaw Tribe 2015; Sabo et al. 1990).

22 The Osage ancestral territory encompasses the Ohio River Valley, including sections of
23 Pennsylvania, West Virginia, Ohio, Indiana, Kentucky, and westward to the Mississippi
24 River, incorporating Missouri, Kansas, Oklahoma, much of Arkansas and parts of
25 Louisiana, Colorado, and Texas. The earliest ancestral lands for the Osage lie east of
26 the Mississippi River (Osage Nation 2015). Burns (2004: 3) noted the "considerable
27 disagreement about Osage origins." Although granting an origin east of the Mississippi
28 River, he cited Osage oral tradition and interpretation by J. Owen Dorsey that the
29 Dhegiha Sioux homeland was as far east as the Chesapeake Piedmont, tracing the
30 migration west through an association with the Indian-Knoll site and shell mound culture
31 in northwestern Kentucky.

32 A widely accepted theory contends the Osage inhabited the Ohio River Valley with other
33 Dhegiha Sioux speaking peoples that ultimately migrated west to the Mississippi River
34 Valley, spurred by the pressure of aggressive tribes to the east. By the mid-seventeenth
35 century, the Dhegiha Sioux divided into independent groups known as the Osage,
36 Quapaw, Ponca, Omaha, and Kansas tribes (Rollings 1992).

37 Sabo (1992) described Osage tribal culture as being divided into two clans: Sky people
38 and Earth people. Osage settlement patterns established villages on an east-west road
39 with members of the Sky people to the north, and members of the Earth people to the
40 south. The ritualistic responsibilities of each clan are similar to those of the Quapaw.
41 Osage houses are also similar in construction to the Quapaw. Subsistence strategies
42 included hunting, gathering, and gardening, with the greatest emphasis on hunting (Sabo
43 et al. 1990, Sabo 1992). Villages had two leaders, and a council of advisors selected from

1 the two clans. Daily life followed the rules and customs established by a group of elders
2 known as the Little Old men. These elders underwent training that lasted from boyhood
3 through seven stages of learning. As with many of the southeastern tribes, the Osage
4 participated in elaborate trade with Euro-American colonists and traders. Through these
5 trade relationships, the Osage were able to acquire guns and horses that dramatically
6 expanded their territory and control (Sabo 1992). Despite the protection of treaties and
7 some government action, the Osage were eventually resettled in Oklahoma in 1872
8 (Sabo et al. 1990).

9
10 In the 1500s, European contact with Native American cultural groups marked the end of
11 the prehistoric period. Indian lifeways during the contact period are known from the written
12 accounts of European explorers. European-American settlers began to move into the
13 region in the late 18th century and early 19th century. The first white immigrants into the
14 Arkansas Territory were trappers and hunters. A second wave of immigrants was
15 primarily small subsistence farmers. Migration of agricultural settlers during this time
16 derived almost entirely from those coming from the southern Appalachian region of
17 Kentucky, Tennessee, and North Carolina (Sabo et al. 1982:89). The settlement patterns
18 include "homesteads exhibiting log house architecture and gardens, located at the base
19 of tributary valleys or at the river valley/slope interface" (Sabo et al. 1982:144). Included
20 in this settlement pattern would be isolated service centers such as mills, tanneries, and
21 distilleries located along waterways and usually along roads. The early settlement in the
22 Ouachita Mountains region were generally subsistence farmers and herders until
23 steamboats were able to make their way up navigable rivers; cotton production increased
24 in the upland farms due to the new market accessibility. The state's population surged in
25 the mid to late 19th century. In 1820, the state's population was only 14,255. By 1840 the
26 population had grown to 97,574 and by 1890 the population was 1,125,385 (Chism
27 1891:328-329).

28
29 Because of the isolation and general ruggedness of the land, the Ouachita Mountains
30 remained sparsely settled by subsistence farmers until the late 19th century when the
31 interstate railroad system opened agricultural markets. During this time, the timber
32 industry began to dominate the regional economy because of the inexpensive and
33 effective transportation provided by the railroads. Attracted by the government offer of
34 free land and by new lumbering opportunities, people homesteaded much of the poorer
35 quality acreage in remote areas of the Ouachita Mountains. Often these farms were
36 marginally improved for the minimum amount of time and then were sold to timber
37 companies (Coleman 1995). Whether the homestead entries were made in the hope of
38 scratching out a living through farming or as speculative ventures, the resulting
39 improvements upon the land created a specific style and pattern of architecture, which is
40 unique for its time and geographic location (Coleman 1995:90).

41
42 Many of the new settlers in the Ouachita Mountains were from adjacent states in the
43 upland south and were of English or Scotch-Irish descent (Smith 1986:10 and
44 McWhiney 1988:8). Because these individuals were from areas with similar topography
45 to the Ouachita Mountains, it was a familiar environment with similar farming conditions
46 (Jurgelski 1996:70). Land located near springs and containing good hunting areas were
47 important considerations to the early settler in the region (Jurgelski 1996:71). Many
48 historic sites in the Ouachita Mountains represent a time when "collusion between

lumber companies and homesteaders may have resulted in short-lived occupations characterized by primitive construction on a regional scale” (Coleman 1994:2).

The following is an excerpt taken from the “Pulaski County” entry by Ron Copeland and Joe Foster (2013) found in the *Arkansas Encyclopedia of History and Culture*:

In 1812, Congress established Missouri Territory, which reached south to Louisiana. Two of the territory’s southern counties (Arkansas and Lawrence) included much of the area that would become Arkansas. When Congress established Arkansas Territory in 1819, the two counties later became the five original Arkansas counties, including Pulaski County, which took its name in honor of Count Casimir Pulaski, a Polish nobleman who fought and died in 1779 in the Revolutionary War’s Battle of Savannah. The territorial legislature voted in 1821 to move the capital from Arkansas Post (Arkansas County) to Little Rock because of flooding and disease at the former location. In 1820, the legislature established Cadron, a fur-trapping post on the Arkansas River, which was located in what is now Faulkner County, as the county seat but moved it to Little Rock in 1821 when it chose to move the territorial capital there. The new state constructed a capitol building in Little Rock on the Arkansas River bank between 1833 and 1842, and the government operated out of the statehouse until completion of the present capitol in 1915. County government operated out of the statehouse until 1883, when the state government came to require the entire building and displaced the county government to a temporary location. County officials began planning and building the Pulaski County Courthouse, completed in 1889.

The secessionist movement dominated Arkansas and Pulaski County politics in 1860 and 1861. Secession Convention delegates voted almost unanimously on May 6, 1861, to secede from the Union. Arkansas formally joined the Confederacy on May 20, 1861. Little Rock remained the state capital, but in 1863, as the Union army approached, the government moved the capital to Washington (Hempstead County). Union forces led by General Frederick Steele prevailed in the Battle of Little Rock in September 1863, defeating Confederate troops led by General Sterling Price. Union forces occupied Pulaski County for the rest of the war. At the end of the war, state officials moved the capital back to Little Rock.

The population surged in the late nineteenth and early twentieth centuries. Little Rock and North Little Rock’s populations increased significantly, and several small crossroad settlements grew into Alexander, Jacksonville, Levy, Mabelvale, Roland, and Scott. In 1890, the city of Little Rock derailed the community of Argenta’s plans to incorporate as a city by annexing the community as Little Rock’s Eighth City Ward. In 1904, Little Rock’s Eighth Ward split off to become part of North Little Rock, a separate municipality. In 1906, city officials formally changed to Argenta but then reverted to its present-day name, North Little Rock, in 1917. About eighty-five percent of Pulaski County’s population lives in incorporated areas of its eight cities: Alexander, Cammack Village, Jacksonville, Little Rock, Maumelle, North Little Rock, Sherwood, and Wrightsville.

1 *Other major events in this era included the construction of Lake Winona,*
2 *completed in 1938 as Little Rock's principal municipal water supply, and the*
3 *establishment of the Little Rock Housing Authority on October 5, 1940, which*
4 *provided low-cost rental housing for many families moving to Little Rock during*
5 *and after World War II. Educational services began to flourish before the nation*
6 *entered the war. In 1952, Pulaski County became the home for the Strategic*
7 *Air Command base in Jacksonville; it opened September 10, 1955 as Little*
8 *Rock Air Force Base.*

9 *The crisis over the desegregation of Little Rock Central High School in 1957*
10 *was one of the most significant news event in the county in the twentieth*
11 *century. Considered the first major test of the U.S. Supreme Court's 1954*
12 *Brown v. Board of Education of Topeka, Kansas decision, the crisis*
13 *foreshadowed the civil rights turmoil that the nation faced throughout the*
14 *1960s. The crisis also revealed deep division among local and state leaders,*
15 *affecting their capacity to grow the local economy. In the last three decades of*
16 *the twentieth century, the county's population growth slowed while surrounding*
17 *counties' growth quickened.*

18 *Despite these trends, Pulaski County developed as a multimodal transportation*
19 *hub. Interstate 30 and Interstate 40 intersect in North Little Rock. In the 1970s,*
20 *projects included the cross-town Interstate 630 in Little Rock, and the I-430/I-*
21 *440 loops around Little Rock and North Little Rock. The December 3, 1970*
22 *completion of the McClelland-Kerr Arkansas River Navigation System opened*
23 *the Arkansas River to barge traffic, and Little Rock and North Little Rock*
24 *developed port facilities on each side of the river.*

25 *In the last half of the twentieth century, the Adams Field airport in Little Rock*
26 *grew to a 640-acre development named Little Rock National Airport with more*
27 *than \$170 million in capital improvements. Other events of note in the twentieth*
28 *century include the construction of the governor's mansion, completed in 1950;*
29 *Little Rock Municipal Waterworks' construction of Lake Maumelle, completed*
30 *in 1958; and the establishment of the global headquarters of non-profit*
31 *organizations Lions World Services for the Blind (1947) and Heifer Project*
32 *International (1971).*

33 *Two large public companies have their headquarters in Pulaski County:*
34 *Acxiom Corporation and Dillard's Inc. Stephens, Inc., one of the largest off-*
35 *Wall Street investment banking companies, has headquarters in Little Rock.*
36 *In November 2004, the William J. Clinton Presidential Library opened on the*
37 *bank of the Arkansas River in Little Rock.*

38 *Major health facilities such as the University of Arkansas for Medical Sciences*
39 *(UAMS), Baptist Health Medical Center, John L. McClelland Veterans Affairs*
40 *Hospital, St. Vincent Infirmary Medical Center, and the Arkansas Heart*
41 *Hospital are all in Little Rock. These institutions receive national recognition in*
42 *trade and business journals. Medical facilities and practices in Pulaski County*
43 *employ about 34,665 people. They serve most of the state but also attract*

1 *patients and researchers worldwide.*

2 *Pulaski County performs the typical functions that other Arkansas counties*
3 *perform but also provides many services not performed by other counties,*
4 *including housing, community, and economic development in unincorporated*
5 *areas, and youth development programs for at-risk children. In 2005, the*
6 *county's budget totaled \$98 million, and county government employed 1,200*
7 *full-time workers.*

8 *Most local government issues transcend local boundaries. Consequently, the*
9 *municipal and county governments in Pulaski County have formed cooperative*
10 *governmental service organizations. These organizations include the Central*
11 *Arkansas Transit Authority (CATA), which provides public transportation; the*
12 *Central Arkansas Library System (CALS), which provides library services for*
13 *Pulaski and Perry counties; Central Arkansas Water, which provides municipal*
14 *water service to all the municipalities of Pulaski County and parts of Saline*
15 *County; Metroplan, which serves as the Metropolitan Planning Organization*
16 *for federal highway appropriations and programs; the Multi-Purpose Civic*
17 *Center Facilities Board, which owns and operates the 18,000-seat Verizon*
18 *Arena (known until 2009 as Alltel Arena) in North Little Rock; and the Pulaski*
19 *County Bridge Public Facilities Board, which developed the Junction Railroad*
20 *Bridge into a pedestrian/bicycle bridge in the River Rail Project Area of*
21 *downtown Little Rock and North Little Rock.*

22

4.0 BACKGROUND RESEARCH

4.1 Archeological Resources

The AHTD Constraints Memorandum dated April 25, 2014 identified only two possible intact recorded archeological sites (Sites 3PU415 and 3PU672) directly within the archeological APE. Review of the Arkansas Archeological Survey (AAS) project files further revealed three archeological sites near the APE that would be recommended for further investigation if the project limits were extended beyond the APE (they were not extended at the time of the current Phase I survey). Site 3PU415 is a small prehistoric lithic scatter and Site 3PU672 is the buried remains of a historic railway (this is mislabeled as 3PU672 in the AHTD Constraints Memo). Site 3PU415 was relocated and revisited. Site 3PU672 could not be revisited as the site is buried beneath existing pavement and concrete.

There are numerous previous archeological investigations within a one-mile radius of the Project Area shown in the AAS project files and online database (AMASDA). Below are a selected few that are in the immediate vicinity of the current Project Area.

In 1985, Robert A. Dunn authored the project report *An Archeological Reconnaissance for the Dark Hollow Drainage System, North Little Rock, Arkansas* (AMASDA 564) for the U.S. Army Corps of Engineers. Plans for flood control in the Dark Hollow Basin of North Little Rock, Arkansas, included the widening of two existing drainage ditches, the construction of two small drainage ditches to connect discontinuous portions of the existing ditches, and the construction of a new outlet structure into the Arkansas River. An archeological reconnaissance of the three areas where new construction was proposed and conducted, revealing no significant cultural resources. Visual inspection of the cut banks of the existing drainage ditches yielded negative results. No impacts to significant cultural resources were anticipated from this project.

In 1993, Lawrence G. Santeford, Carol S. Spears, and Milton A. Hughes coauthored the project report *An Archeological Survey of the Springhill Farm Property in North Little Rock, Pulaski County, Arkansas* (AMASDA 2612) for SPEARS, Inc. An archeological survey was conducted on approximately 150 acres in North Little Rock. Two prehistoric sites (3PU0403 and 3PU0404) were recorded, but each consisted only of a low density scatter of lithic material with no subsurface indications of occupation. Neither site was considered significant, and no further archeological work was recommended.

In 2003 Timothy C. Klinger authored the project report *Fourche Creek Basin Nature Appreciation Facilities; Historic Properties Review* (AMASDA 4940) for Historic Preservation Associates, Inc. This report documents the historic properties review of the 1750-acre bottomland acquisition and Phase I survey of approximately 3 miles of access roads and foot trails in the City of Little Rock, Pulaski County, Arkansas. Potential effects included road and bridge building for access to and development of the proposed trail system. Heavy equipment such as trenchers, backhoes, supply trucks, and possibly directional drill rigs would be operated throughout the APE. Although several previously recorded sites were located near the APE, no previously recorded resources would be affected by the proposed undertaking provided the recommendations contained in the

report were followed (either avoidance or Phase II assessments).

In 2005, Robert Scoggin completed the Project Identification Form for AHTD Job# 060987 – I-30 to Highway (Hwy) 165 Widening, Pulaski County (AMASDA 5035) for the AHTD. A cultural resources survey was conducted of the proposed widening of Hwy 70 from four lanes to include a continuous eleven-foot left turn lane. This project was located from I-30 to Hwy 70. No archeological resources were discovered.

In 2008, Milton Hughes completed the Project Identification Form for AHTD Job# 061197 – I-30 Terminal Borrow Pond Access Rd. in Pulaski County (AMASDA 5645) for the AHTD. The AHTD proposed to construct a paved access to abandoned borrow pits near the Interstate 30/65/440 Interchange southeast of Little Rock. Locals were illegally accessing the ponds from AHTD ROW to fish. A paved access would provide legal access to the ponds. There were no relocatees associated with the project and the entire project was located on wetlands. No sites or structures were found on AAS or SHPO site/structure files and no new sites were identified in the field. No further work was recommended.

In 2004, Andrew C. Buchner authored the project report *Archeological Investigations at the East 3rd Street Brick Pavement (3PU0707), Little Rock, Arkansas* (AMASDA 6735) for Panamerican Consultants, Inc. At the request of McClelland Consulting Engineers, Inc., Panamerican conducted archaeological and historical documentation of a 269-foot section of exposed brick pavement in the 1000 block of East 3rd Street (3PU0707) in Little Rock, Pulaski County, Arkansas. This work was requested by the Arkansas SHPO prior to the demolition of the historic pavement as a part of the River Rail Phase II construction that would provide trolley service to the Clinton Presidential Library. The goal of the investigation was to retrieve archaeological and historical data that could be considered representative of the brick street and sidewalk pavements that formerly characterized older urban areas of Little Rock. Archival research focused on compiling information regarding Little Rock and Arkansas brick makers, and preparing a cartographic history of the Project Area. Major archaeological tasks accomplished included photo documenting the brick pavement, recording the site stratigraphy, and analyzing the recovered bricks. This project represents one of the first archaeological investigations of street features in Central Arkansas, which were significant as part of the early urbanization process.

4.2 Historic Structures

The AHTD Constraints Memorandum dated April 25, 2014 identified 164 structures within the 100-foot buffer on each side of the I-30 and I-40 ROW utilized for the initial analysis of the proposed project's potential impacts to cultural resources. The constraints analysis also identified four historic districts within the buffer zone: Hanger Hill, MacArthur Park, Marshall Square, and Park Hill. Within the buffer, there are five contributing structures from the Hanger Hill District, four each from the MacArthur Park and Park Hill Districts, and eight from the Marshall Square District. The AHTD submitted a Request for Technical Assistance (RTA) to the Arkansas Historic Preservation Program (AHPP) on May 13, 2014.

In correspondence dated June 12, 2014, the AHPP responded to the RTA submission. The AHPP made the following preliminary determination regarding properties of historic or architectural significance within the 100-foot buffer. There are two NRHP-listed structures within the buffer zone: AHPP Resources Number PU3118 (Reichardt House) at 1201 Welch St., Little Rock and PU3164 (Terminal Warehouse Building) located at 500 East Markham St., now 500 President Clinton Ave. Additionally, the AHPP determined there are 119 ineligible structures and 45 NRHP-eligible structures in the area of the proposed project. The AHPP expressed an interest in working with the AHTD on determining the APE for the project.

On January 23, 2015, AHPP staff met with the AHTD regarding the proposed scope of work for the project. After review of the preliminary scope of work, the AHPP concurred with the recommended changes, including the establishment of a 100-foot APE from the edge of existing and new ROW for historic structures. Within the APE, the AHPP noted the presence of one affected NRHP-eligible structure, presumably AHTD Bridge 2001. The AHPP stated they will work with the AHTD to determine the proper documentation for the structure. The AHTD refers to this structure as site #18 in the Appendix D-Scope of Work and the agency also provided photographs of the bridge in Attachment B of the January 2015 Cultural Resources Survey Methodology Memorandum. The AHTD specifies the structure as "Impacted NRHP-Eligible Site" on Sheet 2 of Exhibit 2 of the January 2015 memorandum. Aside from the above-referenced structure, the AHPP concurred that based on the proposed configuration, the project would not adversely affect any other historic structures.

There has not been a formal National Register evaluation of Bridge 2001. The FHWA, AHTD, and AHPP have all concurred that the structure is NRHP-eligible and have thus treated it as such. Flat Earth Archeology proceeded with mitigation measures and development of the draft Memorandum of Understanding as per guidance from the aforementioned agencies.

4.2.1 AHTD Bridge 2001 (Locust Street Overpass) North Little Rock, Arkansas

Historic Name: Locust Street Overpass, North Little Rock

Alternate Name: North Locust Street Bridge

Construction Date: 1936

Construction Type: Continuous Steel Multi-Beam

Construction Contractor: Fred Luttjohann Construction Company, Topeka, KS

Bridge Engineer: N.B. Garver

City and County: North Little Rock / Pulaski

Quadrangle: North Little Rock

Section: 35 **Township:** 1 North **Range:** 12 West

UTM Coordinates: 567587 E, 3847118 N / Zone 15 (at center of bridge)

National Register of Historic Places Status: Eligible

Bridge 2001 is a continuous steel multi-beam bridge constructed in 1936 for a cost of \$186,022.26 (Figures 8 and 9). The Date of Letting was August 14, 1936. The bridge accommodates urban automobile and pedestrian traffic overpassing eight Union-Pacific

1 railroad lines. There are two lanes for vehicular traffic, one each north and south bound.
2 A sidewalk lines the east and west side of the bridge (Figure 10).

3
4 The total length of the bridge is 1,018 feet. The roadway spans 40 feet. The bridge forms
5 as arch between E. 9th Street and W. 13th Street in North Little Rock. The structure rises
6 for approximately 33.5 feet from the roadway elevation at the 9th Street intersection. The
7 western edge of Bridge 2001 at the apex of the arch is 85 feet due east of the eastern
8 edge of the I-30 overpass.

9
10 The superstructure is composed of continuous steel I beam spans and reinforced
11 concrete deck girders (RCDG). The substructure consists of 19 concrete bents on
12 concrete piles with concrete abutments and slabs (Figures 11 through 14). The 19 bents
13 support 20 spans. Abutment 1 is located at the north end of the bridge and abutment 2 at
14 the south end. Only the four spans between bents 8 to 12 utilize structural steel I-beams
15 and wrought iron blast plates. The total length of the continuous I beam spans is 334 feet
16 in the following increments: 75' – bent 8 to 9; 75'6" – bent 9 to 10; 107'6" – bent 10-11;
17 75'6" – bent 11 to 12. The remaining spans on the respective opposite ends of the bridge
18 utilize RCDG. All spans, both RCDG and steel I beam, incorporated Class "S" concrete
19 for bridges and reinforcing steel for bridges.

20 There are two stairways on the west and east sides of the bridge (Figures 11 and 12).
21 Bents 7 and 8 support the west stairway. The east side of bent 16 articulates with the east
22 stairway. The west stairway is a top overrun design with three flights and two intermediate
23 landings with flat turns between the first and second, and second and third runs. Each
24 successive flight turns 180 degrees at the landing, resulting in an "S" shape from the
25 elevation perspective. The flights have dual concrete handrails with nine vertical
26 punctuated pointed arches forming eight balusters per run. The east stairway is a two
27 flight straight run with a single intermediate landing. Each flight of stairs has dual concrete
28 handrails with 13 punctuated pointed arches and 12 balusters each. The design and
29 details of the stair rails are similar to the span handrails that follow the east and west
30 sides of the bridge decking. The arches are an exception to this similarity in design; on
31 the stairway handrails, the arches follow the angle of the course of the stair flights,
32 creating a slightly distorted appearance to the voids.

33
34 Thirty-two recessed galvanized metal electric lighting units line the east and west courses
35 of the roadway elevation of the decking balustrades (Figure 15). Large concrete posts
36 incorporated into the balustrade accommodate the units. The design employs an offset
37 pattern for the sixteen lighting elements on each side. The center of the units is
38 approximately 2 feet above the sidewalk elevation (AHTD 1936). There are no operative
39 lighting units. They appear to have suffered from neglect and possibly vandalism,
40 although much of the interior elements remain.

41
42 Fred Luttjohann served as the construction contractor and N.B. Garver was the Bridge
43 Engineer for Bridge 2001. Both men made significant contributions to bridge design and
44 construction in Arkansas in the early to mid-twentieth century. Archives from the
45 University of Illinois show N.B. Garver worked as an instructor in Civil Engineering in 1914
46 and as an Instructor of Highway Bridge Engineering in 1916 (University of Illinois 2015).
47 By 1922, Garver was in Little Rock, Arkansas and a member of the Arkansas Chapter of
48 the American Association of Engineers (Engineering News Record 1922, Volume 89: 61).

Garver later worked as Chief Bridge Engineer at the AHTD in Little Rock. He was involved as a designer and engineer on a number of bridges in the state in the 1920s and 1930s, including the Cache River Bridge at Hwy 412 in Lawrence/Greene County (1933), the South Fourche River AR 7 Bridge in Perry County (1933), the Lee Creek Bridge (Natural Dam Bridge) in Crawford County (1934), and the North Fork River Bridge in Baxter County built in 1934 (Swanda 1988; O'Reilly and Smith 1988; bridgehunter.com 2015).

The Fred Luttjohann Construction Company of Topeka, Kansas constructed bridges throughout Arkansas and the region. In 1936, the company built the Maple Street Overpass spanning the St. Louis & San Francisco Railroad at Maple Street in Fayetteville, Arkansas (Bennett 2005). Other notable contracts in Arkansas include the Big Piney Creek Bridge in Johnson County (1931), the Horsehead Creek U.S. 64 Bridge in Johnson County (1933), 12th St. Overpass in Pulaski County (1936), and the Jefferson St. Viaduct in Crawford County built in 1936 (bridgehunter.com 2015).

Bridge 2001 exhibits several elements indicative of the Art Deco style prevalent in the 1920s and 1930s. Emblematic of Art Deco designs are bold, crisp, and simple lines with an emphasis on long horizontal arrangement and vertical motifs. As a modernist movement spawned in the wake of World War I, Art Deco debuted as a form at the 1925 Exposition Des Art Decoratifs et Industriels in Paris. The style would greatly influence American design over the following two decades. In the 1930s, Art Deco was fully ensconced in American culture and it began to appear in more quotidian structures and public projects. The economic turmoil of the 1930s influenced American builders, leading to an emphasis on "Depression Deco" that exhibited an even greater efficiency of design and clean horizontal lines with minimal ornamentation aside from incorporated structural details (Delaware Department of Transportation 2015).

The concrete construction, economy of design, and contrasting emphasis on vertical motifs and long horizontal design found in Bridge 2001 accord with a general Art Deco attribution. The end posts reflect the pointed arch voids in the balustrades, with a vertical theme and open joints found on both stairway and decking handrails. The top rails have peaked caps, further reflecting the angular arch theme found throughout the bridge's design elements. Likewise, the vertical emphasis and material used for the recessed lighting units lining the east and west sides of the bridge deck demonstrate the simple and modern forms often found in Art Deco designs of the 1930s in America. The balustrades along each span course terminate in a curvilinear form. Although this is not atypical of the style, it is a variance from the angularity that dominates the bridge design as a whole.

4.2.2 MEMORANDUM OF AGREEMENT

The FHWA, in consultation with the Arkansas SHPO, determined that Bridge 2001 is eligible for inclusion in the NRHP under Criterion C and defined the APE for historic structures as the area within 100 feet of the edge of the ROW for the proposed action. Bridge Number 2001 is within the APE for AHTD Job Number CA0602. The action will require the removal or replacement of Bridge 2001, therefore resulting in an adverse effect to the structure. The FHWA consulted with the SHPO in accordance with Section

1 106 of the National Historic Preservation Act (16 U.S.C. 470f) and its implementing
2 regulations (36 CFR § 800) to resolve the adverse effect to Bridge Number 2001. The
3 FHWA invited the AHTD to participate in the consultation and become signatories to
4 a Memorandum of Agreement (MOA) defining the prescribed mitigation measures for
5 Bridge 2001.

6
7 Consulting parties and signatories are reviewing the MOA at the time of this report
8 publication. Under the terms of the MOA, and upon finalization, the FHWA will ensure
9 documentation of the bridge in accordance with the *AHPP Survey Procedures Manual*
10 (2012). Documentation will include color digital photography and black and white 35mm
11 photography, and completion of an Arkansas Architectural Resource Form. Per request of
12 the Arkansas SHPO, documentation will also include copies of the original plans for Bridge
13 Number 2001. The FHWA marketed Bridge 2001 on January 7, 2016.

1
2

Figure 7. Bridge 2001 Location

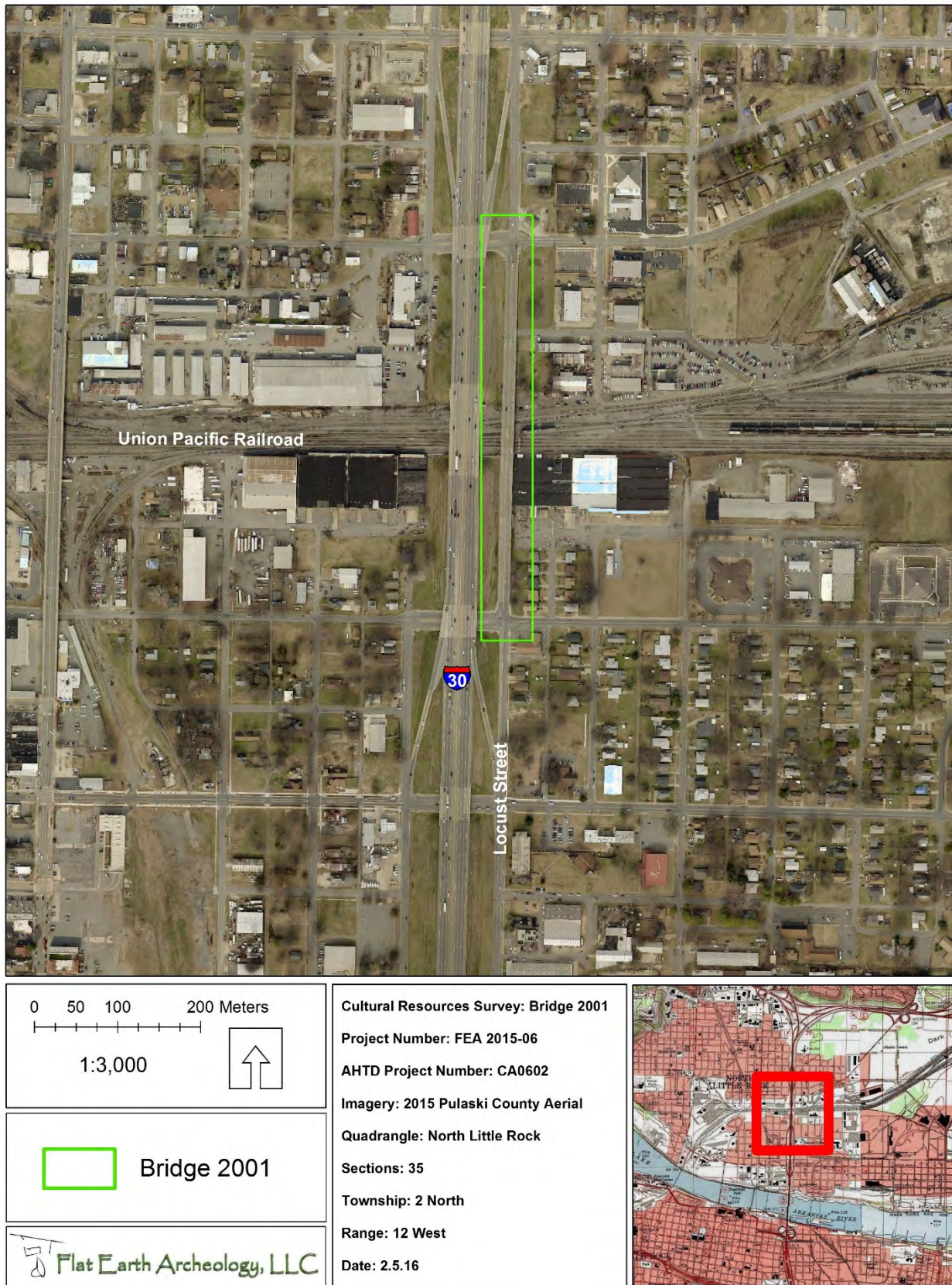
3
4

Figure 8. Bridge 2001 Bridge Record (AHTD 1936)

Form 1079-B-250-10-35-68740

BRIDGE RECORD

LOCATION
 Name or Station LOCUST ST. OVERPASS Over MISSOURI PACIFIC Br. No. 2001
 Year 1936
 Route No. Cry Street Section No. No. L.R. County POLASKI Job No. 6210

INSPECTION OF SITE		DESCRIPTION OF STRUCTURE				
By	Date	Span	Roadway	Height Foundation	Superstructure	Substructure
		<u>12-46'10"</u> <u>2-25'6"</u> <u>1-107'6"</u>	<u>40'0"</u>		<u>RED SPANS</u> <u>CONTIGUOUS I-BEAM SPANS</u>	<u>CONC. BENTS on CONC. PILES</u> <u>WOOD. PILES + SLAB</u>

Drawings No. 4397-98-99; 4400-27, ENCL; FPC 7, FPC 9, CP 7A, CP 7B, 2387, 1888

Plans Started	Completed	Sent to H. P. R. for Appr.	Appr. for Letting	Advertised
				<u>6-14-36</u>
Date of Letting	<u>8-14-36</u>	Contractor	<u>FRED LUTTJOHANN</u>	
Estimated Cost	<u>R-142,894.42</u>	Address	<u>TOPEKA, KANSAS</u>	
Contract Price	<u>\$8-188,085.16</u>	Completed Cost	<u>R-12,999.12</u> <u>\$8-173,023.14</u>	

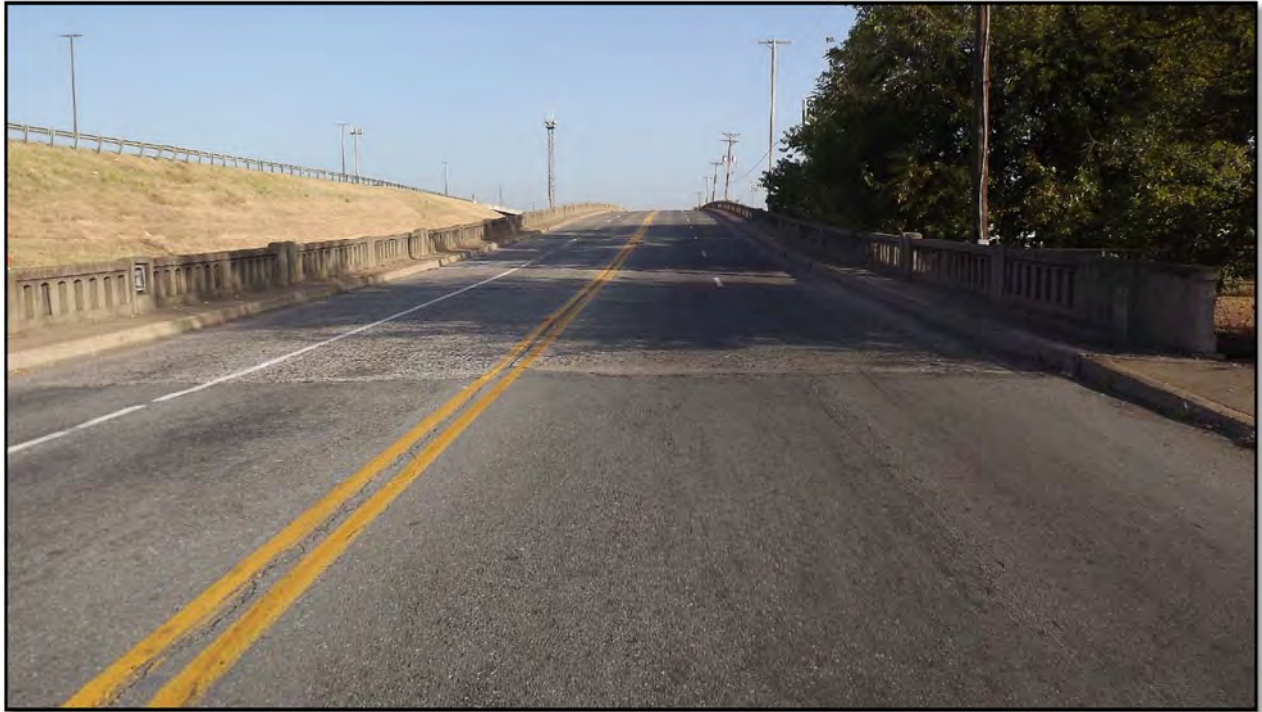
Remarks: Total Lenth Br 1018' TOTAL CONST \$186,022.26
Layout Dwg NO. 4402 (2 pages)

Figure 9. Bridge 2001 Bronze Bridge Name Plate – Located on the Southeast Corner



1
2
3

Figure 10. Bridge 2001 Roadway – View to the North



4
5

Figure 11. Bridge 2001 Drawing 4419 West Stairway Details (AHTD 1936)

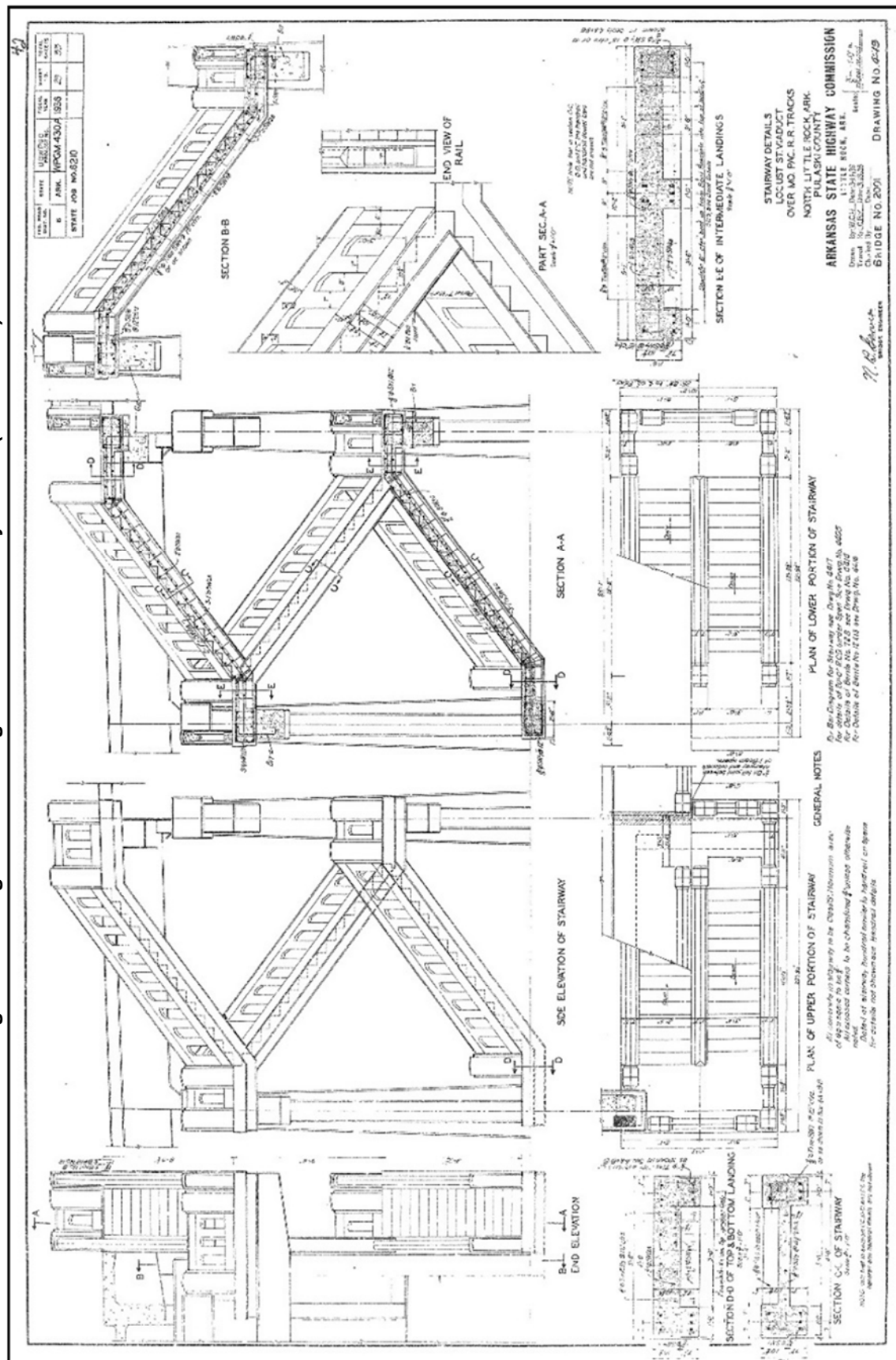


Figure 12. Bridge 2001 West Elevation Oblique View to the Southeast



Figure 13. Bridge 2001 West Elevation Oblique View to the Northeast



Figure 14. Bridge 2001 North End Substructure – View to the Southwest



Figure 15. Bridge 2001 Recessed Lighting Unit Roadway Elevation – South End View to the East



4.3 Historic Trails and Routes

The Project Area is proximal to the Trail of Tears removal corridors in central Arkansas. Removed southeastern tribes travelled this course with exploration parties and during removal between 1830 and 1839 (Horne 2006).

4.3.1 Arkansas: Indian Removal and the Trail of Tears

In the 1780s and 1790s, contingents of Cherokee people began voluntarily migrating to Arkansas due to internal divisions and external pressures from America, Britain, France, and Spain (Cornsilk 1997; Smithers 2015: 48-49). These Cherokee settlers sought to leave their eastern homeland, separate themselves from the Cherokee Nation, and establish an independent government west of the Mississippi. Under the terms of the Treaty of 1817, the Cherokee settlers exchanged their lands in the east for equitable acreage between the Arkansas River and White River in Arkansas Territory and gained recognition as a separate nation (Cornsilk 1997; Oklahoma State Digital Library 2015). Littlefield and Parins (2011:13) noted this as the first official stage toward Indian removal to the territory. The 1820 Treaty of Doak's Stand soon followed, by which some Choctaw first removed to lands in western Arkansas in exchange for thirteen million acres of their homeland in Mississippi (Choctaw Nation 2010). Many Cherokee settlers resided in the newly organized Arkansas territory until the Treaty of 1828 fully divested them of their lands there in exchange for seven million acres in Indian Territory (Cornsilk 1997; Oklahoma State Digital Library 2015).

The growing American population applied increasing pressure to the Native American peoples in the southeast and elsewhere. At the close of the first quarter of the nineteenth century, the topic of Indian removal was an issue of national concern. Presidents from Jefferson to Van Buren proposed solutions that ostensibly served to protect the United States against foreign invasion and free valuable resources for American settlers while affording native people a buffer against American expansion by removing them to the west (Littlefield and Parins 2011: xiii-xiv). Although the Arkansas Territory first appeared a suitable location for removal, by the late 1820s, population growth necessitated opening lands beyond its western border for tribal settlement (Littlefield and Parins 2011: 13).

President Andrew Jackson's first annual message to Congress on December 8, 1829 clarified the administration's position that tribes could not exercise self-governance within the bounds of states and territories. Jackson couched his argument in magnanimous language and proposed relocation as a means of averting the "weakness and decay" that befell tribes alienated from their resources. Although he stated the emigration should be voluntary, he noted that remaining within the limits of existing states and territories would subject native people to the laws of those entities where they would "ere long become merged in the mass of the population" (Miller Center, University of Virginia 2015).

On April 24, 1830, the Senate voted 28 to 19 for passage of the Indian Removal Act; the House of Representatives followed on May 26, barely passing the legislation by a vote of 102 to 97. President Andrew Jackson signed the bill into law on May 28, 1830. The Act authorized the president,

1 *to cause so much of any territory belonging to the United States, west of the river*
2 *Mississippi, not included in any state or organized territory, and to which the*
3 *Indian title has been extinguished, as he may judge necessary, to be divided into*
4 *a suitable number of districts, for the reception of such tribes or nations of Indians*
5 *as may choose to exchange the lands where they now reside, and remove there.*
6

7 The Act extinguished Indian claims to lands in states or territories owned by the United
8 States. The president designated an appropriation of five hundred thousand dollars to
9 execute the provisions of the Act and provide

10
11 *such aid and assistance to be furnished to the emigrants as may be necessary*
12 *and proper to enable them to remove to, and settle in, the country for which they*
13 *may have exchanged; and also to give them such aid and assistance as may be*
14 *necessary for their support and subsistence for the first year after their removal.*
15 *(Library of Congress 2015).*
16

17 The Indian Removal Act resulted in the relocation of the large southeastern tribes: the
18 Cherokee, Chickasaw, Choctaw, Creek, and Seminole, as well as Florida tribes and tribes
19 from the mid-west and northeast such as the Delaware, Seneca, Wyandot, Shawnee,
20 Sauk, Fox, Potawatomi, and Miami, among others. In the 1830s, the United States signed
21 eighty-seven tribal agreements and treaties governing removal and/or cessions of land
22 claims; although most removals occurred from 1830 through the early 1840s, the process
23 continued until as late as 1859 (Littlefield and Parins 2011: xiv).
24

25 The principal tribes associated with removal period routes through Arkansas are the
26 Cherokee, Chickasaw, Choctaw, Creek, and Seminole. Many of the twenty-one federally
27 recognized tribes associated with Arkansas bear that association because of forced
28 removal to Indian Territory in the 1830s. The Quapaw, Osage, and Caddo have well-
29 established ancestral ties to Arkansas. The United States facilitated the relocation and
30 disenfranchisement of these tribes through a number of treaties unassociated with the
31 Trail of Tears prior to the removal period of the mid-nineteenth century.
32

33 The Quapaw ceded all their lands in Arkansas under the terms of the treaties of 1818 and
34 1824. Under the Treaty with the Quapaw dated August 24, 1818, the Quapaw Tribe
35 relinquished to the United States millions of acres extending from the mouth of the
36 Arkansas River, following the Arkansas River west to the Canadian River fork and south
37 to the Big Red River, and eastward again to the Mississippi River thirty leagues
38 (approximately 100 miles) below the mouth of the Arkansas. The treaty retained a
39 relatively small reserve for the Quapaw people, extending from Arkansas Post near the
40 confluence of the Arkansas and White Rivers, due south to the Washita River, up that
41 river to the Saline Fork and following that waterway to a point where a due north transect
42 would intersect the Arkansas River at Little Rock (Oklahoma State Digital Library 2015).
43 Figure 17 is a detail of an 1821 United States Engineers map showing the substantial
44 Quapaw land cession (highlighted in blue) and the small triangular Quapaw Reserve
45 (demarcated in red) below Little Rock (Chief of Engineers 1821). The map does not
46 accurately depict the western Quapaw Line, which extended north to the Arkansas River
47 at Little Rock.
48

1 A stone marker erected in 1936 by the Captain Basil Gaither Chapter of the Daughters of
2 the American Revolution at the corner of 9th St. and Commerce Streets in Little Rock,
3 marks the western Quapaw Line. Survey markers set in the pavement follow the line
4 through the Little Rock Quapaw Quarter neighborhood to the terminus at the Junction
5 Bridge and the "Little Rock" at the Arkansas River.

7 The Treaty of November 15, 1824 ceded the small reserve to the United States and thus
8 terminated Quapaw claim to any of their ancestral lands in Arkansas. Under the terms of
9 the treaty, the Quapaw people were "concentrated and confined" to a district with the
10 Caddo Indians, so that they could form a part of the tribe. The Quapaw were directed to
11 begin removing to the Caddo lands by January 20th, 1826 (Oklahoma State Digital Library
12 2015).

14 The APE south of the Arkansas River is within the original Quapaw lands ceded in 1818
15 and the Quapaw Reserve occupied from 1818 to the final removal in early 1826. The
16 western boundary of the Quapaw Line commemorated by the monument and survey
17 markers is outside the APE and will not be affected by the proposed action.

19 The Treaty of 1808 (Treaty of Fort Clark) ceded all Osage lands in Arkansas north of the
20 Arkansas River to the United States. The cession line began at Fort Clark on the Missouri
21 River and ran south to the Arkansas River and onward along that waterway to the
22 Mississippi River. Under the terms of the treaty, the Osage people ceded all lands east
23 of the line demarcated by the Mississippi River and north of the Arkansas River. The
24 cession effectively ended Osage dominion in the section of the future territory that
25 included the APE north of the Arkansas River (Oklahoma State Digital Library 2015).
26 Figure 18 is a detail from an 1821 United States Engineers map showing the boundaries
27 defined by the Treaty of Fort Clark (demarcated in orange), including the APE north of
28 the Arkansas River at Little Rock (Chief of Engineers 1821).

30 In 1835, the Caddo ceded their lands within the Territory of Arkansas and the United
31 States at large (Oklahoma State Digital Library 2015). These three tribes, among others,
32 count much of Arkansas within their current area of interest. Consultation should consider
33 the interests of all tribal nations associated with the state and the area encompassed by
34 the APE.

36 The Trail of Tears National Historic Trail specifically addresses the 1838-1839 removal of
37 the Cherokee from their homelands in Georgia, Alabama, and Tennessee to Indian
38 Territory. The routes comprising the trail include four waterborne detachments and
39 thirteen land detachments. Both water and land routes passed through central Arkansas
40 in 1830 and 1839. The land routes approached from the Memphis to Little Rock Road
41 through present-day North Little Rock. The water route travelled upstream on the
42 Arkansas River from the confluence with the Mississippi River in route to Indian Territory
43 (National Park Service 2015).

45 Soon after the signing of the Indian Removal Act, the 1830 Treaty of Dancing Rabbit
46 Creek finalized the last cession of reserved Indian lands in Arkansas, resulting in the loss
47 of the remaining Choctaw lands in Mississippi as well as reservation land in western
48 Arkansas (Littlefield and Parins 2011: 244; Oklahoma State Digital Library 2015).

1 As a locus of removal corridors, central Arkansas witnessed the passage of more than
2 40,000 tribal people travelling to Indian Territory (Paige et al. 2003: 2). It is important to
3 note that many tribes maintain proprietary data regarding removal corridors. Therefore,
4 the figures shown in this report are not an exhaustive account of removal routes through
5 central Arkansas (Figures 18 and 19).

7 There are no extant structures within the APE associated with the Trail of Tears National
8 Historic Trail or other removal period corridors. Likewise, there are no documented
9 archeological sites within the APE associated with removal period activities. However,
10 many of the streets in central Arkansas and in the APE retain configurations similar to
11 those during the time of removal and provide valuable information and insight when
12 interpreting the cultural context (Paige et al. 2003: 7). Geography determined the principal
13 role central Arkansas would play in the removal of the southeastern tribes. The Arkansas
14 River crossed the entirety of the state east to west from the confluence with the
15 Mississippi. The river provided a capable, if sometimes intermittent, water route while the
16 Southwest Trail and Military Road to Fort Smith afforded land courses to Indian country
17 to the west. Constructed in 1827, the Military Road provided access to the western
18 Arkansas Territory. The Military Road began at Crittenden's Ferry, located directly
19 opposite the 'little rock' (located at the terminus of Rock Street and outside the APE). The
20 section of the road heading west from the ferry site is within the North Little Rock
21 Riverfront Park (Paige et al 2003: 3-8).

23 Although there were routes to the west from central Arkansas, aside from the Southwest
24 Trail that ran from St. Louis, through North Little Rock/Little Rock and on to Washington
25 and the Red River, there was no practical means for traversing the eastern half of the
26 territory by land. By 1828, a road connected to a Little Rock to Memphis road creating an
27 east/west land route across the territory (Paige et al. 2003: 3-4). This road proved
28 instrumental to the government's efforts during the removal period.

30 In February 1832, David Rorer began operating a second ferry site located at the foot of
31 Locust Street in North Little Rock, approximately one-quarter mile east downriver from
32 the Crittenden Ferry site. Rorer later sold the ferry to William Woodruff, the publisher of
33 the *Arkansas Gazette*. See Figure 20 detailing the ferry location in 1855 current APE.
34 The Rorer Ferry site is now the location of the North Little Rock Marina on the Arkansas
35 River. Development significantly affected the site, as did inundation arising from 1960s
36 dam construction on the river. The Memphis to Little Rock road led to the site of Rorer's
37 Ferry and continued west, closely following the course of the river to Crittenden's Ferry.
38 From this location, the road ran west and is now within the North Little Rock Riverfront
39 Park (Paige et al. 2003: 4-8).

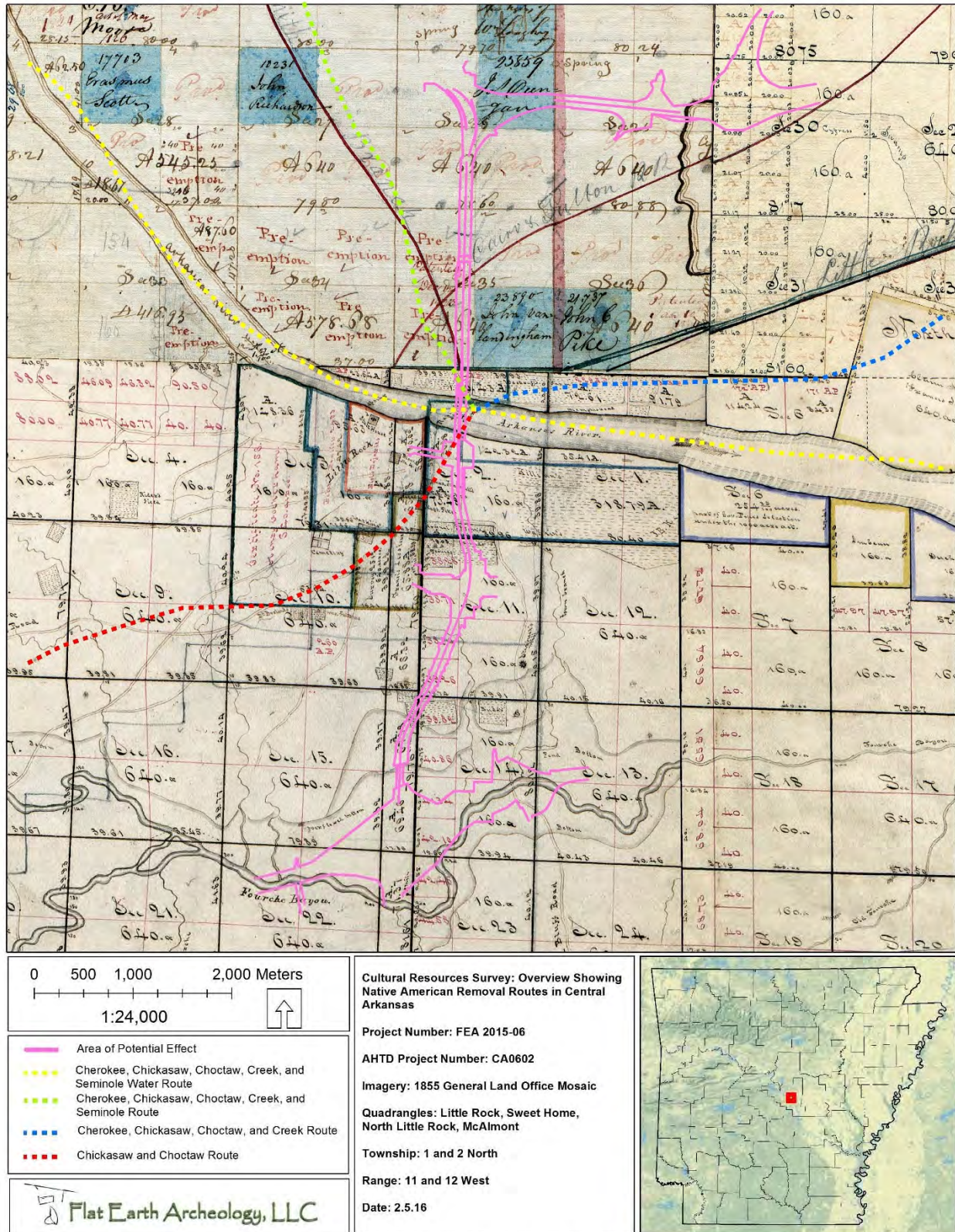
Figure 16. 1821 Map Detail Showing the 1818 Treaty Quapaw Cession and Reservation



Figure 17. 1821 Map Detail Showing the 1808 Treaty of Fort Clark Osage Cession



1 **Figure 18. Overview of Removal Corridors and the Current APE on an 1855 GLO Mosaic**



Source: Removal Route shapefile derived from Footprints Across Arkansas: Trail of Tears Removal Corridors in Arkansas for the Cherokees, Chickasaws, Choctaws, Creeks, and Seminoles. Amber Horne 2006

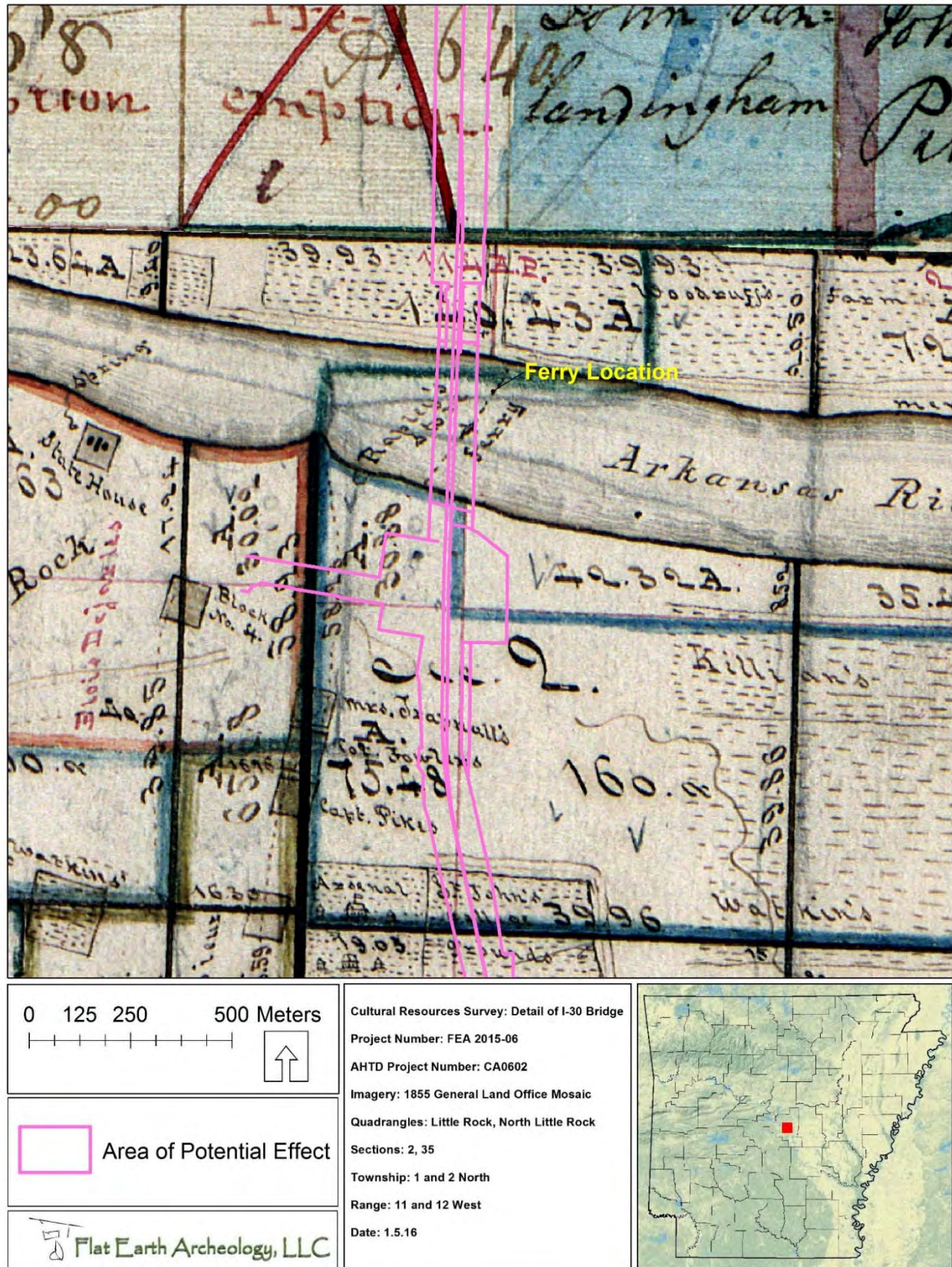
1 **Figure 19. Overview of Removal Corridors and the Current APE on 2015 Aerial Imagery**



Source: Removal Route shapefile derived from Footprints Across Arkansas: Trail of Tears Removal Corridors in Arkansas for the Cherokees, Chickasaws, Choctaws, Creeks, and Seminoles. Amber Horne 2006

1

Figure 20. Circa 1855 River Ferry Crossing Relative to the I-30 Bridge



234

4.4 General Land Office Maps

Flat Earth Archeology consulted the First Land Patent records (Table 1) and the General Land Office (GLO) maps for information regarding the history of land use in Township 1 North, Range 12 West, Sections 2, 3, 11, 13, 14, 15, 22, and 23; Township 2 North, Range 12 West, Sections 25, 26, and 35; and Township 2 North, Range 11 West, Sections 19 and 30. The original 1855 GLO survey maps show topographic features, agricultural fields, ferry locations, roads, trails, structures, land ownership, and other data that informed the cultural resources investigation of the APE. Figures 21, 22, 23, and 24 highlight the archeological survey segments on the 1855 GLO maps. The four segments shown in these figures are the same referenced in Figure 29 and described in Sections 5.3 through 5.6. The 1864 Map of Little Rock and Vicinity (U.S. Army Chief of Engineers 1864) shows the APE in Little Rock and various land owners and structures, including St. John's College that was being used as a U.S. Military General Hospital (Figure 25).

Table 1. First Land Patent Records

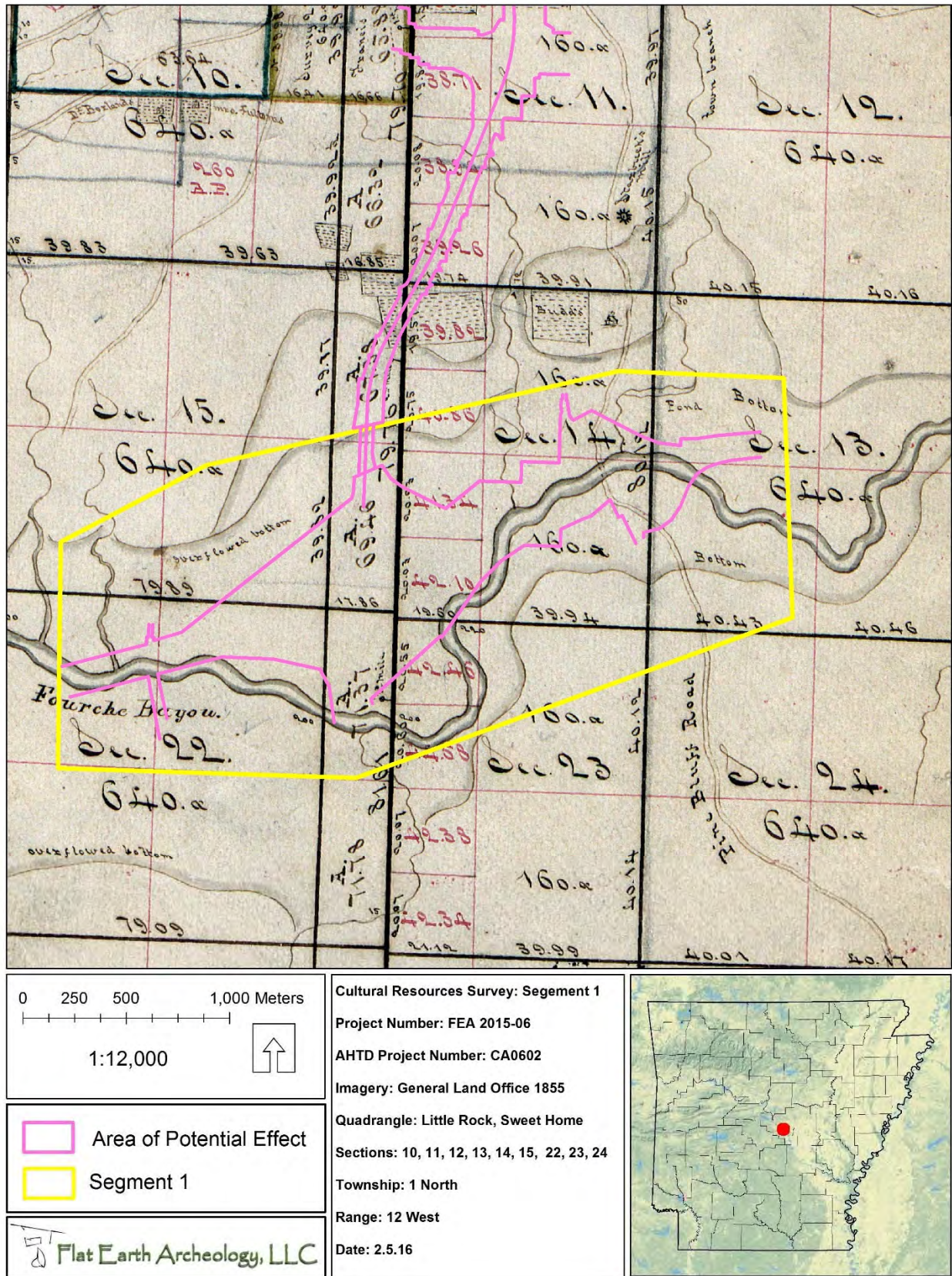
Township & Range	Section	Area	Name	Date	Acreage	Entry Type
T14S - R12W	8	SE1/4	(P) Augustus C. L. Hill (W) John Weston	1851	160	Scrip Warrant (Act of 1847)
	9	W1/2 SW1/4	Andrew J. Floyd and James W. Strong	1860	120	Cash
	17	N1/2 SE1/4	William T. Boen, David Bunn, Che Ah	1851	160	Choctaw Scrip
		S1/2 SE1/4	William T. Boen, Mordica Mitchel, Henry Nelson, Ik Lan Ah Tah	1851	320	Choctaw Scrip
		SE1/4 NE1/4	David Bunn and William Gray	1851	40	Scrip Warrant (Act of 1847)
		NE1/4 NE1/4	Wiley J. Bunn and David Bunn	1860	40	Cash
	20	NE1/4 SE1/4	Jolly Atkins	1861	40	Cash
		SE1/4 NE1/4	William T. Bowen	1850	40	Cash
		NE1/4 NE1/4	James S. Dunn	1860	40	Cash
		SE1/4 SE1/4	Andrew J. Floyd	1859	80	Cash
	29	SE1/4 NE1/4	George W. Floyd	1856	80	Cash
		NE1/4 SE1/4	Jethro D. Ricks	1861	40	Cash
		NE1/4 NE1/4	William T. Bowen, Mordica Mitchel, Henry Nelson, Ik Lan Ah Tah	1851	320	Choctaw Scrip
		SE1/4 SE1/4	Robert W. Andrews	1854	40	Scrip Warrant (Act of 1850)

Table 1. First Land Patent Records						
Township & Range	Section	Area	Name	Date	Acreage	Entry Type
	32	NE1/4 SE1/4	William J. Craven	1886	40	Homestead
		N1/2 NE1/4	Jethro D. Ricks	1852	80	Cash
		SE1/4 NE1/4	Jethro D. Ricks	1859	40	Cash
		SE1/4 SE1/4	John Rowland	1855	80	Cash
	33	S1/2 SW1/4	William B. Hanna	1899	160	Homestead
T15S - R12W	4	W1/2 NW1/4	George N. Johnston	1904	55.06	Cash
		NW1/4 SW1/4	Reuben M. Webb	1904	160	Homestead
	5	E1/2 SE1/4	Reuben M. Webb	1904	160	Homestead
	8	W1/2 SE1/4	Wilburn N. Mayfield	1905	160	Cash
		SE1/4 NE1/4	Monroe Slaughter	1889	40	Homestead
		NE1/4 NE1/4	Reuben M. Webb	1904	160	Homestead
	17	E1/4 NW1/4	Silas S. Cathey	1905	160	Cash
		W1/2 SW1/4	Marcus C. Smith	1902	160	Cash
	18	SE1/4	George Wood	1906	160	Homestead
	19	N1/2 NE1/4	Isaac V. Ables	1904	159.95	Cash
		SW1/4 NE1/4	Isaac V. Ables	1904	159.95	Cash
		W1/2 SW1/4	John H. Sellers	1905	150.63	Cash
		NE1/4 SW1/4	John H. Sellers	1905	150.63	Cash
	30	W1/2 NW1/4	Rufus A. Williams	1904	102.31	Cash
T15S - R13W	25	SE1/4 NE1/4	Fred Williams	1899	160	Homestead
		NE1/4 SE1/4	Lydia M. Williams	1895	148.38	Homestead
		NE1/4 NE1/4	Rufus A. Williams	1904	102.31	Cash
	36	W1/2 SE1/4	Lewis J. Daniel	1905	160	Cash
		NE1/4 SE1/4	Lewis J. Daniel	1905	160	Cash
		NE1/4 SW1/4	Jesse Mauldin	1856	40	Cash
T16S - R13W	1	SE1/4 SW1/4	Samuel R. Herring	1860	40	Cash
		S1/2 NW1/4	Davenport G. Holmes	1904	160.12	Cash
		NE1/4 SW1/4	George W. Parker	1893	160	Homestead
		NE1/4 NW1/4	Horace E. Reynolds	1905	132.39	Homestead
	12	NW1/4	Gideon J. Blann	1905	160	Cash

1
2
3
4
5
6
7
8
9
10
11
12
13

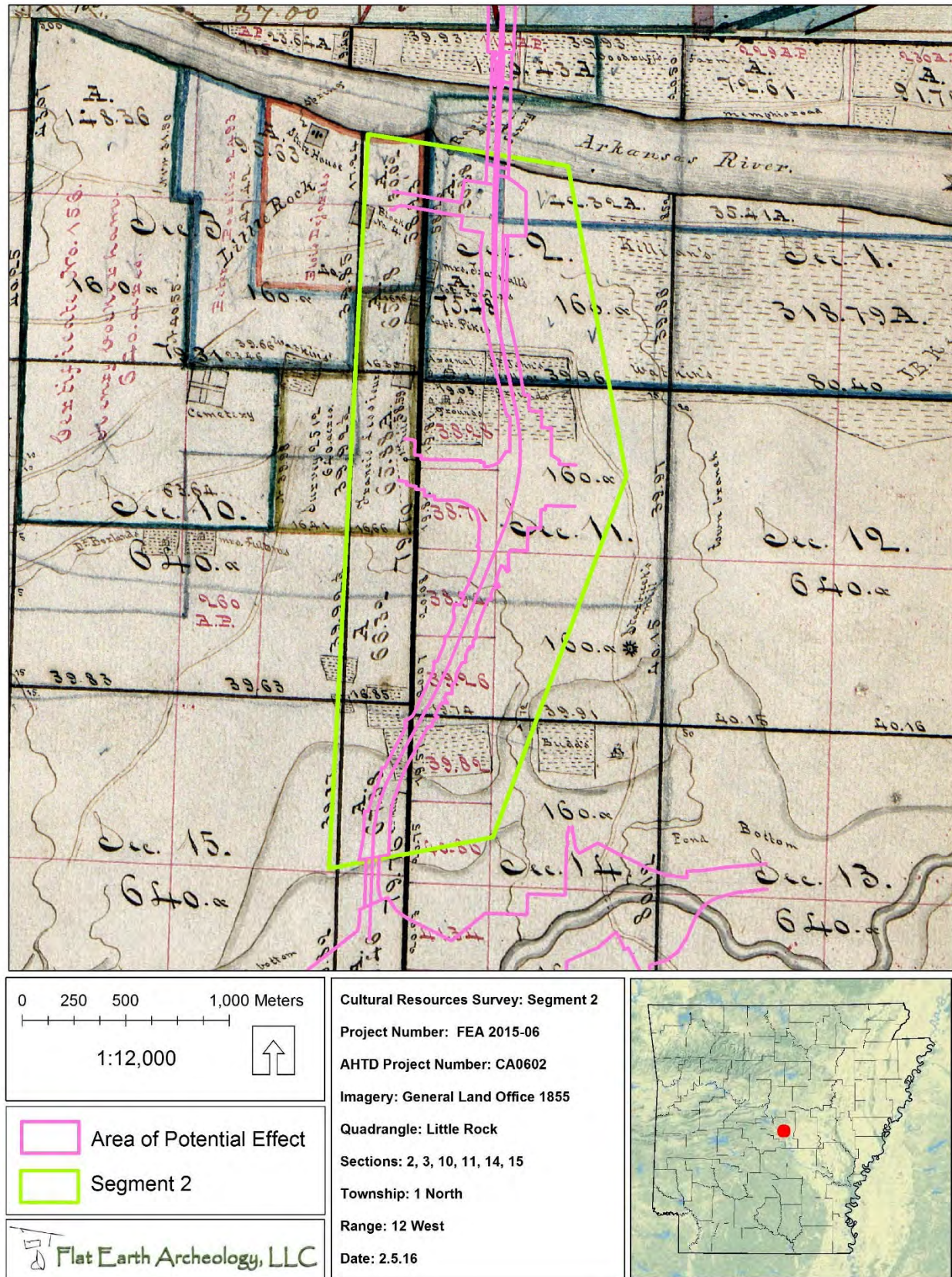
1

Figure 21. GLO Map for Segment 1 of APE

2
3
4

1

Figure 22. GLO Map for Segment 2 of APE



234

1

0 250 500 1,000 Meters

1:12,000

Area of Potential Effect

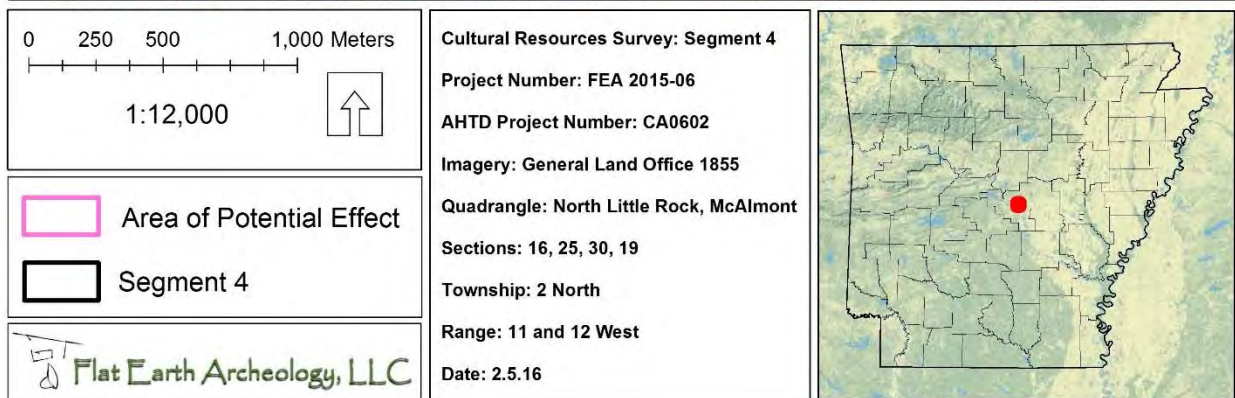
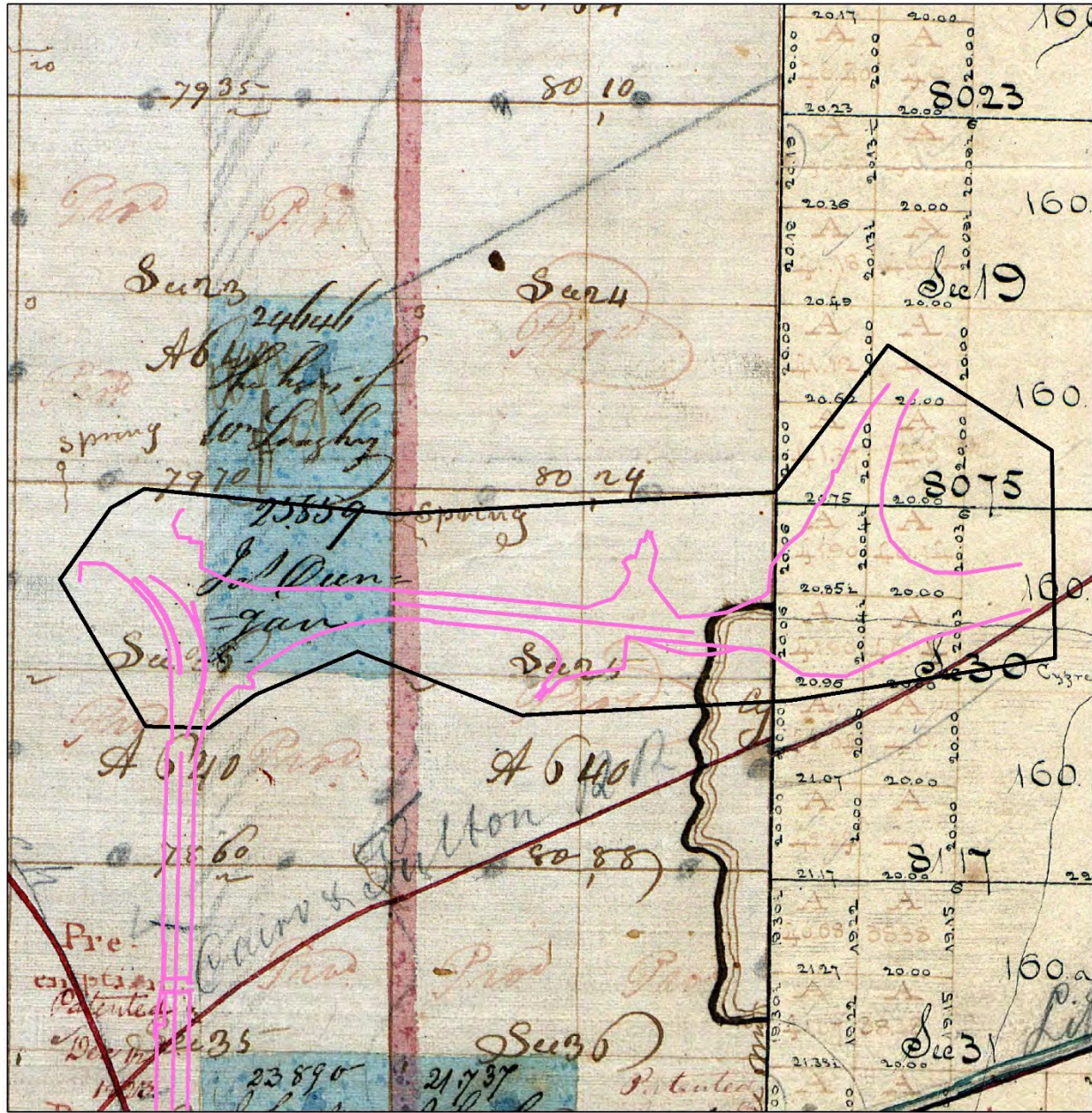
Segment 3

Cultural Resources Survey: Segment 3
Project Number: FEA 2015-06
AHTD Project Number: CA0602
Imagery: General Land Office 1855
Quadrangle: North Little Rock
Sections: 2, 26, 35
Township: 1 and 2 North
Range: 12 West
Date: 2.5.16

2
3
4

1

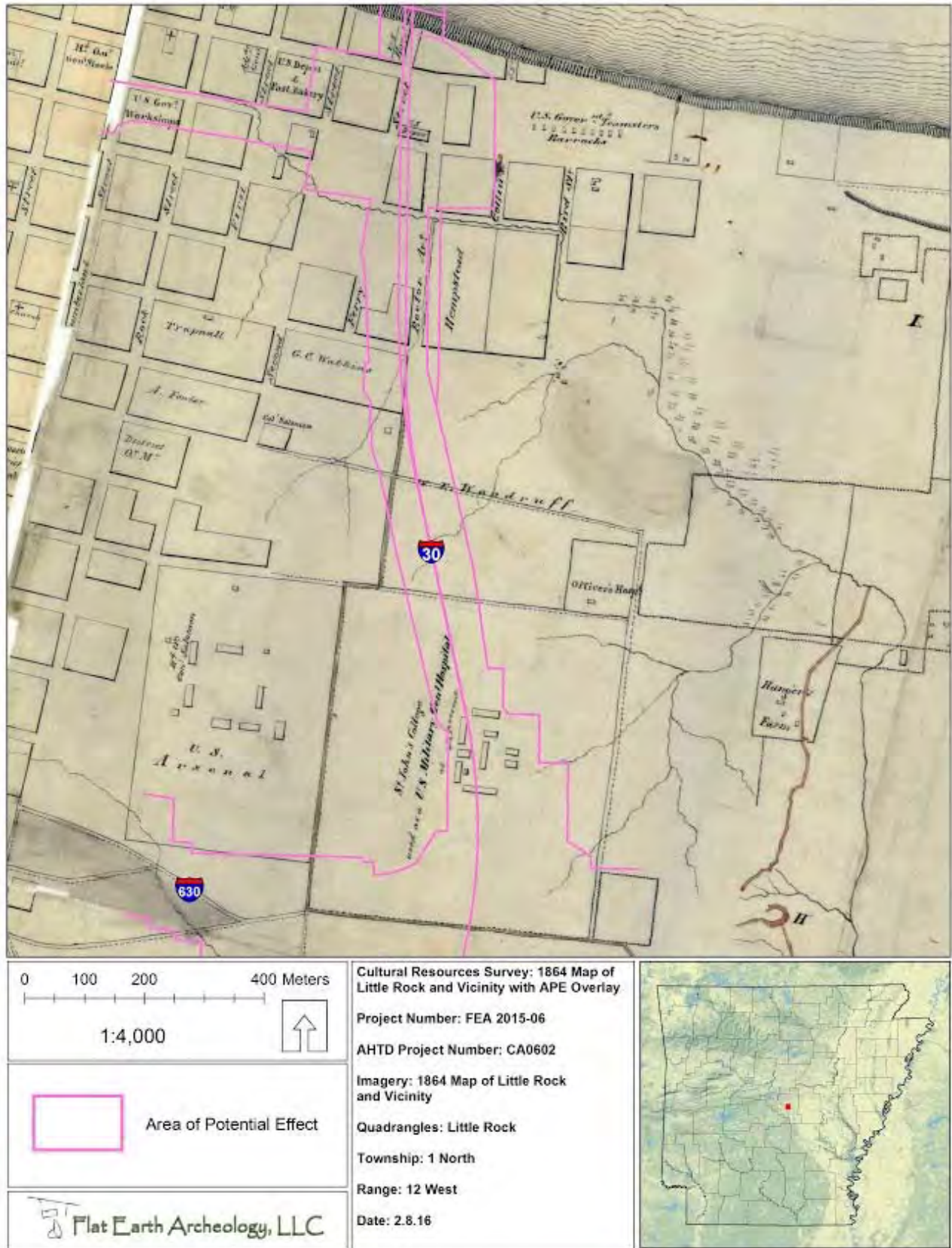
Figure 24. GLO Map for Segment 4 of APE



2
3
4

1

Figure 25. 1864 Map of Little Rock and Vicinity

2
3
4

5.0 LABORATORY AND FIELD METHODOLOGIES AND RESULTS

5.1 Lab Methods

Artifacts recovered during this project were assigned Field Specimen Numbers (FSN) while in the field. The FSN were assigned in sequential numbers at each site, according to the date and time the artifacts were recorded into the FSN log by the individual archeologists in the field. While this sometimes makes proveniences in the artifact tables appear random, it is the best way to assure that all artifacts are assigned an FSN in the field and collected together (i.e. no artifacts are left in the bottom of a field technician's backpack, only to be discovered at a later date).

All of the collected artifacts were returned to the Flat Earth Archeology laboratory where they were washed, catalogued, analyzed and prepared for permanent curation with the Curation Facility at the University of Arkansas. Standard definitions for artifacts were utilized during analysis, as found in *DELOS: A Computerized Artifact Inventory and Analysis System* (Cande and Barnes 1992). During the basic analysis, all artifacts were catalogued, counted, and weighed in grams. Separate analysis sheets were used for historic artifacts and prehistoric artifacts. The Laboratory Serial Number (LSN) was broken into functional classes in the historic analysis sheets (such as Architectural Group, Kitchen Group . . . etc.). For prehistoric analysis sheets the LSNs were broken into functional classes or material type (such as Ceramic, Fire-cracked Rock . . . etc.) LSNs were not assigned to each group specifically, but instead were assigned individually for each FSN. Artifact Serial Numbers (ASNs) were then added for each specific artifact or a group of similar artifacts (i.e. cut nails or clear glass . . . etc.).

Collections and analysis forms will be curated by the AAS under the assigned permanent accession numbers: 2015-755 through 2015-759. Jose Vilahomat, RPA conducted the prehistoric artifact analysis and Brett Sullivan conducted the historic artifact analysis.

5.2 Field Methods

Chris Branam, RPA was the principal investigator for this project. Fieldwork was conducted over the course of six weeks in July and August. Fieldwork was directed by Jose M. Vilahomat, RPA and Chris Branam, RPA. Mr. Vilahomat and Mr. Branam were assisted by archeological field technicians Devin Sorrows, Brett Sullivan, and Zach Burt. Eric Mills, M.A. completed the documentation of Bridge 2001. Because of the large size and somewhat disjointed nature of the Project Area, the Project Area was divided into four separate "segments" for organizational purposes (see Figure 29). Each segment is discussed individually below. Each of the segments was divided into separate "areas" that are also discussed individually within the subheadings of each segment.

The fieldwork consisted of a pedestrian survey with transects spaced at a maximum of 20 meters apart. Shovel tests were excavated at 20 meter intervals on each transect with the exception of those placed near known sites, which were excavated at 5 meter intervals. All of the soils from the shovel tests were screened through ¼ inch hardware mesh. Shovel tests were approximately 35 centimeters in diameter and excavated to 50 centimeters below surface except when bedrock, water, or culturally sterile subsoil was encountered at shallower depths, which was the case in most shovel tests. Shovel tests

1 were excavated by soil horizon. Shovel tests were recorded with fillable forms on an
2 electronic tablet in the field. Soil descriptions for profiles in the shovel tests were recorded
3 using metric depth measurements and were described using textural class terminology
4 and Munsell Soil Color Charts. A total of 5,004 shovel tests were excavated during the
5 Phase I survey.

6
7 Auger testing was conducted at the toe slopes of each bridge that is scheduled to be
8 widened within the Project Area. Chris Branam conducted the manual auger testing with
9 a 4" auger tube with up to 12 foot extensions (Figure 26). The auger tests were excavated
10 through fill layers to a depth well into the native soils. A total of 80 auger tests were
11 excavated during the Phase I survey. Four auger tests were conducted at the Arkansas
12 River I-30 Bridge (one in each corner of the river crossing - NW, NE, SW, SE) (Figure
13 27). At all of the other bridges (terrestrial), four auger tests were excavated depending on
14 the safest location to conduct the auger testing. All of the soils from the auger tests were
15 screened through ¼ inch mesh, just as the soils from the shovel tests. No cultural
16 materials were observed in the auger tests. The auger tests near the river were excavated
17 through a stratum of modern fill, then typically sand, and finally to clay subsoil (Figure 28).
18 The bridges over terrestrial crossings were shallower to native subsoils.

Figure 26. Auger Test on the Northwest Corner of the I-30 River Bridge



Figure 27. Auger Test on the Northwest Corner of the I-30 River Bridge at Roughly 3.2 Meters



Figure 28. Clay Subsoil at Bottom of Auger Test



At each newly identified archeological site additional shovel tests were excavated to determine the site boundaries. The delineation at the archeological sites was achieved by excavating shovel tests in 5 meter intervals in each cardinal direction from the positive shovel test or surface find (depending on site type, landform, and vegetation). All newly identified archeological sites were mapped to-scale, photographed, and UTM coordinates were recorded with a handheld GPS unit. Site forms were completed for each new archeological site and submitted to the AAS. A description of each site and a recommendation regarding each newly recorded archeological site's potential eligibility for the National Register of Historic Places (NRHP) can be found in the Site Descriptions section each of the Project Areas discussed later in this report.

Previously recorded sites in the project area were revisited and examined. Site revisit forms were completed for all previously recorded sites in the project area and submitted to the AAS.

Although complete site significance evaluations are outside the scope of this Phase I survey; based on the current fieldwork, a preliminary evaluation and recommendation for NRHP significance of each newly recorded site was established using the National Register Criteria for Evaluation (36 CFR 60.4) set forth by the Department of Interior, National Park Service:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

Criterion A. *That are associated with events that have made a significant contribution to the broad patterns of our history; or*

Criterion B. *That are associated with the lives of significant persons in or past; or*

Criterion C. *That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or*

Criterion D. *That have yielded or may be likely to yield, information important in history or prehistory.*

Ordinarily cemeteries, birthplaces, graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

a. *A religious property deriving primary significance from architectural or artistic distinction or historical importance; or*

b. *A building or structure removed from its original location but which is primarily significant for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or*

c. *A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building associated with his or her productive life; or*

d. *A cemetery that derives its primary importance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or*

e. *A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or*

f. *A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or*

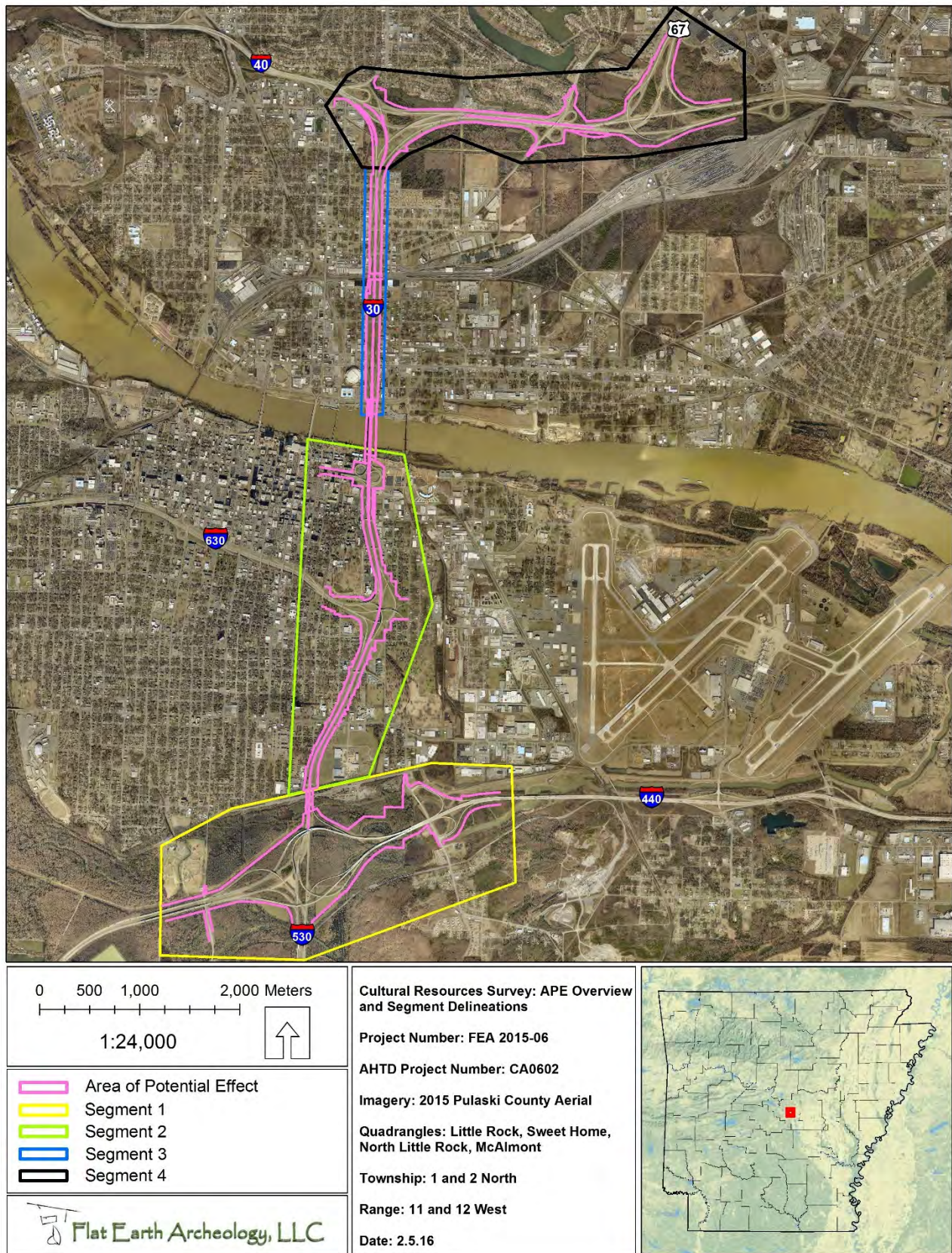
g. *A property achieving significance within the past 50 years if it is of exceptional importance.*

The following considerations were also included in the evaluations during this project: (1) the nature of the deposits such as the presence or potential presence of intact strata, features, or buried horizons; (2) the temporal affiliation and function of the site; (3) the topographic situation represented; (4) the contents of the site including the density and diversity of artifacts; and (5) the site's research potential. Also taken into account were those characteristics culled from *A State Plan for the Conservation of Archeological Resources in Arkansas* (Davis 1994, Amended 2010), which usually make a site significant and therefore eligible to the National Register. These include:

1. Sites with undisturbed single component deposits.
2. Sites with undisturbed intact material or levels which could provide absolute dates for associated cultural material.
3. Sites with stratified deposits.
4. Sites with human skeletal populations.
5. Sites with good preservation or evidence of the reconstruction of the environment and development of cultivation of plants.
6. Sites with evidence of structures, a village plan, etc., which might provide information on the social, political, and religious organization.
7. Sites with tool kits.

1

Figure 29: Archeological APE Split into Segments 1 through 4



2

5.3 Archeological Work in Segment 1

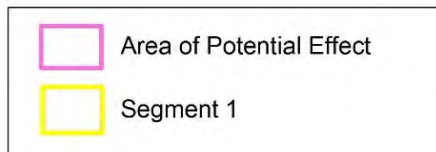
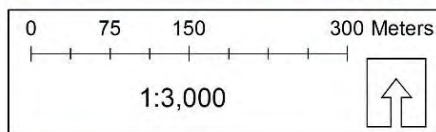
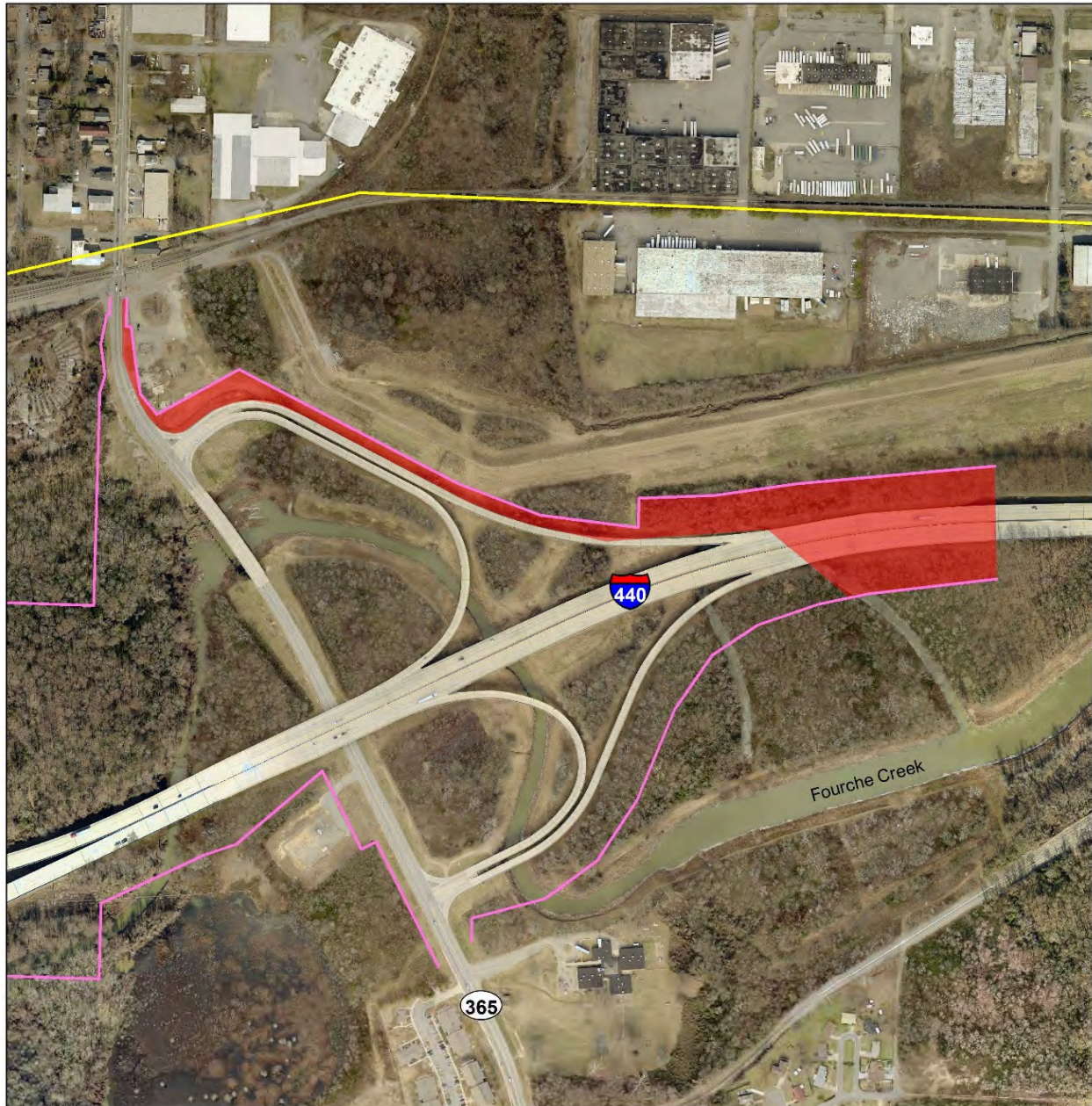
Segment 1 consisted of the Project Area near the I-30, I-530, and I-440 interchanges south of the Union Pacific railroad (see Figure 29). Segment 1 was divided into 12 areas that are described individually below. There were a total of 1,859 shovel tests in Segment 1. For a complete inventory of the shovel tests in Segment 1 see Appendix C. Much of this area is located in floodplain, as reflected in the soils found in this segment. A total of two new archeological sites were identified in Segment 1 during the survey (Sites 3PU969 and 3PU970). These sites are discussed further in the Site Descriptions portion of this report. There were no previously recorded archeological sites within the survey boundaries in Segment 1.

5.3.1 Area A of Segment 1

Area A in Segment 1 is located along the I-440 and the I-440 northern interchange with Hwy 365 (also known as Springer Street). Fourche Creek is located south of Area A. This area covers 9.97 acres (Figure 30). Four transects were walked in Area A and a total of 90 shovel tests were excavated (Figures 31 and 33). The general soil stratigraphic sequence in this area was typically a yellowish brown (10YR5/4) hydric clay over a dark yellowish brown (10YR3/4) hydric clay subsoil (Figure 32). All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 30: Area A of Segment 1 (shaded in red)

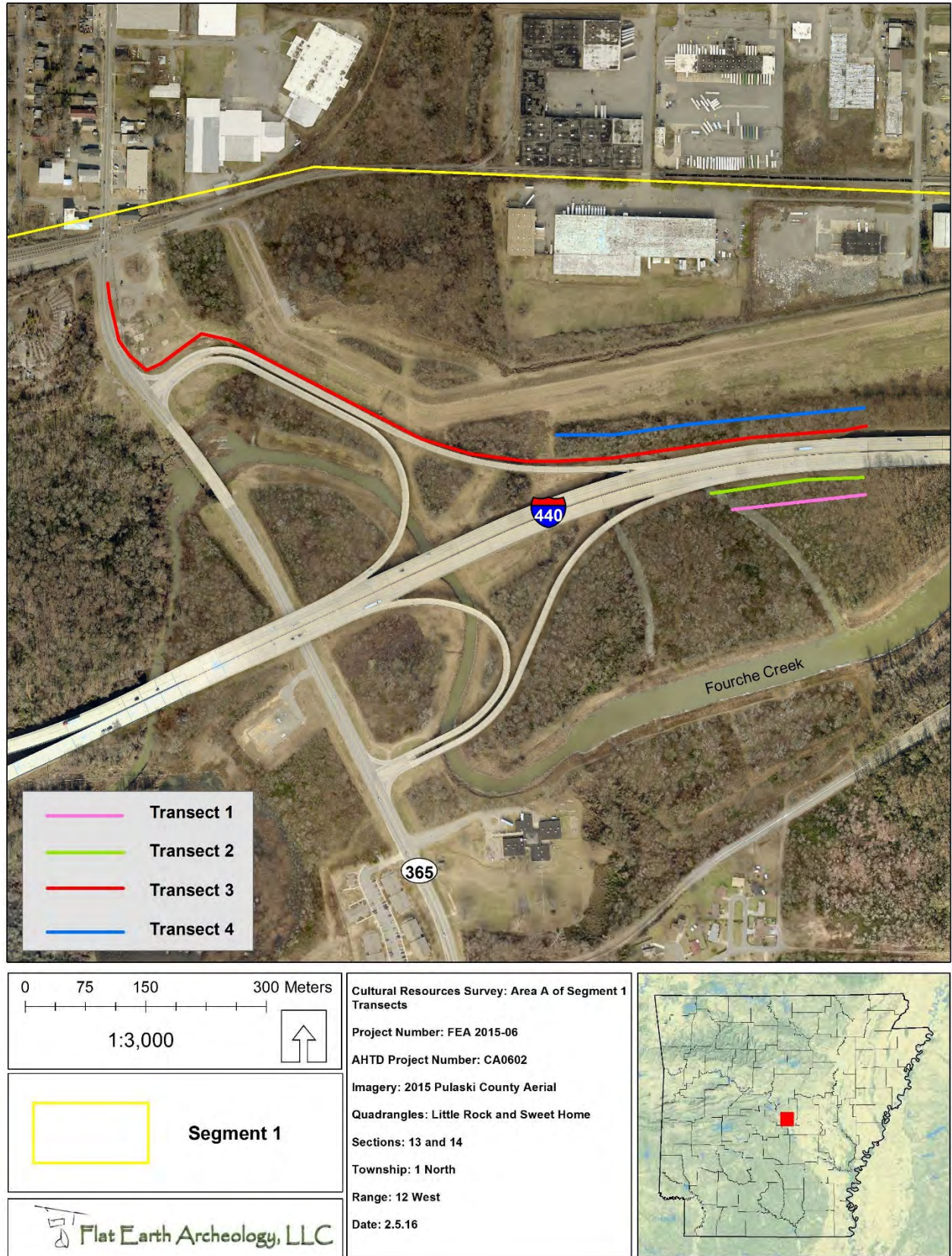


Cultural Resources Survey: Area A of Segment 1
 Project Number: FEA 2015-06
 AHTD Project Number: CA0602
 Imagery: 2015 Pulaski County Aerial
 Quadrangles: Little Rock and Sweet Home
 Sections: 13 and 14
 Township: 1 North
 Range: 12 West
 Date: 2.5.16



2
3
4

1

Figure 31: Transect Locations in Area A of Segment 1

2

3

1 **Figure 32: Shovel Test 20 on Transect 1 in Area A of Segment 1 Showing Hydric Soils**



2

3

Figure 33: Transect 1 in Area A of Segment 1 (facing east)



4

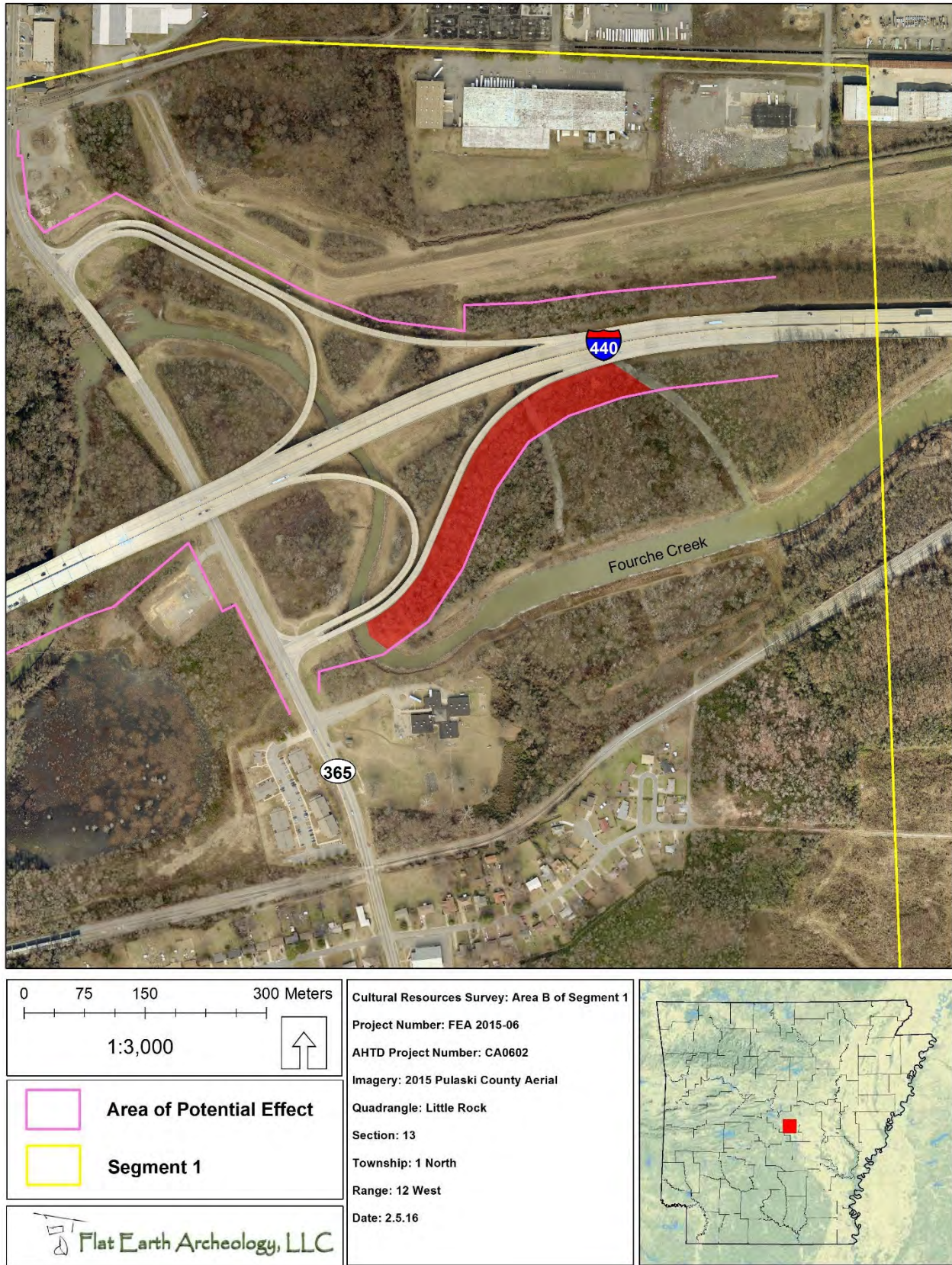
5

1 **5.3.2 Area B of Segment 1**

2 Area B in Segment 1 is located along the I-440 and the I-440 southern interchange
3 with Hwy 365 (also known as Springer Street). This area covers 6.91 acres (Figure
4 34). Two transects were walked in Area B and a total of 49 shovel tests were
5 excavated (Figure 35). The general soil stratigraphic sequence in this area was
6 typically a yellowish brown (10YR5/4) hydric clay over a dark yellowish brown
7 (10YR3/4) hydric clay subsoil. All of the shovel tests were negative for cultural
8 materials and no cultural features or materials were observed on the surface during
9 the pedestrian survey.

10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54

1

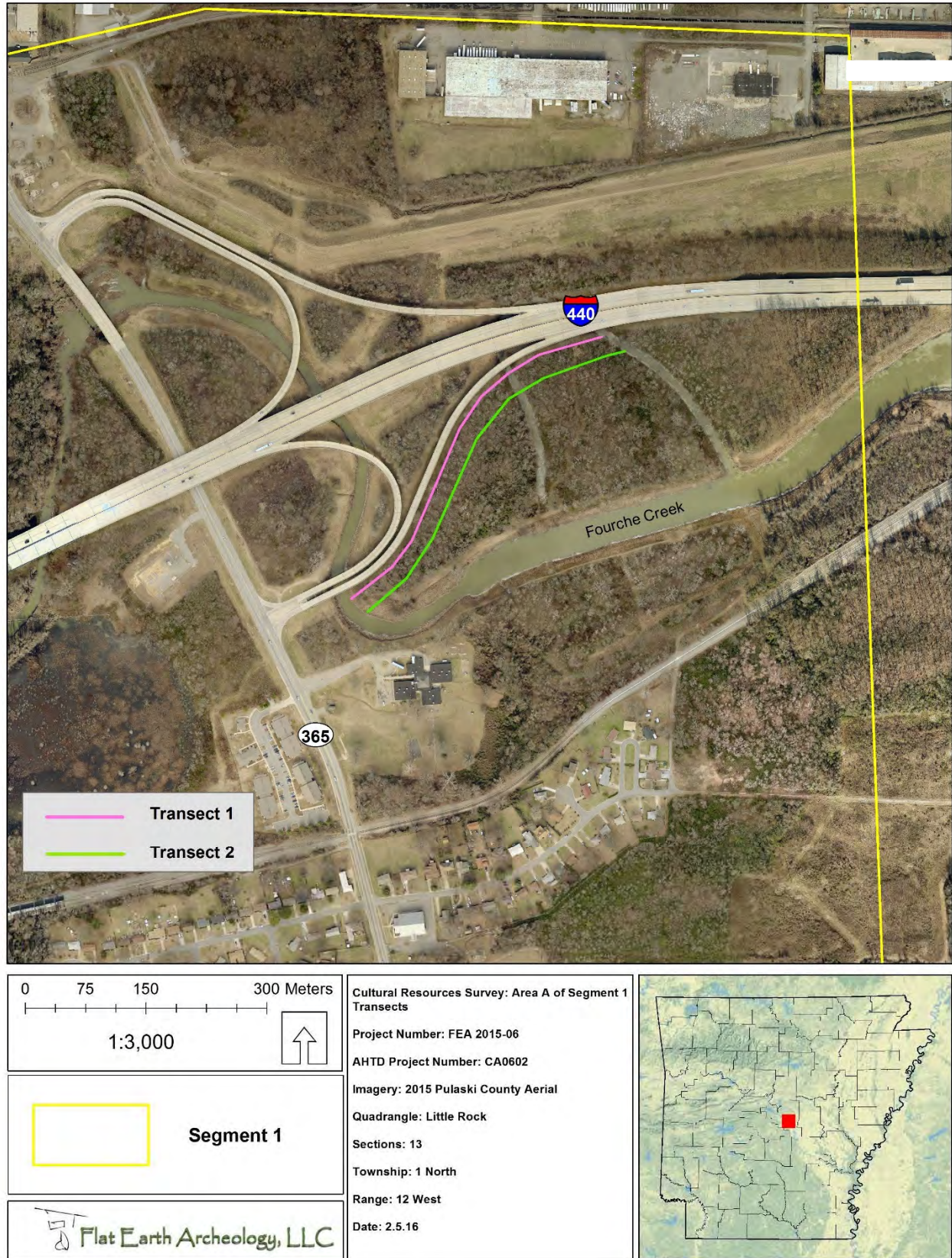
Figure 34: Area B of Segment 1 (shaded in red)

2

3

1

Figure 35: Transect Locations in Area B of Segment 1



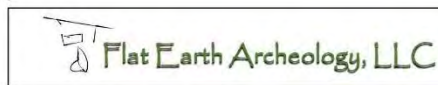
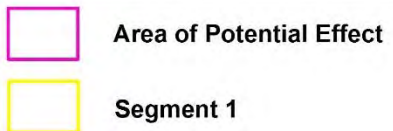
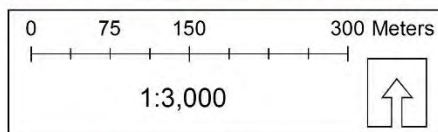
2

3

5.3.3 Area C of Segment 1

Area C in Segment 1 is located along the I-440 and the I-440 interchange with Hwy 365 (also known as Springer Street). Fourche Creek bounds most of the western edge of Area C. This area covers 6.91 acres (Figure 36). Six transects were walked in Area C and a total of 104 shovel tests were excavated (Figure 37). The general soil stratigraphic sequence in this area was typically a yellowish brown (10YR5/4) hydric clay over a dark yellowish brown (10YR3/4) hydric clay subsoil or a grayish brown (10YR5/2) clay subsoil mottled with strong brown (7.5YR5/6) clay. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 36: Area C of Segment 1 (shaded in red)

Cultural Resources Survey: Area C of Segment 1
Project Number: FEA 2015-06
AHTD Project Number: CA0602
Imagery: 2015 Pulaski County Aerial
Quadrangle: Little Rock
Sections: 13 and 14
Township: 1 North
Range: 12 West
Date: 2.5.16

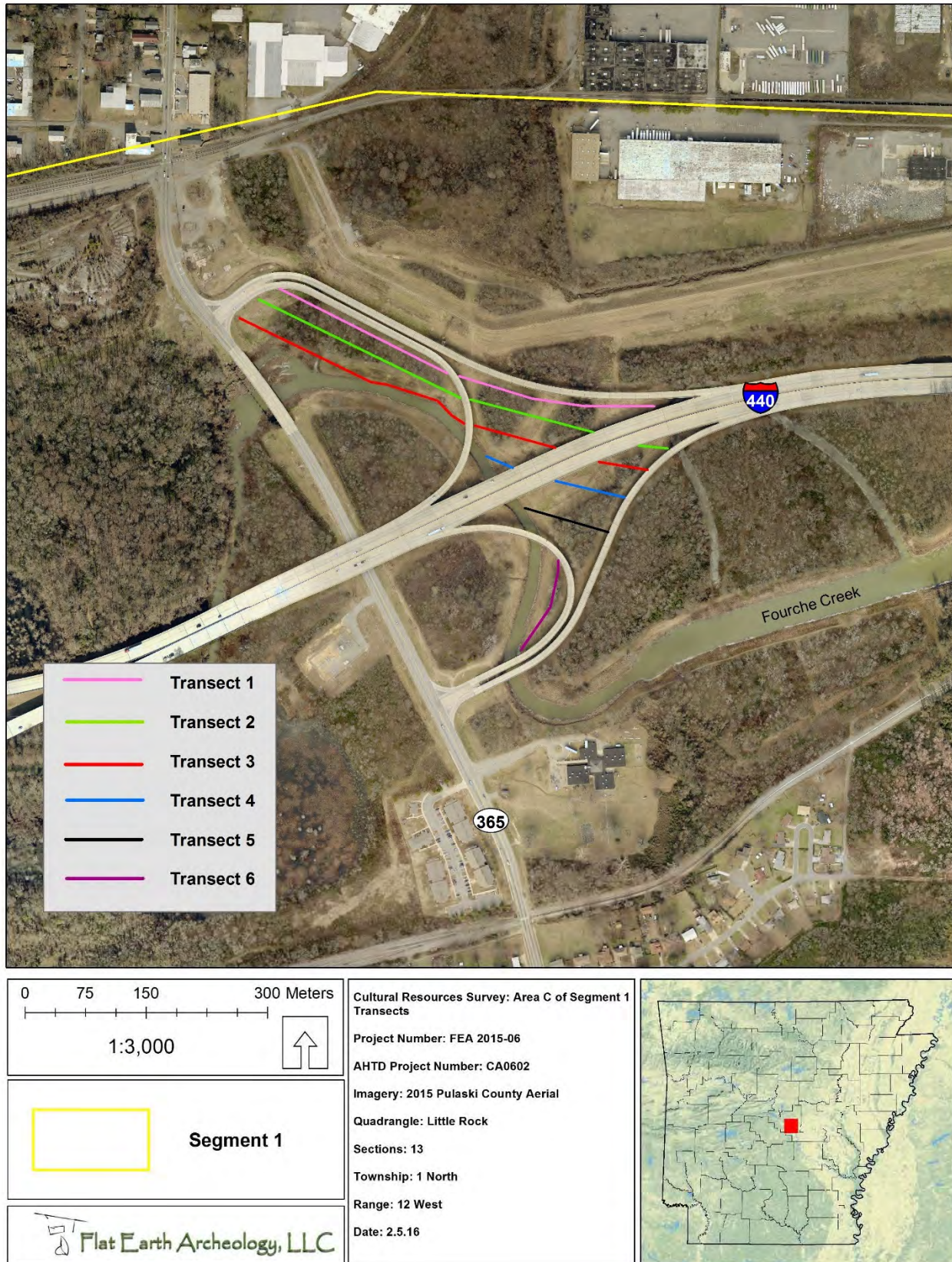


2

3

1

Figure 37: Transect Locations in Area C of Segment 1



2

3

5.3.4 Area D of Segment 1

Area D in Segment 1 is located at the I-440 and the I-440 interchange with Hwy 365 (also known as Springer Street). Fourche Creek bounds most of the eastern edge of Area D. This area covers 14.35 acres (Figure 38). Six transects were walked in Area D and a total of 102 shovel tests were excavated (Figure 39). The general soil stratigraphic sequence in this area was typically a yellowish brown (10YR5/4) hydric clay over a dark yellowish brown (10YR3/4) hydric clay subsoil or a grayish brown (10YR5/2) clay subsoil mottled with strong brown (7.5YR5/6) clay. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

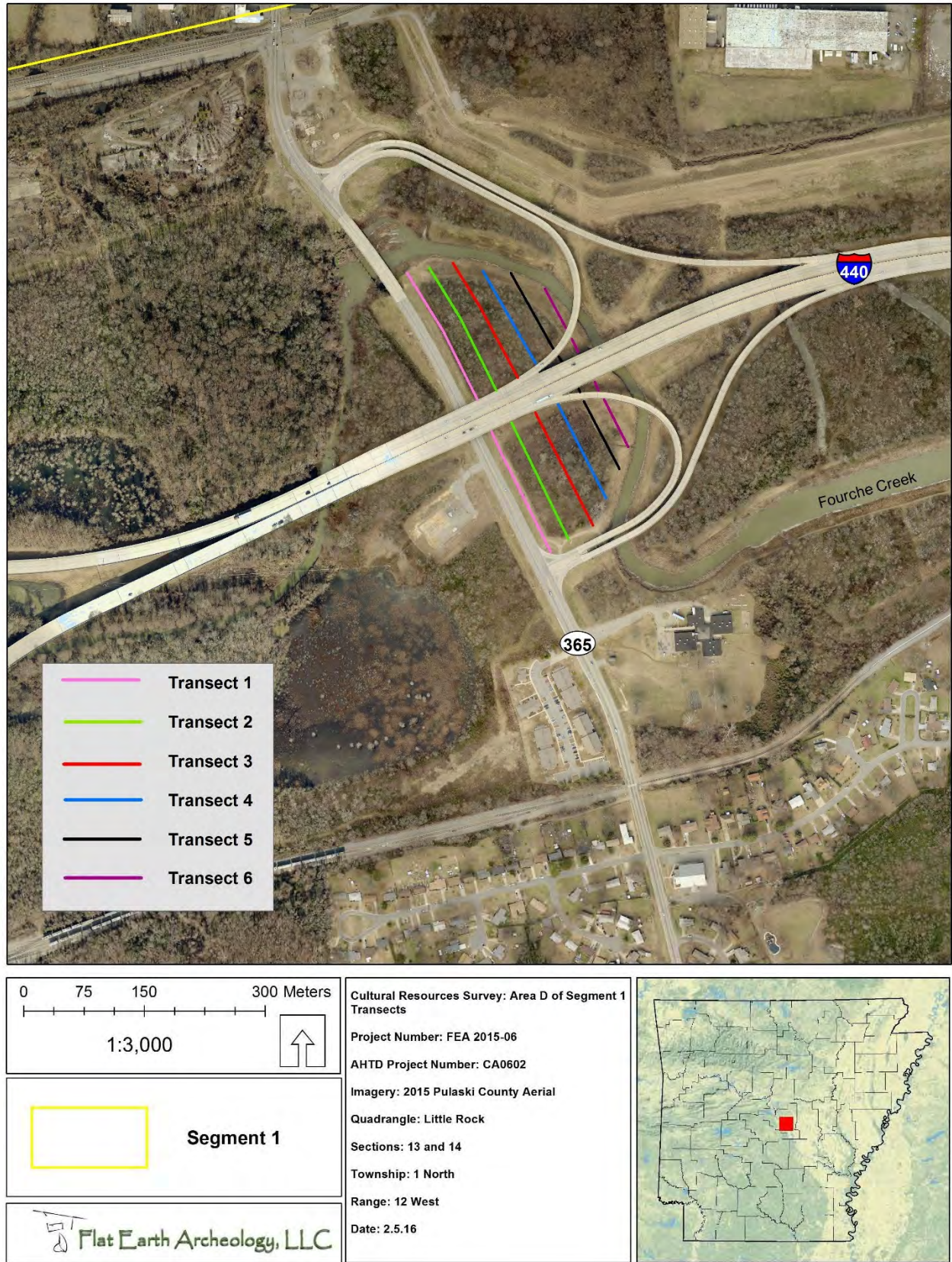
Figure 38: Area D of Segment 1 (shaded in red)

2

3

1

Figure 39: Transect Locations in Area D of Segment 1



2

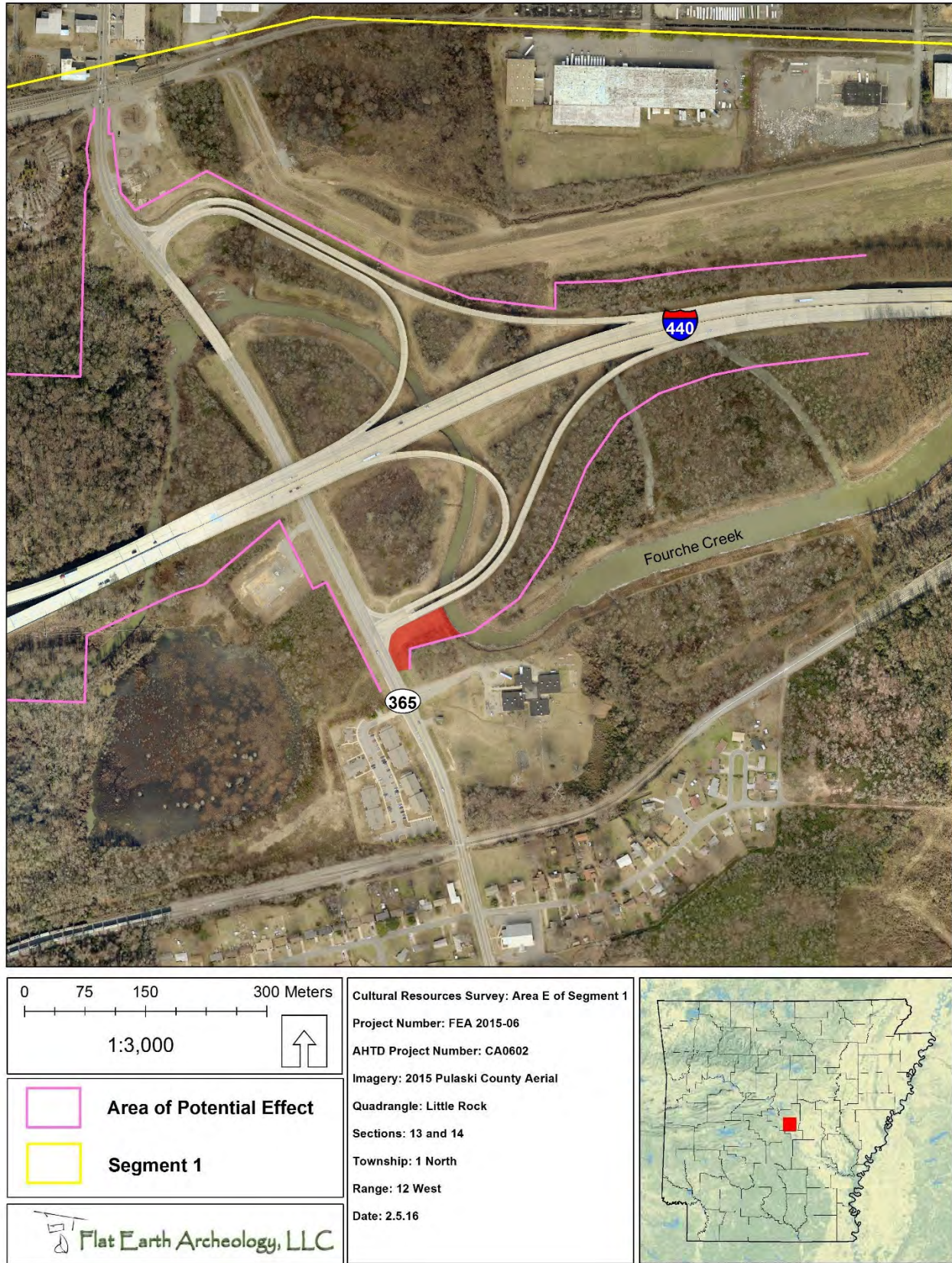
3

5.3.5 Area E of Segment 1

Area E in Segment 1 is located at the southern I-440 interchange with Hwy 365 (also known as Springer Street). Fourche Creek bounds most of the eastern edge of Area E. This area covers 0.7 acres (Figure 40). Two transects were walked in Area E and a total of 9 shovel tests were excavated (Figure 41). The general soil stratigraphic sequence in this area was typically a yellowish brown (10YR5/4) hydric clay over a dark yellowish brown (10YR3/4) hydric clay subsoil or a grayish brown (10YR5/2) clay subsoil mottled with strong brown (7.5YR5/6) clay. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 40: Area E of Segment 1 (shaded in red)



2

3

1

Figure 41: Transect Locations in Area E of Segment 1



2

3

5.3.6 Area F of Segment 1

Area F in Segment 1 is located on the western side of Hwy 365 (also known as Springer Street) and is bounded by the edge of I-440 to the south. Fourche Creek bounds most of the northern and western edge of Area F. This area covers 4.54 acres (Figure 42). Eight transects were walked in Area F and a total of 44 shovel tests were excavated (Figure 43). The vegetation was dense in this segment, typical of the segments in the southern portion of the project area (Figure 45). The general soil stratigraphic sequence in this area was typically a dark yellowish brown (10YR3/4) hydric clay over a grayish brown (10YR5/2) clay subsoil mottled with strong brown (7.5YR5/6) clay (Figure 44). All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 42: Area F of Segment 1 (shaded in red)

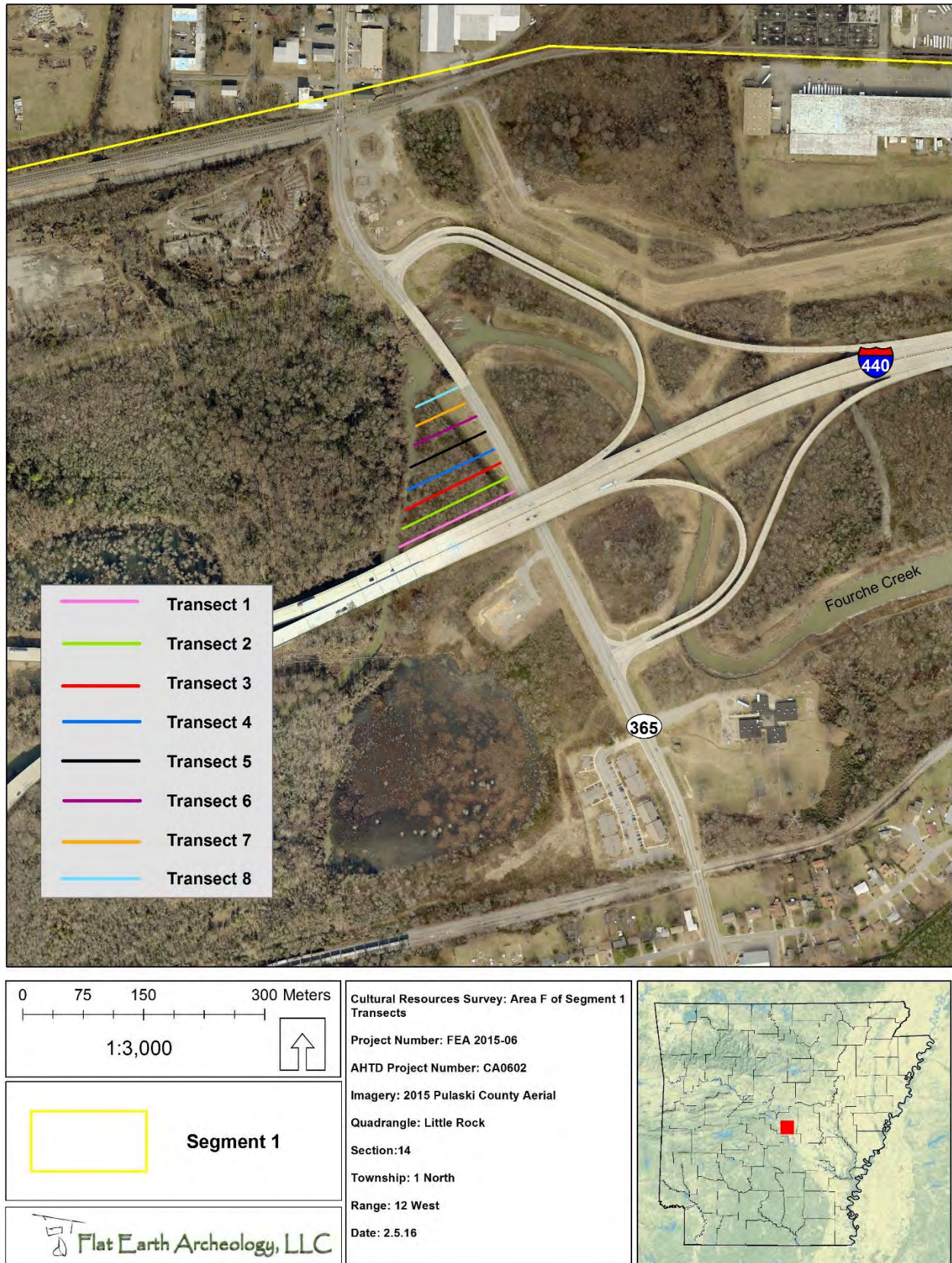


2

3

1

Figure 43: Transect Locations in Area F of Segment 1



2

3

1

Figure 44: Shovel Test 1 on Transect 3 in Area F of Segment 1



2

3

Figure 45: Area F of Segment 1 (facing south from Transect 3)



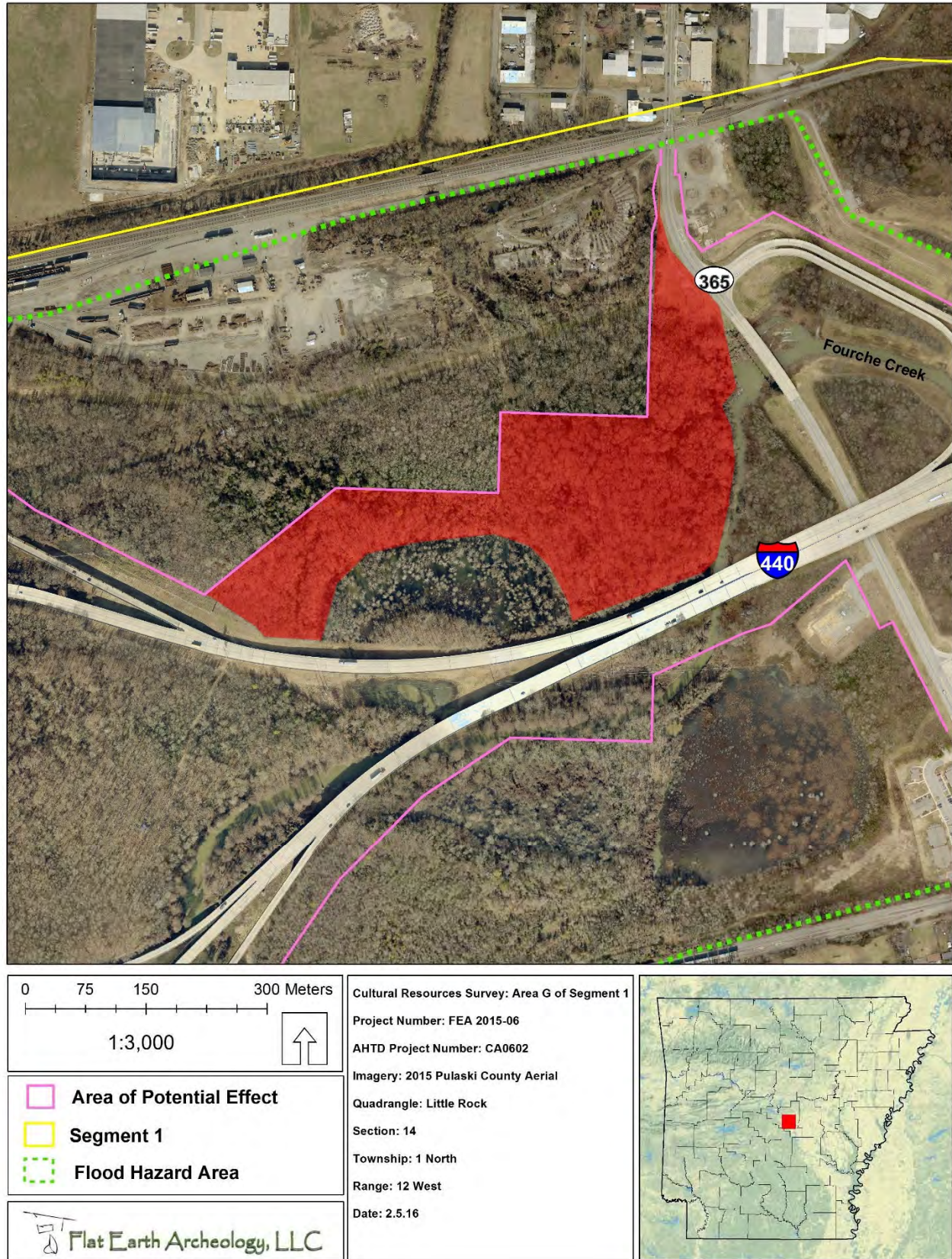
4

5.3.7 Area G of Segment 1

Area G in Segment 1 is located in the floodplain of Fourche Creek on the north side of I-440. This area covers 26.17 acres (Figure 46). Seventeen transects were walked in Area G and a total of 259 shovel tests were excavated on the transects and an additional 9 delineation shovel tests were excavated at Sites 3PU969 and 3PU970 (Figures 47). The general soil stratigraphic sequence in this area was typically a dark yellowish brown (10YR3/4) hydric clay over a grayish brown (10YR5/2) clay subsoil mottled with strong brown (7.5YR5/6) clay. All of the shovel tests were negative for cultural materials. Two newly recorded archeological sites were identified in Area G. Both sites were historic features in the form of brick wells and were designated as Site 3PU969 and Site 3PU970. These sites are discussed further in the Site Descriptions portion of this report. The location of Sites 3PU969 and 3PU970 can be found in Appendix G (separate attachment – not for public release).

1

Figure 46: Area G of Segment 1 (shaded in red)

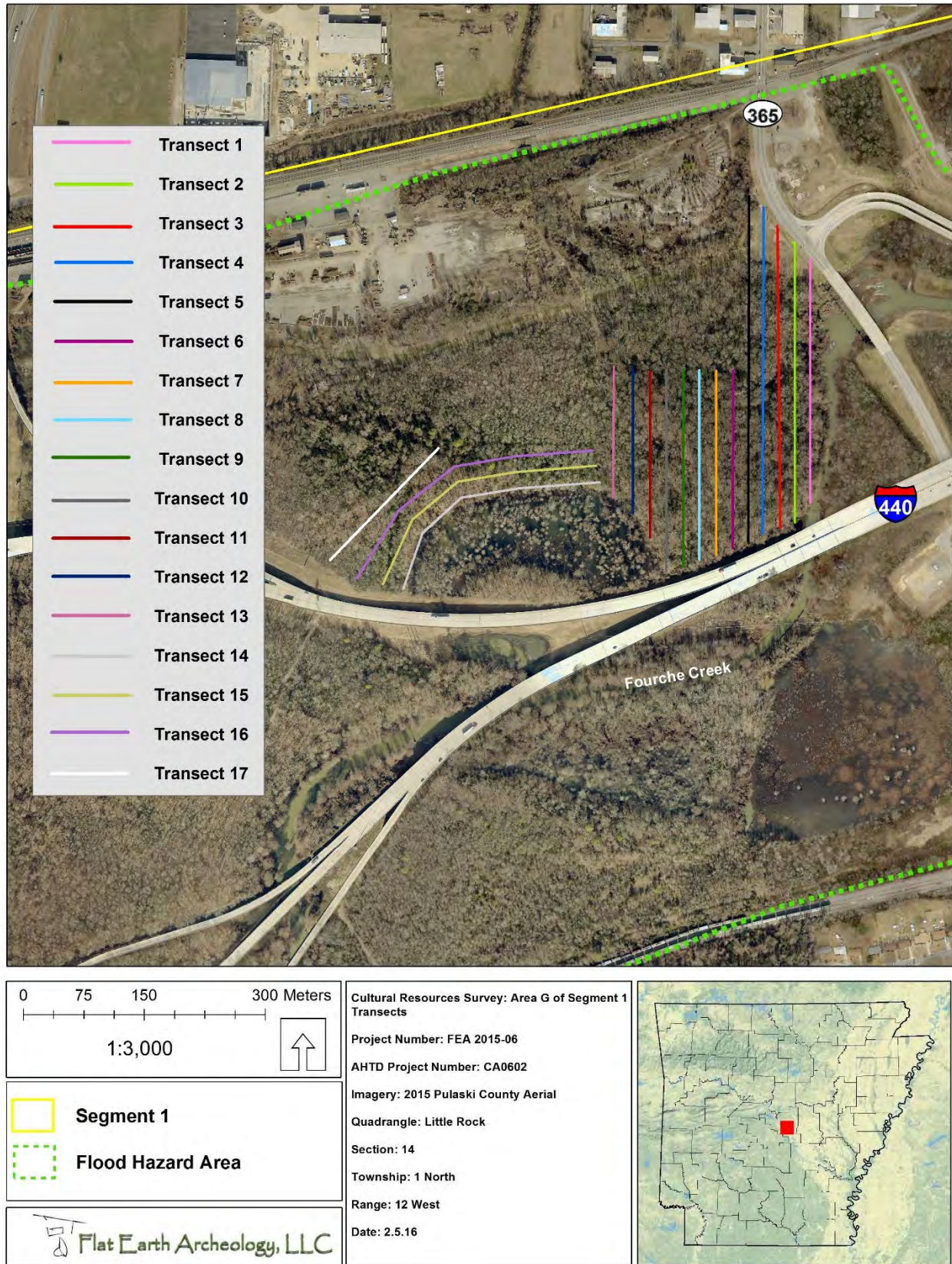


2

3

1

Figure 47: Transect Locations in Area G of Segment 1



2

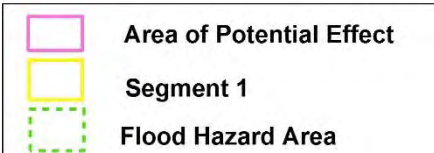
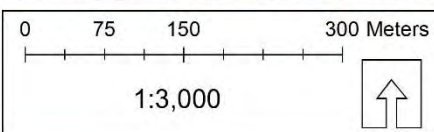
3

5.3.8 Area H of Segment 1

Area H in Segment 1 is located in the floodplain of Fourche Creek on the south side of I-440 and the eastern edge is bounded by Springer Road. This area covers 2.63 acres (Figure 48). A single transect was walked in Area H and a total of 23 shovel tests were excavated (Figure 49). The general soil stratigraphic sequence in this area was typically a yellowish brown (10YR5/4) hydric clay over a dark yellowish brown (10YR3/4) hydric clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 48: Area H of Segment 1 (shaded in red)



Flat Earth Archeology, LLC

Cultural Resources Survey: Area H of Segment 1

Project Number: FEA 2015-06

AHTD Project Number: CA0602

Imagery: 2015 Pulaski County Aerial

Quadrangle: Little Rock

Section: 14

Township: 1 North

Range: 12 West

Date: 2.5.16

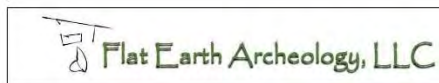
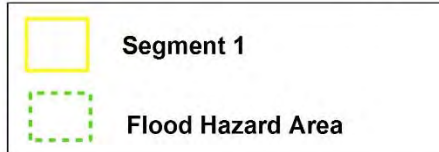
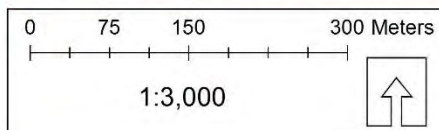


2

3

1

Figure 49: Transect Location in Area H of Segment 1



Cultural Resources Survey: Area H of Segment 1
Transect

Project Number: FEA 2015-06

AHTD Project Number: CA0602

Imagery: 2015 Pulaski County Aerial

Quadrangle: Little Rock

Sections: 14

Township: 1 North

Range: 12 West

Date: 2.5.16



2

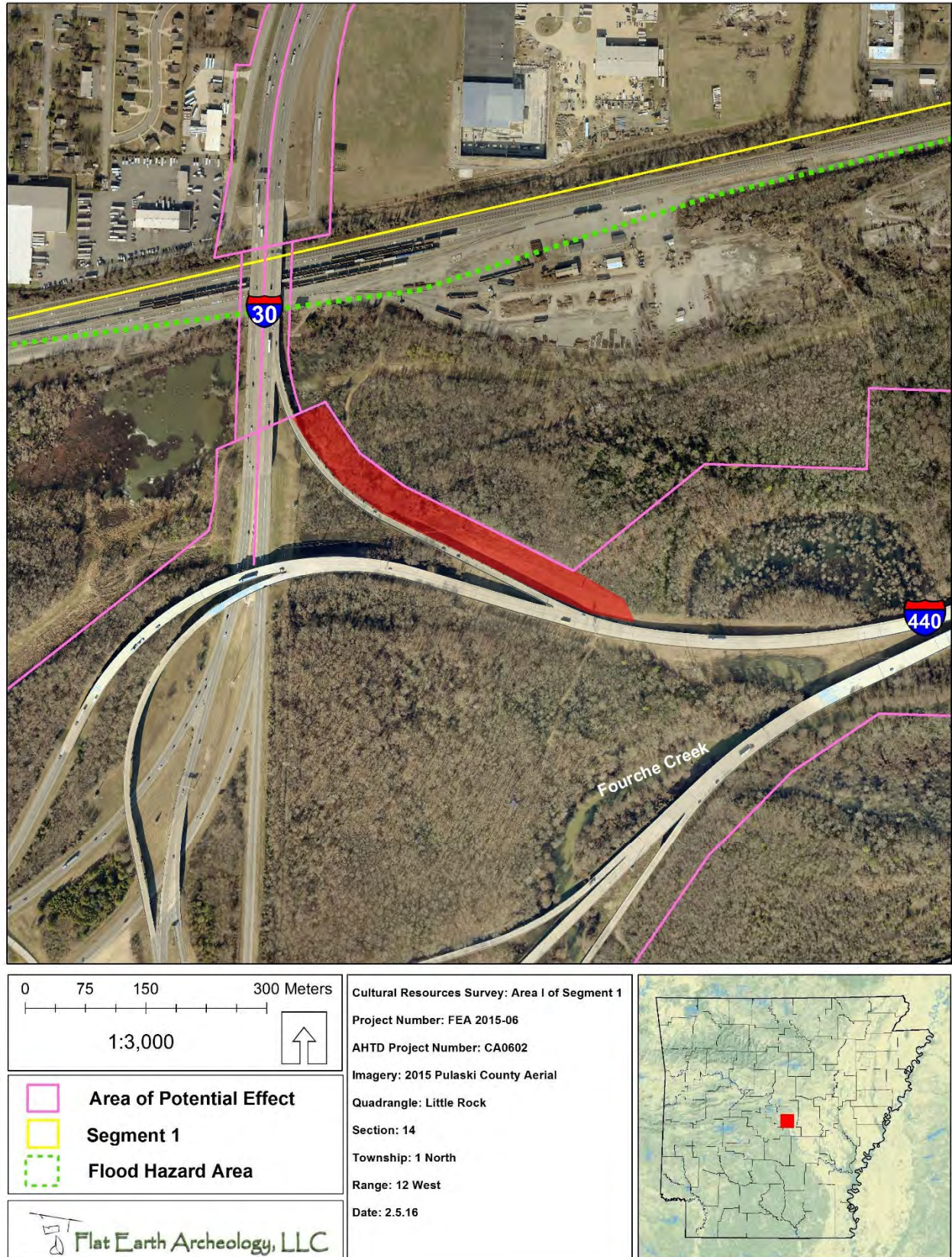
3

5.3.9 Area I of Segment 1

Area I in Segment 1 is located in the floodplain of Fourche Creek along the I-440 exit onto I-30. This area covers 4.3 acres (Figure 50). A single transect was walked in Area I and a total of 25 shovel tests were excavated (Figure 51). The general soil stratigraphic sequence in this area was typically a yellowish brown (10YR5/4) hydric clay over a dark yellowish brown (10YR3/4) hydric clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 50: Area I of Segment 1 (shaded in red)

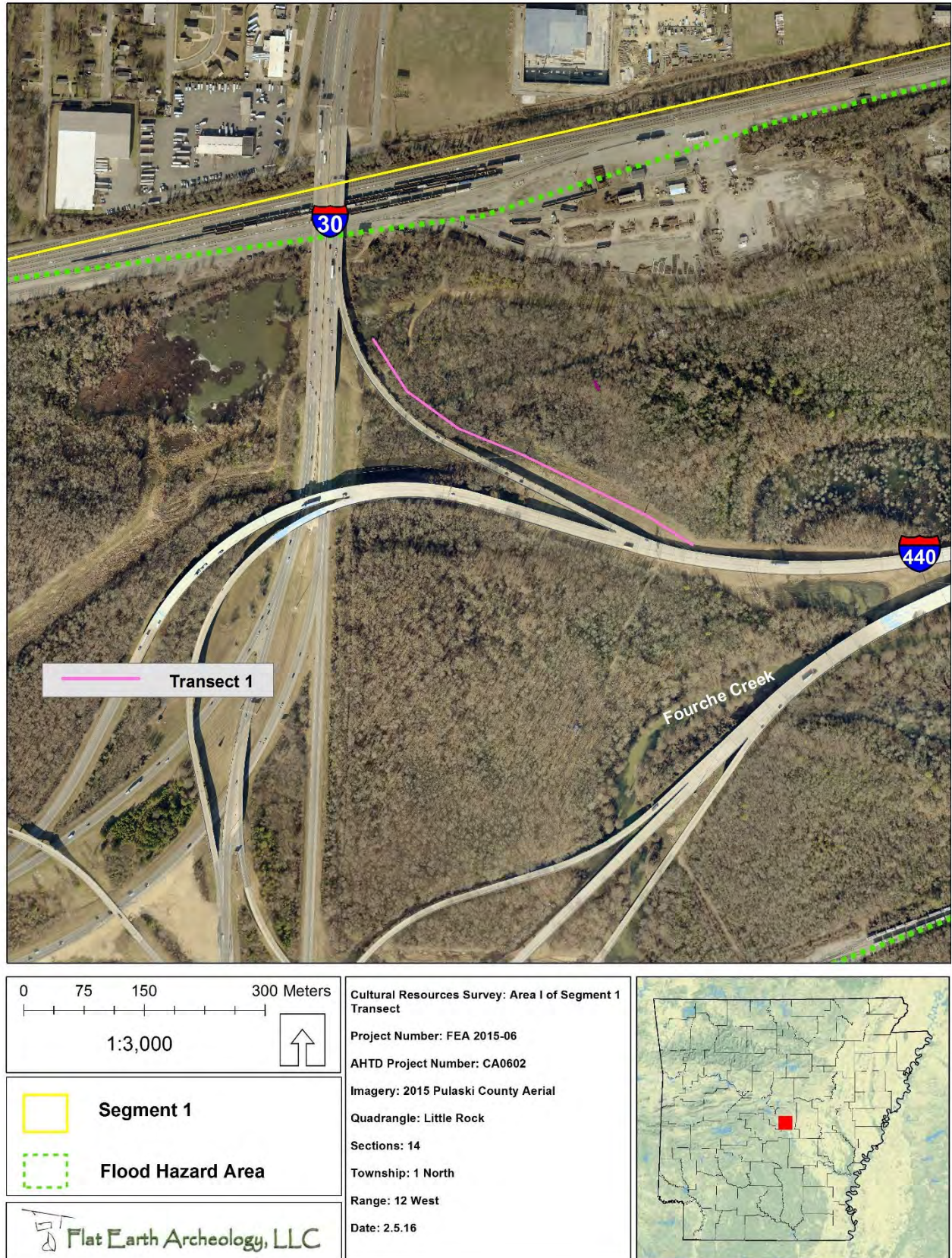


2

3

1

Figure 51: Transect Location in Area I of Segment 1



2

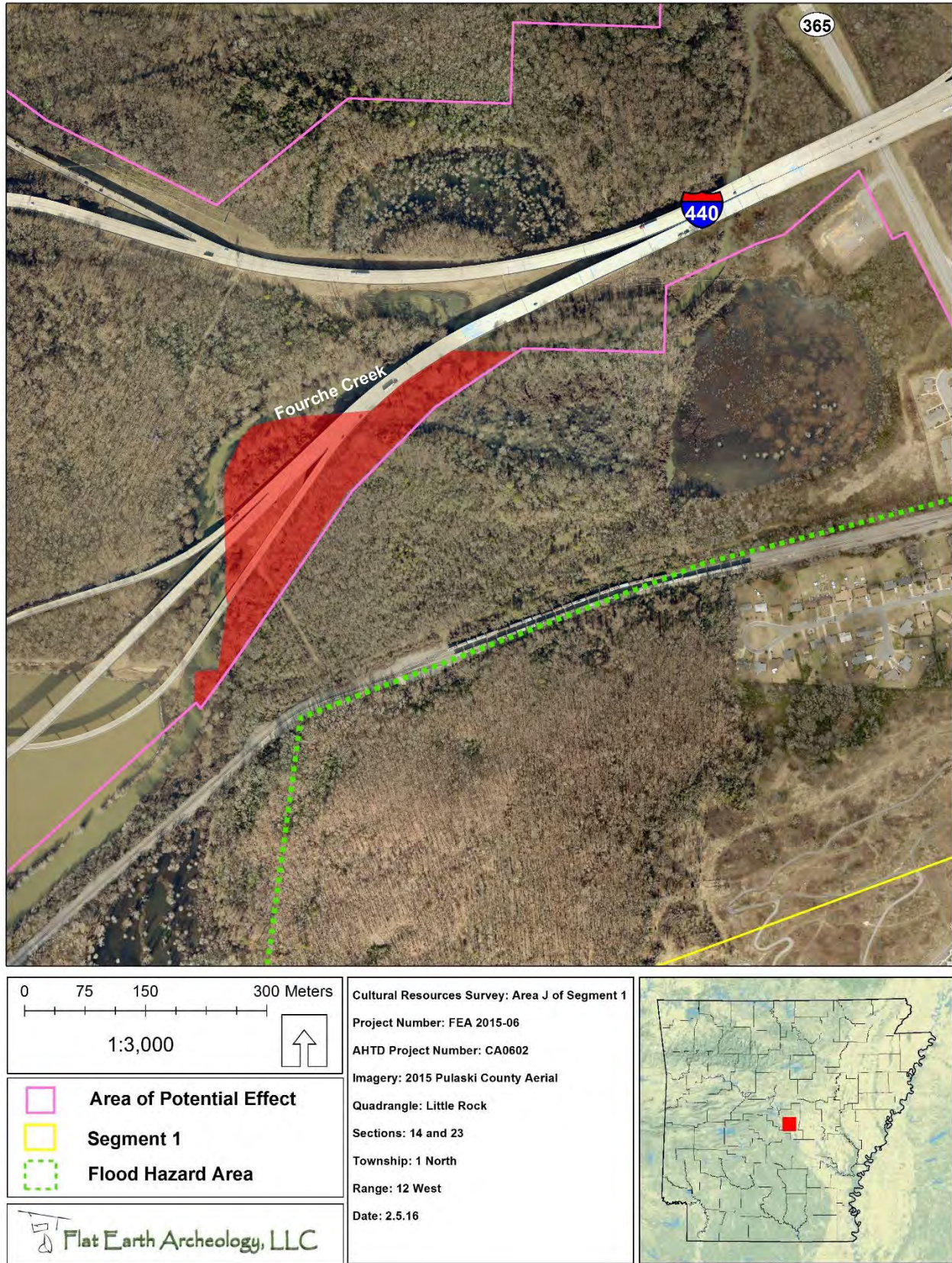
3

5.3.10 Area J of Segment 1

Area J in Segment 1 is located in the floodplain of Fourche Creek along the I-440 and I-30 interchange. This area covers 9.57 acres (Figure 52). Four transects were walked in Area J and a total of 77 shovel tests were excavated (Figures 53 and 54). The general soil stratigraphic sequence in this area was typically a dark yellowish brown (10YR3/4) hydric clay over a grayish brown (10YR5/2) clay subsoil mottled with strong brown (7.5YR5/6) clay (Figure 55). All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 52: Area J of Segment 1 (shaded in red)

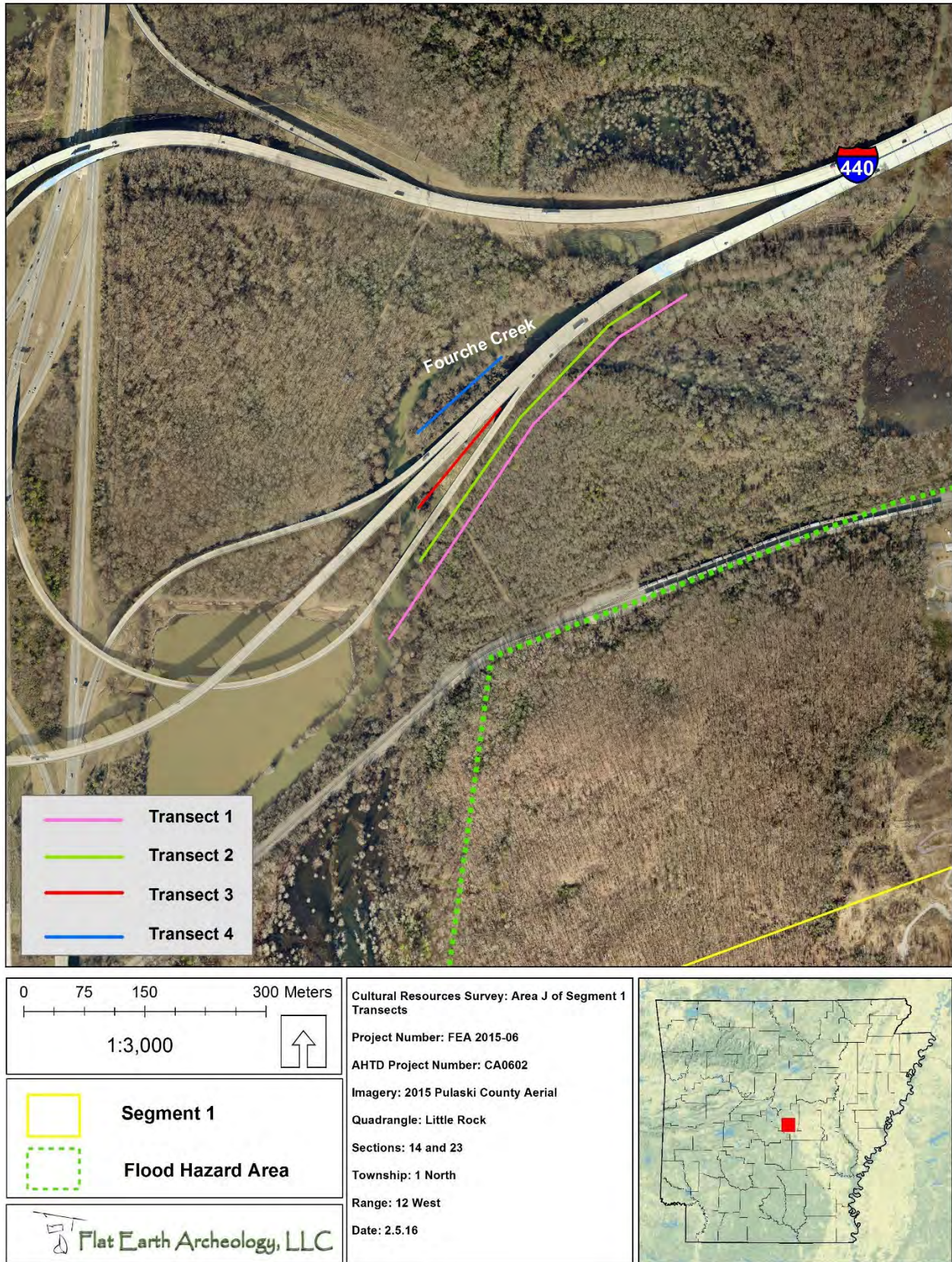


2

3

1

Figure 53: Transect Locations in Area J of Segment 1



2

3

1

Figure 54: Area J of Segment 1 (facing southwest from Transect 1)



2

3

Figure 55: Shovel Test 2 on Transect 4 in Area J of Segment 1



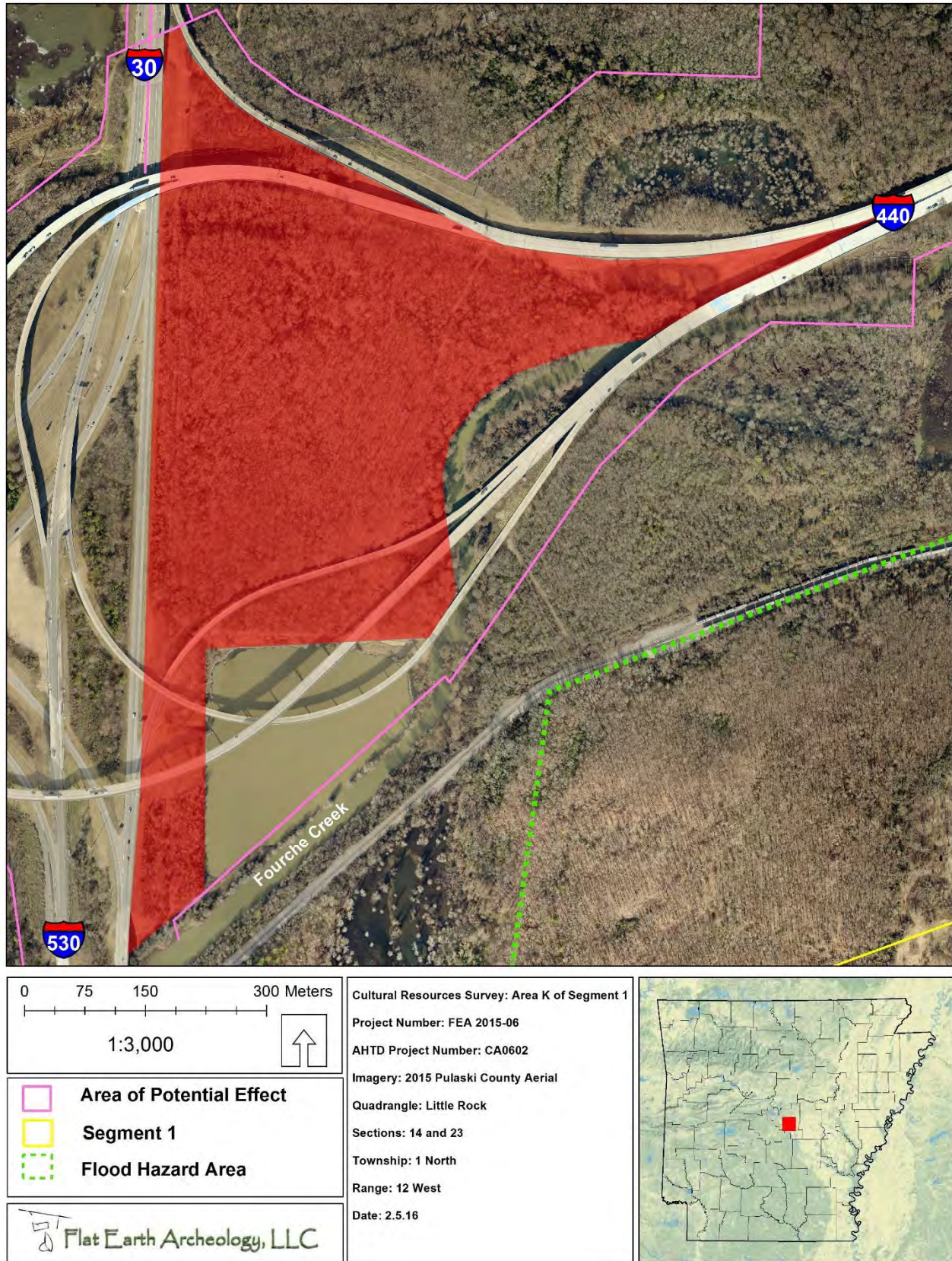
4

5.3.11 Area K of Segment 1

Area K in Segment 1 is located in the floodplain of Fourche Creek at the I-440, I-530, and I-30 interchanges. This area covers 77.67 acres (Figure 56). Twenty-eight transects were walked in Area K and a total of 656 shovel tests were excavated (Figure 57). The general soil stratigraphic sequence in this area was typically a dark yellowish brown (10YR3/4) hydric clay over a grayish brown (10YR5/2) clay subsoil mottled with strong brown (7.5YR5/6) clay. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 56: Area K of Segment 1 (shaded in red)

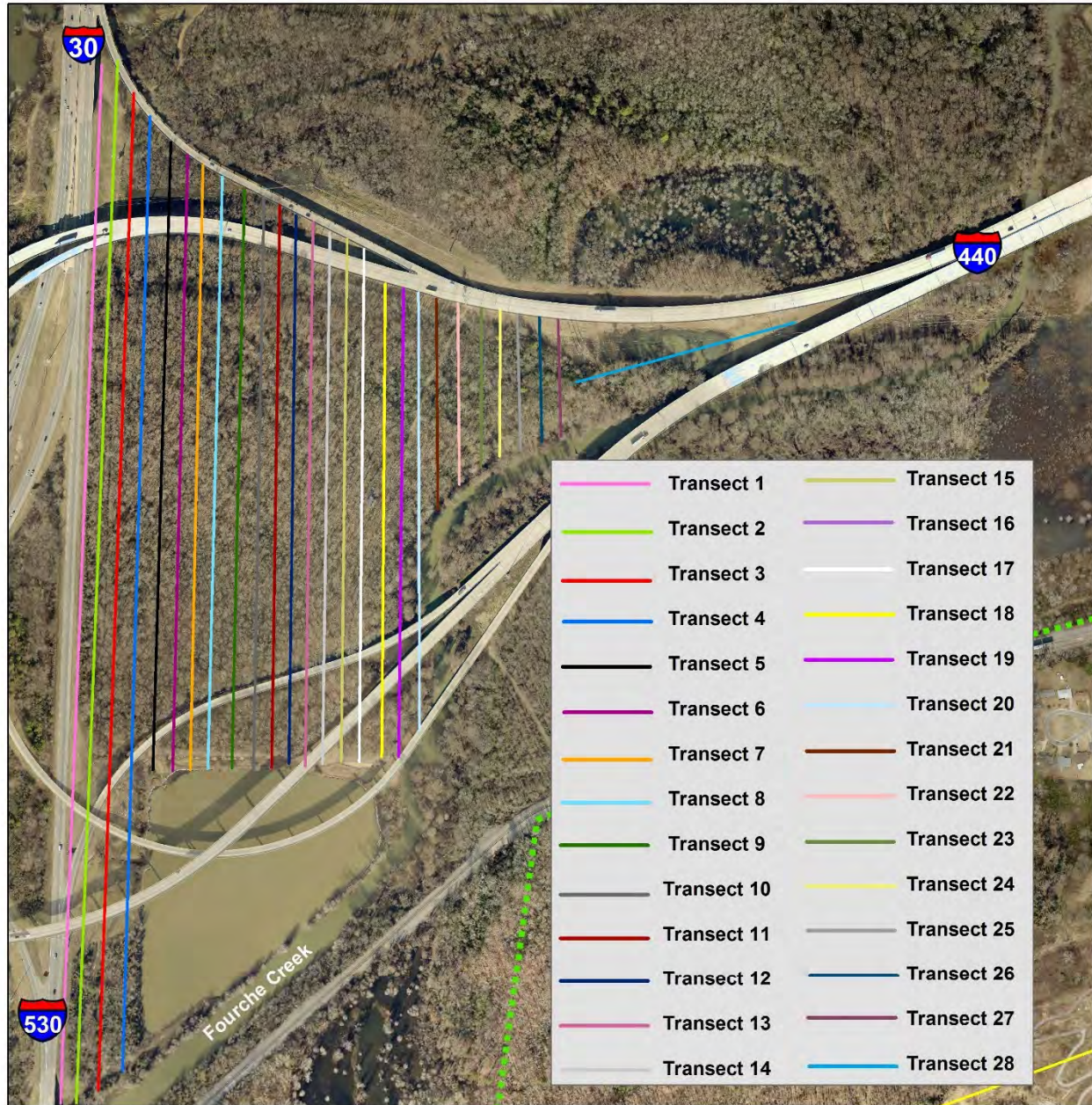


2

3

1

Figure 57: Transect Locations in Area K of Segment 1



2

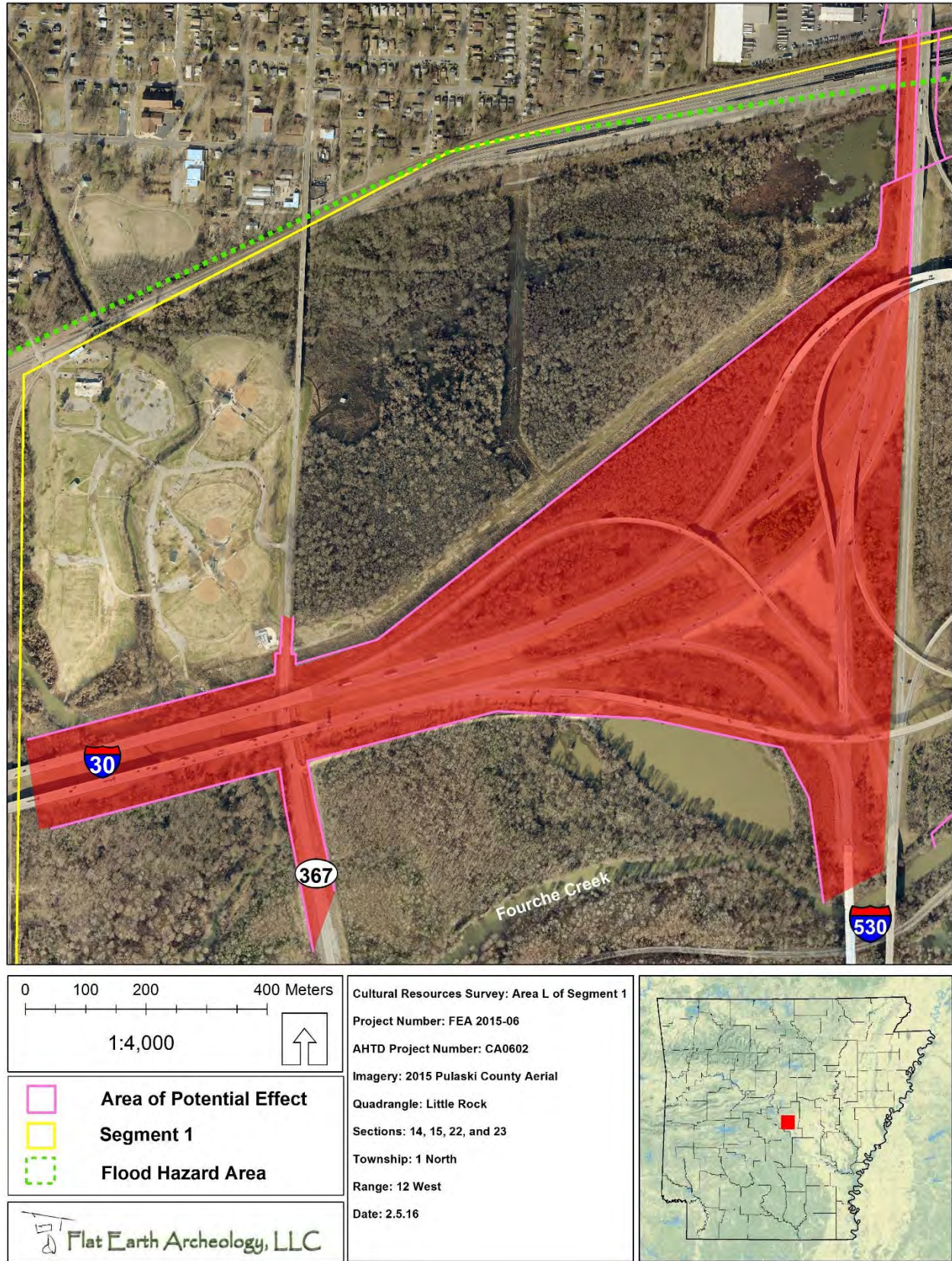
3

5.3.12 Area L of Segment 1

Area L in Segment 1 is located in the floodplain of Fourche Creek at the west side of the I-530 and I-30 interchanges. This area covers 141.71 acres (Figure 58) although the roadways cover a moderate percentage of this acreage. Fifteen transects were walked in Area L and a total of 412 shovel tests were excavated (Figure 59). The general soil stratigraphic sequence in this area was typically a yellowish brown (10YR5/4) clay over a yellowish brown (10YR5/8) clay. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 58: Area L of Segment 1 (shaded in red)

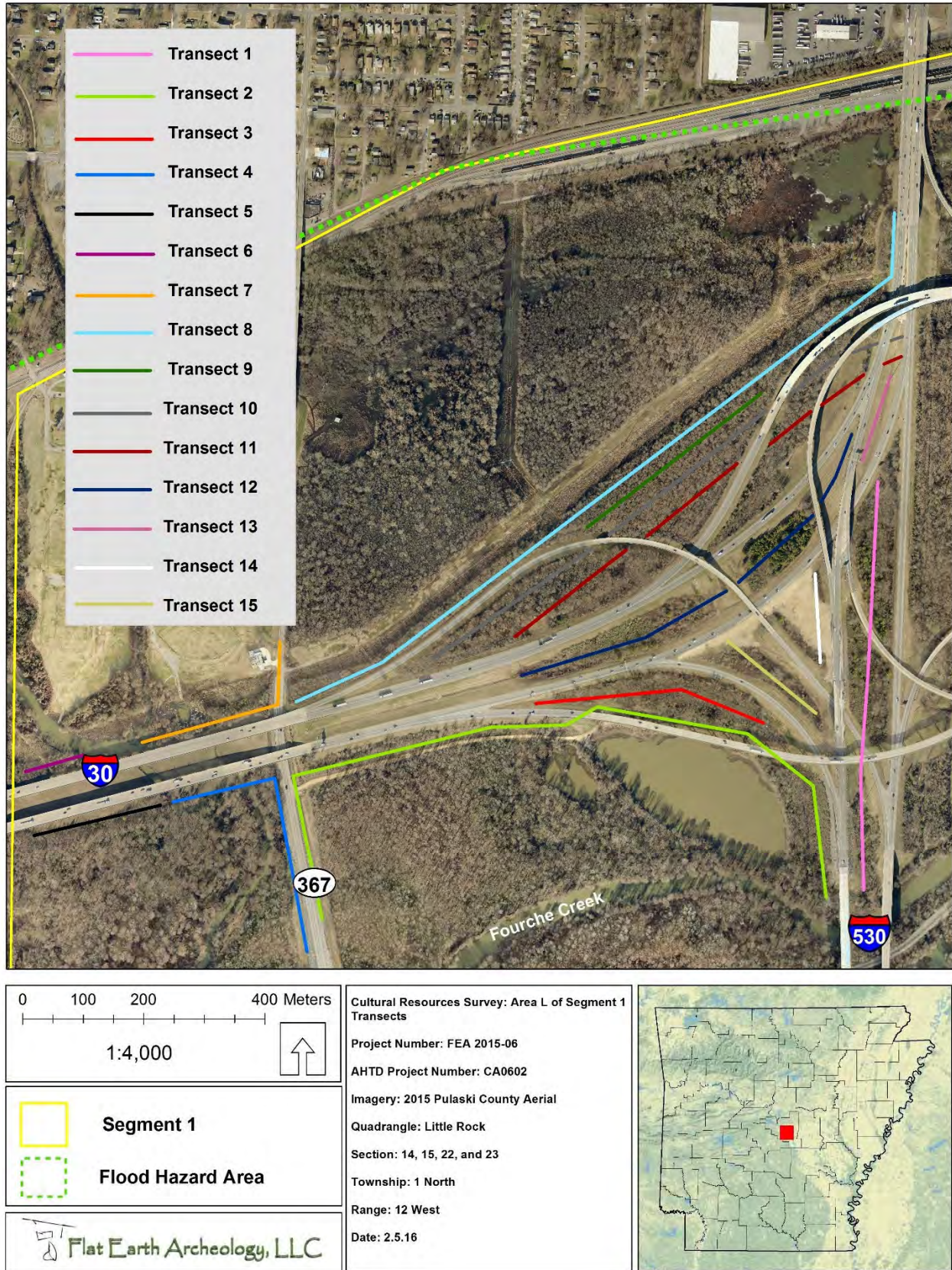


2

3

1

Figure 59: Transect Locations in Area L of Segment 1



2

5.4 Archeological Work in Segment 2

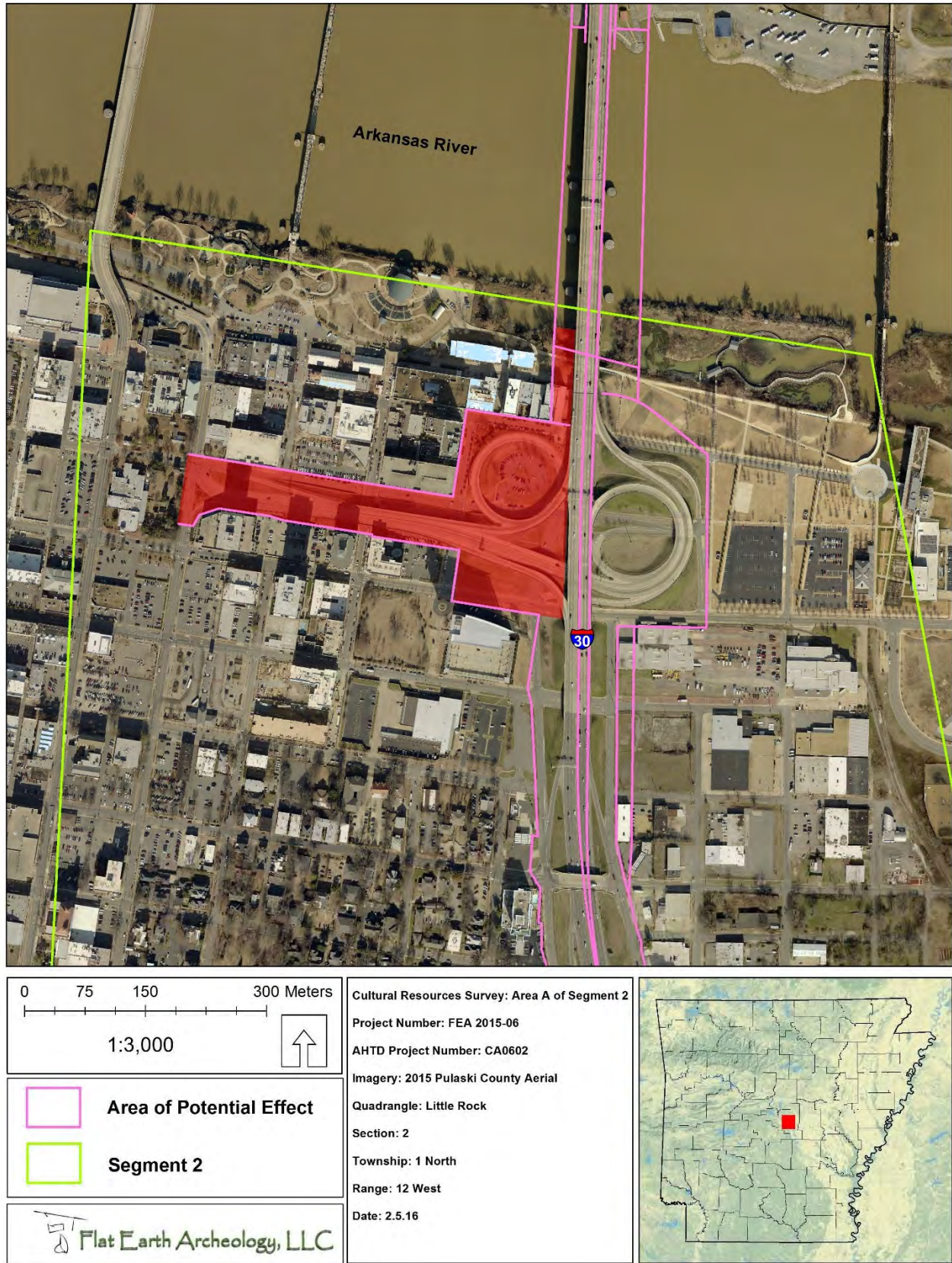
Segment 2 consisted of the Project Area near the I-30 corridor south of the Arkansas River and north of the Union Pacific railroad (see Figure 29). Segment 2 was divided further into ten Areas that are described individually below. There were a total of 1,016 shovel tests in Segment 2. For a complete inventory of the shovel tests in Segment 2 see Appendix D. Much of this Project Area is in existing right-of-way with extremely disturbed soils from road construction. A total of three new archeological sites were identified in Segment 2 during the survey (Sites 3PU973, 3PU974, and 3PU975). These sites are discussed further in the Site Descriptions portion of this report. There were no previously recorded archeological sites within the survey boundaries in Segment 2. Previously recorded Site 3PU762, the 3rd Street and Sherman Street 1906 Railroad Feature, is at the edge of the Project Area in Segment 2. This buried railway feature was not observed in the Project Area during the current survey.

5.4.1 Area A of Segment 2

Area A in Segment 2 is located just south of the Arkansas River on the west side of I-30 along the I-30 and Hwy 10 Interchange. This area covers 14.17 acres (Figure 60), although the roadways cover a large percentage of this acreage. Two transects were walked in Area A and a total of 70 shovel tests were excavated (Figure 61). The general soil stratigraphic sequence in this area was typically a dark grayish brown (10YR4/2) gravelly silty clay over a brownish yellow (10YR6/8) gravelly clay subsoil (Figure 62). All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey. No evidence of the previously recorded Site 3PU762 was observed in the Project Area during the current survey.

1

Figure 60: Area A of Segment 2 (shaded in red)



2

3

1

Figure 61: Transect Locations in Area A of Segment 2



2

3

1

Figure 62: Shovel Test 1 on Transect 1 in Area A of Segment 2

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

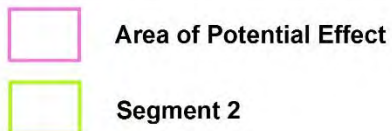
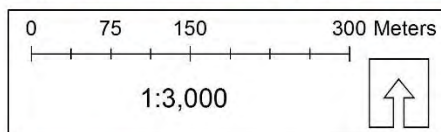
17

5.4.2 Area B of Segment 2

Area B in Segment 2 is located just south of the Arkansas River on the east side of I-30 along the I-30 and Hwy 10 Interchange. This area covers 9.2 acres (Figure 63), although the roadways cover a moderate percentage of this acreage. Seven transects were walked in Area B and a total of 77 shovel tests were excavated (Figure 64). The general soil stratigraphic sequence in this area was typically a dark grayish brown (10YR4/2) gravelly silty clay over a brownish yellow (10YR6/8) gravelly clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 63: Area B of Segment 2 (shaded in red)



Flat Earth Archeology, LLC

Cultural Resources Survey: Area B of Segment 2

Project Number: FEA 2015-06

AHTD Project Number: CA0602

Imagery: 2015 Pulaski County Aerial

Quadrangle: Little Rock

Section: 2

Township: 1 North

Range: 12 West

Date: 2.5.15

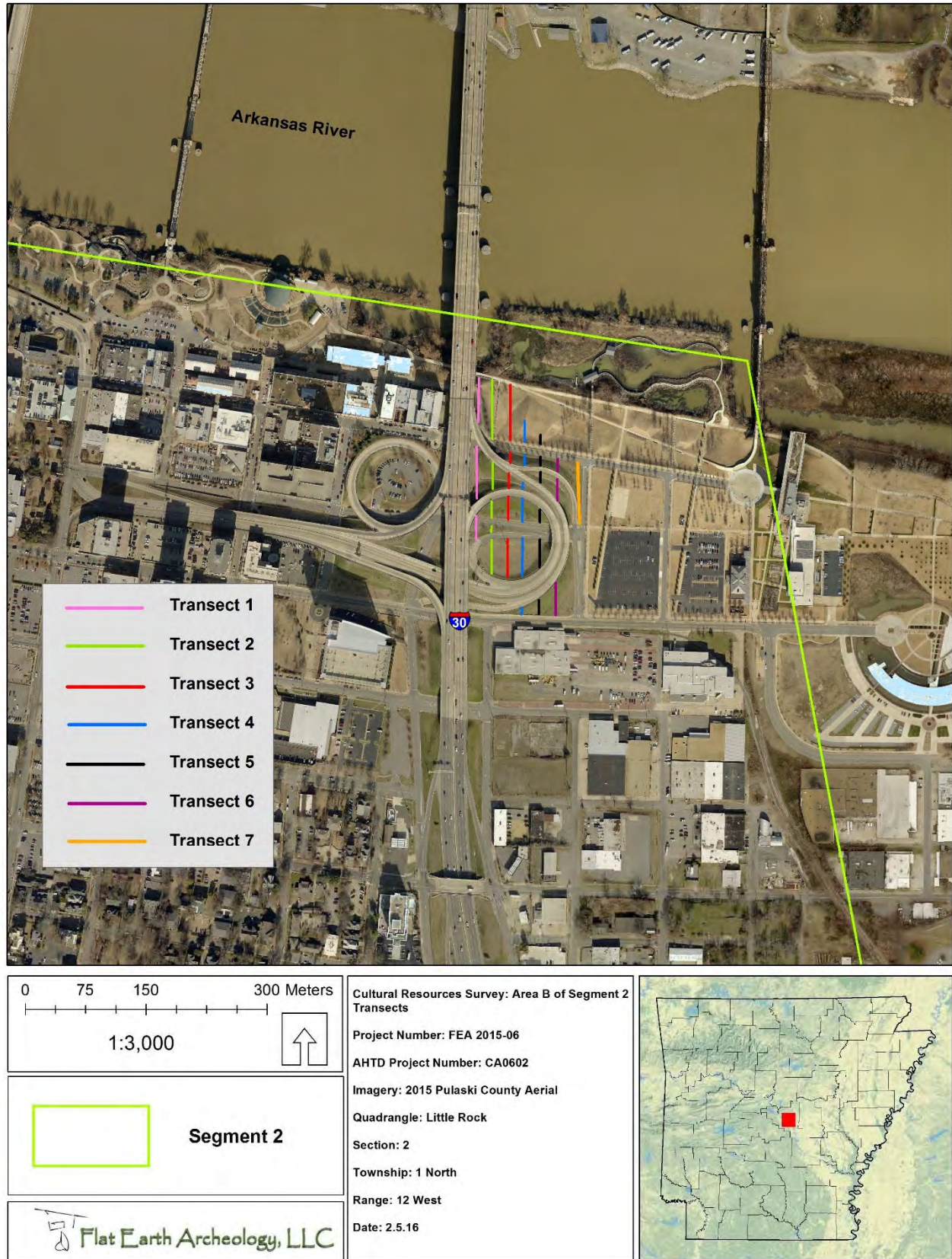


2

3

1

Figure 64: Transect Locations in Area B of Segment 2



2

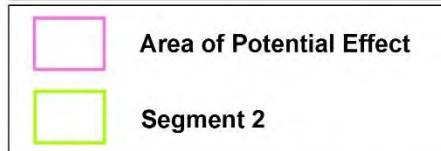
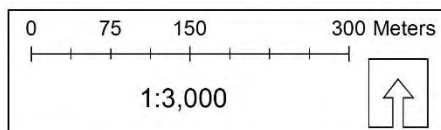
3

5.4.3 Area C of Segment 2

Area C in Segment 2 is located on the west side of I-30 corridor and the northwest side of the I-30 and I-630 interchange. This area covers 18.48 acres (Figure 65). Four transects were walked in Area C and a total of 110 shovel tests were excavated (Figure 66). The general soil stratigraphic sequence in this area was typically a dark grayish brown (10YR4/2) gravelly silty clay over a brownish yellow (10YR6/8) gravelly clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 65: Area C of Segment 2 (shaded in red)



Cultural Resources Survey: Area C of Segment 2

Project Number: FEA 2015-06

AHTD Project Number: CA0602

Imagery: 2015 Pulaski County Aerial

Quadrangle: Little Rock

Sections: 2 and 11

Township: 1 North

Range: 12 West

Date: 2.6.16

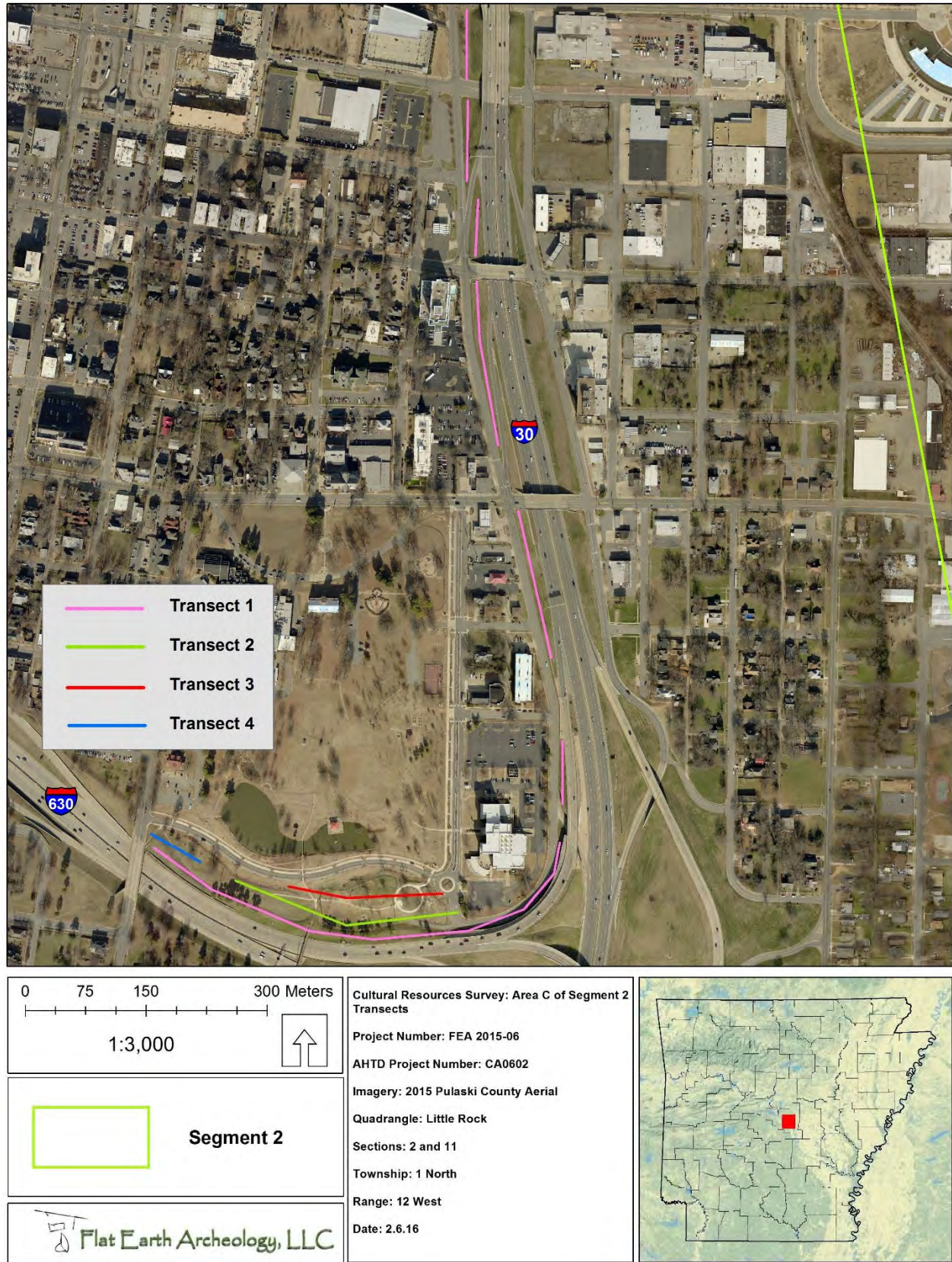


2

3

1

Figure 66: Transect Locations in Area C of Segment 2



2

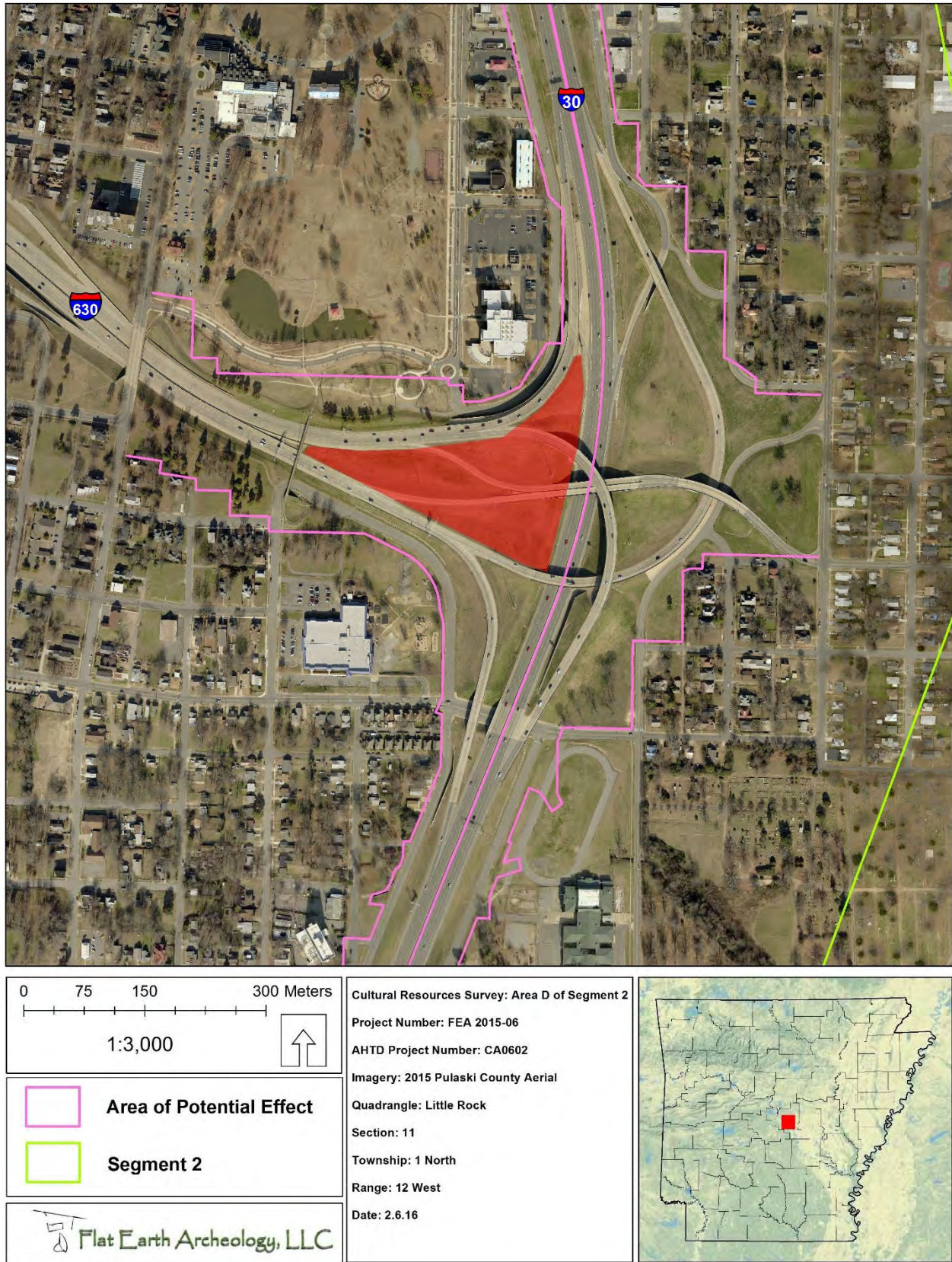
3

5.4.4 Area D of Segment 2

Area D in Segment 2 is located at the I-30 and I-630 interchange. This area covers 8.67 acres (Figure 67). Six transects were walked in Area D and a total of 51 shovel tests were excavated (Figure 68). The general soil stratigraphic sequence in this area was typically a dark grayish brown (10YR4/2) gravelly silty clay over a brownish yellow (10YR6/8) gravelly clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 67: Area D of Segment 2 (shaded in red)

2
3

1

Figure 68: Transect Locations in Area D of Segment 2



2

3

5.4.5 Area E of Segment 2

Area E in Segment 2 is located at the center median of the I-30 and I-630 interchange. This area covers 3.57 acres (Figure 69). Five transects were walked in Area E and a total of 26 shovel tests were excavated (Figure 70). The general soil stratigraphic sequence in this area was typically a dark grayish brown (10YR4/2) gravelly silty clay over a brownish yellow (10YR6/8) gravelly clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 69: Area E of Segment 2 (shaded in red)



2

3

1

Figure 70: Transect Locations in Area E of Segment 2



2

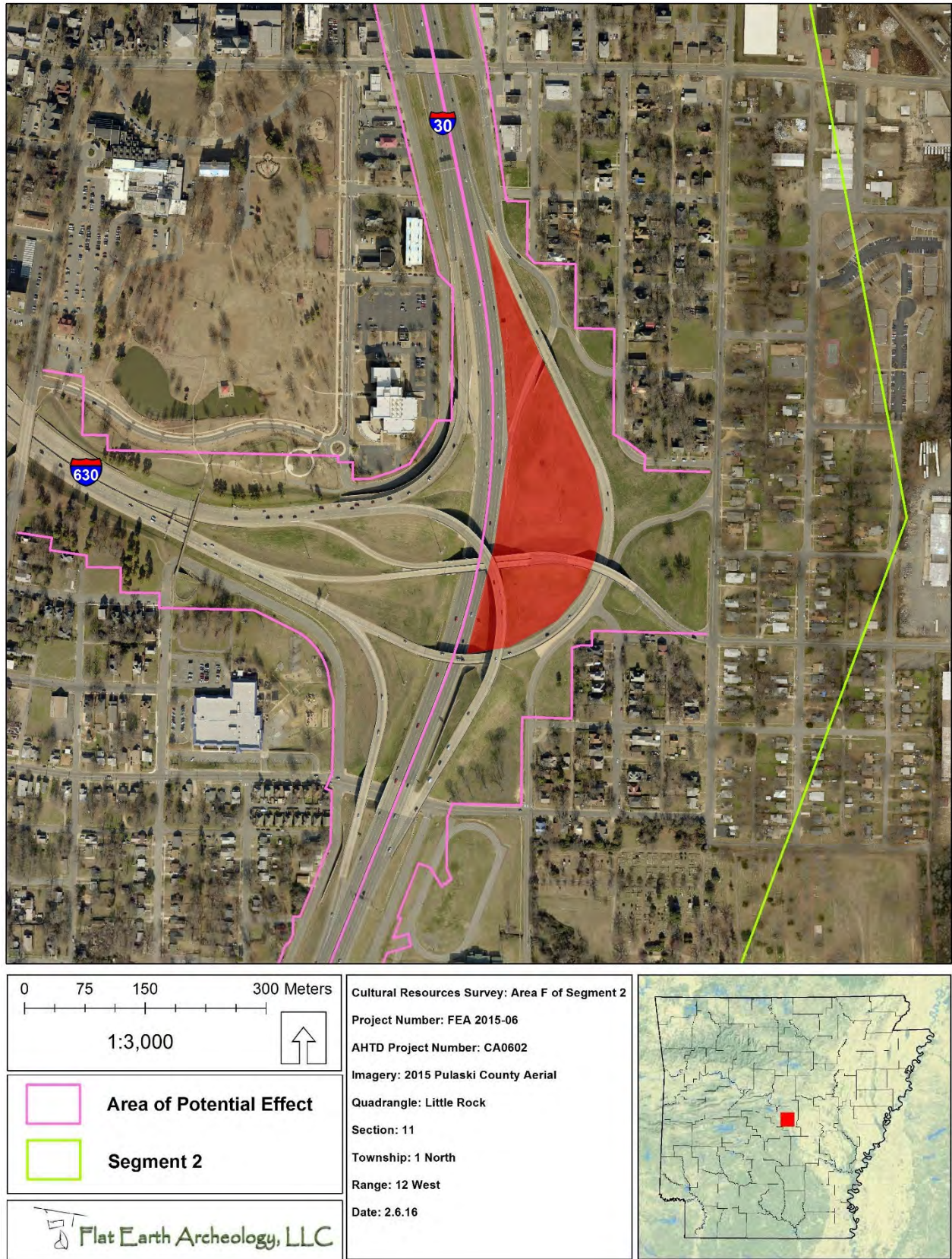
3

5.4.6 Area F of Segment 2

Area F in Segment 2 is located at the I-30 and I-630 interchange. This area covers 10.33 acres (Figure 71). Five transects were walked in Area F and a total of 86 shovel tests were excavated (Figure 72). The general soil stratigraphic sequence in this area was typically a dark grayish brown (10YR4/2) gravelly silty clay over a brownish yellow (10YR6/8) gravelly clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 71: Area F of Segment 2 (shaded in red)

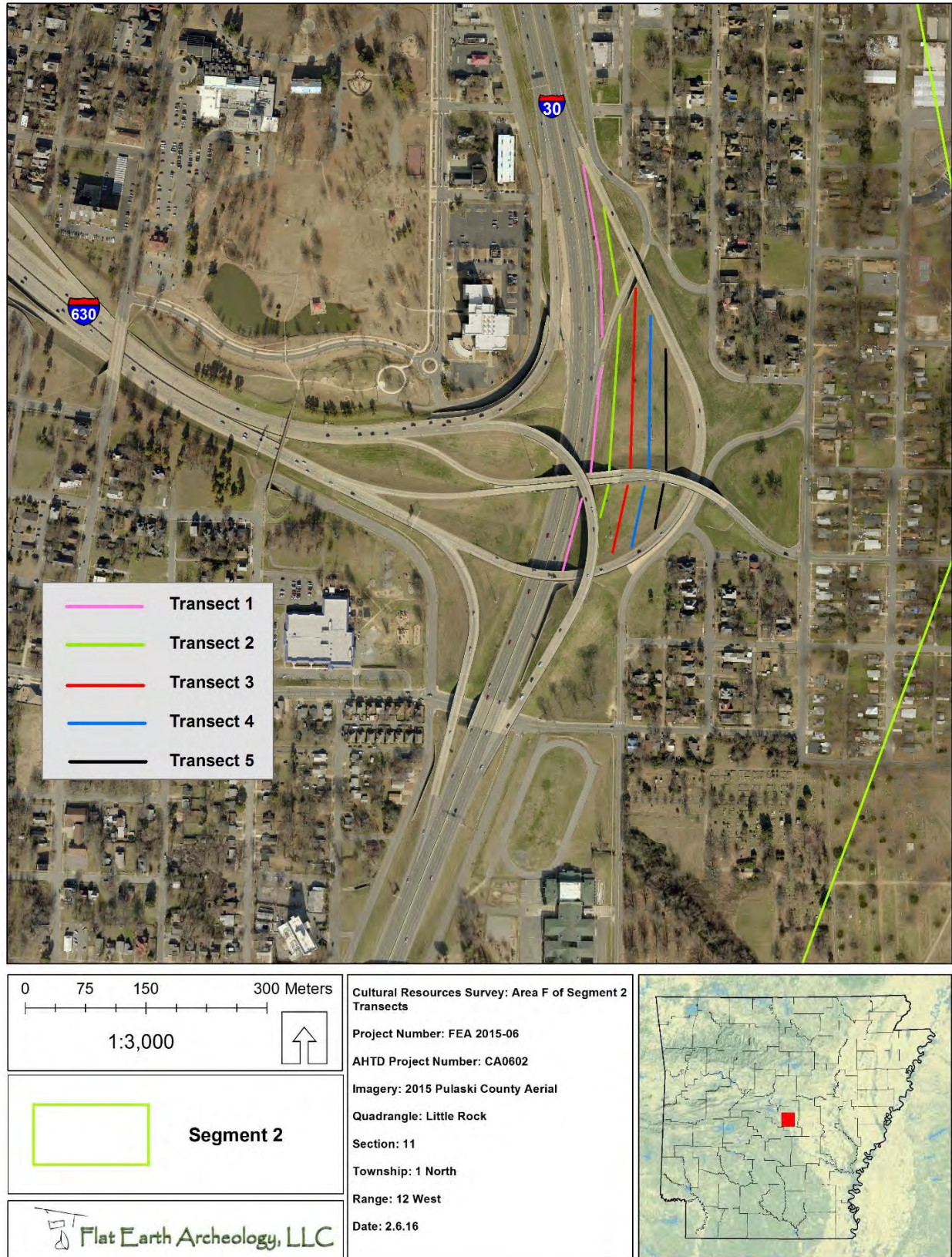


2

3

1

Figure 72: Transect Locations in Area F of Segment 2

2
3

4

5.4.7 Area G of Segment 2

Area G in Segment 2 is located at the I-30 and I-630 interchange. This area covers 9.13 acres (Figure 73). Three transects were walked in Area G and a total of 56 shovel tests were excavated (Figure 74). The general soil stratigraphic sequence in this area was typically a dark grayish brown (10YR4/2) gravelly silty clay over a yellowish brown (10YR5/8) gravelly clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 73: Area G of Segment 2 (shaded in red)



2

3

1

Figure 74: Transect Locations in Area G of Segment 2



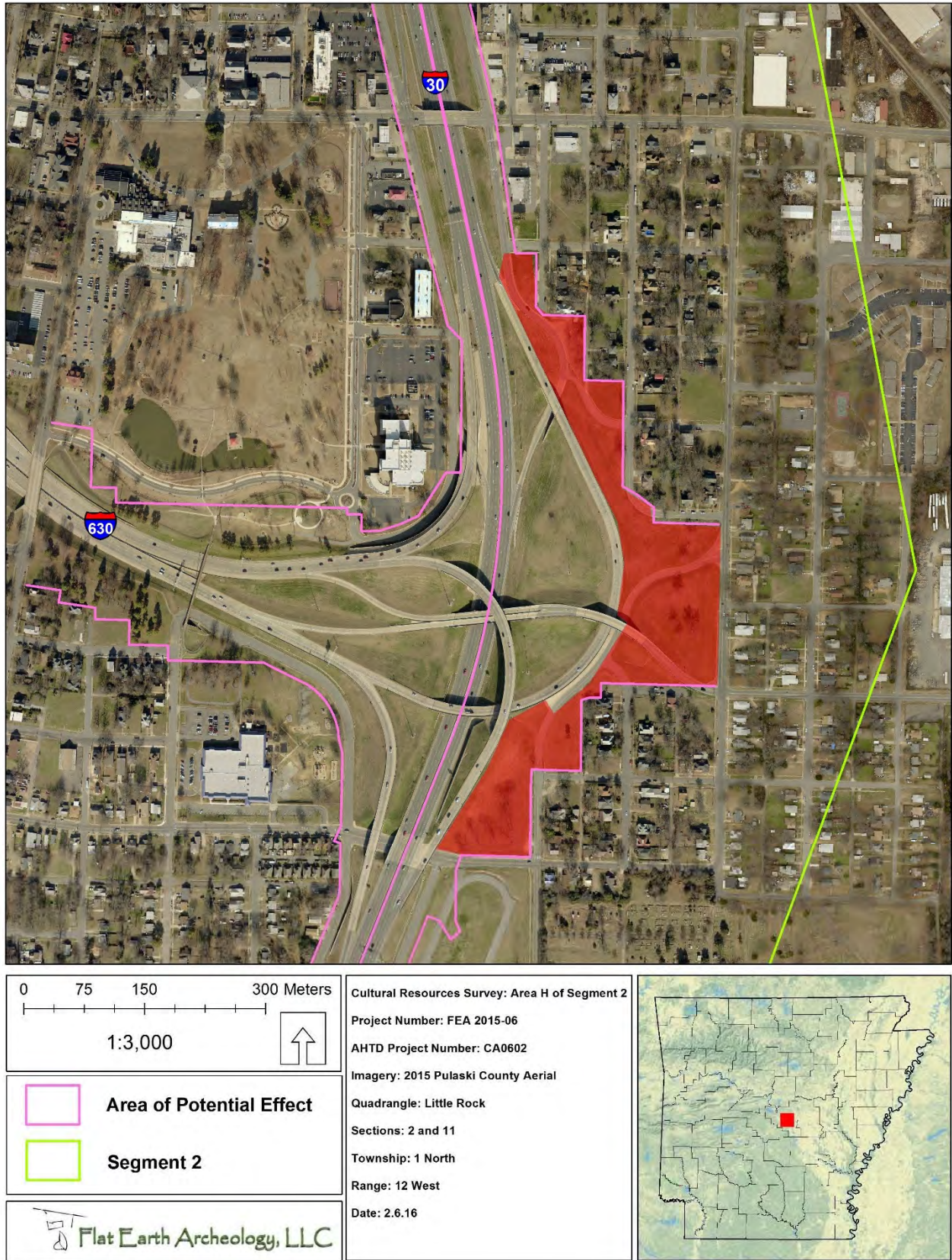
2

3

5.4.8 Area H of Segment 2

Area H in Segment 2 is located at the eastern side of the I-30 and I-630 interchange. This area covers 15.24 acres (Figure 75). Eleven transects were walked in Area H and a total of 134 shovel tests were excavated (Figure 76). The general soil stratigraphic sequence in this area was typically a dark grayish brown (10YR4/2) gravelly silty clay over a yellowish brown (10YR5/8) gravelly clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

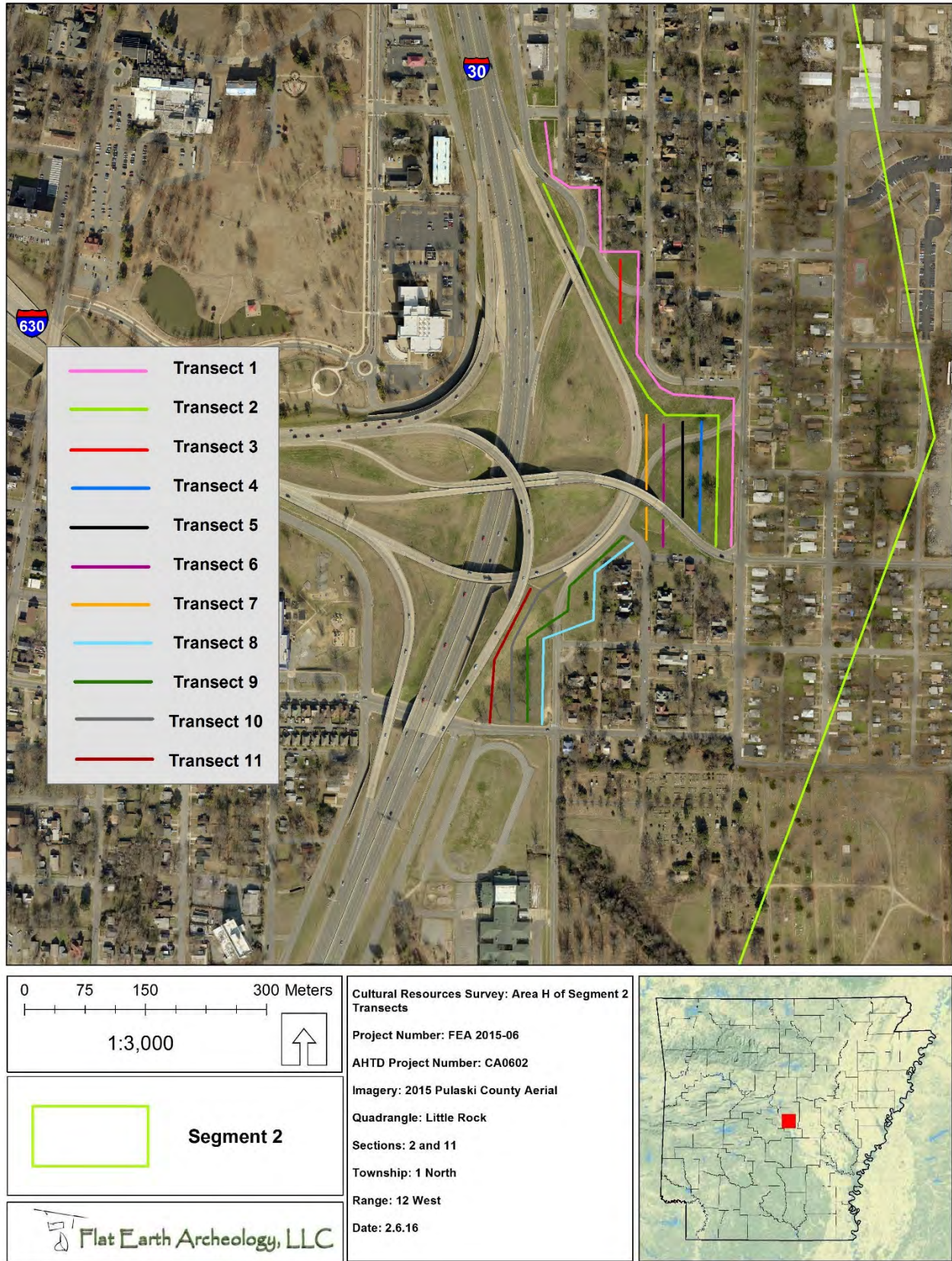
Figure 75: Area H of Segment 2 (shaded in red)

2

3

1

Figure 76: Transect Locations in Area H of Segment 2



2

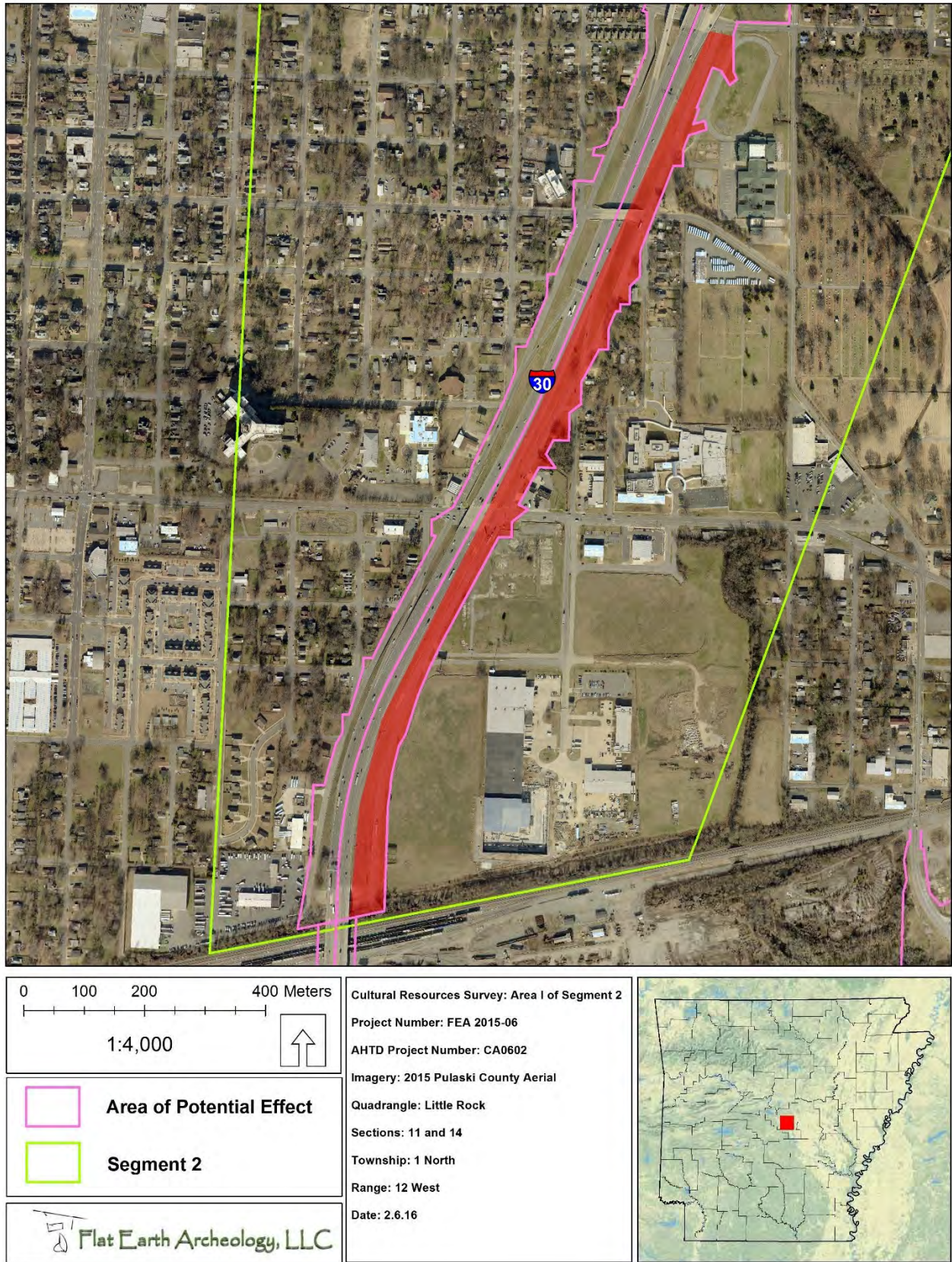
3

5.4.9 Area I of Segment 2

Area I in Segment 2 is located at the eastern side of the I-30 corridor, south of I-630. This area covers 20.6 acres (Figure 77). Two transects were walked in Area I and a total of 155 shovel tests were excavated on the transects (Figure 78). Additionally, there were a total of 17 shovel tests excavated at Site 3PU973 and an additional 9 shovel tests excavated at Site 3PU974. The general soil stratigraphic sequence in this area was typically a dark grayish brown (10YR4/2) gravelly silty clay or yellowish brown (10YR5/4) gravelly silty clay over a yellowish brown (10YR5/8) gravelly clay subsoil. There were a total of four positive shovel tests in Area I of Segment 2 as Sites 3PU973 and 3PU974 were recorded as historic sites. These sites are discussed further in the Site Descriptions portion of this report. The remainder of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey aside from possible foundation stones or concrete pad at the newly recorded sites (3PU973 and 3PU974).

1

Figure 77: Area I of Segment 2 (shaded in red)

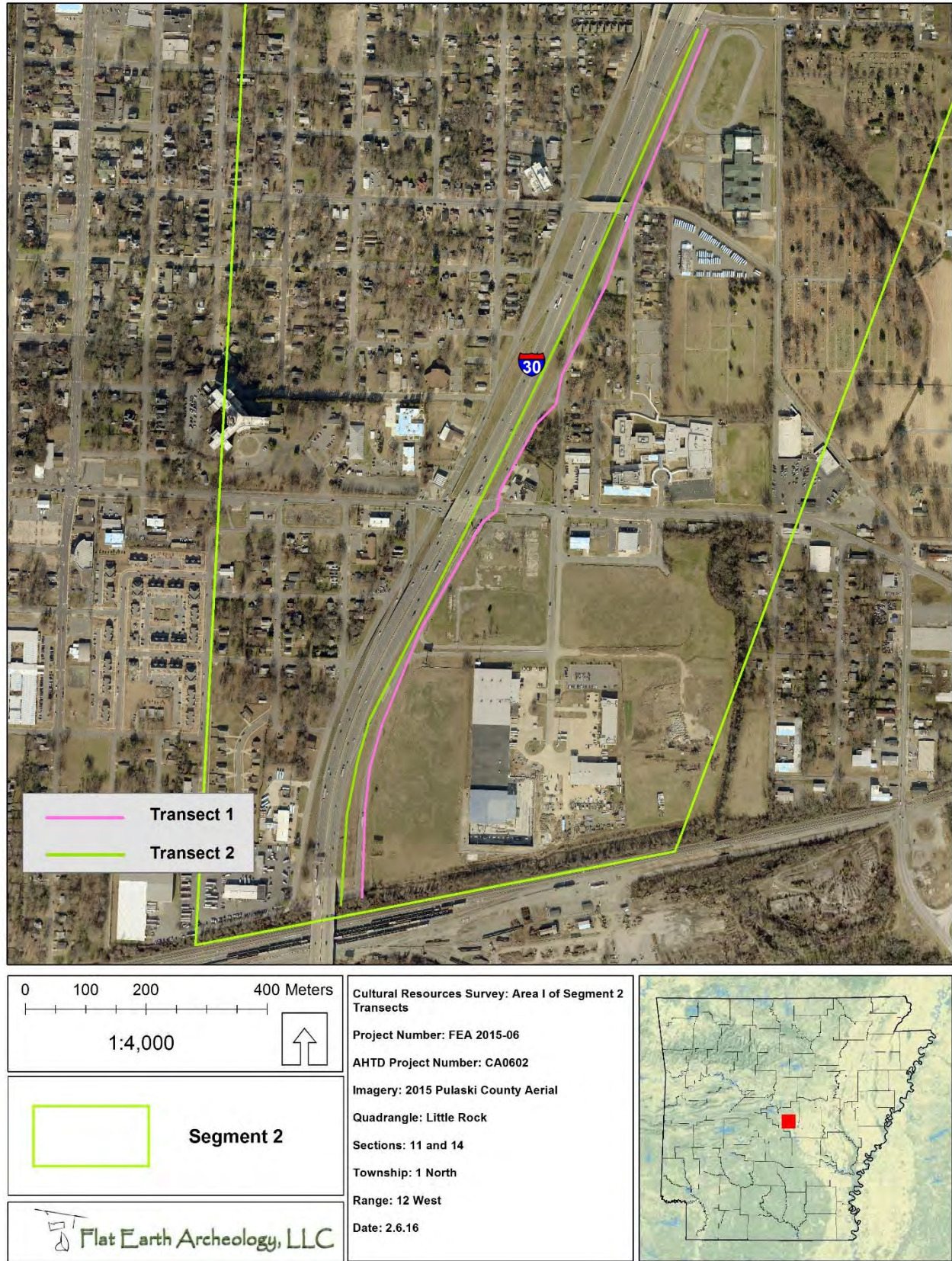


2

3

1

Figure 78: Transect Locations in Area I of Segment 2



2

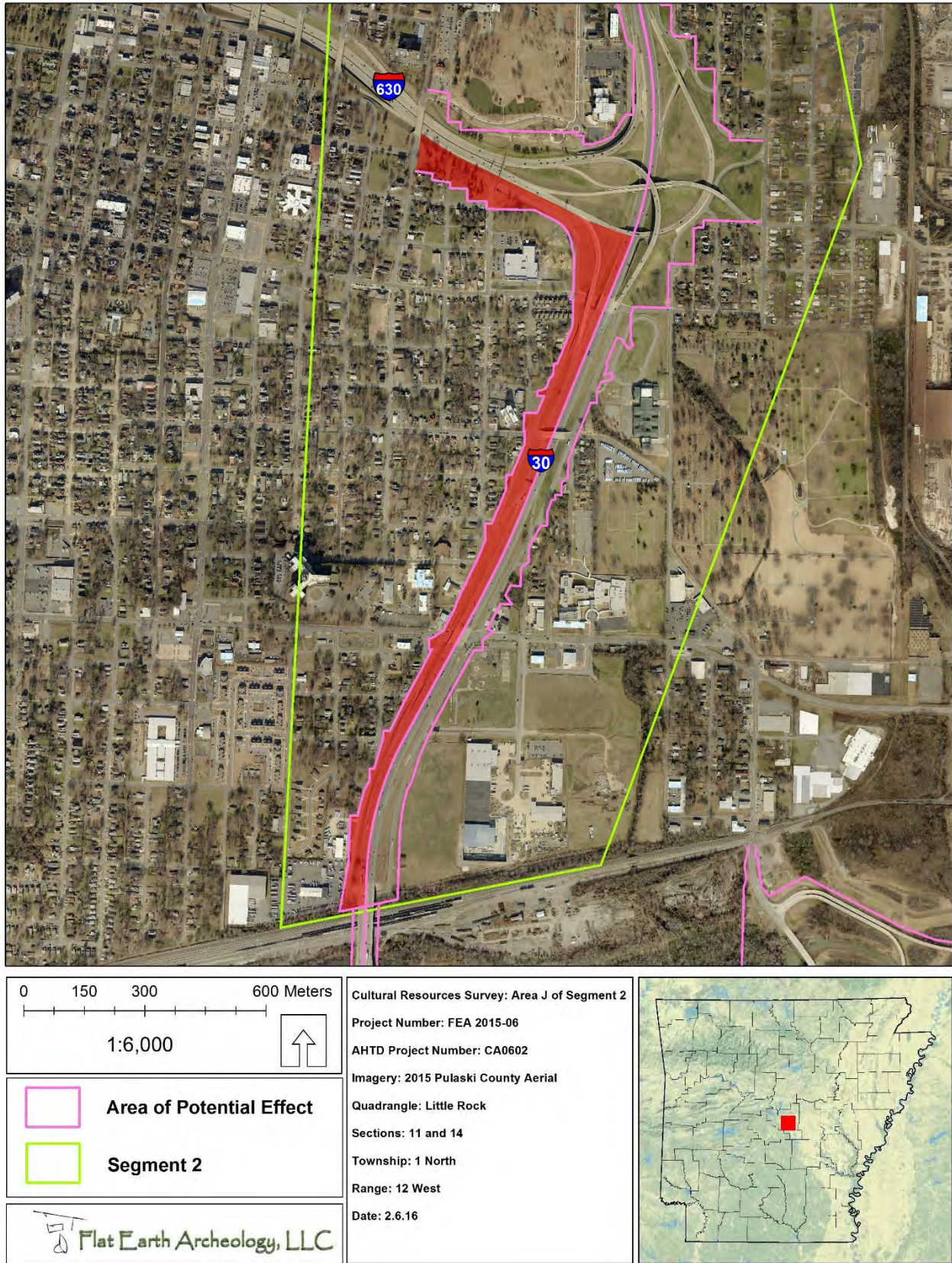
3

5.4.10 Area J of Segment 2

Area J in Segment 2 is located at the west side of the I-30 corridor, south of I-630. This area covers 29.91 acres (Figure 79). Five transects were walked in Area J and a total of 219 shovel tests were excavated on the transects (Figure 80). Additionally, there were a total of 8 shovel tests excavated at Site 3PU975. The general soil stratigraphic sequence in this area was typically a dark yellowish brown (10YR4/2) gravelly silty clay or yellowish brown (10YR5/4) gravelly silty clay over a yellowish brown (10YR5/8) gravelly clay subsoil. Site 3PU975 was recorded as a historic site based on the presence of partial structural foundation. This site is discussed further in the Site Descriptions portion of this report. All of the shovel tests in Area J were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey aside from possible foundation at the newly recorded site (3PU975).

1

Figure 79: Area J of Segment 2 (shaded in red)

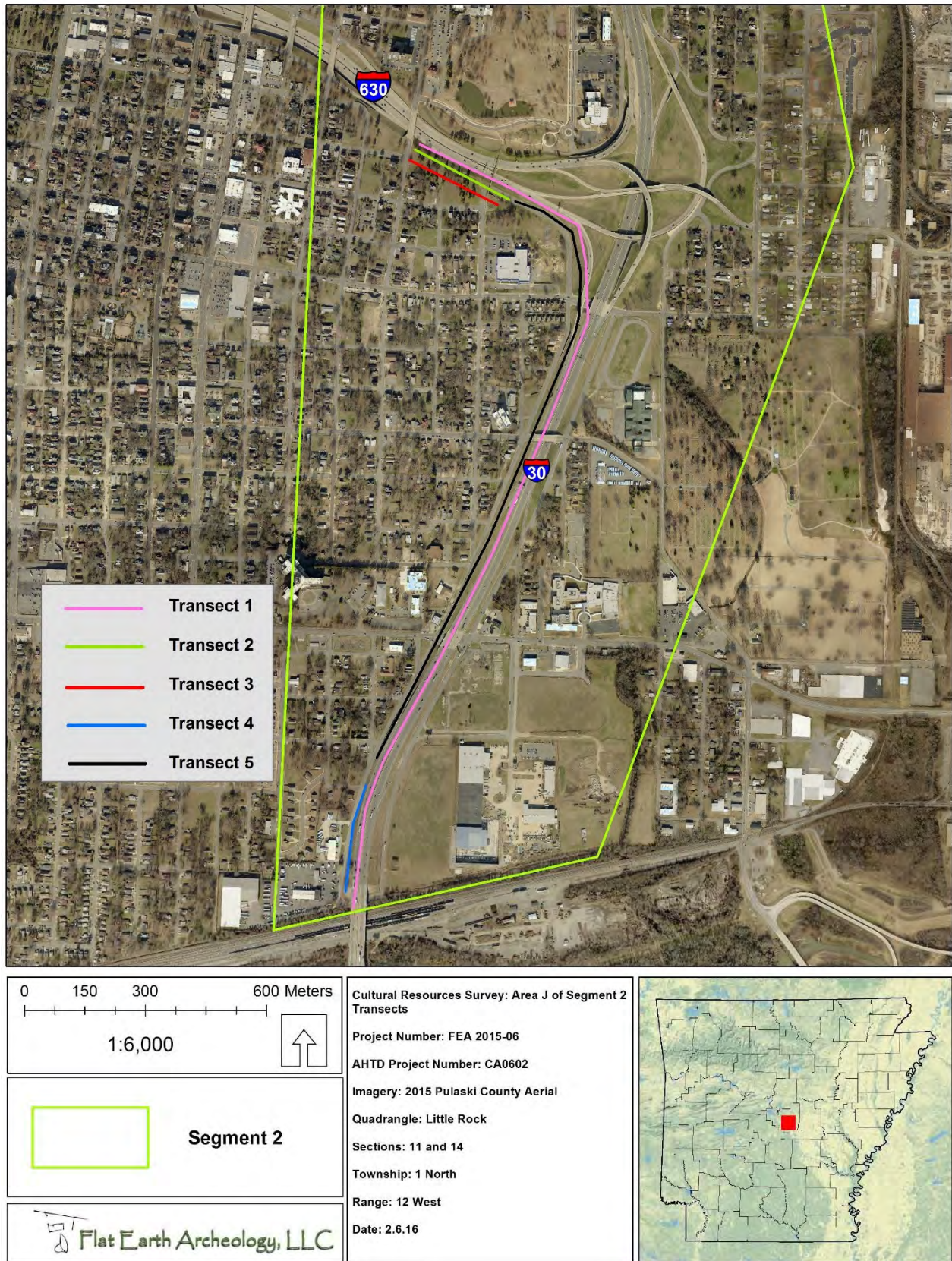


2

3

1

Figure 80: Transect Locations in Area J of Segment 2



2

3

5.5 Archeological Work in Segment 3

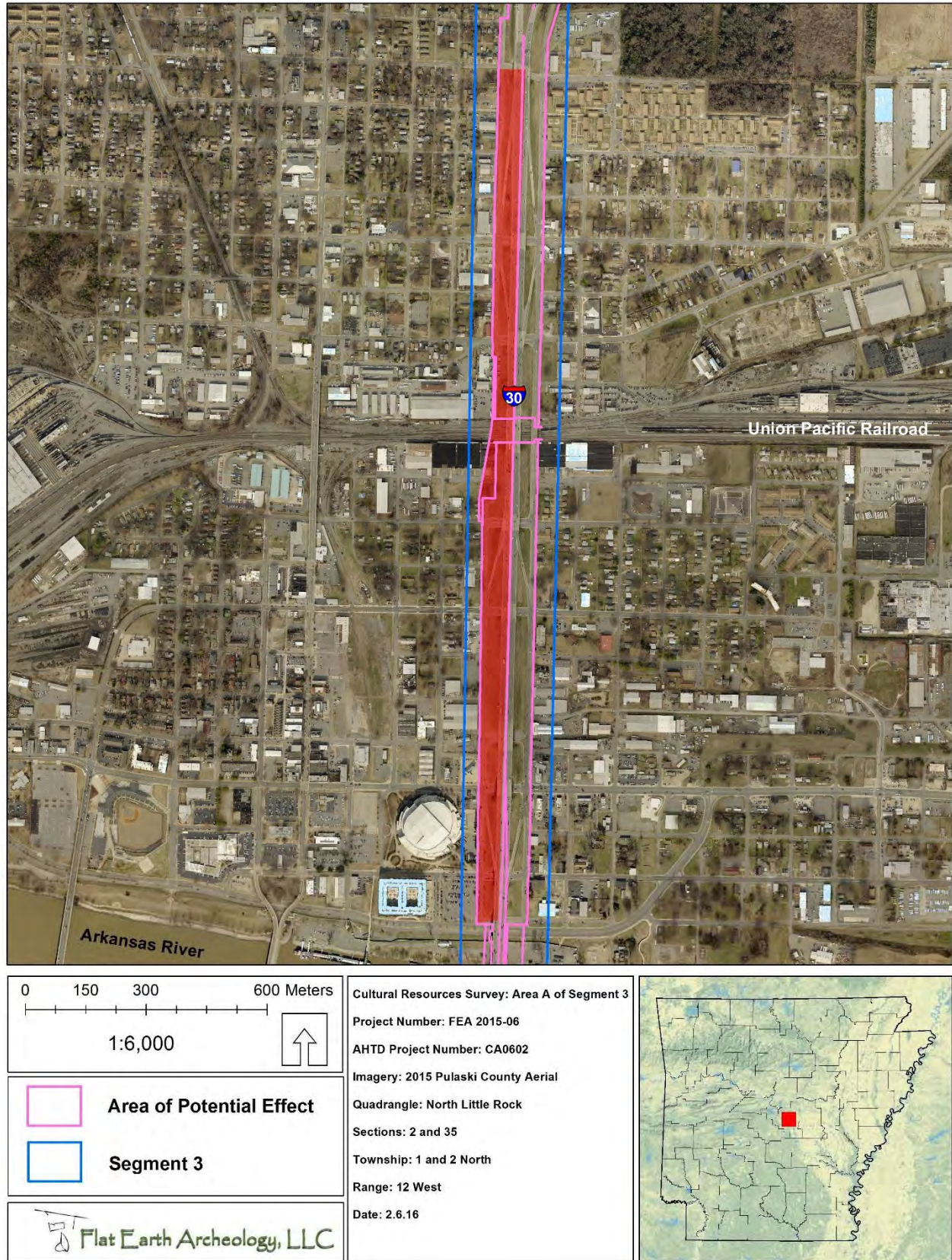
Segment 3 consisted of the Project Area along the I-30 corridor on the north side of the Arkansas River up to E. 19th Street (see Figure 29). Segment 3 was divided further into two Areas that are described individually below. There were a total of 364 shovel tests in Segment 3 (including 26 delineation shovel tests). For a complete inventory of the shovel tests in Segment 3 see Appendix E. Much of this Area is in disturbed soils next to the existing roadways. Two new archeological sites were identified in Segment 3 during the survey (Site 3PU971 and 3PU972). The sites are discussed further in the Site Descriptions portion of this report. There were no previously recorded archeological sites within the survey boundaries in Segment 3.

5.5.1 Area A of Segment 3

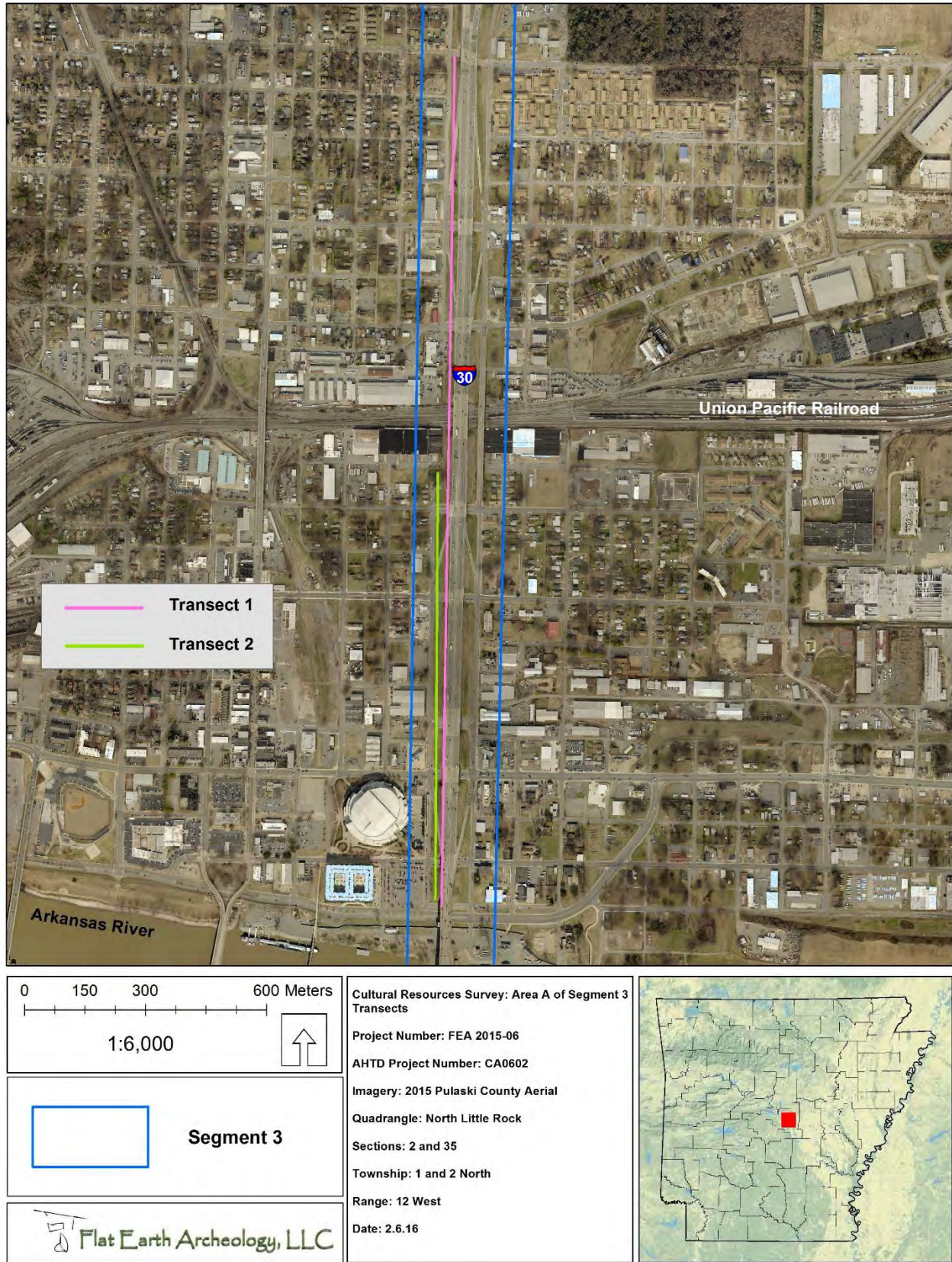
Area A in Segment 3 is located along the western edge of the I-30 corridor. This area covers 34.5 acres (Figure 81). Two transects were walked in Area A and a total of 178 shovel tests were excavated (Figure 82). The general soil stratigraphic sequence in this area was typically a yellowish brown (10YR5/4) silty clay over a yellowish brown (10YR5/8) gravelly clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 81: Area A of Segment 3 (shaded in red)

2
3
4

1

Figure 82: Transect Locations in Area A of Segment 3

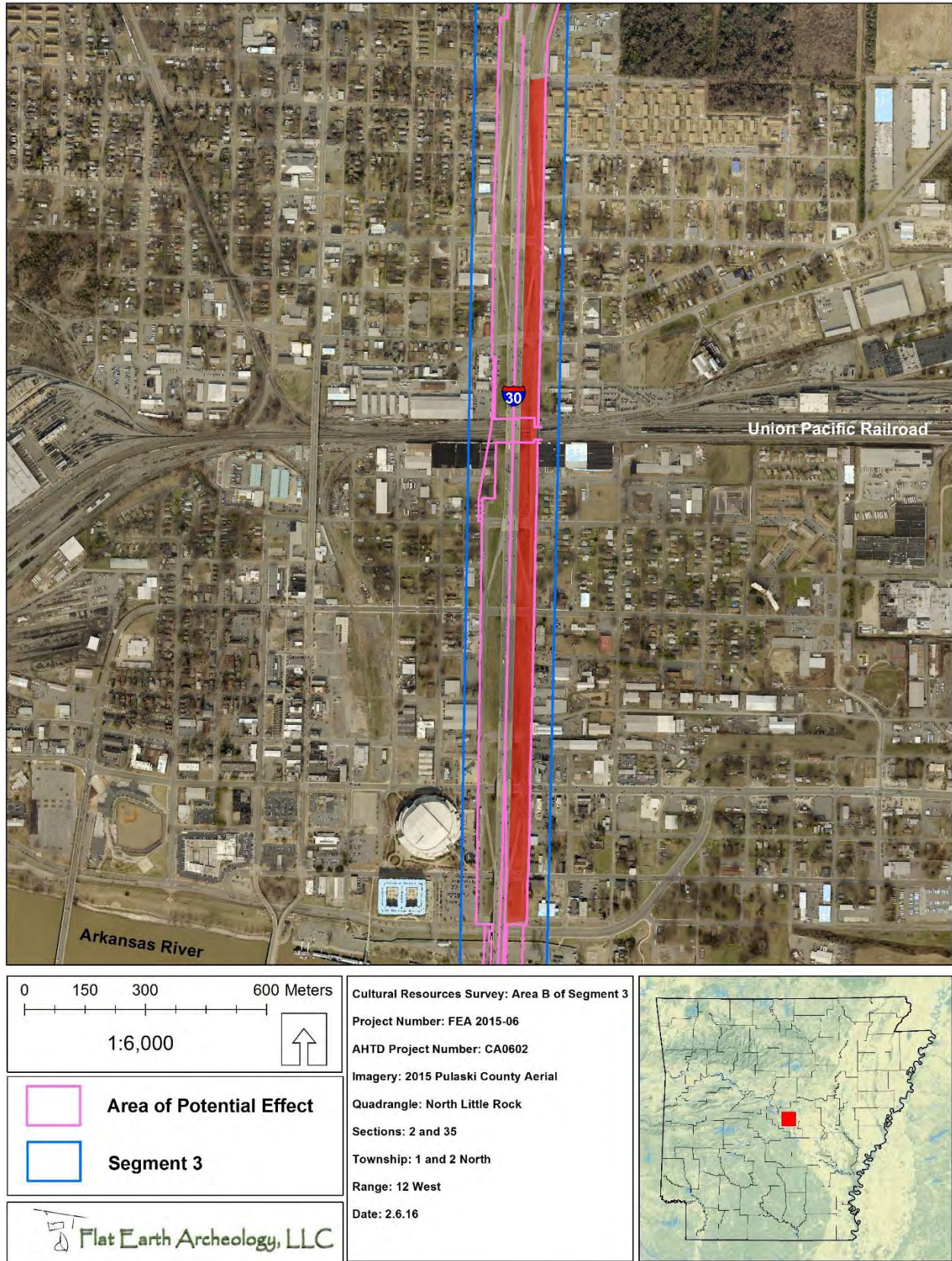
2

3

5.5.2 Area B of Segment 3

Area B in Segment 3 is located along the eastern edge of the I-30 corridor. This area covers 29.43 acres (Figure 83). Five transects were walked in Area B and a total of 162 shovel tests were excavated on the transects (Figure 84). An additional 26 shovel tests were excavated during the delineations at Site 3PU971 and Site 3PU972. The general soil stratigraphic sequence in this area was typically a yellowish brown (10YR5/4) silty clay over a yellowish brown (10YR5/8) gravelly clay subsoil. There were 10 positive shovel tests at Site 3PU971 and four positive shovel tests at Site 3PU972. All of the remaining shovel tests in the Area were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey aside from the two newly recorded historic archeological sites. Sites 3PU971 and 3PU972 are discussed further in the Site Descriptions portion of this report.

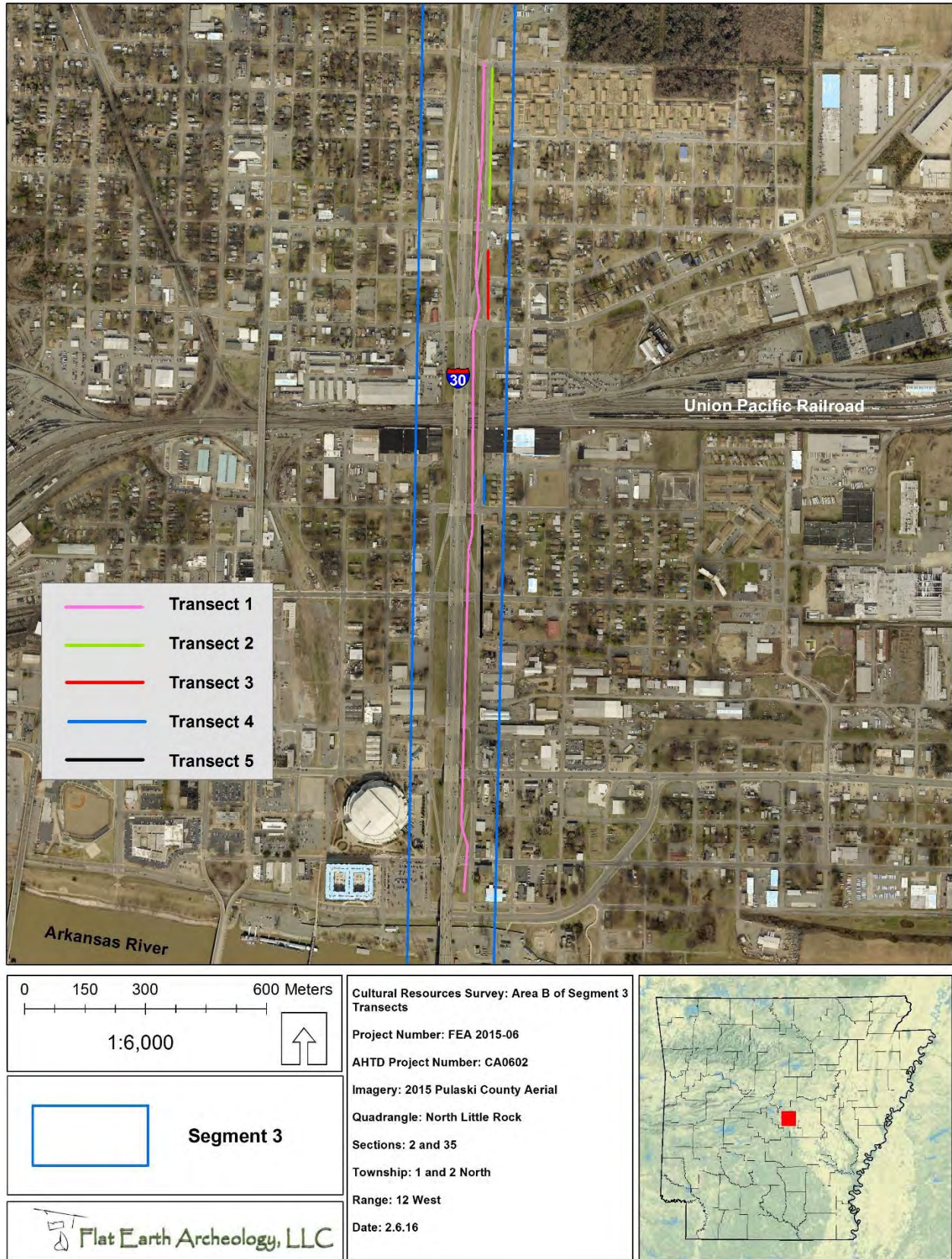
1

Figure 83: Area B of Segment 3 (shaded in red)

2

3

1

Figure 84: Transect Locations in Area B of Segment 3

2

3

5.6 Archeological Work in Segment 4

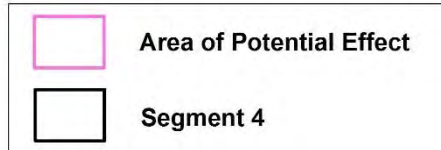
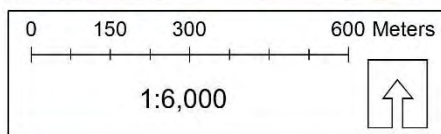
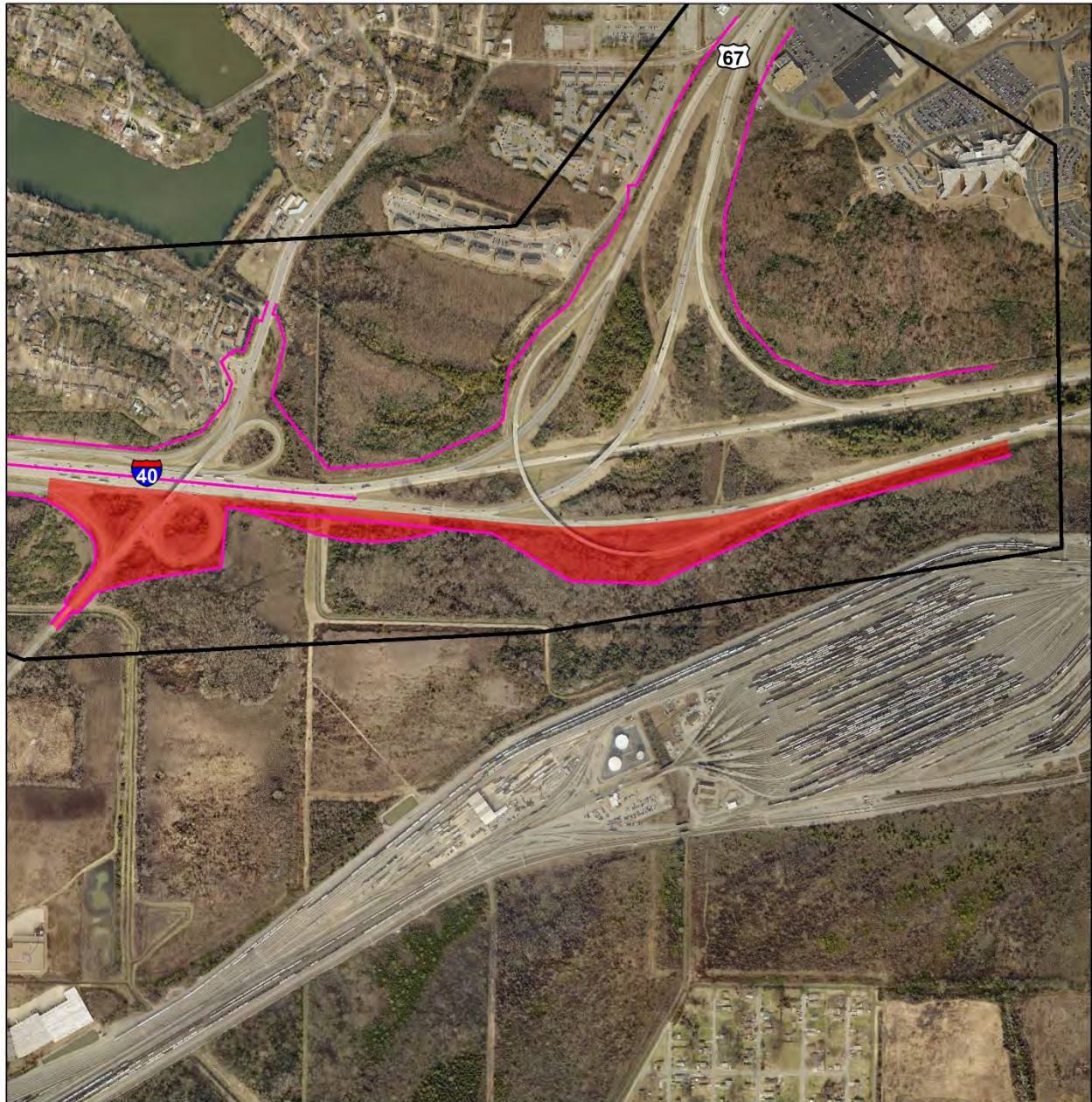
Segment 4 consisted of the Project Area along the Hwy. 67, I-30, and I-40 interchanges (see Figure 29). Segment 4 was divided into 13 Areas that are described individually below. There were a total of 1,765 shovel tests in Segment 4. For a complete inventory of the shovel tests in Segment 4 see Appendix F. Most of this Area is in disturbed soils next to the existing roadways inside the existing right-of-way. No new archeological sites were identified in Segment 4 during the survey. There was one previously recorded archeological site within the survey boundaries in Segment 4. Site 3PU415 was revisited during the current survey. The results of this revisit are discussed further in the Site Descriptions portion of this report.


5.6.1 Area A of Segment 4

Area A in Segment 4 is located along the southern edge of the I-40 and Hwy. 67 interchange. This area covers 38 acres (Figure 85). Twelve transects were walked in Area A and a total of 194 shovel tests were excavated (Figure 86). The general soil stratigraphic sequence in this area was typically a strong brown (7.5YR5/6) clay subsoil with minimal A Horizon or top soil (Figure 87). All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 85: Area A of Segment 4 (shaded in red)



 Flat Earth Archeology, LLC

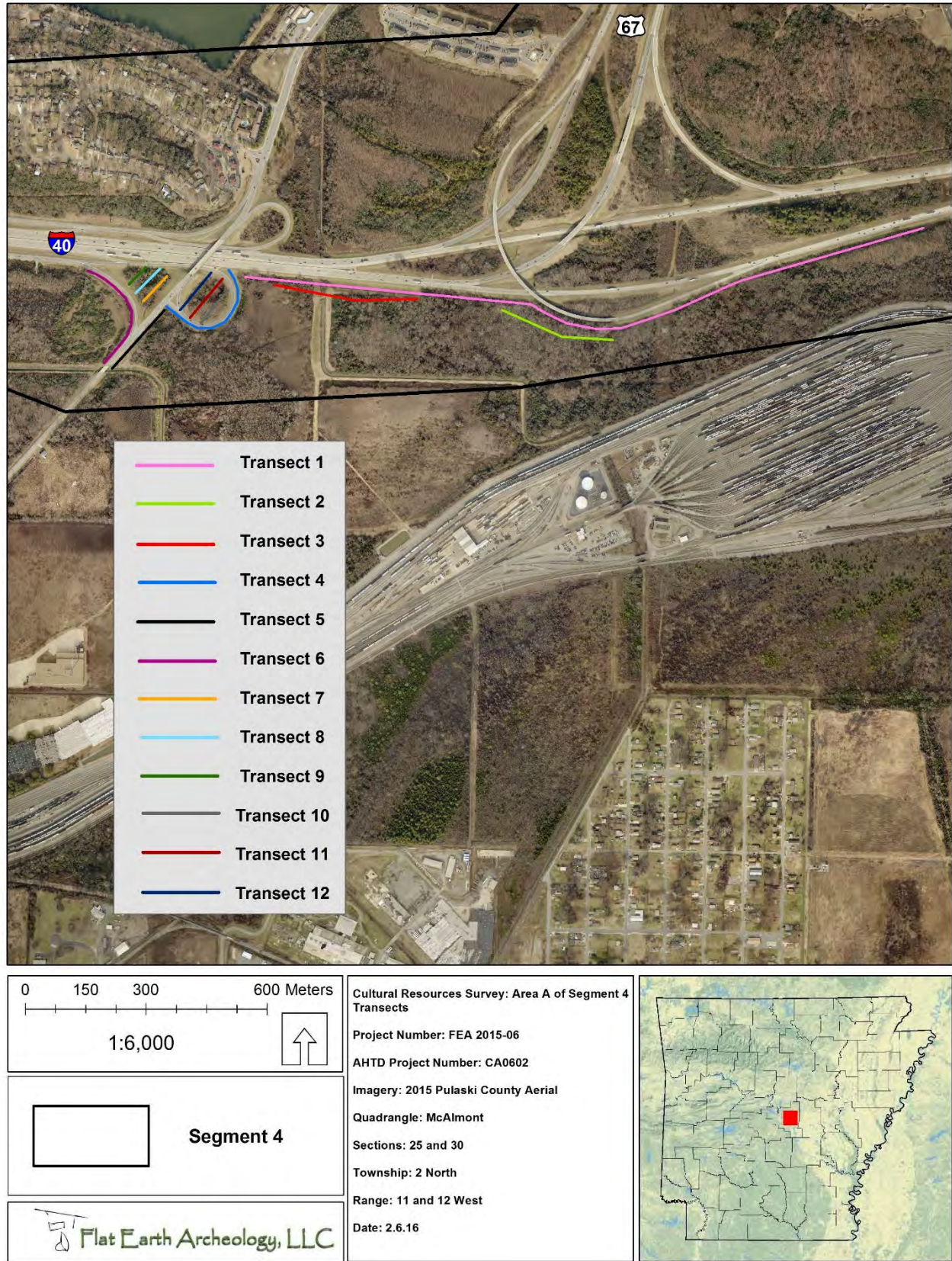
Cultural Resources Survey: Area A of Segment 4
 Project Number: FEA 2015-06
 AHTD Project Number: CA0602
 Imagery: 2015 Pulaski County Aerial
 Quadrangle: McAlmont
 Sections: 25 and 30
 Township: 2 North
 Range: 11 and 12 West
 Date: 2.6.16



2
3
4

1

Figure 86: Transect Locations in Area A of Segment 4



2

3

Figure 87: Shovel Test 5 on Transect 1 Area A of Segment 4



5.6.2 Area B of Segment 4

Area B in Segment 4 is located along the eastern/northern edge of the I-40 and Hwy. 67 interchange. This area covers 11.82 acres (Figure 88). One transect was walked in Area J and a total of 59 shovel tests were excavated (Figure 89). The general soil stratigraphic sequences in this area was typically a strong brown (7.5YR5/6) clay subsoil with minimal A Horizon or top soil; and yellowish brown (10YR5/8) silty clay loam over a strong brown (7.5YR5/6) clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

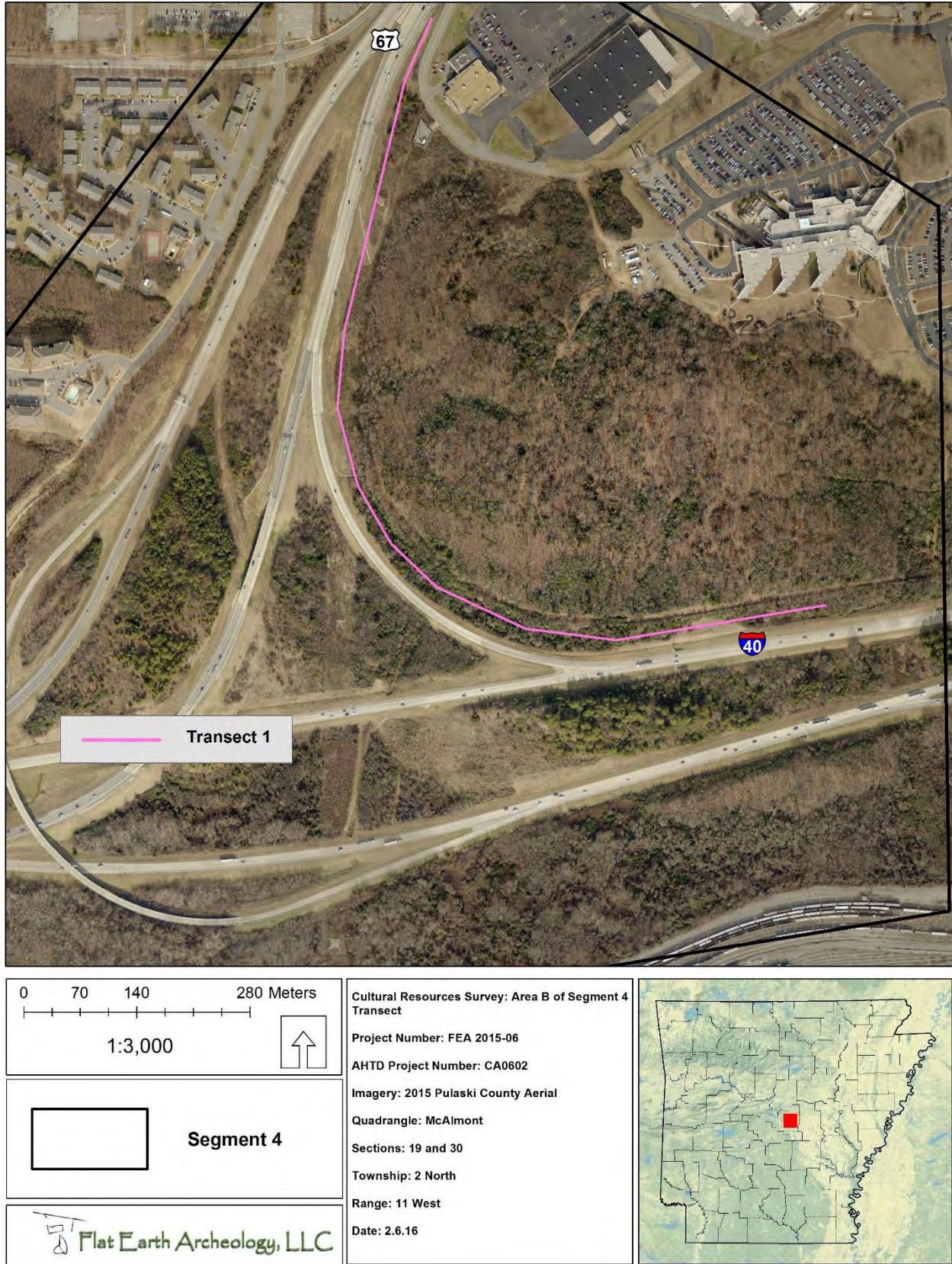
1

Figure 88: Area B of Segment 4 (shaded in red)

2

3

1

Figure 89: Transect Locations in Area B of Segment 4

2

3

5.6.3 Area C of Segment 4

Area C in Segment 4 is located along the western/northwestern edge of the I-40 and Hwy. 67 interchange and the North Hills Boulevard interchange. This area covers 27.33 acres (Figure 90). Nine transects were walked in Area C and a total of 176 shovel tests were excavated (Figure 91). The general soil stratigraphic sequence in this area was typically a yellowish brown (10YR5/8) silty clay loam over a strong brown (7.5YR5/8) clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

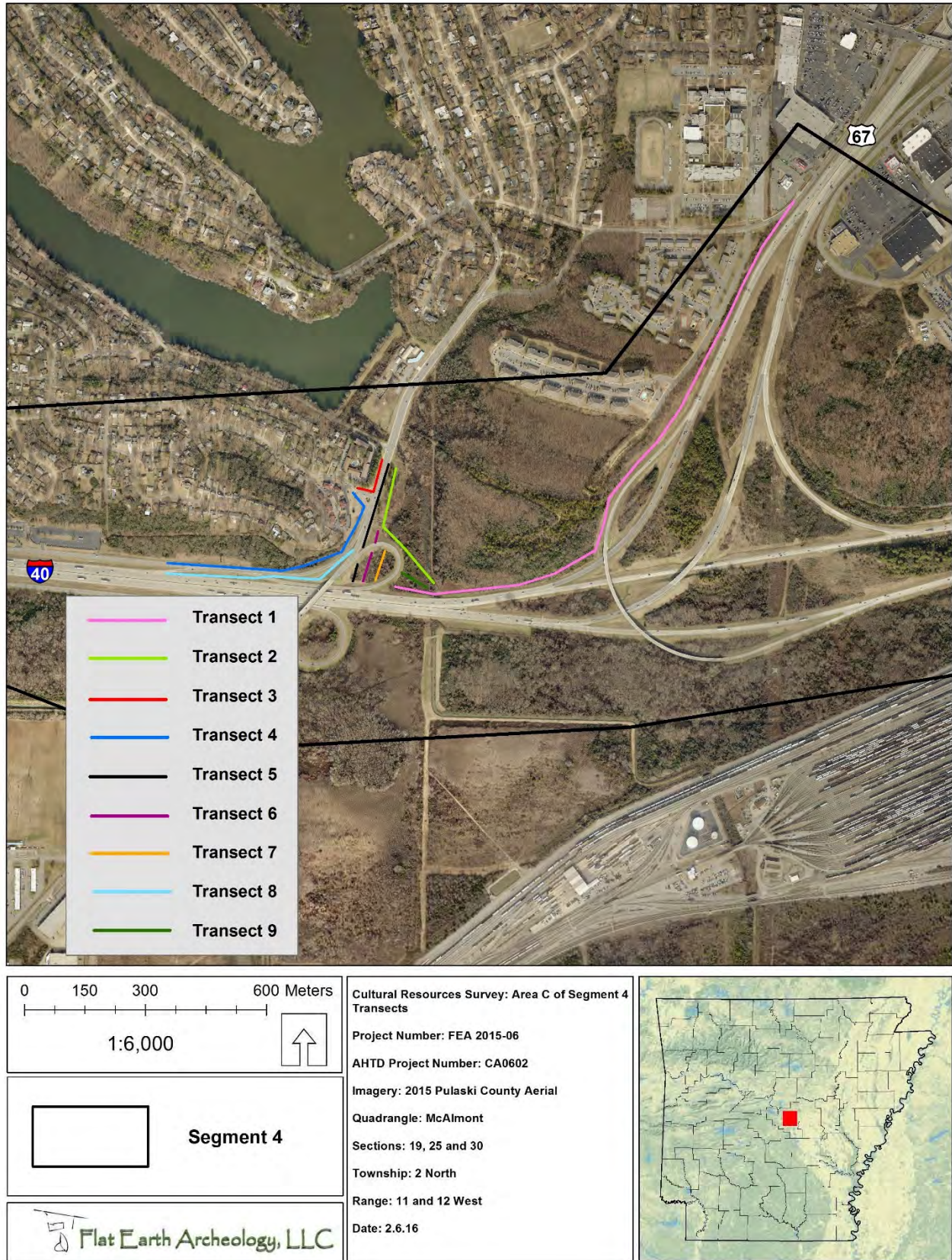
Figure 90: Area C of Segment 4 (shaded in red)

2

3

1

Figure 91: Transect Locations in Area C of Segment 4



2

3

5.6.4 Area D of Segment 4

Area D in Segment 4 is located in the median of the I-40 and Hwy. 67 interchange. This area covers 38.57 acres (Figure 92). Fourteen transects were walked in Area D and a total of 237 shovel tests were excavated (Figure 93). The general soil stratigraphic sequence in this area was typically a very shallow yellowish brown (10YR5/8) silty clay loam over a strong brown (7.5YR5/8) clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

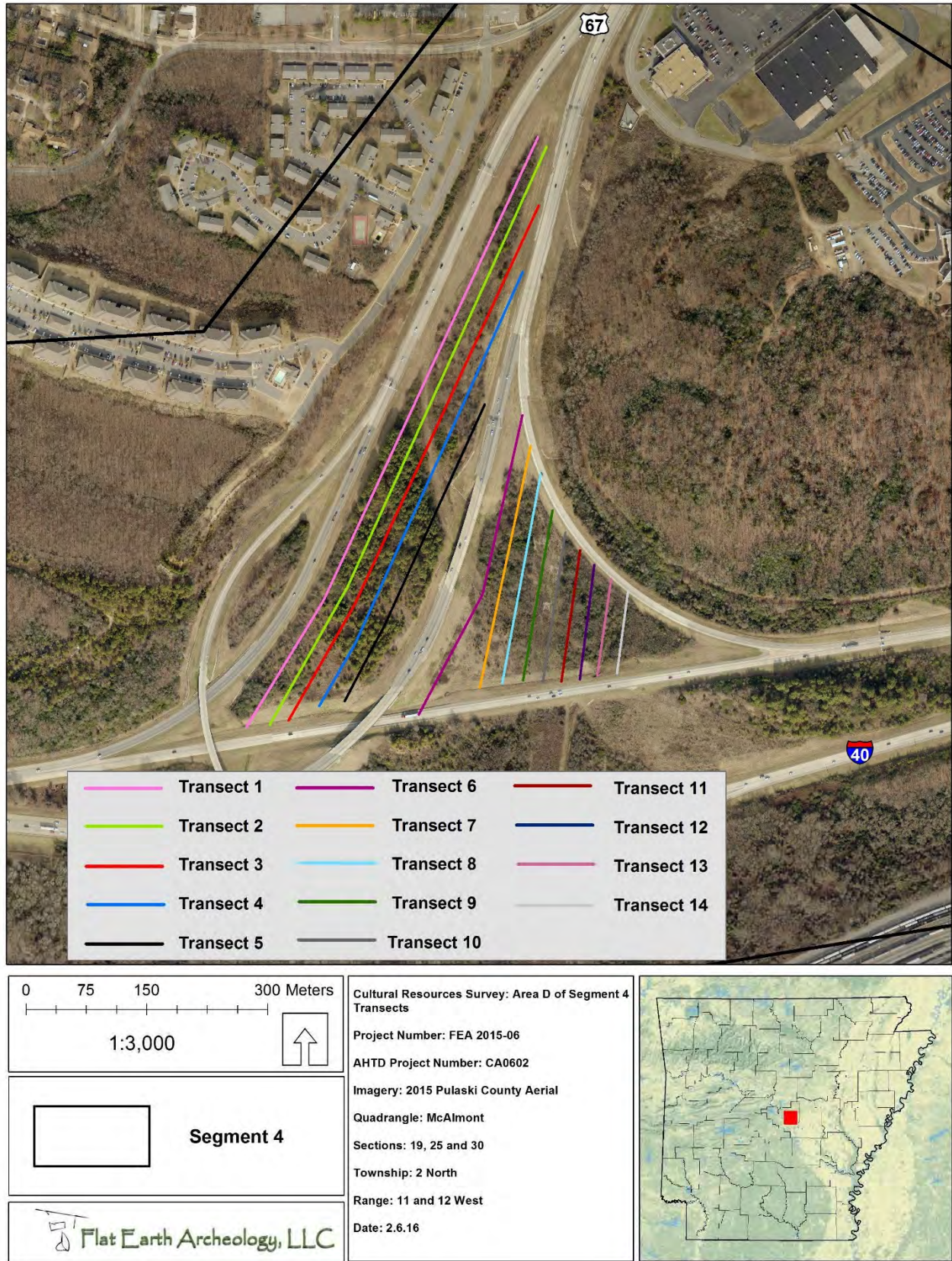
1

Figure 92: Area D of Segment 4 (shaded in red)

2

3

1

Figure 93: Transect Locations in Area D of Segment 4

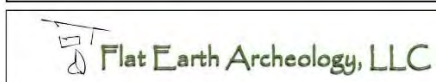
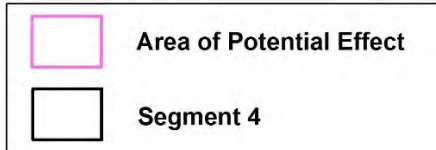
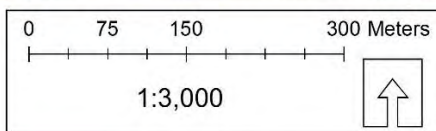
2

3

5.6.5 Area E of Segment 4

Area E in Segment 4 is located in the median of the I-40 and Hwy. 67 interchange. This area covers 4 acres (Figure 94). Four transects were walked in Area E and a total of 87 shovel tests were excavated (Figure 95). The general soil stratigraphic sequence in this area was typically a very shallow dark yellowish brown (10YR4/6) silty clay loam over a strong brown (7.5YR5/6) clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey. Site 3PU415 was revisited in Area E and two lithic flakes were collected from the surface of the toe slope of the road in an eroded area. No other evidence of the site was observed on the surface or subsurface. The site revisit is discussed further in the Site Descriptions portion of this report.

1

Figure 94: Area E of Segment 4 (shaded in red)

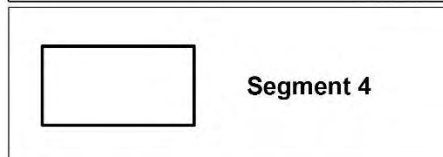
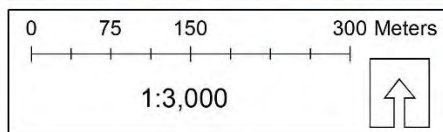
Cultural Resources Survey: Area E of Segment 4
 Project Number: FEA 2015-06
 AHTD Project Number: CA0602
 Imagery: 2015 Pulaski County Aerial
 Quadrangle: McAlmont
 Section: 30
 Township: 2 North
 Range: 11 West
 Date: 2.7.16



2

3

1

Figure 95: Transect Locations in Area E of Segment 4

Cultural Resources Survey: Area E of Segment 4
Transects

Project Number: FEA 2015-06

AHTD Project Number: CA0602

Imagery: 2015 Pulaski County Aerial

Quadrangle: McAlmont

Section: 30

Township: 2 North

Range: 11 West

Date: 2.7.16



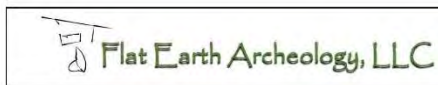
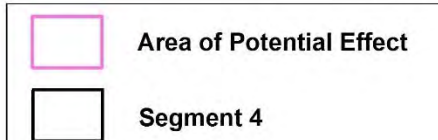
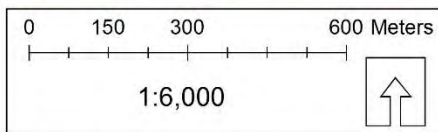
2

3

5.6.6 Area F of Segment 4

Area F in Segment 4 is located in the median of the I-40 and Hwy. 67 interchange. This area covers 32.85 acres (Figure 96). Six transects were walked in Area F and a total of 299 shovel tests were excavated (Figure 97). The general soil stratigraphic sequence in this area was typically a very shallow dark yellowish brown (10YR4/6) silty clay loam over a strong brown (7.5YR5/6) clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 96: Area F of Segment 4 (shaded in red)**Cultural Resources Survey: Area F of Segment 4**

Project Number: FEA 2015-06

AHTD Project Number: CA0602

Imagery: 2015 Pulaski County Aerial

Quadrangle: McAlmont

Sections: 25 and 30

Township: 2 North

Range: 11 and 12 West

Date: 2.7.16

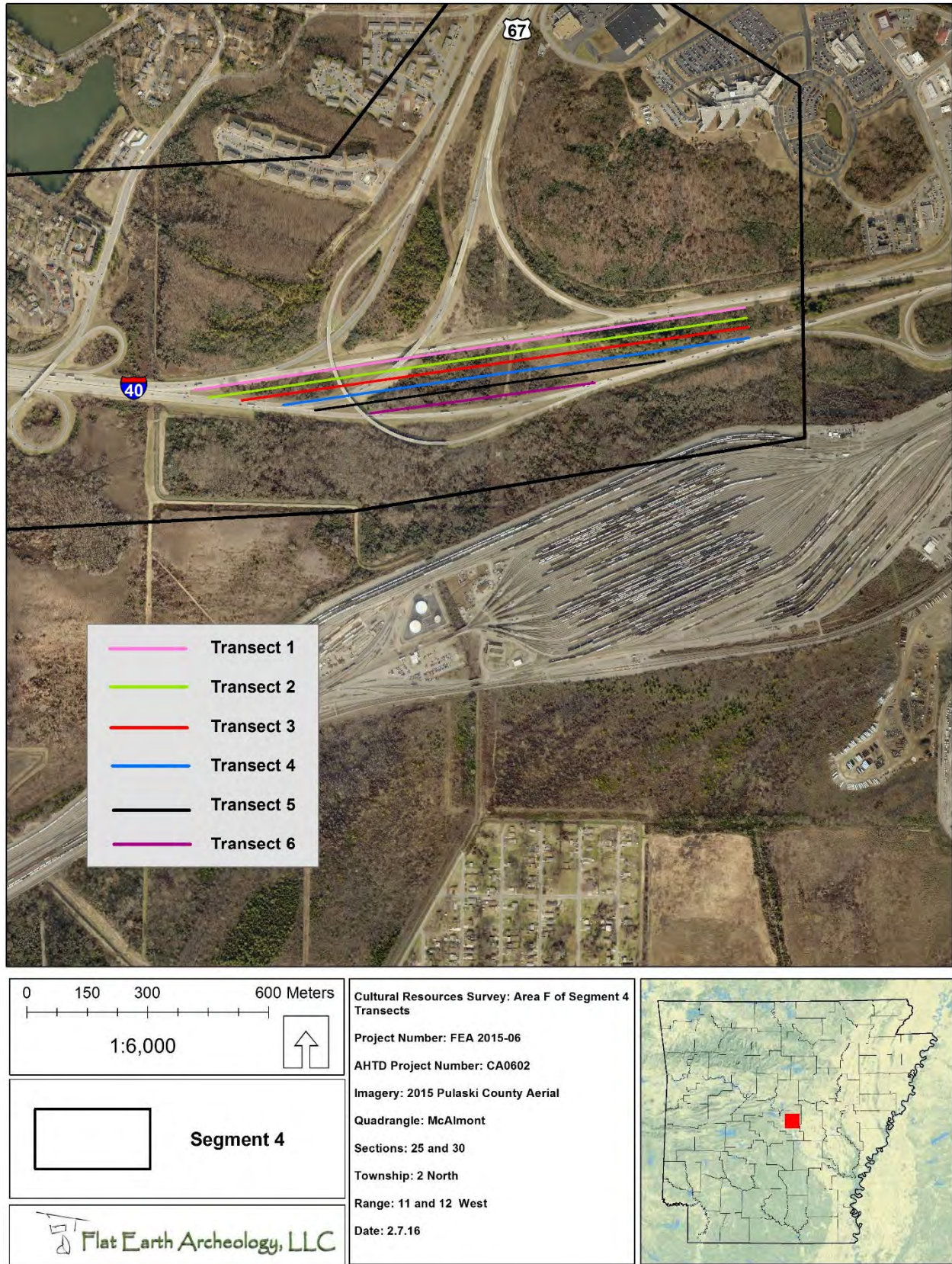


2

3

1

Figure 97: Transect Locations in Area F of Segment 4



2

3

5.6.7 Area G of Segment 4

Area G in Segment 4 is located on the northern edge of the I-30, I-40, and Hwy. 67 interchange. This area covers 15.87 acres (Figure 98). Three transects were walked in Area G and a total of 176 shovel tests were excavated (Figure 99). The general soil stratigraphic sequence in this area was typically a shallow yellowish brown (10YR5/8) silty clay loam over a dark yellowish brown (10YR4/4) clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

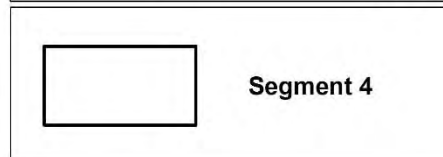
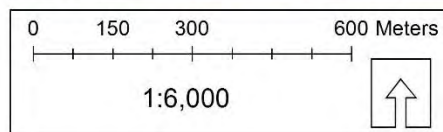
Figure 98: Area G of Segment 4 (shaded in red)



2

3

1

Figure 99: Transect Locations in Area G of Segment 4

Cultural Resources Survey: Area G of Segment 4
Transects

Project Number: FEA 2015-06

AHTD Project Number: CA0602

Imagery: 2015 Pulaski County Aerial

Quadrangles: North Little Rock and McAlmont

Sections: 25 and 26

Township: 2 North

Range: 12 West

Date: 2.7.16



2

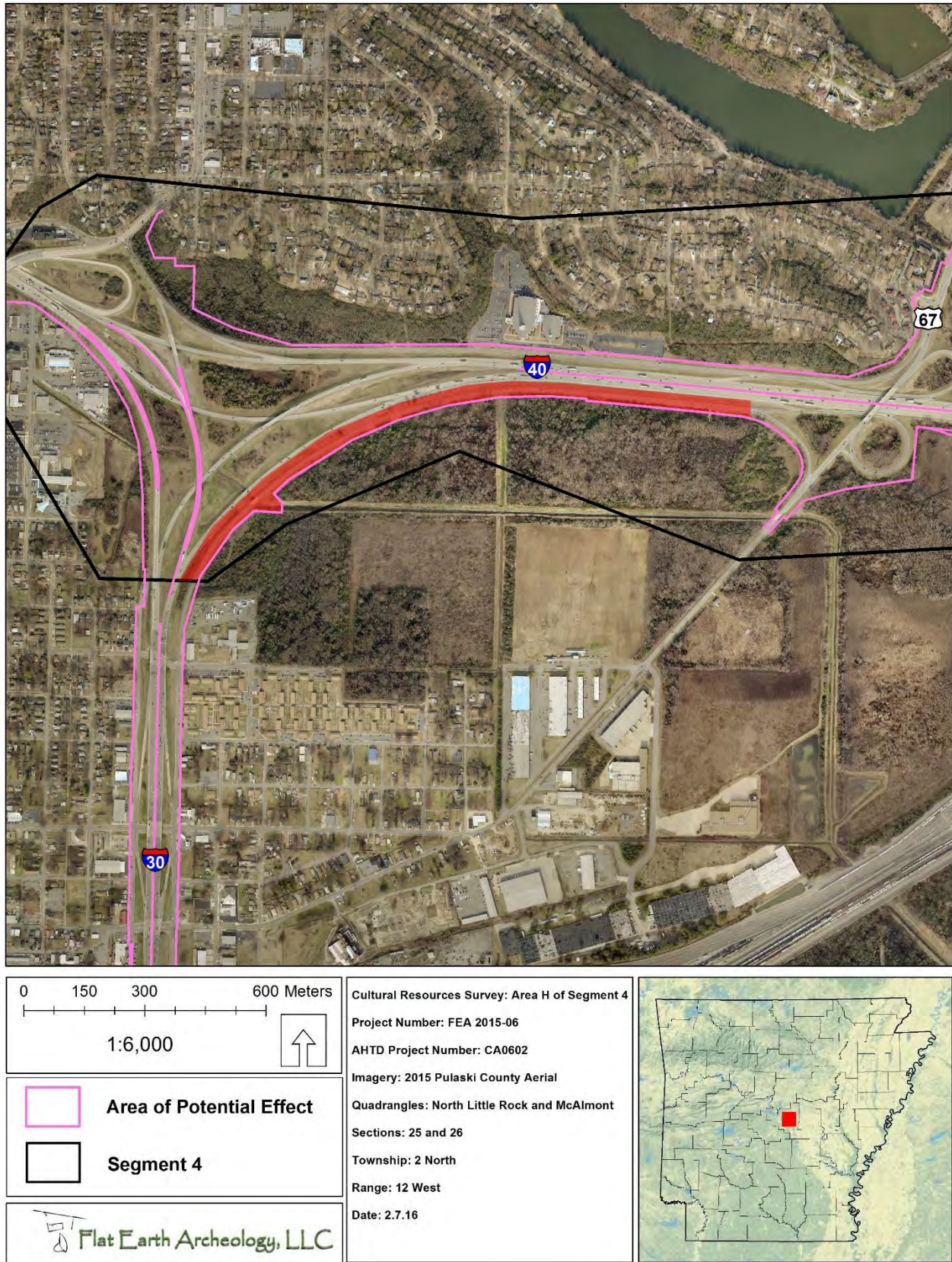
3

5.6.8 Area H of Segment 4

Area H in Segment 4 is located on the southern edge of the I-30, I-40, and Hwy. 67 interchange. This area covers 19.57 acres (Figure 100). Two transects were walked in Area H and a total of 181 shovel tests were excavated (Figure 101). The general soil stratigraphic sequence in this area was typically a shallow dark yellowish brown (10YR4/6) silty clay loam over a strong brown (7.5YR5/8) clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

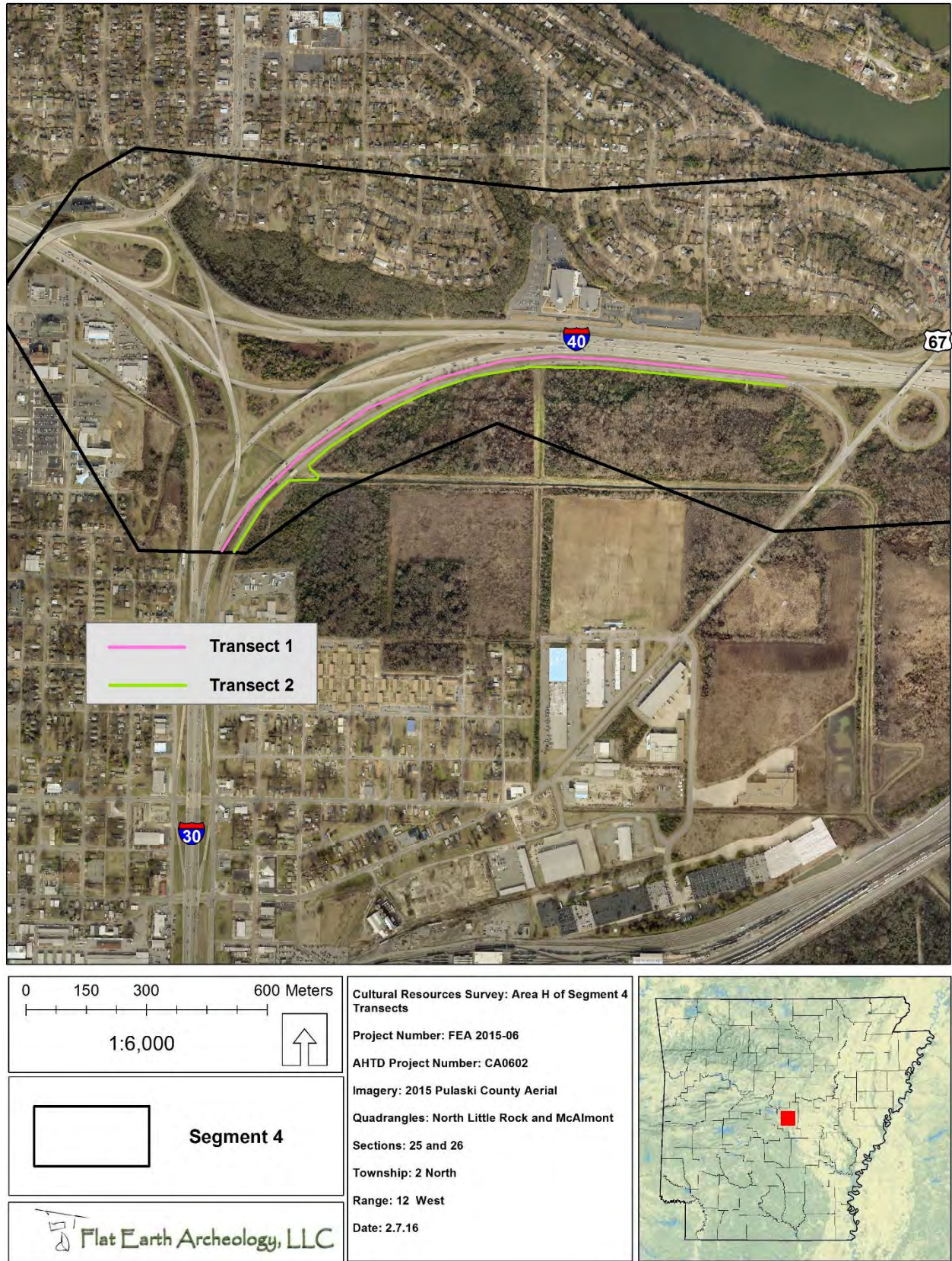
1

Figure 100: Area H of Segment 4 (shaded in red)



2
3
4

1

Figure 101: Transect Locations in Area H of Segment 4

2

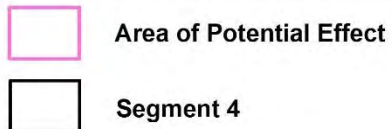
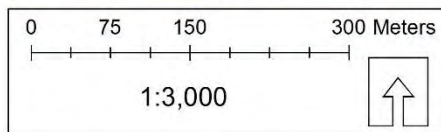
3

5.6.9 Area I of Segment 4

Area I in Segment 4 is located in a median of the I-30, I-40, and Hwy. 67 interchange. This area covers 13.46 acres (Figure 102). Four transects were walked in Area I and a total of 92 shovel tests were excavated (Figure 103). The general soil stratigraphic sequence in this area was typically a strong brown (7.5YR5/6) clay subsoil with no top soil present. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 102: Area I of Segment 4 (shaded in red)



Flat Earth Archeology, LLC

Cultural Resources Survey: Area I of Segment 4

Project Number: FEA 2015-06

AHTD Project Number: CA0602

Imagery: 2015 Pulaski County Aerial

Quadrangle: North Little Rock

Section: 26

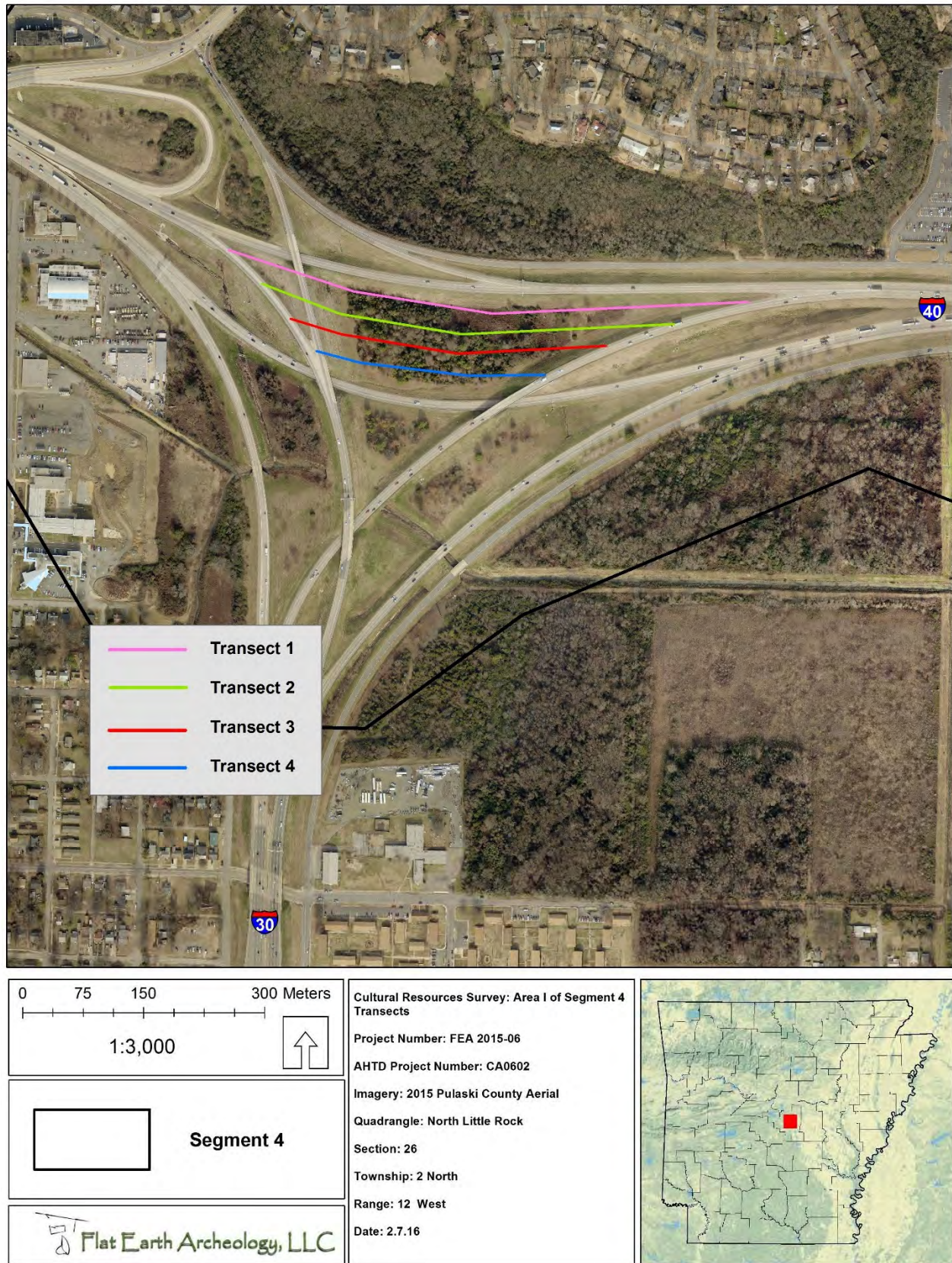
Township: 2 North

Range: 12 West

Date: 2.7.16

2
3
4

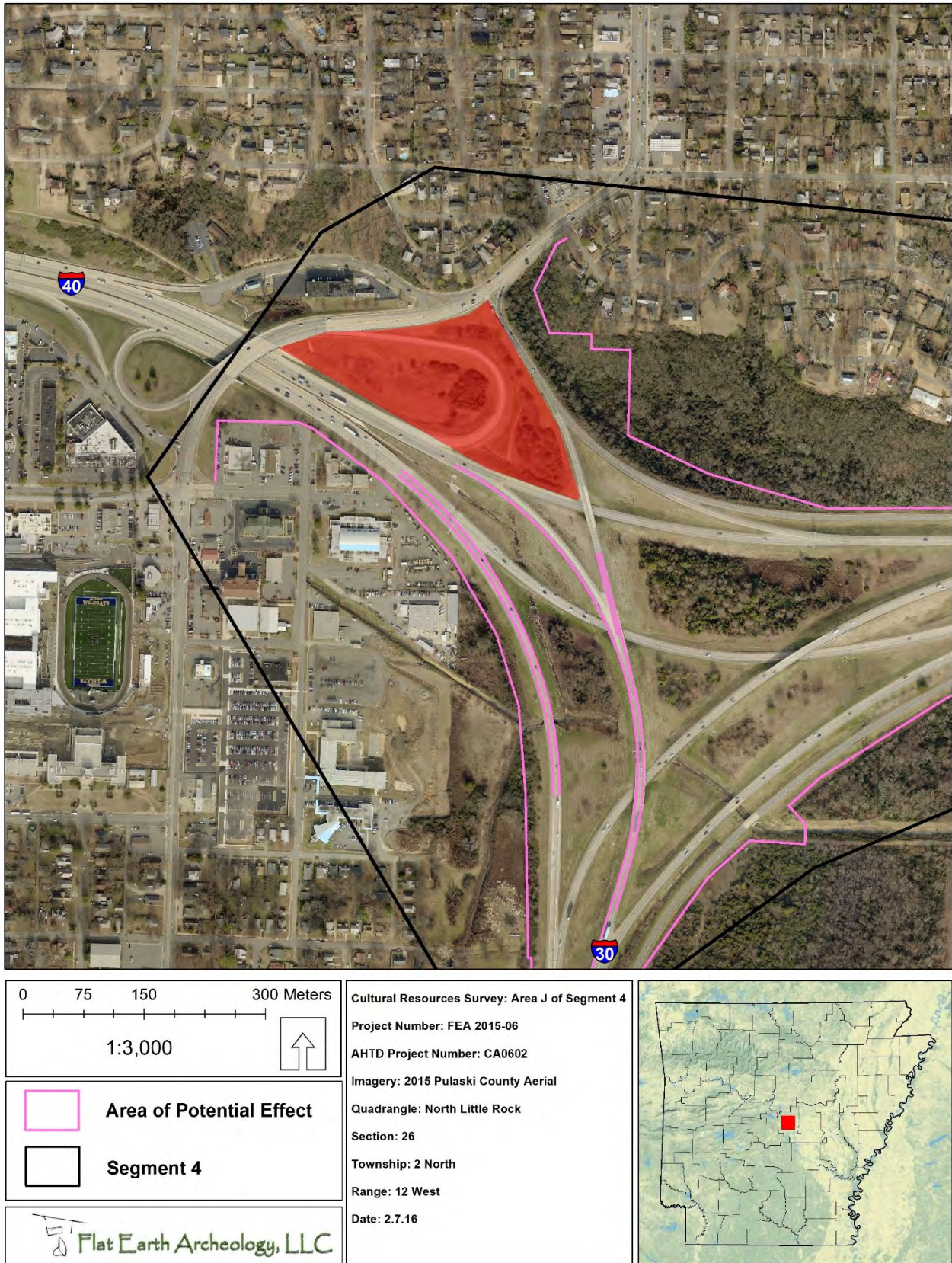
1

Figure 103: Transect Locations in Area I of Segment 42
3

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29

5.6.10 Area J of Segment 4

Area J in Segment 4 is located in a median of the I-30, I-40, and Hwy. 67 interchange. This area covers 8.66 acres (Figure 104). Five transects were walked in Area J and a total of 61 shovel tests were excavated (Figure 105). The general soil stratigraphic sequence in this area was typically a strong brown (7.5YR5/6) clay subsoil with no top soil present. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1
2**Figure 104: Area J of Segment 4 (shaded in red)**

3

1

2

Figure 105: Transect Locations in Area J of Segment 4

3

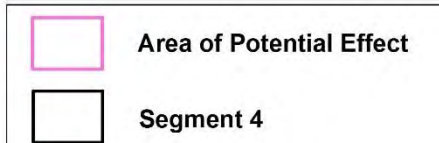
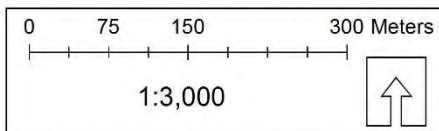
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30

5.6.11 Area K of Segment 4

Area K in Segment 4 is located in a median of the I-30, I-40, and Hwy. 67 interchange. This area covers 48.42 acres (Figure 106). Eight transects were walked in Area K and a total of 107 shovel tests were excavated (Figure 107). The general soil stratigraphic sequence in this area was typically a strong brown (7.5YR4/6) clay subsoil with no top soil present. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1
2
3
4

Figure 106: Area K of Segment 4 (shaded in red)



 Flat Earth Archeology, LLC

Cultural Resources Survey: Area K of Segment 4
 Project Number: FEA 2015-06
 AHTD Project Number: CA0602
 Imagery: 2015 Pulaski County Aerial
 Quadrangle: North Little Rock
 Section: 26
 Township: 2 North
 Range: 12 West
 Date: 2.7.16



1

2

1

Figure 107: Transect Locations in Area K of Segment 4

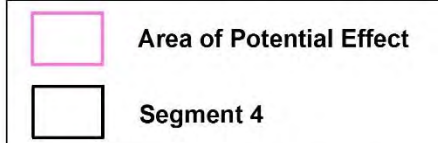
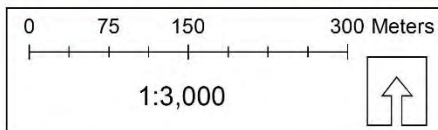
2
3
4

5.6.12 Area L of Segment 4

Area L in Segment 4 is located in a median of the I-30, I-40, and Hwy. 67 interchange. This area covers 4.86 acres (Figure 108). Two transects were walked in Area L and a total of 39 shovel tests were excavated (Figure 109). The general soil stratigraphic sequence in this area was typically a strong brown (7.5YR4/6) clay subsoil with no top soil present. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

Figure 108: Area L of Segment 4 (shaded in red)



Flat Earth Archeology, LLC

Cultural Resources Survey: Area L of Segment 4

Project Number: FEA 2015-06

AHTD Project Number: CA0602

Imagery: 2015 Pulaski County Aerial

Quadrangle: North Little Rock

Section: 26

Township: 2 North

Range: 12 West

Date: 2.7.16



2

3

1

Figure 109: Transect Locations in Area L of Segment 4

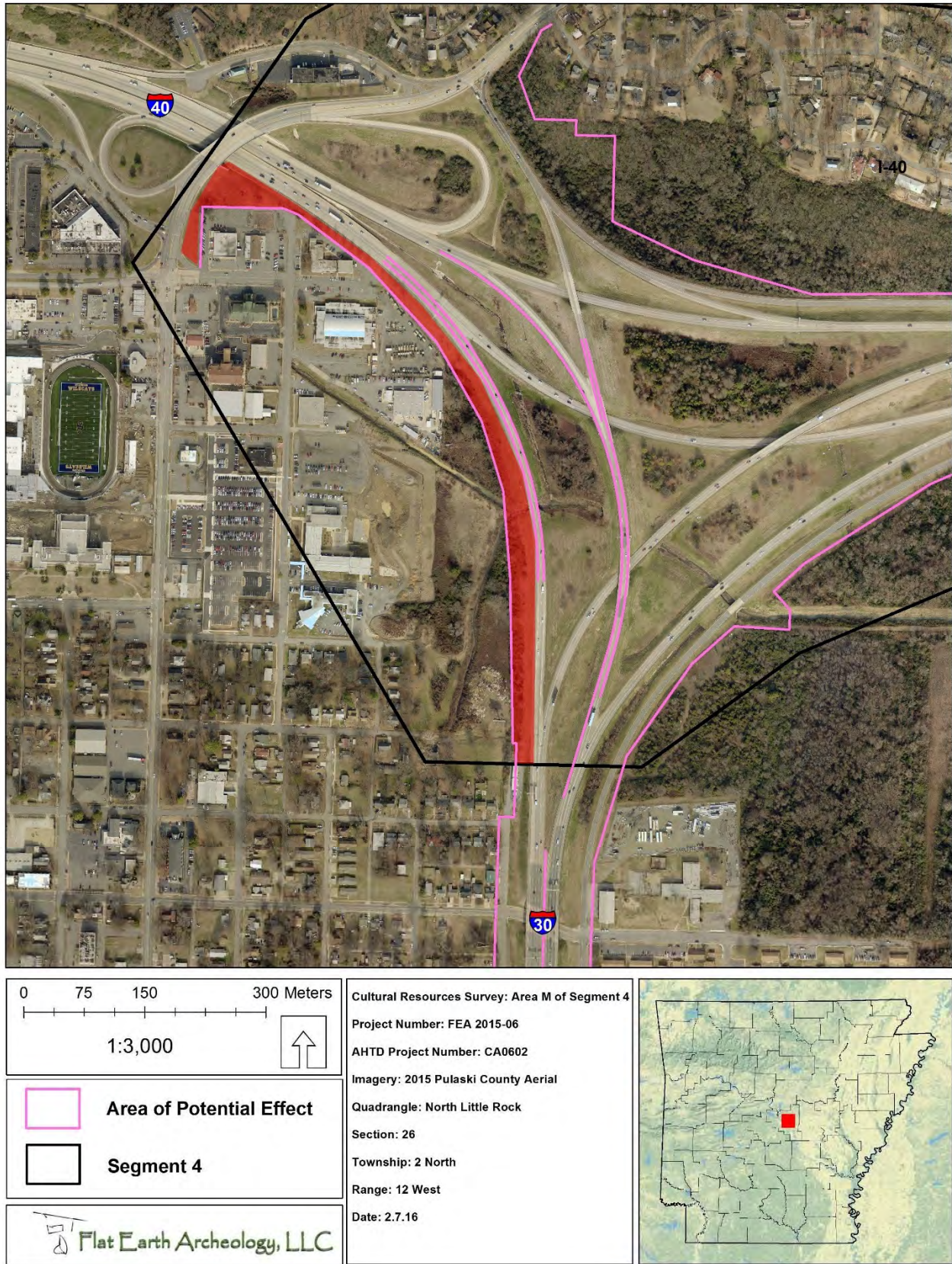
2
3
4

5.6.13 Area M of Segment 4

Area M in Segment 4 is located on the western edge of the I-30, I-40, and Hwy. 67 interchange. This area covers 4.46 acres (Figure 110). A single transect was walked in Area M and a total of 57 shovel tests were excavated (Figure 111). The general soil stratigraphic sequence in this area was typically a shallow dark grayish brown (10YR4/2) silty clay over a strong brown (7.5YR4/6) clay subsoil. All of the shovel tests were negative for cultural materials and no cultural features or materials were observed on the surface during the pedestrian survey.

1

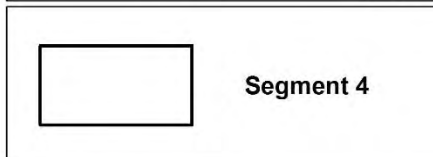
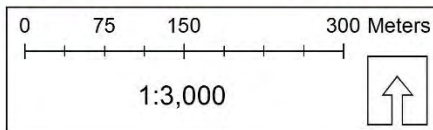
Figure 110: Area M of Segment 4 (shaded in red)



2

3

1

Figure 111: Transect Location in Area M of Segment 4

Cultural Resources Survey: Area M of Segment 4
Transect

Project Number: FEA 2015-06

AHTD Project Number: CA0602

Imagery: 2015 Pulaski County Aerial

Quadrangle: North Little Rock

Section: 26

Township: 2 North

Range: 12 West

Date: 2.7.16



2
3
4

6.0 SITE DESCRIPTIONS

6.1 Newly Recorded Sites

Site 3PU969

Temp. Site No.: 2015-6-1

General Location: Segment 1, Area G

Cultural Affiliation: Historic (early-to-mid 20th century)

Size: 5 meters x 5 meters (approximate)

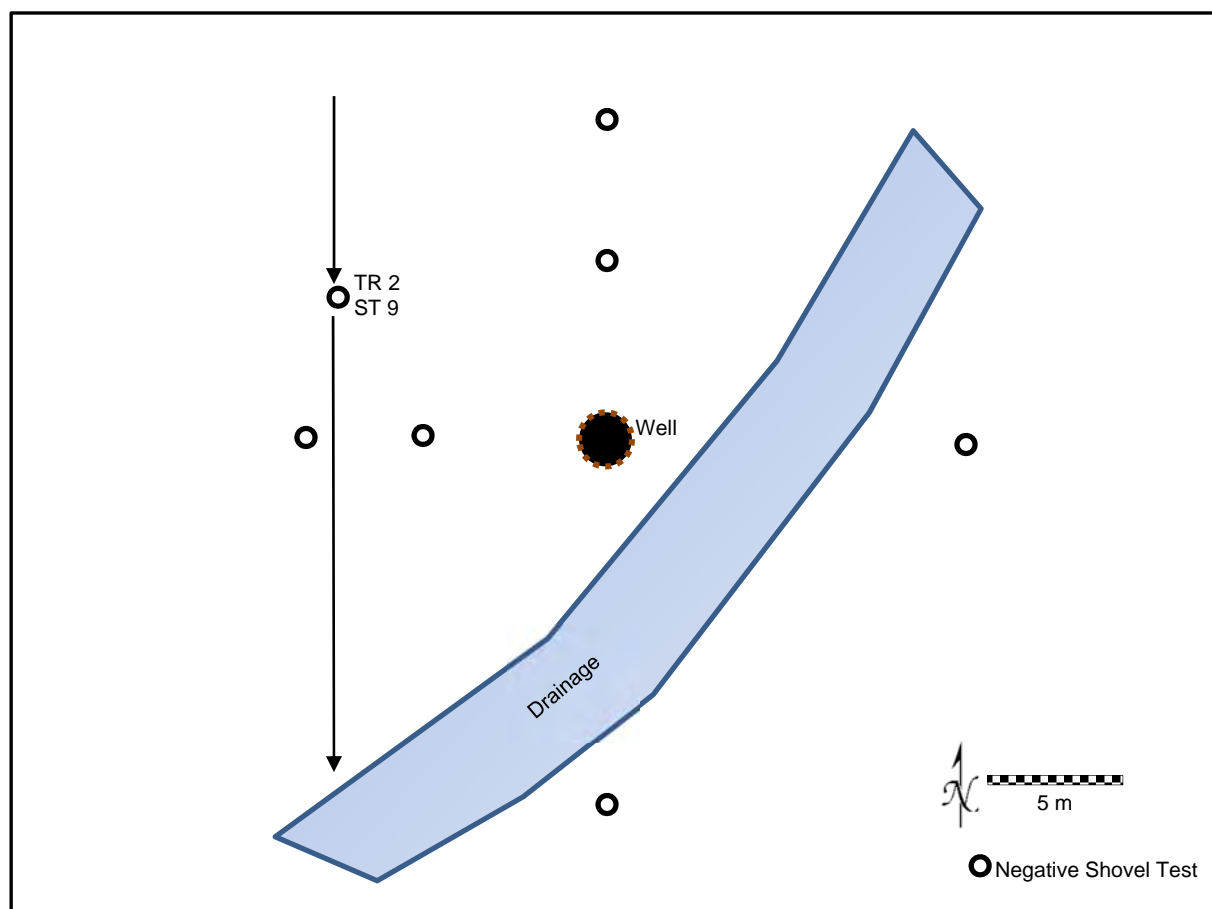
Soil Type: Perry clay, 0 to 1 percent slopes

Description: This historic site consists of a circular brick and mortar well that is situated 2 meters from a tributary drainage that feeds into Fourche Creek (Figure 112). The well is approximately 2.3 meters in diameter and 1.1 meter in height (from the ground surface (Figure 113)). The well was overgrown and at least partially filled so a depth could not be ascertained. The surrounding vegetation is a mix of hardwood trees and a viney understory. Six delineation shovel tests were excavated in 5 meter intervals in each of the cardinal directions using the well as the datum, and Shovel Test 9 on Transect 2 was also in the immediate area. The typical soil profile in the shovel tests at Site 3PU969 was a thin A Horizon of dark yellowish brown (10YR3/4) loamy clay over a grayish brown (10YR5/2) clay subsoil with strong brown (7.5YR5/6) clay mottling (Figure 114). None of the shovel tests were positive for cultural materials. Despite the delineation and visual inspection of the surrounding area, no other cultural features were identified. No artifacts were recovered.

The 1921 and 1939 Sanborn Fire Insurance Maps for Little Rock, Beauman's 1906 Atlas of Pulaski County, and the 1910 Blaisdell's Map of Little Rock were all consulted for information regarding this property. This area was shown on these maps to be undeveloped land at the around the turn of the century.

Recommendation: Site 3PU969 consists of a brick and mortar well that may date from the early-to-mid 20th century. Due to the lack of artifacts, associated features, or archival historic context, there is little potential research value at Site 3PU969. This site does not meet any of the criteria for inclusion on the National Register of Historic Places. No further archeological work is recommended at this site.

Figure 112: Sketch Map of 3PU969



1

Figure 113: Well at 3PU969

2

3

4

5

6

Figure 114: Delineation Shovel Test at 3PU969

7

8

1 Site 3PU970

2 Temp. Site No.: 2015-6-2

3 General Location: Segment 1, Area G

4 Cultural Affiliation: Historic (early-to-mid 20th century)

5 Size: 5 meters x 5 meters (approximate)

6 Soil Type: Perry clay, 0 to 1 percent slopes

7 Description: The historic site consists of a circular brick and mortar well that is situated 5
8 to 7 meters from a tributary (drainage) that feeds into Fourche creek (Figure 115). The
9 surrounding vegetation was brush and viney understory. The well is 60 cm tall (from
10 ground level) and has a diameter of 2.4 meters (Figure 116). Three delineation shovel
11 tests were excavated to the north, south, and west in 5 meter intervals using the well as
12 the datum. Shovel Test 2 on Transect 7 was also in the immediate area. The typical soil
13 profile in the shovel tests at Site 3PU970 was a thin A Horizon of dark yellowish brown
14 (10YR3/4) loamy clay over a grayish brown (10YR5/2) clay subsoil with strong brown
15 (7.5YR5/6) clay mottling (Figure 117). It was impossible to dig to the east due to water.
16 None of the shovel tests were positive. No artifacts were recovered. No other cultural
17 features were identified during the survey in the immediate area.

18
19 The 1921 and 1939 Sanborn Fire Insurance Maps for Little Rock, Beauman's 1906 Atlas
20 of Pulaski County, and the 1910 Blaisdell's Map of Little Rock were all consulted for
21 information regarding this property. This area was shown on these maps to be
22 undeveloped land at the around the turn of the century.

23
24 Recommendation: Site 3PU970 consists of a brick and mortar well that may date from
25 the early-to-mid 20th century. Due to the lack of artifacts, associated features, or archival
26 historic context, there is little potential research value at Site 3PU970. This site does not
27 meet any of the criteria for inclusion on the National Register of Historic Places. No further
28 archeological work is recommended at this site.

Figure 115: Sketch Map of 3PU970

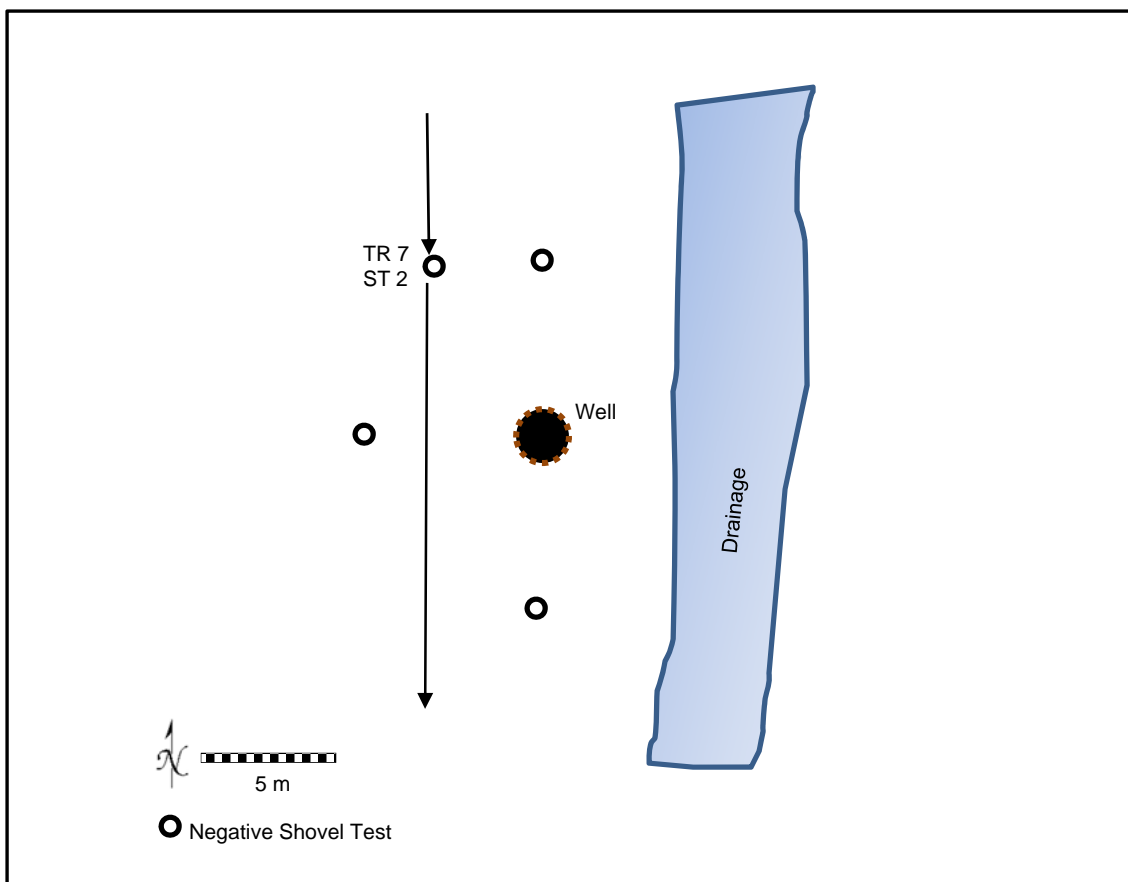


Figure 116: Well at 3PU970



Figure 117: Delineation Shovel Test at 3PU970



1 Site 3PU971

2 Temp. Site No.: 2015-6-3

3 General Location: Segment 3, Area B

4 Cultural Affiliation: Historic (early-to-mid 20th century)

5 Size: 15 meters x 10 meters (approximate)

6 Soil Type: Urban land

7 Description: This historic site consists of a subsurface scatter of historic artifacts in an
8 open lot (Figures 118 and 119). The surrounding vegetation is a mowed lawn and the
9 soils are predominantly silty loam over clay subsoil. The typical shovel test profile at Site
10 3PU971 was yellowish brown (10YR5/4) silty loam over a yellowish brown (10YR5/8)
11 gravelly clay subsoil (Figure 121). No foundation or other cultural features were observed.
12 Out of 22 delineation shovel tests that were excavated, nine were positive for cultural
13 materials. Artifacts recovered include bricks and brick fragments, decorated and
14 undecorated whiteware, stoneware, container glass, window glass, wire nails, and
15 fragments of mortar (see Table 2 and Figure 119). The artifacts were recovered in both
16 Stratum I and Stratum II; however, most of the artifacts coming from Stratum II were in
17 the very upper portion of the subsoil.

18
19 A fragment of the brick found is stamped with "A B&T Co. Little Rock" that indicates the
20 brick was made by the Arkansas Brick and Tile Company, created in 1916 when Arkansas
21 Brick and Manufacturing out of Little Rock merged with the Clark Pressed Brick company
22 out of Malvern (T. A. Randall & Co. 1916: 178). The company was eventually bought by
23 Acme Brick in 1926 (Acme Brick Company 2015).

24
25 The stoneware sherd dates roughly from the mid-19th century to 1930 (Stewart-Abernathy
26 1980). By 1910 glass canning jars were prolific and by the 1930s had replaced stoneware
27 as the predominant food storage containers (Stewart-Abernathy 1980); however, these
28 hardy vessels were often passed down and the manufacture date can be misleading.
29 Taken in context with the majority of artifacts found, the site would appear to date to the
30 early 20th century at the earliest.

31
32 By 1900, wire nails made from Bessemer Steel largely replaced cut nails in the market,
33 meaning all of the nails identified at Site 3PU971 were manufactured in the 20th century
34 (Edwards and Wells 1993:18).

35
36 The 1921 and 1939 Sanborn Fire Insurance Maps for Little Rock, Beauman's 1906 Atlas
37 of Pulaski County, and the 1910 Blaisdell's Map of Little Rock were all consulted for
38 information regarding this property. While a structure is shown in the general vicinity of
39 this site, there was no additional information available on any of the maps.

40
41 Recommendation: This site is a historic artifact scatter, likely representing an early-to-
42 mid 20th century house site. Although there were a few diagnostic artifacts recovered, the
43 research potential for this shallow artifact scatter is very limited. Because of the lack of
44 historic context and archival data associated with the site, Site 3PU971 does not appear
45 to meet any of the criteria for inclusion to the NRHP. No further archeological work is
46 recommended at this site.

1

Table 2. Artifacts Recovered from Site 3PU971

Provenience	Depth (cmbs)	Artifact Type	Catalog Number	Artifacts	Count	Weight (grams)
Segment 3, Area B TR 5, ST 20	0-6	Historic	2015-755-1-1-12	Brick with "AB& T Co. Little Rock" stamp	1	1,893.1
		Historic	2015-755-1-2-2-19	Clear glass bottle fragment	1	1.3
		Historic	2015-755-1-2-62-25	Stoneware sherd	1	34.6
Delineation ST 0N, 5E	0-15	Historic	2015-755-2-1-12	Brick and mortar fragment	1	938.3
	15-35	Historic	2015-755-3-1-13	Mortar fragments	10	11.3
		Historic	2015-755-3-1-12	Brick fragments	4	1.4
		Historic	2015-755-3-2-20-17	Clear container glass shards	6	1.4
		Historic	2015-755-3-2-65-25	Stoneware sherd	1	11.5
		Historic	2015-755-3-2-60-24	Whiteware – plain	3	1.9
		Historic	2015-755-3-2-59-25	Stoneware sherd – plain	2	2.1
Delineation ST 5S, 0E	0-18	Historic	2015-755-4-1-12	Brick fragment	1	19.1
		Historic	2015-755-4-2-23-7	Container glass - clear	3	7.1
		Historic	2015-755-4-2-27-17	Container glass - clear	2	0.9
Delineation ST 0N, 10E	0-20	Historic	2015-755-5-1-13	Mortar fragments	4	138.2
		Historic	2015-755-5-1-12	Brick fragments	2	21.1
		Historic	2015-755-5-1-5-10	Wire nail	1	5.2
		Historic	2015-755-5-1-11	Window glass shard	2	5.4
		Historic	2015-755-5-2-45-24	Whiteware sherd – hand painted	1	4.6
		Historic	2015-755-5-2-59-24	Whiteware sherd - undecorated	1	1.0
Delineation ST 0N, 15E	0-14	Historic	2015-755-6-1-12	Brick fragments	2	46.0
		Historic	2015-755-6-1-13	Mortar fragments	2	23.3
		Historic	2015-755-6-1-11	Window glass shards	2	4.3
		Historic	2015-755-6-1-5-10	Wire nail	1	4.4
		Historic	2015-755-6-2-59-24	Whiteware sherd- plain	1	1.4
		Historic	2015-755-6-2-20-17	Container glass – clear	1	0.9
Delineation ST 5S, 5E	0-19	Historic	2015-755-7-1-12	Brick fragments	13	22.7
		Historic	2015-755-7-1-13	Mortar fragments	11	5.7
		Historic	2015-755-7-2-38-24	Whiteware sherds – plain	4	4.6
		Historic	2015-755-7-2-19-22	Container glass – amethyst	2	3.1
		Historic	2015-755-7-2-27-18	Container glass- brown	1	0.5
		Historic	2015-755-7-2-27-17	Container glass – clear	7	6.0
		Historic	2015-755-7-2-20-17	Container glass – rim/neck - clear	16	15.7
Delineation ST 5S, 10E	0-12	Historic	2015-755-8-1-12	Brick fragment	1	136.4
		Historic	2015-755-8-1-13	Mortar fragments	3	148.5
		Historic	2015-755-8-1-6	Wire roofing nail	1	2.5
		Historic	2015-755-8-1-5-12	Wire nail – 6 d penny weight	2	9.3
		Historic	2015-755-8-1-5-10	Wire nail – 8 d penny weight	1	6.3
		Historic	2015-755-8-2-27-17	Container glass- clear	2	3.9

Provenience	Depth (cmbs)	Artifact Type	Catalog Number	Artifacts	Count	Weight (grams)
Delineation ST 5S, 10E	12-26	Historic	2015-755-12-1-12	Brick fragments	5	73.0
		Historic	2015-755-12-1-13	Mortar fragments	3	59.5
		Historic	2015-755-12-2-38-24	Whiteware sherds – plain	2	13.8
Delineation ST 5S, 15E	0-15	Historic	2015-755-9-1-12	Brick fragment	1	14.7
		Historic	2015-755-9-1-7	Wire nail - fragment	1	4.3
		Historic	2015-755-9-2-19-23	Milk glass shard	1	2.1
		Historic	2015-755-9-2-19-17	Container glass – clear	3	13.0
		Historic	2015-755-9-2-23-17	Container glass – rim/neck – clear	1	5.1
		Historic	2015-755-9-2-45-24	Whiteware sherd – plain	4	7.4
		Historic	2015-755-9-6-92	Plastic blue bead	1	0.6
Delineation ST 10S, 5E	0-18	Historic	2015-755-10-1-13	Mortar fragments	5	87.6
		Historic	2015-755-10-2-19-17	Container glass – clear	3	1.5
	18-24	Historic	2015-755-11-1-12	Brick fragments	2	1.3
		Historic	2015-755-11-1-13	Mortar fragment	1	1.8
		Historic	2015-755-11-2-20-17	Container glass – clear	4	11.7
		Historic	2015-755-11-2-40-24	Whiteware sherd – blue transfer	2	9.1
Total					159	4445.5

Figure 118: Sketch Map of Site 3PU971

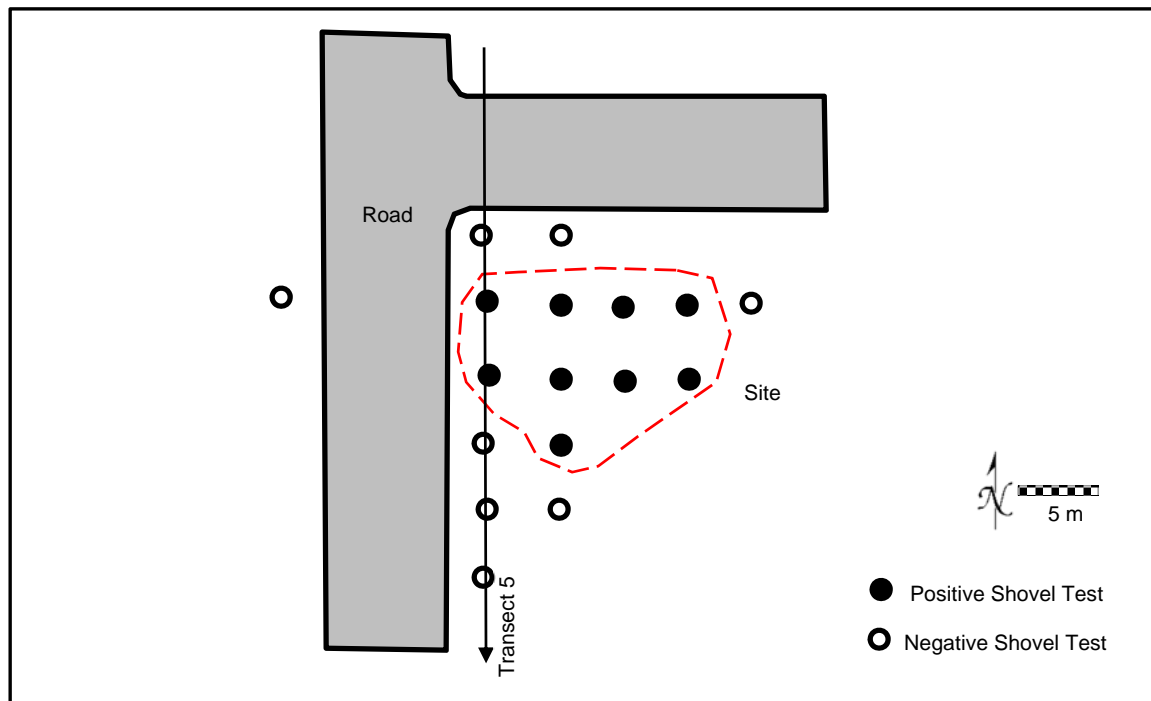


Figure 119: Decorated Whiteware and Stoneware Collected from 3PU971

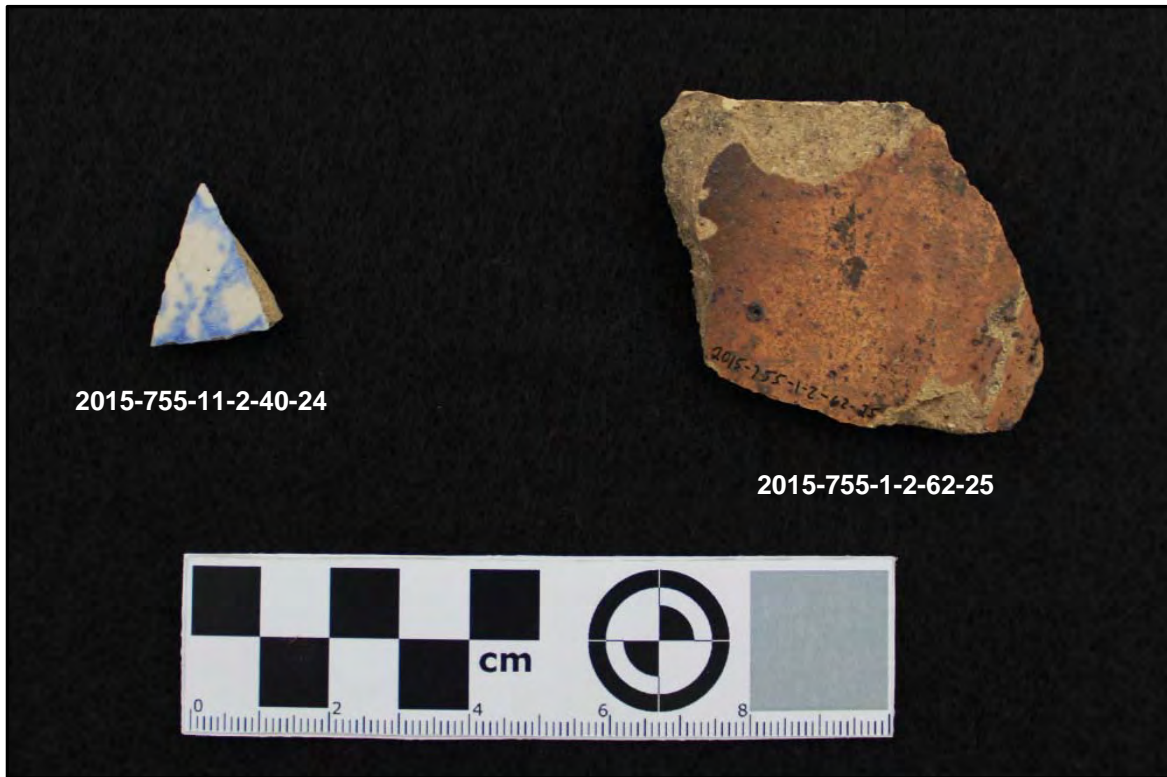


Figure 120: Site 3PU971 (facing southeast)



Figure 121: Shovel Test at Site 3PU971

Site 3PU972

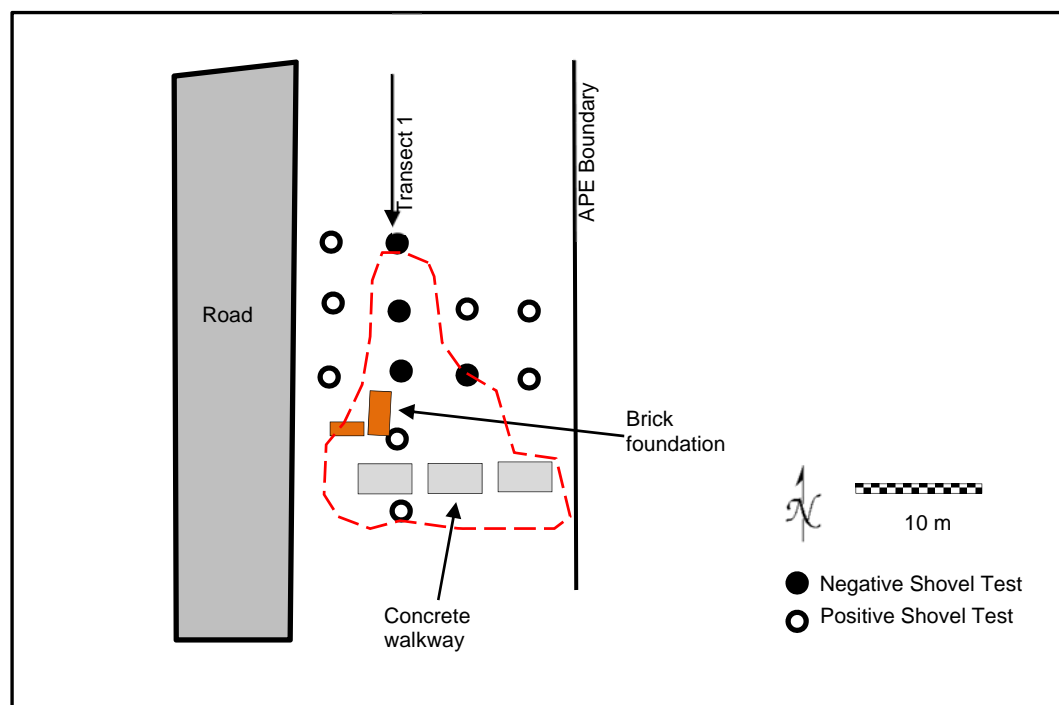
Temp. Site No.: 2015-6-4

General Location: Segment 3, Area BCultural Affiliation: Historic (early-to-mid 20th century)Size: 20 meters x 15 meters (approximate)Soil Type: Urban land

Description: This historic site consists of a partial foundation, a broken concrete walkway, and a subsurface scatter of historic artifacts in an open lot (Figures 122 and 123). The surrounding vegetation is lawn with a few pine trees. The soils are predominantly brown (10YR5/3) silty loam over dark grayish brown (10YR4/2) gravelly silty clay (Figure 124). Out of 15 shovel tests that were excavated in the immediate area, four were positive for cultural materials. Artifacts collected included brick fragments, mortar fragments, one whiteware sherd, and container glass fragments (see Table 3). The 1921 and 1939 Sanborn Fire Insurance Maps for Little Rock, Beauman's 1906 Atlas of Pulaski County, and the 1910 Blaisdell's Map of Little Rock were all consulted for information regarding this property. This area was shown on these maps to be undeveloped land at the around the turn of the century.

Recommendation: This site is a historic artifact scatter with a few small foundational remains, likely representing an early-to-mid 20th century house site. There were no diagnostic artifacts recovered, making the research potential for this light density artifact scatter very limited. Because of the lack of historic context and archival data associated with the site and the complete lack of diagnostic artifacts recovered, Site 3PU972 does not appear to meet any of the criteria for inclusion to the NRHP. No further archeological work is recommended at this site.

Figure 122: Sketch Map of Site 3PU972



1

Table 3. Artifacts Recovered from Site 3PU972

Provenience	Depth (cmbs)	Artifact Type	Catalog Number	Artifacts	Count	Weight (grams)
Segment 3, Area B TR 1, ST 104	0-15	Historic	2015-756-1-1-12	Brick fragments	2	150.7
		Historic	2015-756-1-1-13	Mortar fragment	1	7.3
		Historic	2015-756-1-2-27-17	Unidentified glass – clear	1	1.3
Delineation ST 5N, 0E	0-25	Historic	2015-756-2-1-13	Mortar fragment	1	20.3
		Historic	2015-756-2-2-19-17	Container glass – clear	3	13.3
Delineation ST 0N, 5E	0-24	Historic	2015-756-3-1-12	Brick fragments	2	18.2
		Historic	2015-756-3-1-13	Mortar fragments	1	2.2
		Historic	2015-756-3-2-19-18	Container glass – brown	2	3.0
		Historic	2015-756-3-2-27-17	Unidentified glass – clear	1	0.5
Delineation ST 10N, 0E	0-30	Historic	2015-756-4-1-12	Brick fragments	1	8.7
		Historic	2015-756-4-2-40-24	Whiteware sherd	1	7.8
		Historic	2015-756-4-2-19-17	Container glass – clear	3	4.3
		Historic	2015-756-4-2-19-18	Container glass – brown	1	1.7
Total					20	239.3

2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

Figure 123: Site 3PU972 (facing southeast)



Figure 124: Shovel Test at Site 3PU972



Site 3PU973

Temp. Site No.: 2015-6-5

General Location: Segment 2, Area ICultural Affiliation: Historic (early-to-mid 20th century)Size: 5 meters x 5 meters (approximate)Soil Type: Urban land

Description: This historic site consists of the remains of a brick and mortar foundation with a light density subsurface artifact scatter (Figures 125 and 126). The surrounding vegetation is lawn with a few oak trees to the south. The soils are predominantly yellowish brown (10YR5/4) silty loam over yellowish brown (10YR5/8) gravelly silty clay. Out of 14 shovel tests excavated in the immediate area, two were positive for cultural materials. Artifacts collected include brick fragments, mortar fragments, and one whiteware sherd (Table 4 and Figure 127). The 1921 and 1939 Sanborn Fire Insurance Maps for Little Rock, Beauman's 1906 Atlas of Pulaski County, and the 1910 Blaisdell's Map of Little Rock were all consulted for information regarding this property. While a structure is shown in the general vicinity of this site, there was no additional information available on any of the maps.

Recommendation: This site is a historic artifact scatter with a few small foundational remains, likely representing an early-to-mid 20th century house site. There were no diagnostic artifacts recovered, making the research potential for this light density artifact scatter very limited. Because of the lack of historic context and archival data associated with the site and the complete lack of diagnostic artifacts recovered, Site 3PU973 does not appear to meet any of the criteria for inclusion to the NRHP. No further archeological work is recommended at this site.

Figure 125: Sketch Map of Site 3PU973

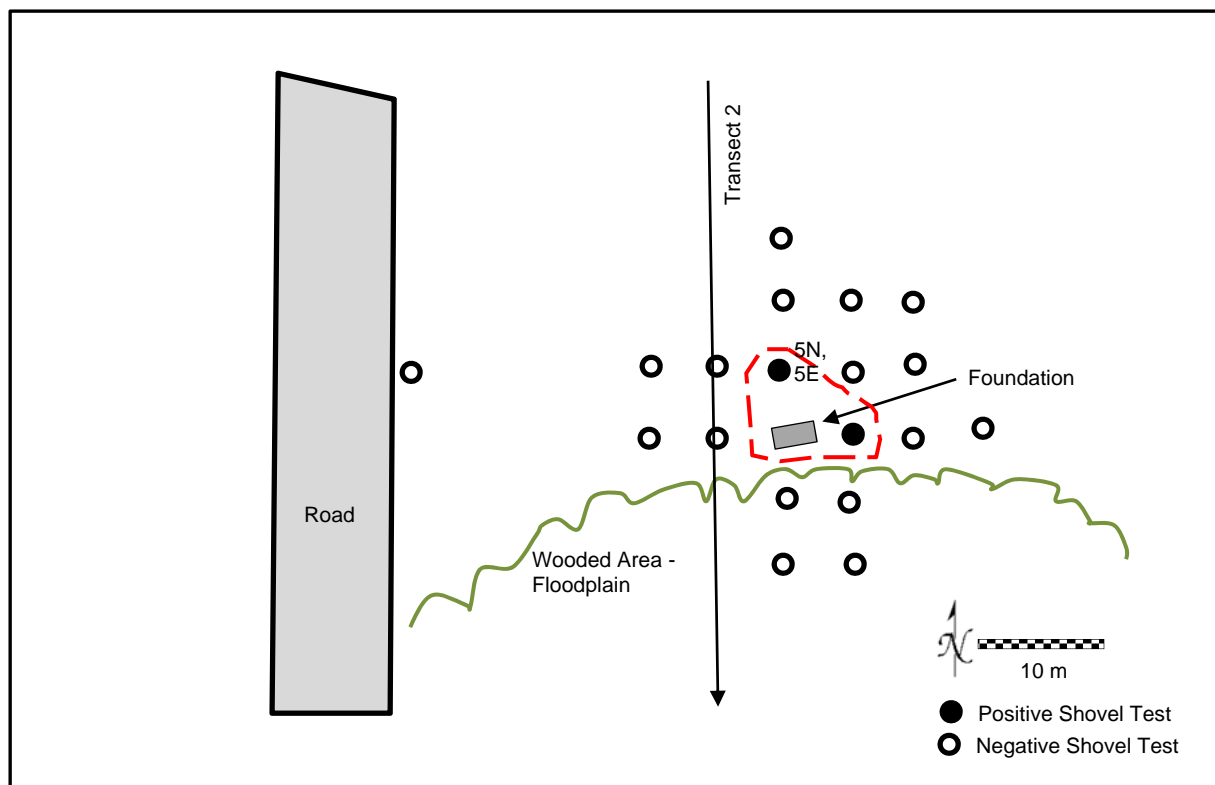


Table 4. Artifacts Recovered from Site 3PU973

Provenience	Depth (cmbs)	Artifact Type	Catalog Number	Artifacts	Count	Weight (grams)
Segment 2 Area I Delineation ST 5N, 5E	0-12	Historic	2015-757-1-1-12	Brick fragments	3	9.3
		Historic	2015-757-1-1-13	Mortar fragments	2	9.6
		Historic	2015-757-1-2-23-24	Whiteware – Possible small blue transfer	1	2.4
Delineation ST 0N, 10E	0-15	Historic	2015-757-2-1-12	Brick fragments	2	259
		Historic	2015-757-2-1-13	Mortar fragment	1	27
Total					9	307.3

Table 126: Site 3PU973 (facing south)**Table 127: Bricks at 3PU973**

1 Site 3PU974

2 Temp. Site No.: 2015-6-6

3 General Location: Segment 2, Area I

4 Cultural Affiliation: Historic (early-to-mid 20th century)

5 Size: 5 meters x 5 meters (approximate)

6 Soil Type: Urban land

7 Description: This historic site consists of a small subsurface scatter of artifacts (Figure
8 128). The surrounding vegetation is lawn. The soils are predominantly dark yellowish
9 brown (10YR4/4) silty loam over a yellowish brown (10YR5/8) silty clay (Figure 130). Out
10 of 11 shovel tests excavated in the area, two were positive for cultural materials. Artifacts
11 included brick fragments, mortar fragments, glass shards, two whiteware sherds, one
12 stoneware sherd, wire nails, and one small metal ball (Table 5). The metal ball could be
13 a musket ball, but there are no apparent mold seams or nipples (Figure 129). Also, the
14 ball is not lead. It is perhaps more probable that this is a ball-bearing.

15
16 The Albany slipped stoneware sherd dates roughly from the mid-19th century to 1930
17 (Stewart-Abernathy 1980). By 1910, glass canning jars were prolific and by the 1930s
18 had replaced stoneware as the predominant food storage containers (Stewart-Abernathy
19 1980); however, these hardy vessels were often passed down and the manufacture date
20 can be misleading.

21
22 The 1921 and 1939 Sanborn Fire Insurance Maps for Little Rock, Beauman's 1906 Atlas
23 of Pulaski County, and the 1910 Blaisdell's Map of Little Rock were all consulted for
24 information regarding this property. This lot was shown on these maps to be undeveloped
25 at the around the turn of the century, although there are structures shown nearby.

26
27 Recommendation: This site is a historic artifact scatter with a few small foundational
28 remains, likely representing an early-to-mid 20th century house site. There were no
29 diagnostic artifacts recovered, making the research potential for this light density artifact
30 scatter very limited. Because of the lack of historic context and archival data associated
31 with the site and the complete lack of diagnostic artifacts recovered, Site 3PU974 does
32 not appear to meet any of the criteria for inclusion to the NRHP. No further archeological
33 work is recommended at this site.

Figure 128: Sketch Map of Site 3PU974

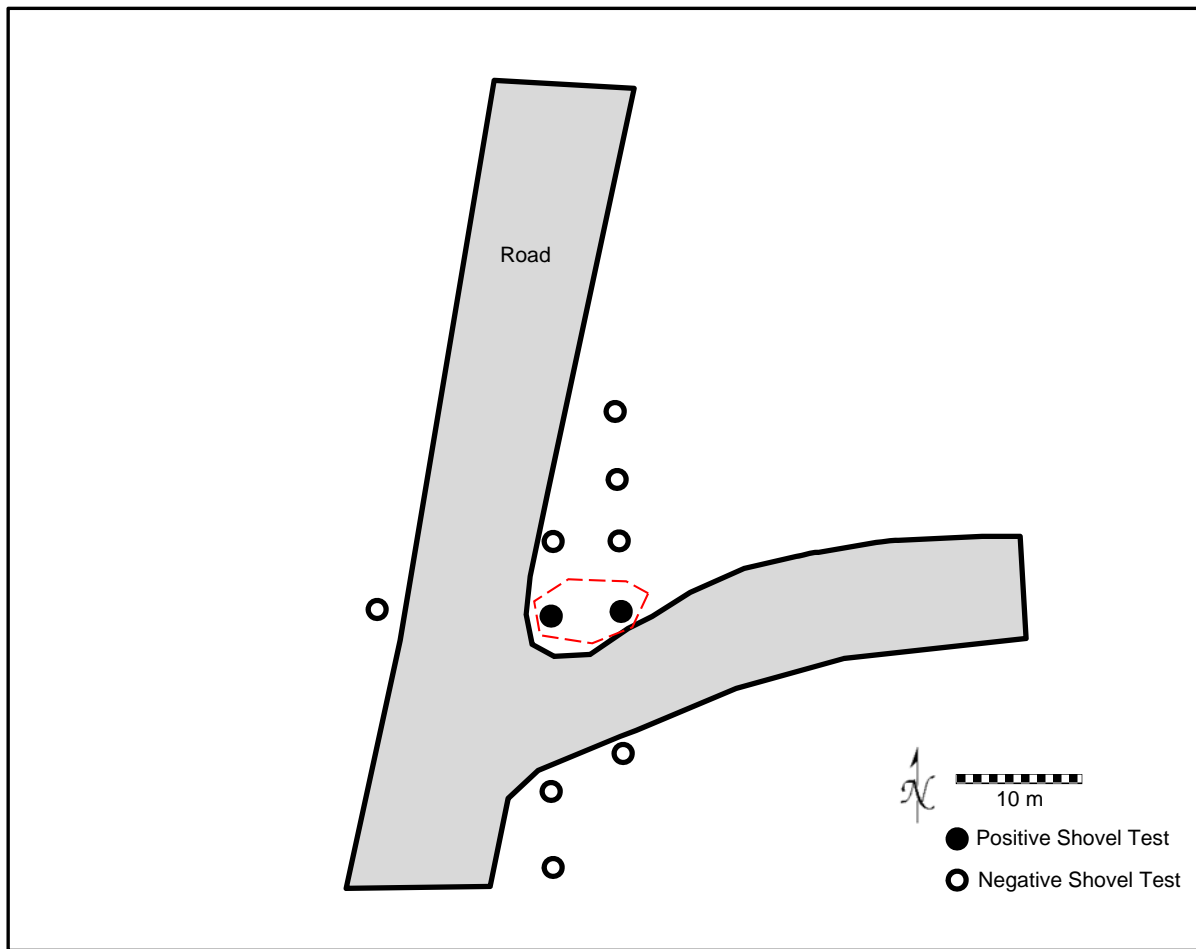


Table 5. Artifacts Recovered from Site 3PU974

Provenience	Depth (cmbs)	Artifact Type	Catalog Number	Artifacts	Count	Weight (grams)
Segment 2 Area I TR 1 ST 56	0-12	Historic	2015-758-1-2-19-19	Container glass-green	1	0.7
		Historic	2015-758-1-9-102	Rusted metal ball-bearing or possible musket ball (17 mm in diameter)	1	15.6
Delineation ST 0N, 5E	0-15	Historic	2015-758-2-1-7	Rusted wire nails	2	5.1
		Historic	2015-758-2-1-12	Brick fragment	1	0.5
		Historic	2015-758-2-1-13	Mortar fragment	1	22.0
		Historic	2015-758-2-2-40-24	Whiteware – plain	3	11.3
		Historic	2015-758-2-2-20-17	Container glass – clear	1	1.2
		Historic	2015-758-2-2-52-25	Stoneware – Albany slipped interior and salt glazed exterior	1	4.2
Total					11	60.6

Figure 129: Selected Artifacts from 3PU974



Figure 130: Shovel Test at Site 3PU974



Site 3PU975**Temp. Site No.:** 2015-6-7**General Location:** Segment 2, Area J**Cultural Affiliation:** Historic (unknown)**Size:** 5 meters x 5 meters (approximate)**Soil Type:** Urban land

Description: This site consists of a partial concrete foundation that appears to be in-situ (Figures 131 and 132). The surrounding vegetation is lawn with a few oak trees that appear to be 30-40 years old. The soils are predominantly dark grayish brown (10YR4/2) silty loam over strong brown (10YR4/6) silty clay. There were nine shovel tests excavated in the immediate area, but none were positive for cultural materials. The 1921 and 1939 Sanborn Fire Insurance Maps for Little Rock, Beauman's 1906 Atlas of Pulaski County, and the 1910 Blaisdell's Map of Little Rock were all consulted for information regarding this property. While a structure is shown in the general vicinity of this site, there was no additional information available on any of the maps.

Recommendation: This site is a possible structural foundation. Because of the lack of historic context and archival data associated with the site and the complete lack of diagnostic artifacts recovered, Site 3PU975 does not meet any of the criteria for inclusion to the NRHP. No further archeological work is recommended at this site.

Figure 131: Sketch Map of Site 3PU975

Figure 132: Possible Concrete Foundation at 3PU975

6.2 Site Revisits

Site 3PU415

General Location: Segment 4, Area E

Cultural Affiliation: Prehistoric (unknown)

Size: 2 meters x 2 meters (approximate)

Description: The site was first recorded by John Miller of the AHTD in 1994 during the Phase I Survey for AHTD Job 60139. The site was described as consisting “of a very low density lithic scatter located on the crest of a ridge overlooking the Arkansas River floodplain.” Artifacts observed in 1994 included four chert flakes and one novaculite flake found on the surface along a dirt road. Shovel tests adjacent to the surface finds were negative for cultural materials. The site size was an estimate primarily based on topography according to the original site form. The site was recommended in the site form as not eligible for the NRHP.

The site was revisited by Flat Earth Archeology in 2015 during the current Phase I Survey project. A pedestrian survey and shovel tests were conducted every five meters within and around the site in order to search for surface and subsurface deposits. Two lithic flakes, one Reeds Spring chert and one Keokuk chert, were observed on the surface of the side slope adjacent to the roadway (Table 6). Four shovel tests were excavated at or near the surface finds to investigate for subsurface deposits (Figure 133). All of the shovel tests in the area were negative. On the slope, surface visibility was good to excellent, roughly 76-100%, due to erosion and lack of vegetation. The vegetation surrounding the site was mixed hardwoods with a small amount of underbrush. The soil was predominantly strong brown (7.5YR5/6) clay that became heavily compacted between 20 to 30 cmbs when the stratum became approximately 60% gravel.

Recommendation: Site 3PU415 was revisited and only two lithic flakes were observed and these were in an eroded area. The area is heavily disturbed. This site does not meet any of the criteria for inclusion on the NRHP. No further archeological work is recommended at Site 3PU415.

Figure 133: Sketch Map of Site 3PU415

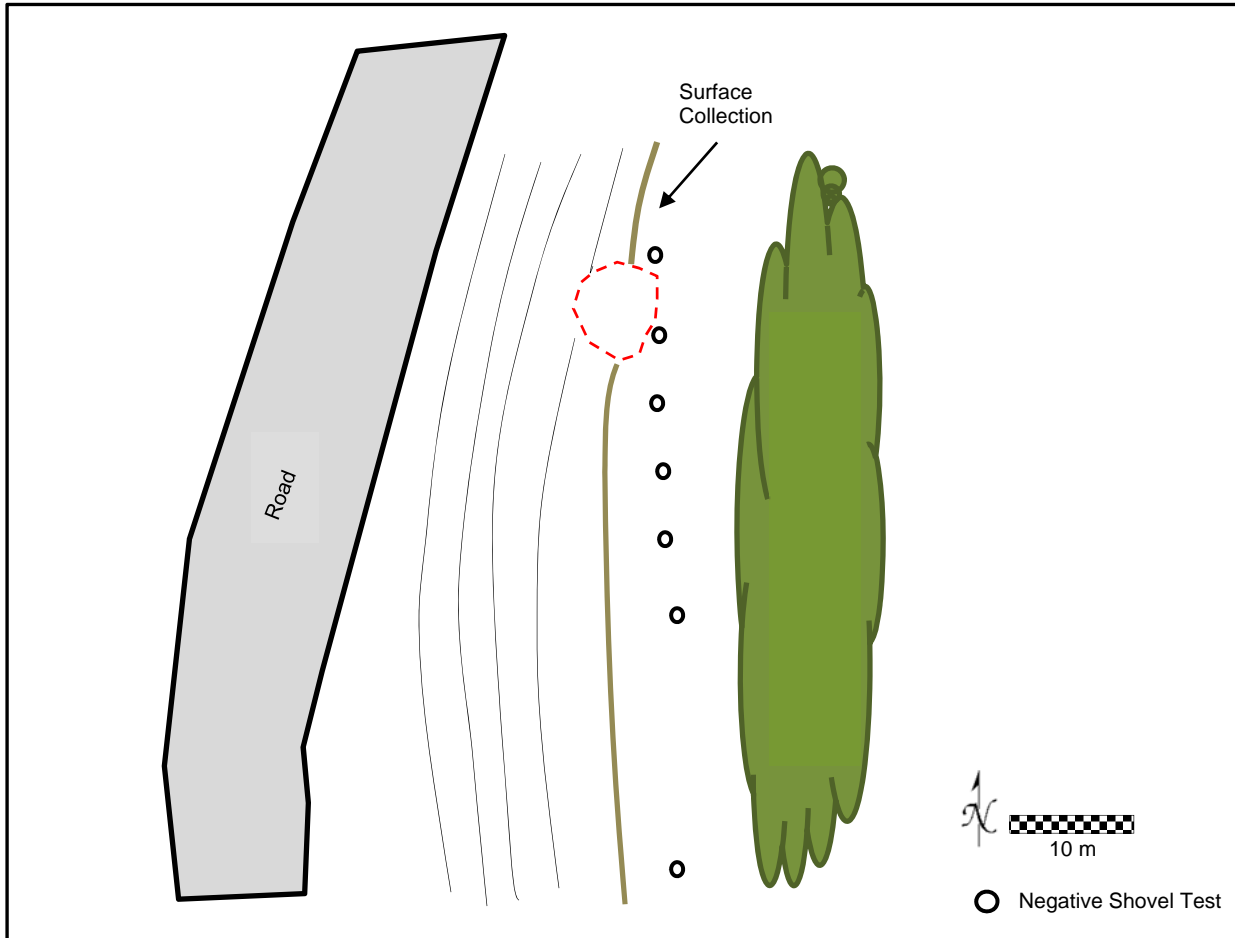


Table 6. Artifacts Recovered from Site 3PU415 Revisit

Provenience	Depth (cmbs)	Artifact Type	Catalog Number	Artifacts	Count	Weight (grams)
Segment 4 Area E Surface Collection	0	Prehistoric	2015-759-1-1-43-22	Keokuk chert thinning flake	1	1.2
Surface Collection	0	Prehistoric	2015-759-1-1-43-36	Reeds Spring chert thinning flake	1	0.3
Total					2	1.5

7.0 SUMMARY AND CONCLUSIONS

A Phase I cultural resources survey was conducted covering the agreed upon archeological APE along approximately 6.7 miles of proposed roadway widening. A total of 5,004 screened shovel tests were excavated and 80 auger tests were excavated. Seven new archeological sites were identified and recorded and a previously recorded archeological site was revisited (Table 7). None of the newly recorded archeological sites are recommended as eligible for inclusion to the NRHP. The previously recorded site inside the APE that was revisited (3PU415) is also recommended as not eligible for inclusion to the NRHP. No further archeological work is recommended at these archeological sites. Site 3PU762 is a recorded site that is buried under pavement near the Hwy 10 interchange. Because of the nature of this site, the buried historic street and railways may extend into the current project's APE. Archeological monitoring is recommended at the locations between Site 3PU762 and Site 3PU707 (the eastern extent of the buried streets and railway that is well outside of the current project's APE). This monitoring should be planned in coordination with the SHPO and the AHTD/FHWA.

Site forms were completed and submitted to the AAS for all of the new sites identified during the survey. A revisit form was completed and submitted for previously recorded archeological site 3PU405 with a revised sketch map and new photographs of the site.

Aside from the archeological monitoring near Site 3PU762, no further archeological work is recommended for the currently planned Project Area.

1

Table 7. Summary of Archeological Sites

Site Number	Site Type	Function	Site Size	Preliminary Recommendation NRHP Eligibility	Justification
3PU969	Historic	Early-to-mid 20 th century well	25 m ²	Not Eligible	Lack of artifacts, site lacks integrity, lack of research potential
3PU970	Historic	Early-to-mid 20 th century well	25 m ²	Not Eligible	Lack of artifacts, site lacks integrity, lack of research potential
3PU971	Historic	Early-to-mid 20 th century house site	150 m ²	Not Eligible	Lack of historic context, lack of integrity
3PU972	Historic	Early-to-mid 20 th century house site	300 m ²	Not Eligible	Lack of historic context, lack of integrity
3PU973	Historic	Early-to-mid 20 th century house site	25 m ²	Not Eligible	Lack of historic context, lack of integrity
3PU974	Historic	Early-to-mid 20 th century house site	25 m ²	Not Eligible	Lack of diagnostic artifacts, site lacks integrity, lack of research potential
3PU975	Historic	Unknown (historic)	25 m ²	Not Eligible	Lack of artifacts, site lacks integrity, lack of research potential
3PU415 (Revisit)	Prehistoric	Unknown (low density lithic scatter)	25 m ²	Not Eligible	Lack of diagnostic artifacts, site lacks integrity, lack of research potential
3PU762 (Not Revisted)	Historic	Early 20 th century streets and railway buried under current asphalt streets	unknown	Undetermined – Archeological Monitoring Recommended	Undetermined cultural features likely present under existing streets

2

3

4 In the event of an inadvertent discovery of human remains, burial furniture, and/or grave
5 goods during subsequent development or modification of the Project Area, the proponent
6 should follow the protocols outlined in Act 753 of 1991, as amended (Arkansas Grave
7 Protection Act). Excepting an inadvertent discovery and the recommended mitigation of
8 Bridge 2001 (N. Locust St. Bridge), Flat Earth Archeology recommends no further
9 archeological work in the Project Area.

10

11 There is a realistic limitation involved with standard survey field methodology. Shovel
12 testing is most effective in finding certain types of sites, those with relatively high artifact
13 densities or those with abnormal soil development such as middens. Thin artifact scatters
14 can be missed in areas where surface visibility is poor. Furthermore deeply buried sites
15 are difficult to identify using standard survey methodology. Flat Earth Archeology made a
16 good faith effort to locate cultural resources in the Project Area, but this is not a guarantee
17 that no cultural resources are present.

18

19

8.0 REFERENCES CITED

- Acme Brick Company
2015 History of the Acme Brick.
<https://www.brick.com/aboutus/history.htm>, accessed April 14, 2015
- Arkansas Geological Survey
2015 "Gulf Coastal Plain"
http://www.geology.ar.gov/education/geo_gulf_coastal_plain.htm. Electronic Resource Accessed September 3, 2015.
- Arkansas Geological Survey
2015 "Midway Group" <http://www.geology.ar.gov/geology/tm.htm>. Electronic Resource Accessed September 3, 2015.
- Arkansas Geological Survey
2015 "Mississippi Embayment"
http://www.geology.ar.gov/geology/strat_missembayment_gulfplain.htm. Electronic Resource Accessed September 3, 2015.
- Arkansas Geological Survey
2015 "Wilcox Group" <http://www.geology.ar.gov/geology/tw.htm>. Electronic Resource Accessed September 3, 2015.
- Arkansas Highway and Transportation Department
1936 *Plan of Proposed Bridge over Mo. Pac. R.R. Tracks on Locust Street – North Little Rock, Pulaski County*, Job No. 620. U.S. Works Program Grade Crossing Project No. PGM 430A. Drawings 4397- 4420-C. Arkansas Highway and Transportation Department, Little Rock.
- Arkansas Historic Preservation Program
2012 *Survey Procedures Manual: Guidelines for Historic and Architectural Surveys in Arkansas*. Arkansas Department of Heritage, Little Rock.
- Beauman, Guy
1906 *Atlas of Pulaski County, Arkansas*. Guy Beauman Publisher.
- Bennett, Lola
2005 *Maple Street Bridge (St. Louis-San Francisco Railway Viaduct), Washington County, Arkansas*. Historic American Engineering Record, HAER No. AR-68. Written Historical and Descriptive Data. Electronic Document, <http://lcweb2.loc.gov/master/pnp/habshaer/ar/ar0100/ar0140/data/ar0140data.pdf> accessed October 21, 2015.
- Blaisdell, Francis L.
1910 *Blaisdell's Map of Little Rock, Arkansas*, Map1546, Arkansas History Commission, Little Rock, Arkansas

- 1 Bridgehunter.com
2 2015 Jefferson Street Viaduct, Crawford County, Arkansas. Electronic Document,
3 <https://bridgehunter.com/ar/crawford/jefferson-st/>, accessed October 20, 2015.
4
5 2015 North Fork River Bridge, Baxter County, Arkansas. Electronic Document,
6 <http://bridgehunter.com/ar/baxter/bh38472/>, accessed October 20, 2015.
7
8 2015 South Fourche River AR 7 Bridge, Perry County, Arkansas. Electronic
9 Document, <http://bridgehunter.com/ar/perry/south-lafave-7/>, accessed October
10 20, 2015.
11
12 Buchner, Andrew C.
13 2004 *Archeological Investigations at the East 3rd Street Brick Pavement (3PU0707)*,
14 Little Rock, Arkansas. Panamerican Consultants, Inc.
15
16 Burnett, Barbara A.
17 1988 Standridge Bioarcheology and the Middle Ouachita Caddo. In *Standridge:*
18 *Caddoan Settlement in a Mountain Environment*, edited by Ann M. Early, pp 143-
19 152. Arkansas Archeological Survey Research Series No. 29, Fayetteville.
20
21 Burns, Louis F.
22 2004 *A History of the Osage People*. University of Alabama Press, Tuscaloosa,
23 Alabama.
24
25 Cande, Kathleen H., with a section by James E. Barnes
26 1992 *DELOS: A Computerized Artifact Inventory and Analysis System, Version 3.0*.
27 Arkansas Archeological Survey Technical Paper No. 7. Fayetteville, Arkansas.
28
29 Chapman, Carl H. and Dale R. Henning
30 1975 *American Indian Ethnohistory Plains Indians Series, Osage Indians*. Garland,
31 New York.
32
33 Chism, Ben B.
34 1891 *A Digest of the Election Laws of the State of Arkansas*. Printing Press Company,
35 Little Rock.
36
37 Choctaw Nation
38 2010 Choctaw Nation History: Removal. Electronic Document,
39 <http://www.choctawnation.com/history/choctaw-nation-history/removal/removal/>,
40 accessed October 19, 2015.
41
42 Coleman, Roger E.
43 1995 Chapter 10: The Moore Homestead (3PL355). In *Archeological Investigations in*
44 *the Southern Ouachita Mountains: Excavations at the Shady Lake Recreation*
45 *Area and Vicinity*. By Jack H. Stewart, Roger E. Coleman, Jerry E. Hilliard,
46 Michael A. Pfeiffer, Meeks Etchieson, Charles R. Ewen, Barbara Williams, and
47 Paul S. Gardner. Arkansas Archeological Survey Project 856 – Final Report.
48 Submitted to Ouachita National Forest, Hot Springs.

- 1 1994 *Birds of Passage: Subsistence Farming in the Ouachita Mountains, Ouachita*
2 *National Forest, Arkansas*. Draft paper presented at the 1996 annual meeting of
3 the Society for Historical Archaeology, Cincinnati.
4
- 5 Copeland, Ron, and Joe Foster
6 2013 "Pulaski County" entry in *the Encyclopedia of Arkansas History and Culture*.
7 [http://www.encyclopediaofarkansas.net/encyclopedia/entry-](http://www.encyclopediaofarkansas.net/encyclopedia/entry-detail.aspx?search=1&entryID=409)
8 [detail.aspx?search=1&entryID=409](http://www.encyclopediaofarkansas.net/encyclopedia/entry-detail.aspx?search=1&entryID=409). Electronic Resource Accessed August 30,
9 2015.
10
- 11 Cornsilk, David A.
12 1997 Footsteps-Historical Perspective: History of the Keetoowah Cherokees. *The*
13 *Cherokee Observer*. Electronic Document,
14 <http://www.cherokeeobserver.org/keetoowah/octissue97.html>, accessed October
15 18, 2015.
16
- 17 Davis, Hester A. (editor)
18 1994, amended 2010
19 *A State Plan for the Conservation of Archeological Resources in Arkansas*.
20 Arkansas Archeological Survey Research Series No. 21. Fayetteville, Arkansas.
21
- 22 Dickson, Don R.
23 1991 *The Albertson Site: A Deeply and Clearly Stratified Bluff Shelter*. Arkansas
24 Archeological Survey Research Series No. 41, Fayetteville, AR.
25
- 26 Delaware Department of Transportation
27 2015 *The Art Deco Movement and Definition*. Electronic Document,
28 http://www.deldot.gov/archaeology/art_deco_architecture/pdf/ch1.pdf, accessed
29 October 20, 2015.
30
- 31 Dunn, Robert A.
32 1985 *An Archeological Reconnaissance for the Dark Hollow Drainage System, North*
33 *Little Rock, Arkansas*. U.S. Army Corps of Engineers – Little Rock District.
34
- 35 Early, Ann M.
36 1988 *Standridge: Caddoan Settlement in a Mountain Environment*. Arkansas
37 Archeological Survey Research Series No. 29.
38
- 39 Edwards, Jay D. and Tom Wells
40 1993 *Historic Louisiana Nails: Aids to the Dating of Old Buildings*. Geoscience
41 Publications, Louisiana State University, Baton Rouge, Louisiana.
42
- 43 Engineering News Record Vol. 89
44 1922 *Timber Roof Framing in Arkansas Capitol is 87 Years Old*. McGraw-Hill, New
45 York.
46
47
48

- 1 Foti, Thomas L.
2 1974 Natural Divisions of Arkansas. In *Arkansas Natural Area Plan*, prepared
3 by the Arkansas Department of Planning, pp. 11-34. Arkansas Department of
4 Planning, Little Rock.
5
6 2008 *The Natural Divisions of Arkansas*. Arkansas Natural Heritage Commission, Little
7 Rock, AR.
8
9 Haley, Boyd R.
10 1993 *Geologic Map of Arkansas*. U.S. Geological Survey in cooperation with the
11 Arkansas Geological Commission.
12
13 Haley, George J., Randle O. Buckner, and Dorris F. Festervand
14 1975 *Soil Survey of Pulaski County, Arkansas*. United States Department of
15 Agriculture, Soil Conservation Service, in cooperation with Arkansas Agricultural
16 Experiment Station.
17
18 Horne, Amber M.
19 2006 *Footprints Across Arkansas: Trail of Tears Removal Corridors in Arkansas for the*
20 *Cherokees, Chickasaws, Choctaws, Creeks, and Seminoles*. Little Rock, AR:
21 Department of Arkansas Heritage and the Arkansas Archeological Survey.
22
23 House, John H.
24 1982 *Powell Canal: Baytown Period Occupation on Bayou Macon in Southeast*
25 *Arkansas*. Arkansas Archeological Survey Research Series No. 19.
26
27 1996 East-Central Arkansas. In *Prehistory of the Central Mississippi Valley*. Edited by
28 C.H. McNutt. University of Alabama Press, Tuscaloosa.
29
30 Hughes, Milton
31 2008 AHTD Job #061197 (I-30 Terminal Borrow Pond Access Road in Pulaski County
32 (PIF). Arkansas Highway and Transportation Department.
33
34 Jeter, Marvin D., Jerome C. Rose, G. Ishmael Williams, Jr., and Anna M. Harmon
35 1989 Archeology and Bio-archeology of the Lower Mississippi Valley and Trans-
36 Mississippi South in Arkansas and Louisiana. *Arkansas Archeological Survey*
37 *Research Series #37*.
38
39 Jurgelski, William Martin
40 1996 *Homesteads and Homesteaders in the Ouachita National Forest*. M.A. Thesis,
41 University of Arkansas, Fayetteville.
42
43 Kay, Marvin
44 1982 *Holocene Adaptations Within the Lower Pomme de Terre River Valley, Missouri*,
45 Volume II. Illinois State Museum Society, Springfield, Illinois.
46
47
48

- 1 Klinger, Timothy C.
2 2003 *Fourche Creek Basin Nature Appreciation Facilities; Historic Properties Review*.
3 Historic Preservation Associates, Inc.
4
- 5 Lafferty, Robert H. III, Neal H. Lopinot, Margaret J. Guccione, Lawrence G. Santeford,
6 Michael C. Sierzchula, Susan L. Scott, Kathryn A. King, Kathleen M. Hess, and Linda
7 Scott Cummings
8 1988 *Tracks in Time: Archeology at the Elk Track Site (3NW205) and the Webb*
9 *Branch Site (3NW206), Erbie Campground Project, Buffalo National River,*
10 *Newton County, Arkansas*. Mid-Continental Research Associates Report No. 88-
11 1. Prepared for the National Park Service, Southwest Region.
12
- 13 Library of Congress
14 2015 A Century of Lawmaking for a New Nation: U.S. Congressional Documents and
15 Debates, 1774-1875. Statutes at Large, 21st Cong., 1st Sess., Statute I, Indian
16 Removal Act. Electronic Document, [http://memory.loc.gov/cgi-](http://memory.loc.gov/cgi-bin/ampage?collId=llsl&fileName=004/llsl004.db&recNum=458)
17 [bin/ampage?collId=llsl&fileName=004/llsl004.db&recNum=458](http://memory.loc.gov/cgi-bin/ampage?collId=llsl&fileName=004/llsl004.db&recNum=458), accessed
18 October 18, 2015.
19
- 20 Littlefield, Daniel F. and James W. Parins, eds.
21 2011 *Encyclopedia of American Indian Removal*. Greenwood, Santa Barbara, CA.
22
- 23 McWhiney, Grady
24 1988 *Cracker Culture: Celtic Ways in the Old South*. University of Alabama Press,
25 Tuscaloosa and London.
26
- 27 Miller Center, University of Virginia
28 2015 First Annual Message to Congress (December 8, 1829), Andrew Jackson.
29 Electronic Document, [http://millercenter.org/president/jackson/speeches/speech-](http://millercenter.org/president/jackson/speeches/speech-3632)
30 [3632](http://millercenter.org/president/jackson/speeches/speech-3632), accessed October 19, 2015.
31
- 32 Miller, John E.
33 2003 *A Cultural Resources Survey of AHTD Job Number R50064, Highway 122*
34 *East, Independence County, Arkansas*. Arkansas Highway and Transportation
35 Department, Little Rock.
36
- 37 2001 *A Cultural Resources Survey of Arkansas Highway and Transportation*
38 *Department Job 070159, Bradley County, Arkansas*. Arkansas Highway and
39 Transportation Department, Little Rock.
40
- 41 Morin, Nancy R. (Editor)
42 1993 *Flora of North America North of Mexico*. Oxford University Press, New York.
43
- 44 Morse, Dan F. and Phyllis A. Morse (editors)
45 1983 *Archaeology of the Central Mississippi Valley*. Academic Press, New York.
46
47
48

1 Munsell Color

2 1994 *Munsell Soil Color Charts*. Revised Edition. Macbeth Division of Kollmorgen
3 Instruments Corporation. New Windsor, New York.
4

5 National Park Service

6 2015 Trail of Tears. Electronic Document, <http://www.nps.gov/trte/index.htm>, accessed
7 October 19, 2015.
8

9 National Parks Service

10 2010 United States, Department of the Interior, National Park Service. "Homesteading
11 by the Numbers", <http://www.nps.gov/home/historyculture/bynumbers.htm>.
12 Electronic Resource Accessed July 21, 2010.
13

14 National Weather Service

15 2015 "Climate Statistics for the Little Rock Area." Electronic Resources Accessed April
16 4, 2015.
17

18 Oklahoma State University Digital Library

19 2015 Treaty with the Osage, 1808, 7 Stat., 107. Indian Affairs and Treaties, Vol. II
20 Treaties. Electronic Document,
21 <http://digital.library.okstate.edu/kappler/vol2/treaties/osa0095.htm>, accessed
22 October 19, 2015.
23

24 2015 Treaty with the Cherokee, 1817, 7 Stat., 156. Indian Affairs: Laws and Treaties,
25 Vol. II Treaties. Electronic Document,
26 [http://digital.library.okstate.edu/kappler/vol2/treaties/che0140.](http://digital.library.okstate.edu/kappler/vol2/treaties/che0140.htm#mn1)
27 [hm#mn1](http://digital.library.okstate.edu/kappler/vol2/treaties/che0140.htm#mn1), accessed October 18, 2015.
28

29 2015 Treaty with the Quapaw, 1824, 7 Stat., 232. Indian Affairs and Treaties, Vol. II
30 Treaties. Electronic Document,
31 <http://digital.library.okstate.edu/kappler/vol2/treaties/qua0210.htm>, accessed
32 October 19, 2015.
33

34 2015 Treaty with the Western Cherokee, 1828, 7 Stat., 311. Indian Affairs: Laws and
35 Treaties, Vol. II Treaties. Electronic Document,
36 [http://digital.library.okstate.edu/kappler/Vol2/](http://digital.library.okstate.edu/kappler/Vol2/Treaties/che0288.htm)
37 [Treaties/che0288.htm](http://digital.library.okstate.edu/kappler/Vol2/Treaties/che0288.htm), accessed October 18, 2015.
38

39 2015 Treaty with the Choctaw, 1830, 7 Stat., 333. Indian Affairs: Laws and Treaties,
40 Vol. II Treaties. Electronic Document, [http://](http://digital.library.okstate.edu/kappler/Vol2/treaties/cho0310.htm#mn15)
41 digital.library.okstate.edu/kappler/Vol2/treaties/cho0310.htm#mn15, accessed
42 October 19, 2015.
43

44 2015 Treaty with the Caddo, 1835, 7 Stat., 470. Indian Affairs: Laws and Treaties, Vol.
45 II Treaties. Electronic Document, [http://](http://digital.library.okstate.edu/kappler/vol2/treaties/cad0432.htm)
46 digital.library.okstate.edu/kappler/vol2/treaties/cad0432.htm,
47 accessed October 19, 2015.
48

- O'Reilly, Sean and Corinne Smith
1988 Cache River Bridge Spanning Cache River at the U.S. Highway 412, Walnut Ridge, Lawrence-Greene County Line, Arkansas. Historic American Engineering Record, HAER AR-25 Photographs, Written Historical and Descriptive Data. Electronic Document, <http://lcweb2.loc.gov/master/pnp/habshaer/ar/ar0000/ar0083/data/ar0083data.pdf>, accessed October 21, 2015.
- Osage Nation
2015 Osage Ancestral Territory Map. Electronic document, <https://www.osagenation-nsn.gov/who-we-are/historic-preservation>, accessed October 12, 2015.
- Paige, Amanda L., Fuller L. Bumpers, and Daniel F. Littlefield
2003 *The North Little Rock Site on the Trail of Tears National Historic Trail: Historical Contexts Report*. American Native Press Archives, University of Arkansas at Little Rock.
- Quapaw Tribe
2015 Origin of Tribal Name. Electronic document, <https://www.quapawtribe.com/index.aspx?nid=401>, accessed October 12, 2015.
- 2015 Quapaw Tribal Information Chronological Order Compiled By Rise Supernaw Proctor. Electronic document, <http://www.quapawtribalancestry.com/quapawtribalorder.htm>, accessed October 12, 2015.
- Reed, David
2015 Arkansas Natural Geographic Divisions Map. Electronic document, <http://www.encyclopediaofarkansas.net/encyclopedia/media-detail.aspx?mediaID=6333>, Accessed December 1, 2015.
- Rollings, Willard H.
1992 *The Osage: An Ethnohistorical Study of hegemony on the Prairie-Plains*. University of Missouri Press, Columbia, Missouri.
- Sabo, G., III
1992 *Paths of Our Children*. Arkansas Archeological Survey Popular Series No. 3. Fayetteville, Arkansas
- Sabo, G., III, A.M. Early, J.C. Rose, B.A. Burnett, L. Vogelee Jr., and J.P. Harcourt
1990 *Human Adaptation in the Ozark and Ouachita Mountains*. Arkansas Archeological Survey Research Series No. 31. Fayetteville, Arkansas.
- Sabo, George III, Ann M. Early, Jerome C. Rose, Barbara A. Burnett, Louis Vogelee, Jr., and James P. Harcourt
1988 *Human Adaptation in the Ozark-Ouachita Mountains*. Arkansas Archeological Survey. Submitted to the U.S. Army Corps of Engineers, Southwestern Division, Dallas. Contract DACW63-84-C-0149.

- 1 Sabo, George III, David B. Waddell, and John H. House
2 1982 *A Cultural Resource Overview of the Ozark and St. Francis National Forests,*
3 *Arkansas.* Arkansas Archeological Survey. Submitted to USDA Forest Service,
4 Ozark-St. Francis National Forests, Contract 53-43ZP-1-00984.
5
- 6 Sanborn Map Company
7 1939 Sanborn Fire Insurance Map from Little Rock, Pulaski County, Arkansas. *Vol. 1*
8 *and Vol. 3.* Library of Congress Geography and Map Division Washington, D.C.
9 20540-4650 USA
10
- 11 1921 *Sanborn Fire Insurance Map from Little Rock, Pulaski County, Arkansas, Oct.*
12 *1921.* Library of Congress Geography and Map Division Washington, D.C.
13 20540-4650 USA
14
- 15 Santeford, Lawrence G., Carol S. Spears, and Milton A. Hughes
16 1993 *An Archeological Survey of the Springhill Farm Property in North Little Rock,*
17 *Pulaski County, Arkansas.* Spears, Inc.
18
- 19 Schambach, Frank F.
20 1982 An Outline of Fourche Maline Culture in Southwest Arkansas. In *Arkansas*
21 *Archeology in Review*, edited by Neal L. Trubowitz and Marvin D. Jeter, pp. 132-
22 197. Arkansas Archeological Survey Research Series No. 15, Fayetteville.
23
- 24 Schambach, Frank F. and Ann Early
25 1982 "Southwest Arkansas" in *A State Plan for the Conservation of Archeological*
26 *Resources in Arkansas.* Arkansas Archeological Survey Research Series No. 21
27
- 28 Scoggin, Robert
29 2005 AHTD Job #060987 (I-30 to Highway 165 Widening, Pulaski County (PIF).
30 Arkansas Highway and Transportation Program.
31
- 32 Smith, Kenneth L.
33 1986 *Sawmill: The Story of Cutting the Last Great Virgin Forest East of the Rockies.*
34 University of Arkansas Press, Fayetteville, Arkansas.
35
- 36 Smithers, Gregory D.
37 2015 *The Cherokee Diaspora: An Indigenous History of Migration, Resettlement, and*
38 *Identity.* Yale University Press, New Haven, CT.
39
- 40 Spears, Carol S., Kenneth L. Smith, Kirsten Hoffman, Milton Hughes, Annie Moerbe,
41 and Marisa Bartlett
42 1993 *A Cultural Resources Survey of 2260 Acres in the Cold Springs, Fourche, and*
43 *Caddo Ranger Districts of the Ouachita National Forest, Garland, Logan, Scott,*
44 *and Yell Counties, Arkansas.* SPEARS Project Report 62. Submitted for the
45 USDA Forest Service, Ouachita National Forest, Little Rock.
46
47
48

- 1 Stewart-Abernathy, Leslie C.
2 1980 *Historic Ceramics: Decorative Techniques, 1600 to Present*. Ms. on file at the
3 Arkansas Archeological Survey, Fayetteville.
4
- 5 Swanda, Michael
6 1988 Lee Creek Bridge (Natural Dam Bridge), Crawford County, Arkansas. Historic
7 American Engineering Record, HAER No. AR-24. Photographs, Written Historical
8 and Descriptive Data. Electronic Document,
9 [https://www.arkansashighways.com/historic_bridge/
10 HAER%20Documents/AR24%20Lee%20Creek%20Bridge%20%2801811%29.
11 pdf](https://www.arkansashighways.com/historic_bridge/HAER%20Documents/AR24%20Lee%20Creek%20Bridge%20%2801811%29.pdf), accessed October 21, 2015.
12
- 13 T. A. Randall & Co.
14 1916 *The Clay Worker* Vols. 65-66 Pg 178 Indianapolis, IN
15 University of Illinois
16
- 17 U. S. Army, Chief of Engineers
18 1821 Indian Reservations West of the Mississippi Between the Red and Missouri
19 Rivers. Civil Works Map File, I.R. 19, Record Group 77. National Archives at
20 College Park, MD.
21
- 22 U.S. Army, Chief of Engineers
23 1864 Little Rock and Vicinity, Arkansas. Fortifications Map File, Drawer 123, Sheet 9-
24 1, Record Group 77. National Archives at College Park, MD.
25
- 26 United States Department of Agriculture
27 2015 Web Soil Survey. Electronic document, [http://websoilsurvey.sc.egov.usda.gov/
28 App/WebSoilSurvey.aspx](http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx), accessed December 1, 2015.
29
- 30 University of Illinois
31 2015 Short Course in Highway Engineering, January 19-31, 1914. Electronic
32 Document, [http://archives.library.illinois.edu/erec/University%20Archives/
33 1105831/short_course_1914_opt.pdf](http://archives.library.illinois.edu/erec/University%20Archives/1105831/short_course_1914_opt.pdf), accessed October 20, 2015.
34
- 35 2015 Short Course in Highway Engineering, January 10-21, 1916. Electronic
36 Document, [http://archives.library.illinois.edu/erec/University%20Archives/
37 1105831/short_course_1916_opt.pdf](http://archives.library.illinois.edu/erec/University%20Archives/1105831/short_course_1916_opt.pdf), accessed October 20, 2015.
38
- 39 Wyckoff, Don G.
40 1984 *The Foragers: Eastern Oklahoma*. In *Prehistory of Oklahoma*, edited by Robert
41 E. Bell, pp. 119-160. Academic Press, New York.
42
43

Chris M. Branam, RPA

13 Valley Road
Cabot, AR 72023

Phone: 501.593.0609 Email: cmbranam@gmail.com

EDUCATION

A.B.D. History Ph.D. University of Arkansas
Fayetteville, Arkansas

(Expected Graduation Date 2012)

Dissertation Topic: Small-Scale Slaveholders and Slaves in the Early Twentieth Century Trans-Mississippi West, a Social History of Non-Plantation Slavery in Arkansas and Missouri.

December 2003 University of Arkansas
Fayetteville, Arkansas

M.A. in Anthropology (Historic Archeology Emphasis)

Thesis: A Database of Steamboat Wrecks on the Arkansas River between Fort Smith, Arkansas, and Arkansas Post, Arkansas, from 1830-1900.

December 1997 University of Arkansas at Little Rock Little
Rock, Arkansas
B.A. in Anthropology
Minor in Philosophy/Religious Studies

RESEARCH INTERESTS

- Historic archeology and nautical archeology
- Research of historic river transportation in Arkansas and the Southeastern United States
- Early American Ceramics
- Late-eighteenth to mid-nineteenth century settlement patterns, economics, cultures, and land use in the American South
- Small-Scale Slaveholders and Slaves in the early nineteenth century Trans-Mississippi West, an Examination of Non-Plantation Slavery in Arkansas and Missouri.
- Eighteenth and nineteenth century distilling processes, drinking habits, and taverns in the southern Colonies/States and Territories (as a part of an Arkansas Humanities Council grant to Black River Technical College located in Pocahontas, Arkansas)
- Class issues and social history related to small-scale slavery in the Old Southwest, particularly in the Arkansas and Missouri Territories (as a part of an Arkansas Humanities Council grant to Black River Technical College and PhD Dissertation)

Appendix A: Qualifications for Chris Branam, Principal Investigator

WORK EXPERIENCE

August 2008 to present Arkansas	Flat Earth Archeology, LLC	Cabot,
------------------------------------	-----------------------------------	--------

Principal Investigator/Archeologist

- Perform archeological surveys and background research for cultural resource management projects in Arkansas and surrounding states
- Perform Phase II testing and Phase III mitigation for cultural resource management projects
- Author reports resulting in archeological investigations and aiding clients with Section 106 or other compliance needs

December 2008 to September 2011 **Arkansas Highway and Transportation Dept**
Archeologist

- Perform archeological studies and surveys for various projects in Arkansas
- Research for and author reports resulting from archeological work performed, giving recommendations regarding archeological clearance and site evaluations
- Evaluate and comment on reports by archeological consultants contracted by AHTD
- Give archeological presentations to public and academic conferences

January 2005 to December 2008 **SPEARS, Inc.** West Fork, Arkansas

Archeological Field Supervisor

- Supervised and directed various Section 106 (archeological survey) projects throughout Arkansas, directed fieldwork and research, and authored technical reports for the projects
- Analyzed, researched, and wrote descriptions regarding the cultural significance of selected historic artifacts from the Jacob Wolf House excavations

May 2004 to January 2005 **SPEARS, Inc.** West Fork, Arkansas

Archeological Field Technician

- Worked on a Phase III Archeological Mitigation of four Late Woodland/Early Mississippian sites in Northeastern Arkansas

May 1999 – March 2000 **R. Christopher Goodwin & Assoc.** New Orleans
and May 2002 – August 2002 (seasonal)

Archeological Field Crew Chief

- Worked on various Phase I archeological survey projects for Highway and Pipeline projects in Alabama, Arkansas, Florida, Georgia, Mississippi, Louisiana, South Carolina, Tennessee, and Texas.
- Worked on a Phase III Archeological Mitigation for a Prehistoric site in Northern Tennessee on the Cumberland River for the United States Army Corps of Engineers.

TEACHING EXPERIENCE

- ANTH 2310: Cultural Anthropology. An introduction to the field of cultural anthropology with emphasis on basic anthropological concepts, the nature of culture, the development of civilizations, human social behavior, and the study of people and customs around the world. Pulaski Technical College, North Little Rock, Arkansas.
(Fall 2005; Spring and Fall 2006; Spring, Summer, and Fall 2007; Spring, Summer, and Fall 2008; Spring, Summer, and Fall 2009; Spring, Summer, and Fall 2010)
- HIST 1113: World Civilizations I. Introduces the major civilizations of the world in their historical context to 1500. University of Arkansas, Fayetteville, Arkansas. (Fall 2008)

PRESENTATIONS

Branam, Chris

2009 *AHTD Policies Regarding Historic Cemeteries and Burials*. Presented at the Memorial In May – Cemetery Preservation Conference held in Jonesboro, Arkansas.

2008 *Examining the Motives, Means, and Rhetoric of Disfranchisement in Arkansas, 1888 – 1892*. Paper presented at the Mid-American Conference for History held in Springfield, Missouri.

2008 *The Lubricant That Allowed America to Move West: The Role of Distilled Spirits in the Trans-Mississippi Region during the Early Nineteenth Century*. Paper presented at the Arkansas Historical Association Sixty-Seventh Annual Conference held in Eureka Springs, Arkansas.

2002 *Steamboat Wrecks on the Arkansas River between Fort Smith and Arkansas Post*. Paper presented at the Arkansas Archeological Survey, Fayetteville, Arkansas

1997 *Evolution of the Trireme*. Paper presented at the University of Arkansas at Little Rock Anthropology Symposium held in Little Rock, Arkansas

OTHER TEACHING & WORK RELATED EXPERIENCE

- History Graduate Teaching Assistant: University of Arkansas, Western Civilization II, Spring 2008
 - History Graduate Teaching Assistant: University of Arkansas, Western Civilization I, Fall 2007
 - Seasonal Interpreter: Toltec Mounds Archeological State Park, 1997
 - Graduate Teaching Assistant: University of Arkansas at Little Rock, Archeology Field School, 1997
 - Teaching Assistant: University of Arkansas at Little Rock, Archeology Field School, 1996
-

AWARDS

- 2008 Recipient of the Mary D. Hudgins Fellowship in Arkansas History from the University of Arkansas History Department.
- 1997 Recipient of the Student Fieldwork in Anthropology Award (now known as the Mark J. Hartmann Anthropology Student Fellowship) from the University of Arkansas at Little Rock.

CURRENT PROFESSIONAL MEMBERSHIPS

- Registry of Professional Archaeologists
- Archaeological Institute of America
- Arkansas Historical Association
- Southern Historical Association

PUBLICATIONS

Branam, Chris

- 2010 "Rethinking Disfranchisement in Arkansas: The Election Law of 1891 and The Poll Tax Amendment of 1892" *Arkansas Historical Quarterly*, Fall 2010.

Branam, Chris

- 2009 *Slave Codes*. Entry in The Encyclopedia of Arkansas History and Culture.
<http://www.encyclopediaofarkansas.net/encyclopedia/entry-detail.aspx?search=1&entryID=5054>

Branam, Chris

- 2008 *Election Law of 1891*. Entry in The Encyclopedia of Arkansas History and Culture.
<http://www.encyclopediaofarkansas.net/encyclopedia/entry-detail.aspx?search=1&entryID=4033>

ARCHEOLOGICAL REPORTS AND UNPUBLISHED WORK

Over 200 archeological reports authored and co-authored to date. The following is a small sample:

Branam, Chris

- 2015 *A Cultural Resources Survey of the Proposed 20-Acre Cornerstone Development Site in Beebe, White County, Arkansas*. For B & F Engineering

Branam, Chris

- 2015 *A Cultural Resources Survey of the Proposed "Lee Mackey 11-28-17" Well Pad Location in Woods County, Oklahoma*. For Eagle Environmental

Branam, Chris

- 2015 *Phase I Cultural Resources Survey of the 110-Acre Site for the Proposed Fayetteville Regional Park in Washington County, Arkansas*. For the City of Fayetteville and Garver

Appendix A: Qualifications for Chris Branam, Principal Investigator

Engineering

Branam, Chris

2014 *Memorandum of Agreement and Treatment Plan development for the Phase III Mitigation of Sites 3BE714 and 3BE906 in Benton County, Arkansas.* For the Arkansas Highway & Transportation Department

Branam, Chris

2014 *Site Monitoring of Ground Disturbing Activities at Site 3WA304 Associated with Reach B of the Illinois River Mitigation Bank Project.* For Streamworks Mitigation Services

Branam, Chris

2014 *Phase II Cultural Resources Significance Testing of Site 3WA235 in Fayetteville, Washington County, Arkansas.* For the City of Fayetteville

Branam, Chris

2014 *Phase I Cultural Resources Survey for the Proposed Highland Kings Cell Tower in Caddo Parish, Louisiana*

Branam, Chris

2014 *Phase I Cultural Resources Survey for the Albemarle 24" Transit Pipeline Replacement in Columbia County, Arkansas.* For Albemarle Corp.

Branam, Chris

2014 *Phase I Cultural Resources Survey for the Big Dam Bridge Pit Stop in Little Rock, Pulaski County, Arkansas.* For the City of Little Rock

Branam, Chris

2014 *Cultural Resources Survey for the 100 Mile Mt. Ida Waterline Extension, Montgomery County, Arkansas.* For the City of Mount Ida.

Branam, Chris

2014 *Statewide NHPA Archeological Inventory of 857 Acres at Robinson Maneuver Training Center.* For the Military Department of Arkansas

Branam, Chris

2013 *A Cultural Resources Survey of a Proposed Mitigation Bank Project of the Illinois River Property in Washington County, Arkansas.* For Streamworks Mitigation Services

Branam, Chris

2013 *Phase I Cultural Resources Survey for a Proposed New Firebreak and Fence Corridor at Robinson Maneuver Training Center.* For the Military Department of Arkansas

Branam, Chris

2013 *Archeological Survey of the Proposed Avinger Cell Tower in Cass County, Texas*

Branam, Chris

2013 *NHPA Archaeological Inventory of 1,709 Acres at Robinson Maneuver Training Center and Fort Chaffee Joint Maneuver Training Center, Arkansas.* For the Military Department of Arkansas

Branam, Chris

2013 *A Cultural Resources Survey for the Jonesboro Roundabout at the Intersection of Airport Road and Aggie Road, Craighead County, Arkansas.* For Garver Engineering.

Appendix A: Qualifications for Chris Branam, Principal Investigator

Branam, Chris

2012 *Phase I Cultural Resources Survey of 2,334 Acres at Robinson Maneuver Training Center and Fort Chaffee Joint Maneuver Training Center, Arkansas.* For the Military Department of Arkansas

Branam, Chris

2012 *A Cultural Resources Survey for the ONEOK Canadian Valley 40.7 Mile Pipeline Project, Oklahoma.* For ONEOK

Branam, Chris

2012 *A Cultural Resources Survey for the Yonce Lake Project, Okmulgee County, Oklahoma.* For Terracon

Branam, Chris

2012 *Phase I Survey of the Proposed Tributary to Little Osage Creek Drainage Improvement for the City of Bentonville, Benton County, Arkansas.*

Branam, Chris

2012 *A Cultural Resources Survey for the Layfield-Coushatta Cell Tower Location, Red River Parish, Louisiana.*

Branam, Chris

2012 *A Cultural Resources Survey for the Eudora Cell Tower Location, Polk County, Missouri.*

Branam, Chris

2011 *Phase II Archeological Testing of Four Sites at Robinson Maneuver Training Center in Faulkner County, Arkansas.* For the Military Department of Arkansas

Branam, Chris

2011 *Phase II Archeological Testing of 19 Sites at Robinson Maneuver Training Center and 19 Sites at Fort Chaffee Joint Maneuver Training Center.* For the Military Department of Arkansas

Branam, Chris

2011 *Phase I Survey for the Eureka Gardens Sewer Line Improvements Project, Pulaski County, Arkansas.* For Marlar Engineering

Branam, Chris

2011 *Phase I Survey for the Clark County Industrial Park - Tract 7, Clark County, Arkansas.* For Terracon

Branam, Chris

2011 *Phase I Survey for the Proposed AR1513 Jonesboro Airport Communications Antenna, Craighead County, Arkansas.*

Branam, Chris

2010 *Phase II Archeological Testing of Six Sites at Robinson Maneuver Training Center and Seven Sites at Fort Chaffee Joint Maneuver Training Center.* For the Arkansas Military Department

Branam, Chris

2010 *A Cultural Resources Survey of Proposed Arkansas Highway and Transportation Department Jobs 090169 – Highway 7 Passing Lanes; 090213 – Highway 7 Safety*

Appendix A: Qualifications for Chris Branam, Principal Investigator

Improvements; and 009784 – Buffalo River Bridge and Approaches on State Highway 7 at Pruitt, Newton County. For the Arkansas Highway and Transportation Department.

Branam, Chris

2010 *A Cultural Resources Survey of Proposed Arkansas Highway and Transportation Department Job FA4510, Searcy County Line – Northwest (Phase I)(Reconstruction of County Road 6), Marion County, Arkansas.* For the Arkansas Highway and Transportation Department.

Branam, Chris

2010 *A Cultural Resources Survey of the Proposed James Fork Water Line Project in Scott County, Arkansas.* Flat Earth Archeology Project Report 2010-39. Report Submitted to the James Fork Regional Water District.

Branam, Chris

2009 *Phase II Archeological Testing of Six Archeological Sites at the Robinson Maneuver Training Center, Pulaski and Faulkner Counties, Arkansas.* Flat Earth Archeology Project Report 2009-43. Report Submitted to Arkansas Army National Guard.

Branam, Chris

2009 *Phase II Testing of Archeological Site 3WA1383 for Arkansas Highway and Transportation Department Job 040411, Washington County, Arkansas.* For the Arkansas Highway and Transportation Department.

Branam, Chris

2009 *A Cultural Resources Survey for a Proposed Cell Tower Near Fort Smith, Sebastian County, Arkansas.* Flat Earth Archeology Project Report 2009-1. Report Submitted to White Buffalo Environmental, Inc. of Tulsa, OK.

Branam, Chris

2009 *A Cultural Resources Survey of Proposed Arkansas Highway and Transportation Department Job 061202, Stagecoach Road (Highway 5) Saline County Line to Otter Creek Road, Pulaski County.* For the Arkansas Highway and Transportation Department.

Branam, Chris

2009 *Archeological Site Revisits and Assessments for the Stringtown Road Water Line Extension, Newton County, Arkansas.* Flat Earth Archeology Project Report 2009-58. Report Submitted to Blaylock Threat Engineers, Inc.

Branam, Chris and Erik Masterson

2008 *A Cultural Resources Survey for a Proposed Cell Tower Near Sulphur Springs, Benton County, Arkansas.* Flat Earth Archeology Project Report 2008-5. Report Submitted to Peregrine Environmental of Bryant, AR.

Branam, Chris and Erik Masterson

2008 *A Cultural Resources Survey for a Proposed Cell Tower Near Fort Smith, Sebastian County, Arkansas.* Flat Earth Archeology Project Report 2008-4. Report Submitted to White Buffalo Environmental, Inc. of Tulsa, OK.

Branam, Chris and Erik Masterson

2008 *A Cultural Resources Survey for a Proposed Cell Tower Near Johnson, Washington County, Arkansas.* Flat Earth Archeology Project Report 2008-3. Report Submitted to Trileaf Corporation of Grimes, IA.

Branam, Chris and Erik Masterson

2008 *A Cultural Resources Survey for a Proposed Cell Tower Near Mountainburg, Crawford County, Arkansas.* Flat Earth Archeology Project Report 2008-2. Report Submitted to

Appendix A: Qualifications for Chris Branam, Principal Investigator

Trileaf Corporation of Grimes, IA.

Branam, Chris and Erik Masterson

2008 *A Cultural Resources Survey for a Proposed Cell Tower Near Pottsville, Pope County, Arkansas.* Flat Earth Archeology Project Report 2008-1. Report Submitted to White Buffalo Environmental, Inc. of Tulsa, OK.

Branam, Chris and Carol S. Spears

2008 *A Cultural Resources Survey of 1,743 Acres in the Oden Ranger District of the Ouachita National Forest, Montgomery County, Arkansas.* SPEARS Project Report 195.

Branam, Chris

2008 *A Cultural Resources Survey for a Proposed Cell Tower near Oak Grove, Carroll County, Arkansas.* Report submitted to Terracon Consultants, Inc., Bryant, Arkansas.

Branam, Chris

2008 *A Cultural Resources Survey of the Proposed Water Line North of Steadman Road in the Prairie Grove Battle Field State Park, Washington County, Arkansas.* SPEARS Project Report 193.

Branam, Chris

2008 *A Cultural Resources Survey of the Proposed Water System Improvements for the Rackley Mountain Extension, Crawford County, Arkansas.* Report submitted to Hawkins-Weir Engineers, Inc., Van Buren, Arkansas. SPEARS Project Report 192.

Melissa Zabecki and Chris Branam

2007 *A Cultural Resources Survey for the Proposed Waste Area No. 7 (Former Barrow Pit), Pulaski County, Arkansas.* SPEARS Project Report 189.

Branam, Chris and Carol S. Spears

2007 *A Cultural Resources Survey in the Bayou Ranger District of the Ozark National Forest, Conway, Pope, and Van Buren Counties, Arkansas.* SPEARS Project Report 185.

Branam, Chris and Carol S. Spears

2007 *A Cultural Resources Survey for the Proposed Sewer Line Extension in Pocahontas and Shannon, Randolph County, Arkansas.* SPEARS Project Report 184.

Branam, Chris and Carol S. Spears

2007 *A Cultural Resources Survey for the Proposed Tumbling Shoals Public Water Line, Cleburne County, Arkansas.* SPEARS Project Report 183.

Branam, Chris and Carol S. Spears

2007 *A Cultural Resources Survey of Campgrounds "A" and "C" at Lake Catherine State Park, Hot Springs County, Arkansas.* SPEARS Project Report 181.

Spears, Carol S. and Chris Branam

2007 *A Cultural Resources Survey of the Proposed River Ridge Development and Testing at Site 3PI565 on the Little Missouri River, Pike County, Arkansas.* SPEARS Project Report 177.

Spears, Carol S., Melissa Zabecki, and Chris Branam

2007 *A Cultural Resources Survey of the Proposed Water and Sewer Line Improvements for the City of Pea Ridge, Benton County, Arkansas.* SPEARS Project Report 175.

Branam, Chris

2006 *A Cultural Resources Survey of the Hot Spring County Industrial Park at Malvern, Hot*

Appendix A: Qualifications for Chris Branam, Principal Investigator

Spring County, Arkansas. SPEARS Project Report 174.

Branam, Chris

2006 *A Cultural Resources Survey of the Proposed Shadow Ridge Subdivision Development at Pickles Gap, Faulkner County, Arkansas.* Report submitted to Tim Tyler Surveying, Conway, Arkansas. SPEARS Project Report 173.

Branam, Chris

2006 *A Cultural Resources Survey of the Proposed Water Line Improvements by the Western Greene County Regional Water District, Greene County, Arkansas.* Report submitted to NRS Consulting, Inc., Jonesboro, Arkansas. SPEARS Project Report 172.

Spears, Carol S., Chris Branam, Christopher M. Page, Robin F. Bowers, Glenda Cade, Leslie Walker, and Robert H. Lafferty, III

2006 *Archeological Investigations at the Wolf House Site Volume III: Excavations Under the North Pen and Recommendations for Future Studies.* Draft Report in Review.

Branam, Chris and Carol S. Spears

2006 *A Cultural Resources Survey of the Proposed Widening of the Runway and Taxiway at the Clinton Municipal Airport, Van Buren County, Arkansas.* Report submitted to Grimes Consulting Engineers, Inc., Little Rock, Arkansas. SPEARS Project Report 170.

Branam, Chris and Carol S. Spears

2006 *A Cultural Resources Survey of the Proposed Utility Line Corridor Near the Joplin Recreational/Mountain Harbor Area on Ouachita Lake, Montgomery County, Arkansas.* Report submitted to the U.S. Army Corps of Engineers, Vicksburg District. SPEARS Project Report 169.

Branam, Chris and Carol S. Spears

2006 *A Cultural Resources Survey of the Proposed East Side Parallel Taxiway at the Rogers Municipal Airport, Rogers, Benton County, Arkansas.* An addendum report (to SPEARS 161) submitted to Delta Airport Consultants, Inc., Richmond, Virginia. SPEARS Project Report 167.

Branam, Chris and Carol S. Spears

2006 *A Cultural Resources Survey of 12 Proposed Seismic Lines on the Ozark-St. Francis National Forests, Conway, Franklin, Johnson, Pope, and Van Buren Counties, Arkansas.* Report submitted to Kingfisher Exploration Services, Inc., Beaumont, Texas. SPEARS Project Report 166.

Branam, Chris and Carol S. Spears

2005 *A Cultural Resources Survey of Proposed Seismic Lines on the Ozark National Forest, Pope, Van Buren and Conway Counties, Arkansas.* Report submitted to Kingfisher Exploration Services, Inc., Beaumont, Texas. SPEARS Project Report 165.

Branam, Chris and Carol S. Spears

2005 *An Archeological Survey of the Proposed Borrow Dirt Pit at the I-40/Highway 326 Interchange, Pope County, Arkansas.* Report submitted to Gilbert Central Corp., Russellville, Arkansas. SPEARS Project Report 164.

Appendix A: Qualifications for Chris Branam, Principal Investigator

Branam, Chris and Carol S. Spears

- 2005 *An Archeological Survey of the Proposed Lakeland Harbor Condominium Development on Lake Hamilton, Garland County, Arkansas.* Report submitted to K&S Developments, Hot Springs, Arkansas. SPEARS Project Report 163.

Branam, Chris and Carol S. Spears

- 2005 *A Cultural Resources Survey of the Proposed Oak Shores Boat Ramp on Lake Hamilton, Garland County, Arkansas.* Report submitted to Dale Horn (Two D, LLC), Hot Springs, Arkansas. SPEARS Project Report 162.

Branam, Chris and Carol S. Spears

- 2005 *An Archeological Survey of the Proposed West Taxiway and "Basin B" at Rogers Municipal Airport, Benton County, Arkansas.* Report submitted to Delta Airport Consultants, Inc., Richmond, Virginia. SPEARS Project Report 160.

Branam, Chris and Carol S. Spears

- 2005 *A Cultural Resource Survey of the Proposed Oak Shores Boat Ramp On Lake Hamilton, Garland County, Arkansas.* SPEARS Project Report No. 162. Prepared for Two D, LLC.

Branam, Chris and Carol S. Spears

- 2005 *A Cultural Resources Survey of the Proposed Westside Taxiway and "Basin B", Rogers Municipal Airport, Rogers, Arkansas.* SPEARS Project Report No. 160. Prepared for Delta Environmental Consulting Co.

Branam, Chris

- 2003 *Steamboat Wrecks on the Arkansas River between Fort Smith and Arkansas Post, 1830-1900.* Unpublished Master's thesis, Department of Anthropology, University of Arkansas, Fayetteville

Appendix B: Curation Agreement Form

LETTER OF AGREEMENT FOR CURATION OF ARCHEOLOGICAL MATERIALS

It is hereby agreed and understood by the University of Arkansas Collections Facility (UACF) and the (Depositor) that the UACF will receive and review, for the fee stipulated below, collections of archeological materials (from the Depositor) Flat Earth Archeology, LLC which collection is to be or was obtained as follows (designate location, contract, or other parameter of the collection/research activity in sufficient detail as to make it distinct from any other collection):

Phase I Cultural Resources Survey for the I-30 Bridge Replacement in Pulaski County, Arkansas. AHTD Job No. CA0602 (FEA Project 2015-6).

when this collection is found by the University of Arkansas Collections Facility to be in conformance with the Curation Standards for Arkansas (*State Plan*; Appendix G 1994) and the UACF's Curation Standards, it will accept this collection for long term curation and management.

This collection(s) is assigned the following Accession Number(s) _____

The (Depositor) Flat Earth Archeology, LLC agrees to assume responsibility for bringing the collection into complete conformance with the National Park Service Guidelines (36CFR79) as appropriate, the Curation Standards for Arkansas, and the UACF Curation Standards.

The (Depositor) Flat Earth Archeology, LLC agrees to deposit the collection with the UACF on or about December 2015. A Notice of Receipt will be issued by the Survey Registrar when the collection is in hand.

The UACF agrees to complete the Registrar's review in _____ days after date of receipt as measured between the date of the Notice of Receipt and the postmark of the Letter of Acceptance or Letter of Review as appropriate.

If the collection conforms completely to the curation standards, a Letter of Acceptance will be issued when the review is completed.

If the collection(s) and document(s) are found not to conform to the above standards, a Letter of Review will be issued itemizing the deficiencies and a Letter of Agreement for Collections Preparation will be negotiated (see UACF Curation Standards).

The (Depositor) Flat Earth Archeology, LLC agrees that it will assume full responsibility for correcting deficiencies of the collection within a reasonable length of time.

After signature of this Agreement, the depositor will not retain the collection or otherwise dispose of it, nor will they deposit the collection with another Curation Facility.

The UACF agrees to provide curation and access to the collection, which will remain the property under the continued ownership of the Arkansas Highway & Transportation Dept. in accordance with the Archeological Contract Collections Management Policy.


Appendix B: Curation Agreement Form

The fee schedule attached is a part of this Letter of Agreement. The box count and linear foot measurement to be charged are understood to be the count and measure at the time the collection is deemed acceptable.

Company/Agency: Flat Earth Archeology, LLC

Address: 117 Financial Drive

Cabot, AR 72023

Signature: 
Depositor

Title: Principal Investigator

Date: September 28, 2015

Director, Arkansas Archeological Survey
2475 N. Hatch Ave.
Fayetteville, AR 72704

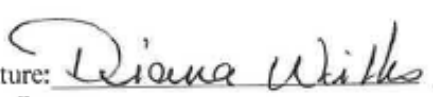
Signature: _____

Date: _____

Company/Agency: Arkansas State Highway and
Transportation Department

Address: P.O. Box 2261

Little Rock, AR 72203

Signature: 
Owner

Title : Section Head, Cultural Resources

Date: September 28, 2015

Registrar, Arkansas Archeological Survey
2475 N. Hatch Ave.
Fayetteville, AR 72704

Signature: _____

Date: _____

Address revised
2/2000

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
A	1	1	0	Negative	
A	1	2	20	Negative	
A	1	3	40	Negative	
A	1	4	60	Negative	
A	1	5	80	Negative	
A	1	6	100	Negative	
A	1	7	120	Negative	
A	1	8	140	Negative	
A	1	9	160	Negative	
A	1	10	180	Negative	
A	1	11	200	Negative	
A	1	12	220	Negative	
A	1	13	240	Negative	
A	1	14	260	Negative	
A	1	15	280	Negative	
A	1	16	300	Negative	
A	1	17	320	Negative	
A	1	18	340	Negative	
A	1	19	360	Negative	
A	1	20	380	Negative	
A	1	21	400	Negative	
A	1	22	420	Negative	
A	1	23	440	Negative	
A	1	24	460	Negative	
A	1	25	480	Negative	
A	1	26	500	Negative	
A	1	27	520	Negative	
A	1	28	540	Negative	
A	1	29	560	Negative	
A	1	30	580	Negative	
A	1	31	600	Negative	
A	1	32	620	Negative	
A	1	33	640	Negative	
A	1	34	660	Negative	
A	1	35	680	Negative	
A	1	36	700	Negative	
A	1	37	720	Negative	
A	1	38	740	Negative	
A	1	39	760	Negative	
A	1	40	780	Negative	
A	1	41	800	Negative	
A	1	42	820	Negative	
A	1	43	840	Negative	
A	1	44	860	Negative	
A	1	45	880	Negative	
A	1	46	900	Negative	
A	1	47	920	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
A	1	48	940	Negative	
A	1	49	960	Negative	
A	1	50	980	Negative	
A	1	51	1000	Negative	
A	1	52	1020	Negative	
A	1	53	1040	Negative	
A	2	1	0	Negative	
A	2	2	20	Negative	
A	2	3	40	Negative	
A	2	4	60	Negative	
A	2	5	80	Negative	
A	2	6	100	Negative	
A	2	7	120	Negative	
A	2	8	140	Negative	
A	2	9	160	Negative	
A	2	10	180	Negative	
A	2	11	200	Negative	
A	2	12	220	Negative	
A	2	13	240	Negative	
A	2	14	260	Negative	
A	2	15	280	Negative	
A	2	16	300	Negative	
A	2	17	320	Negative	
A	2	18	340	Negative	
A	2	19	360	Negative	
A	2	20	380	Negative	
A	3	1	0	Negative	
A	3	2	20	Negative	
A	3	3	40	Negative	
A	3	4	60	Negative	
A	3	5	80	Negative	
A	3	6	100	Negative	
A	3	7	120	Negative	
A	3	8	140	Negative	
A	3	9	160	Negative	
A	4	1	0	Negative	
A	4	2	20	Negative	
A	4	3	40	Negative	
A	4	4	60	Negative	
A	4	5	80	Negative	
A	4	6	100	Negative	
A	4	7	120	Negative	
A	4	8	140	Negative	
B	1	1	0	Negative	
B	1	2	20	Negative	
B	1	3	40	Negative	
B	1	4	60	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
B	1	5	80	Negative	
B	1	6	100	Negative	
B	1	7	120	Negative	
B	1	8	140	Negative	
B	1	9	160	Negative	
B	1	10	180	Negative	
B	1	11	200	Negative	
B	1	12	220	Negative	
B	1	13	240	Negative	
B	1	14	260	Negative	
B	1	15	280	Negative	
B	1	16	300	Negative	
B	1	17	320	Negative	
B	1	18	340	Negative	
B	1	19	360	Negative	
B	1	20	380	Negative	
B	1	21	400	Negative	
B	1	22	420	Negative	
B	1	23	440	Negative	
B	1	24	460	Negative	
B	2	1	0	Negative	
B	2	2	20	Negative	
B	2	3	40	Negative	
B	2	4	60	Negative	
B	2	5	80	Negative	
B	2	6	100	Negative	
B	2	7	120	Negative	
B	2	8	140	Negative	
B	2	9	160	Negative	
B	2	10	180	Negative	
B	2	11	200	Negative	
B	2	12	220	Negative	
B	2	13	240	Negative	
B	2	14	260	Negative	
B	2	15	280	Negative	
B	2	16	300	Negative	
B	2	17	320	Negative	
B	2	18	340	Negative	
B	2	19	360	Negative	
B	2	20	380	Negative	
B	2	21	400	Negative	
B	2	22	420	Negative	
B	2	23	440	Negative	
B	2	24	460	Negative	
B	2	25	480	Negative	
C	1	1	0	Negative	
C	1	2	20	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
C	1	3	40	Negative	
C	1	4	60	Negative	
C	1	5	80	Negative	
C	1	6	100	Negative	
C	1	7	120	Negative	
C	1	8	140	Negative	
C	1	9	160	Negative	
C	1	10	180	Negative	
C	1	11	200	Negative	
C	1	12	220	Negative	
C	1	13	240	Negative	
C	1	14	260	Negative	
C	1	15	280	Negative	
C	1	16	300	Negative	
C	1	17	320	Negative	
C	1	18	340	Negative	
C	1	19	360	Negative	
C	1	20	380	Negative	
C	1	21	400	Negative	
C	1	22	420	Negative	
C	1	23	440	Negative	
C	1	24	460	Negative	
C	1	25	480	Negative	
C	2	1	0	Negative	
C	2	2	20	Negative	
C	2	3	40	Negative	
C	2	4	60	Negative	
C	2	5	80	Negative	
C	2	6	100	Negative	
C	2	7	120	Negative	
C	2	8	140	Negative	
C	2	9	160	Negative	
C	2	10	180	Negative	
C	2	11	200	Negative	
C	2	12	220	Negative	
C	2	13	240	Negative	
C	2	14	260	Negative	
C	2	15	280	Negative	
C	2	16	300	Negative	
C	2	17	320	Negative	
C	2	18	340	Negative	
C	2	19	360	Negative	
C	2	20	380	Negative	
C	2	21	400	Negative	
C	2	22	420	Negative	
C	2	23	440	Negative	
C	2	24	460	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
C	2	25	480	Negative	
C	2	26	500	Negative	
C	2	27	520	Negative	
C	2	28	540	Negative	
C	2	29	560	Negative	
C	3	1	0	Negative	
C	3	2	20	Negative	
C	3	3	40	Negative	
C	3	4	60	Negative	
C	3	5	80	Negative	
C	3	6	100	Negative	
C	3	7	120	Negative	
C	3	8	140	Negative	
C	3	9	160	Negative	
C	3	10	180	Negative	
C	3	11	200	Negative	
C	3	12	220	Negative	
C	3	13	240	Negative	
C	3	14	260	Negative	
C	3	15	280	Negative	
C	3	16	300	Negative	
C	3	17	320	Negative	
C	3	18	340	Negative	
C	3	19	360	Negative	
C	3	20	380	Negative	
C	3	21	400	Negative	
C	3	22	420	Negative	
C	3	23	440	Negative	
C	3	24	460	Negative	
C	3	25	480	Negative	
C	3	26	500	Negative	
C	3	27	520	Negative	
C	3	28	540	Negative	
C	3	29	560	Negative	
C	4	1	0	Negative	
C	4	2	20	Negative	
C	4	3	40	Negative	
C	4	4	60	Negative	
C	4	5	80	Negative	
C	4	6	100	Negative	
C	4	7	120	Negative	
C	4	8	140	Negative	
C	4	9	160	Negative	
C	5	1	0	Negative	
C	5	2	20	Negative	
C	5	3	40	Negative	
C	5	4	60	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
C	5	5	80	Negative	
C	6	1	0	Negative	
C	6	2	20	Negative	
C	6	3	40	Negative	
C	6	4	60	Negative	
C	6	5	80	Negative	
C	6	6	100	Negative	
C	6	7	120	Negative	
D	1	1	0	Negative	
D	1	2	20	Negative	
D	1	3	40	Negative	
D	1	4	60	Negative	
D	1	5	80	Negative	
D	1	6	100	Negative	
D	1	7	120	Negative	
D	1	8	140	Negative	
D	1	9	160	Negative	
D	1	10	180	Negative	
D	1	11	200	Negative	
D	1	12	220	Negative	
D	1	13	240	Negative	
D	1	14	260	Negative	
D	1	15	280	Negative	
D	1	16	300	Negative	
D	1	17	320	Negative	
D	1	18	340	Negative	
D	1	19	360	Negative	
D	1	20	380	Negative	
D	1	21	400	Negative	
D	2	1	0	Negative	
D	2	2	20	Negative	
D	2	3	40	Negative	
D	2	4	60	Negative	
D	2	5	80	Negative	
D	2	6	100	Negative	
D	2	7	120	Negative	
D	2	8	140	Negative	
D	2	9	160	Negative	
D	2	10	180	Negative	
D	2	11	200	Negative	
D	2	12	220	Negative	
D	2	13	240	Negative	
D	2	14	260	Negative	
D	2	15	280	Negative	
D	2	16	300	Negative	
D	2	17	320	Negative	
D	2	18	340	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
D	2	19	360	Negative	
D	2	20	380	Negative	
D	2	21	400	Negative	
D	3	1	0	Negative	
D	3	2	20	Negative	
D	3	3	40	Negative	
D	3	4	60	Negative	
D	3	5	80	Negative	
D	3	6	100	Negative	
D	3	7	120	Negative	
D	3	8	140	Negative	
D	3	9	160	Negative	
D	3	10	180	Negative	
D	3	11	200	Negative	
D	3	12	220	Negative	
D	3	13	240	Negative	
D	3	14	260	Negative	
D	3	15	280	Negative	
D	3	16	300	Negative	
D	3	17	320	Negative	
D	3	18	340	Negative	
D	3	19	360	Negative	
D	4	1	0	Negative	
D	4	2	20	Negative	
D	4	3	40	Negative	
D	4	4	60	Negative	
D	4	5	80	Negative	
D	4	6	100	Negative	
D	4	7	120	Negative	
D	4	8	140	Negative	
D	4	9	160	Negative	
D	4	10	180	Negative	
D	4	11	200	Negative	
D	4	12	220	Negative	
D	4	13	240	Negative	
D	4	14	260	Negative	
D	4	15	280	Negative	
D	4	16	300	Negative	
D	4	17	320	Negative	
D	4	18	340	Negative	
D	5	1	0	Negative	
D	5	2	20	Negative	
D	5	3	40	Negative	
D	5	4	60	Negative	
D	5	5	80	Negative	
D	5	6	100	Negative	
D	5	7	120	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
D	5	8	140	Negative	
D	5	9	160	Negative	
D	5	10	180	Negative	
D	5	11	200	Negative	
D	5	12	220	Negative	
D	5	13	240	Negative	
D	6	1	0	Negative	
D	6	2	20	Negative	
D	6	3	40	Negative	
D	6	4	60	Negative	
D	6	5	80	Negative	
D	6	6	100	Negative	
D	6	7	120	Negative	
D	6	8	140	Negative	
D	6	9	160	Negative	
D	6	10	180	Negative	
E	1	1	0	Negative	
E	1	2	20	Negative	
E	1	3	40	Negative	
E	1	4	60	Negative	
E	2	1	0	Negative	
E	2	2	20	Negative	
E	2	3	40	Negative	
E	2	4	60	Negative	
E	2	5	80	Negative	
F	1	1	0	Negative	
F	1	2	20	Negative	
F	1	3	40	Negative	
F	1	4	60	Negative	
F	1	5	80	Negative	
F	1	6	100	Negative	
F	1	7	120	Negative	
F	1	8	140	Negative	
F	2	1	0	Negative	
F	2	2	20	Negative	
F	2	3	40	Negative	
F	2	4	60	Negative	
F	2	5	80	Negative	
F	2	6	100	Negative	
F	2	7	120	Negative	
F	3	1	0	Negative	
F	3	2	20	Negative	
F	3	3	40	Negative	
F	3	4	60	Negative	
F	3	5	80	Negative	
F	3	6	100	Negative	
F	3	7	120	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
F	4	1	0	Negative	
F	4	2	20	Negative	
F	4	3	40	Negative	
F	4	4	60	Negative	
F	4	5	80	Negative	
F	4	6	100	Negative	
F	5	1	0	Negative	
F	5	2	20	Negative	
F	5	3	40	Negative	
F	5	4	60	Negative	
F	5	5	80	Negative	
F	6	1	0	Negative	
F	6	2	20	Negative	
F	6	3	40	Negative	
F	6	4	60	Negative	
F	7	1	0	Negative	
F	7	2	20	Negative	
F	7	3	40	Negative	
F	7	4	60	Negative	
F	8	1	0	Negative	
F	8	2	20	Negative	
F	8	3	40	Negative	
G	1	1	0	Negative	
G	1	2	20	Negative	
G	1	3	40	Negative	
G	1	4	60	Negative	
G	1	5	80	Negative	
G	1	6	100	Negative	
G	1	7	120	Negative	
G	1	8	140	Negative	
G	1	9	160	Negative	
G	1	10	180	Negative	
G	1	11	200	Negative	
G	1	12	220	Negative	
G	1	13	240	Negative	
G	1	14	260	Negative	
G	1	15	280	Negative	
G	1	16	300	Negative	
G	1	17	320	Negative	
G	1	18	340	Negative	
G	2	1	0	Negative	
G	2	2	20	Negative	
G	2	3	40	Negative	
G	2	4	60	Negative	
G	2	5	80	Negative	
G	2	6	100	Negative	
G	2	7	120	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
G	2	8	140	Negative	
G	2	9	160	Negative	
G		Delineation (Del.)		Negative	3PU969 5N, 0E Stratum I (0-4 cmbs) dark yellowish brown (10YR3/4) hydric clay Stratum II (4-30 cmbs) grayish brown (10YR5/2) clay subsoil mottled with strong brown (7.5YR5/6) clay
G		Del.		Negative	3PU969 10N, 0E
G		Del.		Negative	3PU969 0N, 5W
G		Del.		Negative	3PU969 0N, 10W
G		Del.		Negative	3PU969 0N, 10E
G		Del.		Negative	3PU969 10S, 0E
G	2	10	180	Negative	
G	2	11	200	Negative	
G	2	12	220	Negative	
G	2	13	240	Negative	
G	2	14	260	Negative	
G	2	15	280	Negative	
G	2	16	300	Negative	
G	2	17	320	Negative	
G	2	18	340	Negative	
G	2	19	360	Negative	
G	3	1	0	Negative	
G	3	2	20	Negative	
G	3	3	40	Negative	
G	3	4	60	Negative	
G	3	5	80	Negative	
G	3	6	100	Negative	
G	3	7	120	Negative	
G	3	8	140	Negative	
G	3	9	160	Negative	
G	3	10	180	Negative	
G	3	11	200	Negative	
G	3	12	220	Negative	
G	3	13	240	Negative	
G	3	14	260	Negative	
G	3	15	280	Negative	
G	3	16	300	Negative	
G	3	17	320	Negative	
G	3	18	340	Negative	
G	3	19	360	Negative	
G	3	20	380	Negative	
G	3	21	400	Negative	
G	4	1	0	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
G	4	2	20	Negative	
G	4	3	40	Negative	
G	4	4	60	Negative	
G	4	5	80	Negative	
G	4	6	100	Negative	
G	4	7	120	Negative	
G	4	8	140	Negative	
G	4	9	160	Negative	
G	4	10	180	Negative	
G	4	11	200	Negative	
G	4	12	220	Negative	
G	4	13	240	Negative	
G	4	14	260	Negative	
G	4	15	280	Negative	
G	4	16	300	Negative	
G	4	17	320	Negative	
G	4	18	340	Negative	
G	4	19	360	Negative	
G	4	20	380	Negative	
G	4	21	400	Negative	
G	4	22	420	Negative	
G	4	23	440	Negative	
G	4	24	460	Negative	
G	4	25	480	Negative	
G	4	26	500	Negative	
G	5	1	0	Negative	
G	5	2	20	Negative	
G	5	3	40	Negative	
G	5	4	60	Negative	
G	5	5	80	Negative	
G	5	6	100	Negative	
G	5	7	120	Negative	
G	5	8	140	Negative	
G	5	9	160	Negative	
G	5	10	180	Negative	
G	5	11	200	Negative	
G	5	12	220	Negative	
G	6	1	0	Negative	
G	6	2	20	Negative	
G	6	3	40	Negative	
G	6	4	60	Negative	
G	6	5	80	Negative	
G	6	6	100	Negative	
G	6	7	120	Negative	
G	6	8	140	Negative	
G	6	9	160	Negative	
G	6	10	180	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
G	6	11	200	Negative	
G	6	12	220	Negative	
G	7	1	0	Negative	
G	7	2	20	Negative	3PU970 Stratum I (0-6 cmbs) dark yellowish brown (10YR3/4) hydric clay Stratum II (6-28cmbs) grayish brown (10YR5/2) clay subsoil mottled with strong brown (7.5YR5/6) clay
G		Del.		Negative	3PU970 0N, 5W
G		Del.		Negative	3PU970 5N, 0E
G		Del.		Negative	3PU970 5S, 0E
G	7	3	40	Negative	
G	7	4	60	Negative	
G	7	5	80	Negative	
G	7	6	100	Negative	
G	7	7	120	Negative	
G	7	8	140	Negative	
G	7	9	160	Negative	
G	7	10	180	Negative	
G	7	11	200	Negative	
G	7	12	220	Negative	
G	8	1	0	Negative	
G	8	2	20	Negative	
G	8	3	40	Negative	
G	8	4	60	Negative	
G	8	5	80	Negative	
G	8	6	100	Negative	
G	8	7	120	Negative	
G	8	8	140	Negative	
G	8	9	160	Negative	
G	8	10	180	Negative	
G	8	11	200	Negative	
G	8	12	220	Negative	
G	8	13	240	Negative	
G	9	1	0	Negative	
G	9	2	20	Negative	
G	9	3	40	Negative	
G	9	4	60	Negative	
G	9	5	80	Negative	
G	9	6	100	Negative	
G	9	7	120	Negative	
G	9	8	140	Negative	
G	9	9	160	Negative	
G	9	10	180	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
G	9	11	200	Negative	
G	9	12	220	Negative	
G	9	13	240	Negative	
G	10	1	0	Negative	
G	10	2	20	Negative	
G	10	3	40	Negative	
G	10	4	60	Negative	
G	10	5	80	Negative	
G	10	6	100	Negative	
G	10	7	120	Negative	
G	10	8	140	Negative	
G	10	9	160	Negative	
G	10	10	180	Negative	
G	10	11	200	Negative	
G	11	1	0	Negative	
G	11	2	20	Negative	
G	11	3	40	Negative	
G	11	4	60	Negative	
G	11	5	80	Negative	
G	11	6	100	Negative	
G	11	7	120	Negative	
G	11	8	140	Negative	
G	11	9	160	Negative	
G	12	1	0	Negative	
G	12	2	20	Negative	
G	12	3	40	Negative	
G	12	4	60	Negative	
G	12	5	80	Negative	
G	12	6	100	Negative	
G	12	7	120	Negative	
G	12	8	140	Negative	
G	12	9	160	Negative	
G	13	1	0	Negative	
G	13	2	20	Negative	
G	13	3	40	Negative	
G	13	4	60	Negative	
G	13	5	80	Negative	
G	13	6	100	Negative	
G	13	7	120	Negative	
G	13	8	140	Negative	
G	14	1	0	Negative	
G	14	2	20	Negative	
G	14	3	40	Negative	
G	14	4	60	Negative	
G	14	5	80	Negative	
G	14	6	100	Negative	
G	14	7	120	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
G	14	8	140	Negative	
G	14	9	160	Negative	
G	14	10	180	Negative	
G	14	11	200	Negative	
G	14	12	220	Negative	
G	14	13	240	Negative	
G	14	14	260	Negative	
G	14	15	280	Negative	
G	14	16	300	Negative	
G	15	1	0	Negative	
G	15	2	20	Negative	
G	15	3	40	Negative	
G	15	4	60	Negative	
G	15	5	80	Negative	
G	15	6	100	Negative	
G	15	7	120	Negative	
G	15	8	140	Negative	
G	15	9	160	Negative	
G	15	10	180	Negative	
G	15	11	200	Negative	
G	15	12	220	Negative	
G	15	13	240	Negative	
G	15	14	260	Negative	
G	15	15	280	Negative	
G	15	16	300	Negative	
G	15	17	320	Negative	
G	15	18	340	Negative	
G	15	19	360	Negative	
G	16	1	0	Negative	
G	16	2	20	Negative	
G	16	3	40	Negative	
G	16	4	60	Negative	
G	16	5	80	Negative	
G	16	6	100	Negative	
G	16	7	120	Negative	
G	16	8	140	Negative	
G	16	9	160	Negative	
G	16	10	180	Negative	
G	16	11	200	Negative	
G	16	12	220	Negative	
G	16	13	240	Negative	
G	16	14	260	Negative	
G	16	15	280	Negative	
G	16	16	300	Negative	
G	16	17	320	Negative	
G	16	18	340	Negative	
G	16	19	360	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
G	16	20	380	Negative	
G	17	1	0	Negative	
G	17	2	20	Negative	
G	17	3	40	Negative	
G	17	4	60	Negative	
G	17	5	80	Negative	
G	17	6	100	Negative	
G	17	7	120	Negative	
G	17	8	140	Negative	
G	17	9	160	Negative	
G	17	10	180	Negative	
G	17	11	200	Negative	
G	17	12	220	Negative	
G	17	13	240	Negative	
G	17	14	260	Negative	
G	17	15	280	Negative	
G	17	16	300	Negative	
G	17	17	320	Negative	
G	17	18	340	Negative	
G	17	19	360	Negative	
G	17	20	380	Negative	
G	17	21	400	Negative	
H	1	1	0	Negative	
H	1	2	20	Negative	
H	1	3	40	Negative	
H	1	4	60	Negative	
H	1	5	80	Negative	
H	1	6	100	Negative	
H	1	7	120	Negative	
H	1	8	140	Negative	
H	1	9	160	Negative	
H	1	10	180	Negative	
H	1	11	200	Negative	
H	1	12	220	Negative	
H	1	13	240	Negative	
H	1	14	260	Negative	
H	1	15	280	Negative	
H	1	16	300	Negative	
H	1	17	320	Negative	
H	1	18	340	Negative	
H	1	19	360	Negative	
H	1	20	380	Negative	
H	1	21	400	Negative	
H	1	22	420	Negative	
H	1	23	440	Negative	
I	1	1	0	Negative	
I	1	2	20	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
I	1	3	40	Negative	
I	1	4	60	Negative	
I	1	5	80	Negative	
I	1	6	100	Negative	
I	1	7	120	Negative	
I	1	8	140	Negative	
I	1	9	160	Negative	
I	1	10	180	Negative	
I	1	11	200	Negative	
I	1	12	220	Negative	
I	1	13	240	Negative	
I	1	14	260	Negative	
I	1	15	280	Negative	
I	1	16	300	Negative	
I	1	17	320	Negative	
I	1	18	340	Negative	
I	1	19	360	Negative	
I	1	20	380	Negative	
I	1	21	400	Negative	
I	1	22	420	Negative	
I	1	23	440	Negative	
I	1	24	460	Negative	
I	1	25	480	Negative	
J	1	1	0	Negative	
J	1	2	20	Negative	
J	1	3	40	Negative	
J	1	4	60	Negative	
J	1	5	80	Negative	
J	1	6	100	Negative	
J	1	7	120	Negative	
J	1	8	140	Negative	
J	1	9	160	Negative	
J	1	10	180	Negative	
J	1	11	200	Negative	
J	1	12	220	Negative	
J	1	13	240	Negative	
J	1	14	260	Negative	
J	1	15	280	Negative	
J	1	16	300	Negative	
J	1	17	320	Negative	
J	1	18	340	Negative	
J	1	19	360	Negative	
J	1	20	380	Negative	
J	1	21	400	Negative	
J	1	22	420	Negative	
J	1	23	440	Negative	
J	1	24	460	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
J	1	25	480	Negative	
J	1	26	500	Negative	
J	1	27	520	Negative	
J	1	28	540	Negative	
J	1	29	560	Negative	
J	2	1	0	Negative	
J	2	2	20	Negative	
J	2	3	40	Negative	
J	2	4	60	Negative	
J	2	5	80	Negative	
J	2	6	100	Negative	
J	2	7	120	Negative	
J	2	8	140	Negative	
J	2	9	160	Negative	
J	2	10	180	Negative	
J	2	11	200	Negative	
J	2	12	220	Negative	
J	2	13	240	Negative	
J	2	14	260	Negative	
J	2	15	280	Negative	
J	2	16	300	Negative	
J	2	17	320	Negative	
J	2	18	340	Negative	
J	2	19	360	Negative	
J	2	20	380	Negative	
J	2	21	400	Negative	
J	2	22	420	Negative	
J	2	23	440	Negative	
J	2	24	460	Negative	
J	3	1	0	Negative	
J	3	2	20	Negative	
J	3	3	40	Negative	
J	3	4	60	Negative	
J	3	5	80	Negative	
J	3	6	100	Negative	
J	3	7	120	Negative	
J	3	8	140	Negative	
J	3	9	160	Negative	
J	3	10	180	Negative	
J	3	11	200	Negative	
J	3	12	220	Negative	
J	3	13	240	Negative	
J	3	14	260	Negative	
J	3	15	280	Negative	
J	4	1	0	Negative	
J	4	2	20	Negative	
J	4	3	40	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
J	4	4	60	Negative	
J	4	5	80	Negative	
J	4	6	100	Negative	
J	4	7	120	Negative	
J	4	8	140	Negative	
J	4	9	160	Negative	
K	1	1	0	Negative	
K	1	2	20	Negative	
K	1	3	40	Negative	
K	1	4	60	Negative	
K	1	5	80	Negative	
K	1	6	100	Negative	
K	1	7	120	Negative	
K	1	8	140	Negative	
K	1	9	160	Negative	
K	1	10	180	Negative	
K	1	11	200	Negative	
K	1	12	220	Negative	
K	1	13	240	Negative	
K	1	14	260	Negative	
K	1	15	280	Negative	
K	1	16	300	Negative	
K	1	17	320	Negative	
K	1	18	340	Negative	
K	1	19	360	Negative	
K	1	20	380	Negative	
K	1	21	400	Negative	
K	1	22	420	Negative	
K	1	23	440	Negative	
K	1	24	460	Negative	
K	1	25	480	Negative	
K	1	26	500	Negative	
K	1	27	520	Negative	
K	1	28	540	Negative	
K	1	29	560	Negative	
K	1	30	580	Negative	
K	1	31	600	Negative	
K	1	32	620	Negative	
K	1	33	640	Negative	
K	1	34	660	Negative	
K	1	35	680	Negative	
K	1	36	700	Negative	
K	1	37	720	Negative	
K	1	38	740	Negative	
K	1	39	760	Negative	
K	1	40	780	Negative	
K	1	41	800	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
K	1	42	820	Negative	
K	1	43	840	Negative	
K	1	44	860	Negative	
K	1	45	880	Negative	
K	1	46	900	Negative	
K	1	47	920	Negative	
K	1	48	940	Negative	
K	1	49	960	Negative	
K	1	50	980	Negative	
K	1	51	1000	Negative	
K	1	52	1020	Negative	
K	1	53	1040	Negative	
K	1	54	1060	Negative	
K	1	55	1080	Negative	
K	1	56	1100	Negative	
K	1	57	1120	Negative	
K	2	1	0	Negative	
K	2	2	20	Negative	
K	2	3	40	Negative	
K	2	4	60	Negative	
K	2	5	80	Negative	
K	2	6	100	Negative	
K	2	7	120	Negative	
K	2	8	140	Negative	
K	2	9	160	Negative	
K	2	10	180	Negative	
K	2	11	200	Negative	
K	2	12	220	Negative	
K	2	13	240	Negative	
K	2	14	260	Negative	
K	2	15	280	Negative	
K	2	16	300	Negative	
K	2	17	320	Negative	
K	2	18	340	Negative	
K	2	19	360	Negative	
K	2	20	380	Negative	
K	2	21	400	Negative	
K	2	22	420	Negative	
K	2	23	440	Negative	
K	2	24	460	Negative	
K	2	25	480	Negative	
K	2	26	500	Negative	
K	2	27	520	Negative	
K	2	28	540	Negative	
K	2	29	560	Negative	
K	2	30	580	Negative	
K	2	31	600	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
K	2	32	620	Negative	
K	2	33	640	Negative	
K	2	34	660	Negative	
K	2	35	680	Negative	
K	2	36	700	Negative	
K	2	37	720	Negative	
K	2	38	740	Negative	
K	2	39	760	Negative	
K	2	40	780	Negative	
K	2	41	800	Negative	
K	2	42	820	Negative	
K	2	43	840	Negative	
K	2	44	860	Negative	
K	2	45	880	Negative	
K	2	46	900	Negative	
K	2	47	920	Negative	
K	2	48	940	Negative	
K	2	49	960	Negative	
K	2	50	980	Negative	
K	2	51	1000	Negative	
K	2	52	1020	Negative	
K	2	53	1040	Negative	
K	2	54	1060	Negative	
K	2	55	1080	Negative	
K	2	56	1100	Negative	
K	3	1	0	Negative	
K	3	2	20	Negative	
K	3	3	40	Negative	
K	3	4	60	Negative	
K	3	5	80	Negative	
K	3	6	100	Negative	
K	3	7	120	Negative	
K	3	8	140	Negative	
K	3	9	160	Negative	
K	3	10	180	Negative	
K	3	11	200	Negative	
K	3	12	220	Negative	
K	3	13	240	Negative	
K	3	14	260	Negative	
K	3	15	280	Negative	
K	3	16	300	Negative	
K	3	17	320	Negative	
K	3	18	340	Negative	
K	3	19	360	Negative	
K	3	20	380	Negative	
K	3	21	400	Negative	
K	3	22	420	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
K	3	23	440	Negative	
K	3	24	460	Negative	
K	3	25	480	Negative	
K	3	26	500	Negative	
K	3	27	520	Negative	
K	3	28	540	Negative	
K	3	29	560	Negative	
K	3	30	580	Negative	
K	3	31	600	Negative	
K	3	32	620	Negative	
K	3	33	640	Negative	
K	3	34	660	Negative	
K	3	35	680	Negative	
K	3	36	700	Negative	
K	3	37	720	Negative	
K	3	38	740	Negative	
K	3	39	760	Negative	
K	3	40	780	Negative	
K	3	41	800	Negative	
K	3	42	820	Negative	
K	3	43	840	Negative	
K	3	44	860	Negative	
K	3	45	880	Negative	
K	3	46	900	Negative	
K	3	47	920	Negative	
K	3	48	940	Negative	
K	3	49	960	Negative	
K	3	50	980	Negative	
K	3	51	1000	Negative	
K	3	52	1020	Negative	
K	3	53	1040	Negative	
K	3	54	1060	Negative	
K	3	55	1080	Negative	
K	3	56	1100	Negative	
K	4	1	0	Negative	
K	4	2	20	Negative	
K	4	3	40	Negative	
K	4	4	60	Negative	
K	4	5	80	Negative	
K	4	6	100	Negative	
K	4	7	120	Negative	
K	4	8	140	Negative	
K	4	9	160	Negative	
K	4	10	180	Negative	
K	4	11	200	Negative	
K	4	12	220	Negative	
K	4	13	240	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
K	4	14	260	Negative	
K	4	15	280	Negative	
K	4	16	300	Negative	
K	4	17	320	Negative	
K	4	18	340	Negative	
K	4	19	360	Negative	
K	4	20	380	Negative	
K	4	21	400	Negative	
K	4	22	420	Negative	
K	4	23	440	Negative	
K	4	24	460	Negative	
K	4	25	480	Negative	
K	4	26	500	Negative	
K	4	27	520	Negative	
K	4	28	540	Negative	
K	4	29	560	Negative	
K	4	30	580	Negative	
K	4	31	600	Negative	
K	4	32	620	Negative	
K	5	1	0	Negative	
K	5	2	20	Negative	
K	5	3	40	Negative	
K	5	4	60	Negative	
K	5	5	80	Negative	
K	5	6	100	Negative	
K	5	7	120	Negative	
K	5	8	140	Negative	
K	5	9	160	Negative	
K	5	10	180	Negative	
K	5	11	200	Negative	
K	5	12	220	Negative	
K	5	13	240	Negative	
K	5	14	260	Negative	
K	5	15	280	Negative	
K	5	16	300	Negative	
K	5	17	320	Negative	
K	5	18	340	Negative	
K	5	19	360	Negative	
K	5	20	380	Negative	
K	5	21	400	Negative	
K	5	22	420	Negative	
K	5	23	440	Negative	
K	5	24	460	Negative	
K	5	25	480	Negative	
K	5	26	500	Negative	
K	5	27	520	Negative	
K	5	28	540	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
K	5	29	560	Negative	
K	5	30	580	Negative	
K	5	31	600	Negative	
K	5	32	620	Negative	
K	6	1	0	Negative	
K	6	2	20	Negative	
K	6	3	40	Negative	
K	6	4	60	Negative	
K	6	5	80	Negative	
K	6	6	100	Negative	
K	6	7	120	Negative	
K	6	8	140	Negative	
K	6	9	160	Negative	
K	6	10	180	Negative	
K	6	11	200	Negative	
K	6	12	220	Negative	
K	6	13	240	Negative	
K	6	14	260	Negative	
K	6	15	280	Negative	
K	6	16	300	Negative	
K	6	17	320	Negative	
K	6	18	340	Negative	
K	6	19	360	Negative	
K	6	20	380	Negative	
K	6	21	400	Negative	
K	6	22	420	Negative	
K	6	23	440	Negative	
K	6	24	460	Negative	
K	6	25	480	Negative	
K	6	26	500	Negative	
K	6	27	520	Negative	
K	6	28	540	Negative	
K	6	29	560	Negative	
K	6	30	580	Negative	
K	6	31	600	Negative	
K	6	32	620	Negative	
K	7	1	0	Negative	
K	7	2	20	Negative	
K	7	3	40	Negative	
K	7	4	60	Negative	
K	7	5	80	Negative	
K	7	6	100	Negative	
K	7	7	120	Negative	
K	7	8	140	Negative	
K	7	9	160	Negative	
K	7	10	180	Negative	
K	7	11	200	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
K	7	12	220	Negative	
K	7	13	240	Negative	
K	7	14	260	Negative	
K	7	15	280	Negative	
K	7	16	300	Negative	
K	7	17	320	Negative	
K	7	18	340	Negative	
K	7	19	360	Negative	
K	7	20	380	Negative	
K	7	21	400	Negative	
K	7	22	420	Negative	
K	7	23	440	Negative	
K	7	24	460	Negative	
K	7	25	480	Negative	
K	7	26	500	Negative	
K	7	27	520	Negative	
K	7	28	540	Negative	
K	7	29	560	Negative	
K	7	30	580	Negative	
K	7	31	600	Negative	
K	8	1	0	Negative	
K	8	2	20	Negative	
K	8	3	40	Negative	
K	8	4	60	Negative	
K	8	5	80	Negative	
K	8	6	100	Negative	
K	8	7	120	Negative	
K	8	8	140	Negative	
K	8	9	160	Negative	
K	8	10	180	Negative	
K	8	11	200	Negative	
K	8	12	220	Negative	
K	8	13	240	Negative	
K	8	14	260	Negative	
K	8	15	280	Negative	
K	8	16	300	Negative	
K	8	17	320	Negative	
K	8	18	340	Negative	
K	8	19	360	Negative	
K	8	20	380	Negative	
K	8	21	400	Negative	
K	8	22	420	Negative	
K	8	23	440	Negative	
K	8	24	460	Negative	
K	8	25	480	Negative	
K	8	26	500	Negative	
K	8	27	520	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
K	8	28	540	Negative	
K	8	29	560	Negative	
K	8	30	580	Negative	
K	8	31	600	Negative	
K	9	1	0	Negative	
K	9	2	20	Negative	
K	9	3	40	Negative	
K	9	4	60	Negative	
K	9	5	80	Negative	
K	9	6	100	Negative	
K	9	7	120	Negative	
K	9	8	140	Negative	
K	9	9	160	Negative	
K	9	10	180	Negative	
K	9	11	200	Negative	
K	9	12	220	Negative	
K	9	13	240	Negative	
K	9	14	260	Negative	
K	9	15	280	Negative	
K	9	16	300	Negative	
K	9	17	320	Negative	
K	9	18	340	Negative	
K	9	19	360	Negative	
K	9	20	380	Negative	
K	9	21	400	Negative	
K	9	22	420	Negative	
K	9	23	440	Negative	
K	9	24	460	Negative	
K	9	25	480	Negative	
K	9	26	500	Negative	
K	9	27	520	Negative	
K	9	28	540	Negative	
K	9	29	560	Negative	
K	9	30	580	Negative	
K	9	31	600	Negative	
K	10	1	0	Negative	
K	10	2	20	Negative	
K	10	3	40	Negative	
K	10	4	60	Negative	
K	10	5	80	Negative	
K	10	6	100	Negative	
K	10	7	120	Negative	
K	10	8	140	Negative	
K	10	9	160	Negative	
K	10	10	180	Negative	
K	10	11	200	Negative	
K	10	12	220	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
K	10	13	240	Negative	
K	10	14	260	Negative	
K	10	15	280	Negative	
K	10	16	300	Negative	
K	10	17	320	Negative	
K	10	18	340	Negative	
K	10	19	360	Negative	
K	10	20	380	Negative	
K	10	21	400	Negative	
K	10	22	420	Negative	
K	10	23	440	Negative	
K	10	24	460	Negative	
K	10	25	480	Negative	
K	10	26	500	Negative	
K	10	27	520	Negative	
K	10	28	540	Negative	
K	10	29	560	Negative	
K	10	30	580	Negative	
K	11	1	0	Negative	
K	11	2	20	Negative	
K	11	3	40	Negative	
K	11	4	60	Negative	
K	11	5	80	Negative	
K	11	6	100	Negative	
K	11	7	120	Negative	
K	11	8	140	Negative	
K	11	9	160	Negative	
K	11	10	180	Negative	
K	11	11	200	Negative	
K	11	12	220	Negative	
K	11	13	240	Negative	
K	11	14	260	Negative	
K	11	15	280	Negative	
K	11	16	300	Negative	
K	11	17	320	Negative	
K	11	18	340	Negative	
K	11	19	360	Negative	
K	11	20	380	Negative	
K	11	21	400	Negative	
K	11	22	420	Negative	
K	11	23	440	Negative	
K	11	24	460	Negative	
K	11	25	480	Negative	
K	11	26	500	Negative	
K	11	27	520	Negative	
K	11	28	540	Negative	
K	11	29	560	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
K	12	1	0	Negative	
K	12	2	20	Negative	
K	12	3	40	Negative	
K	12	4	60	Negative	
K	12	5	80	Negative	
K	12	6	100	Negative	
K	12	7	120	Negative	
K	12	8	140	Negative	
K	12	9	160	Negative	
K	12	10	180	Negative	
K	12	11	200	Negative	
K	12	12	220	Negative	
K	12	13	240	Negative	
K	12	14	260	Negative	
K	12	15	280	Negative	
K	12	16	300	Negative	
K	12	17	320	Negative	
K	12	18	340	Negative	
K	12	19	360	Negative	
K	12	20	380	Negative	
K	12	21	400	Negative	
K	12	22	420	Negative	
K	12	23	440	Negative	
K	12	24	460	Negative	
K	12	25	480	Negative	
K	12	26	500	Negative	
K	12	27	520	Negative	
K	12	28	540	Negative	
K	12	29	560	Negative	
K	13	1	0	Negative	
K	13	2	20	Negative	
K	13	3	40	Negative	
K	13	4	60	Negative	
K	13	5	80	Negative	
K	13	6	100	Negative	
K	13	7	120	Negative	
K	13	8	140	Negative	
K	13	9	160	Negative	
K	13	10	180	Negative	
K	13	11	200	Negative	
K	13	12	220	Negative	
K	13	13	240	Negative	
K	13	14	260	Negative	
K	13	15	280	Negative	
K	13	16	300	Negative	
K	13	17	320	Negative	
K	13	18	340	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
K	13	19	360	Negative	
K	13	20	380	Negative	
K	13	21	400	Negative	
K	13	22	420	Negative	
K	13	23	440	Negative	
K	13	24	460	Negative	
K	13	25	480	Negative	
K	13	26	500	Negative	
K	13	27	520	Negative	
K	13	28	540	Negative	
K	13	29	560	Negative	
K	14	1	0	Negative	
K	14	2	20	Negative	
K	14	3	40	Negative	
K	14	4	60	Negative	
K	14	5	80	Negative	
K	14	6	100	Negative	
K	14	7	120	Negative	
K	14	8	140	Negative	
K	14	9	160	Negative	
K	14	10	180	Negative	
K	14	11	200	Negative	
K	14	12	220	Negative	
K	14	13	240	Negative	
K	14	14	260	Negative	
K	14	15	280	Negative	
K	14	16	300	Negative	
K	14	17	320	Negative	
K	14	18	340	Negative	
K	14	19	360	Negative	
K	14	20	380	Negative	
K	14	21	400	Negative	
K	14	22	420	Negative	
K	14	23	440	Negative	
K	14	24	460	Negative	
K	14	25	480	Negative	
K	14	26	500	Negative	
K	14	27	520	Negative	
K	14	28	540	Negative	
K	15	1	0	Negative	
K	15	2	20	Negative	
K	15	3	40	Negative	
K	15	4	60	Negative	
K	15	5	80	Negative	
K	15	6	100	Negative	
K	15	7	120	Negative	
K	15	8	140	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
K	15	9	160	Negative	
K	15	10	180	Negative	
K	15	11	200	Negative	
K	15	12	220	Negative	
K	15	13	240	Negative	
K	15	14	260	Negative	
K	15	15	280	Negative	
K	15	16	300	Negative	
K	15	17	320	Negative	
K	15	18	340	Negative	
K	15	19	360	Negative	
K	15	20	380	Negative	
K	15	21	400	Negative	
K	15	22	420	Negative	
K	15	23	440	Negative	
K	15	24	460	Negative	
K	15	25	480	Negative	
K	15	26	500	Negative	
K	15	27	520	Negative	
K	15	28	540	Negative	
K	16	1	0	Negative	
K	16	2	20	Negative	
K	16	3	40	Negative	
K	16	4	60	Negative	
K	16	5	80	Negative	
K	16	6	100	Negative	
K	16	7	120	Negative	
K	16	8	140	Negative	
K	16	9	160	Negative	
K	16	10	180	Negative	
K	16	11	200	Negative	
K	16	12	220	Negative	
K	16	13	240	Negative	
K	16	14	260	Negative	
K	16	15	280	Negative	
K	16	16	300	Negative	
K	16	17	320	Negative	
K	16	18	340	Negative	
K	16	19	360	Negative	
K	16	20	380	Negative	
K	16	21	400	Negative	
K	16	22	420	Negative	
K	16	23	440	Negative	
K	16	24	460	Negative	
K	16	25	480	Negative	
K	16	26	500	Negative	
K	16	27	520	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
K	16	28	540	Negative	
K	17	1	0	Negative	
K	17	2	20	Negative	
K	17	3	40	Negative	
K	17	4	60	Negative	
K	17	5	80	Negative	
K	17	6	100	Negative	
K	17	7	120	Negative	
K	17	8	140	Negative	
K	17	9	160	Negative	
K	17	10	180	Negative	
K	17	11	200	Negative	
K	17	12	220	Negative	
K	17	13	240	Negative	
K	17	14	260	Negative	
K	17	15	280	Negative	
K	17	16	300	Negative	
K	17	17	320	Negative	
K	18	1	0	Negative	
K	18	2	20	Negative	
K	18	3	40	Negative	
K	18	4	60	Negative	
K	18	5	80	Negative	
K	18	6	100	Negative	
K	18	7	120	Negative	
K	18	8	140	Negative	
K	18	9	160	Negative	
K	18	10	180	Negative	
K	18	11	200	Negative	
K	19	1	0	Negative	
K	19	2	20	Negative	
K	19	3	40	Negative	
K	19	4	60	Negative	
K	19	5	80	Negative	
K	19	6	100	Negative	
K	19	7	120	Negative	
K	19	8	140	Negative	
K	19	9	160	Negative	
K	19	10	180	Negative	
K	20	1	0	Negative	
K	20	2	20	Negative	
K	20	3	40	Negative	
K	20	4	60	Negative	
K	20	5	80	Negative	
K	20	6	100	Negative	
K	20	7	120	Negative	
K	20	8	140	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
K	20	9	160	Negative	
K	21	1	0	Negative	
K	21	2	20	Negative	
K	21	3	40	Negative	
K	21	4	60	Negative	
K	21	5	80	Negative	
K	21	6	100	Negative	
K	21	7	120	Negative	
K	21	8	140	Negative	
K	21	9	160	Negative	
K	22	1	0	Negative	
K	22	2	20	Negative	
K	22	3	40	Negative	
K	22	4	60	Negative	
K	22	5	80	Negative	
K	22	6	100	Negative	
K	22	7	120	Negative	
K	22	8	140	Negative	
K	23	1	0	Negative	
K	23	2	20	Negative	
K	23	3	40	Negative	
K	23	4	60	Negative	
K	23	5	80	Negative	
K	23	6	100	Negative	
K	23	7	120	Negative	
K	23	8	140	Negative	
K	24	1	0	Negative	
K	24	2	20	Negative	
K	24	3	40	Negative	
K	24	4	60	Negative	
K	24	5	80	Negative	
K	24	6	100	Negative	
K	24	7	120	Negative	
K	25	1	0	Negative	
K	25	2	20	Negative	
K	25	3	40	Negative	
K	25	4	60	Negative	
K	25	5	80	Negative	
K	25	6	100	Negative	
K	26	1	0	Negative	
K	26	2	20	Negative	
K	26	3	40	Negative	
K	26	4	60	Negative	
K	27	1	0	Negative	
K	27	2	20	Negative	
K	27	3	40	Negative	
K	27	4	60	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
K	27	5	80	Negative	
K	27	6	100	Negative	
K	27	7	120	Negative	
K	27	8	140	Negative	
L	1	1	0	Negative	
L	1	2	20	Negative	
L	1	3	40	Negative	
L	1	4	60	Negative	
L	1	5	80	Negative	
L	1	6	100	Negative	
L	1	7	120	Negative	
L	1	8	140	Negative	
L	1	9	160	Negative	
L	1	10	180	Negative	
L	1	11	200	Negative	
L	1	12	220	Negative	
L	1	13	240	Negative	
L	1	14	260	Negative	
L	1	15	280	Negative	
L	1	16	300	Negative	
L	1	17	320	Negative	
L	1	18	340	Negative	
L	1	19	360	Negative	
L	1	20	380	Negative	
L	1	21	400	Negative	
L	1	22	420	Negative	
L	1	23	440	Negative	
L	1	24	460	Negative	
L	1	25	480	Negative	
L	1	26	500	Negative	
L	1	27	520	Negative	
L	1	28	540	Negative	
L	1	29	560	Negative	
L	1	30	580	Negative	
L	1	31	600	Negative	
L	1	32	620	Negative	
L	1	33	640	Negative	
L	1	34	660	Negative	
L	1	35	680	Negative	
L	1	36	700	Negative	
L	1	37	720	Negative	
L	1	38	740	Negative	
L	2	1	0	Negative	
L	2	2	20	Negative	
L	2	3	40	Negative	
L	2	4	60	Negative	
L	2	5	80	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
L	2	6	100	Negative	
L	2	7	120	Negative	
L	2	8	140	Negative	
L	2	9	160	Negative	
L	2	10	180	Negative	
L	2	11	200	Negative	
L	2	12	220	Negative	
L	2	13	240	Negative	
L	2	14	260	Negative	
L	2	15	280	Negative	
L	2	16	300	Negative	
L	2	17	320	Negative	
L	2	18	340	Negative	
L	2	19	360	Negative	
L	2	20	380	Negative	
L	2	21	400	Negative	
L	2	22	420	Negative	
L	2	23	440	Negative	
L	2	24	460	Negative	
L	2	25	480	Negative	
L	2	26	500	Negative	
L	2	27	520	Negative	
L	2	28	540	Negative	
L	2	29	560	Negative	
L	2	30	580	Negative	
L	2	31	600	Negative	
L	2	32	620	Negative	
L	2	33	640	Negative	
L	2	34	660	Negative	
L	2	35	680	Negative	
L	2	36	700	Negative	
L	2	37	720	Negative	
L	2	38	740	Negative	
L	2	39	760	Negative	
L	2	40	780	Negative	
L	2	41	800	Negative	
L	2	42	820	Negative	
L	2	43	840	Negative	
L	2	44	860	Negative	
L	2	45	880	Negative	
L	2	46	900	Negative	
L	2	47	920	Negative	
L	2	48	940	Negative	
L	2	49	960	Negative	
L	2	50	980	Negative	
L	2	51	1000	Negative	
L	2	52	1020	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
L	2	53	1040	Negative	
L	2	54	1060	Negative	
L	2	55	1080	Negative	
L	2	56	1100	Negative	
L	2	57	1120	Negative	
L	2	58	1140	Negative	
L	2	59	1160	Negative	
L	2	60	1180	Negative	
L	2	61	1200	Negative	
L	2	62	1220	Negative	
L	2	63	1240	Negative	
L	2	64	1260	Negative	
L	2	65	1280	Negative	
L	2	66	1300	Negative	
L	2	67	1320	Negative	
L	2	68	1340	Negative	
L	3	1	0	Negative	
L	3	2	20	Negative	
L	3	3	40	Negative	
L	3	4	60	Negative	
L	3	5	80	Negative	
L	3	6	100	Negative	
L	3	7	120	Negative	
L	3	8	140	Negative	
L	3	9	160	Negative	
L	3	10	180	Negative	
L	3	11	200	Negative	
L	3	12	220	Negative	
L	3	13	240	Negative	
L	3	14	260	Negative	
L	3	15	280	Negative	
L	3	16	300	Negative	
L	3	17	320	Negative	
L	3	18	340	Negative	
L	3	19	360	Negative	
L	4	1	0	Negative	
L	4	2	20	Negative	
L	4	3	40	Negative	
L	4	4	60	Negative	
L	4	5	80	Negative	
L	4	6	100	Negative	
L	4	7	120	Negative	
L	4	8	140	Negative	
L	4	9	160	Negative	
L	4	10	180	Negative	
L	4	11	200	Negative	
L	4	12	220	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
L	4	13	240	Negative	
L	4	14	260	Negative	
L	4	15	280	Negative	
L	4	16	300	Negative	
L	4	17	320	Negative	
L	4	18	340	Negative	
L	4	19	360	Negative	
L	4	20	380	Negative	
L	4	21	400	Negative	
L	4	22	420	Negative	
L	4	23	440	Negative	
L	4	24	460	Negative	
L	5	1	0	Negative	
L	5	2	20	Negative	
L	5	3	40	Negative	
L	5	4	60	Negative	
L	5	5	80	Negative	
L	5	6	100	Negative	
L	5	7	120	Negative	
L	5	8	140	Negative	
L	5	9	160	Negative	
L	5	10	180	Negative	
L	5	11	200	Negative	
L	6	1	0	Negative	
L	6	2	20	Negative	
L	6	3	40	Negative	
L	6	4	60	Negative	
L	7	1	0	Negative	
L	7	2	20	Negative	
L	7	3	40	Negative	
L	7	4	60	Negative	
L	7	5	80	Negative	
L	7	6	100	Negative	
L	7	7	120	Negative	
L	7	8	140	Negative	
L	7	9	160	Negative	
L	7	10	180	Negative	
L	7	11	200	Negative	
L	7	12	220	Negative	
L	7	13	240	Negative	
L	7	14	260	Negative	
L	7	15	280	Negative	
L	7	16	300	Negative	
L	7	17	320	Negative	
L	8	1	0	Negative	
L	8	2	20	Negative	
L	8	3	40	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
L	8	4	60	Negative	
L	8	5	80	Negative	
L	8	6	100	Negative	
L	8	7	120	Negative	
L	8	8	140	Negative	
L	8	9	160	Negative	
L	8	10	180	Negative	
L	8	11	200	Negative	
L	8	12	220	Negative	
L	8	13	240	Negative	
L	8	14	260	Negative	
L	8	15	280	Negative	
L	8	16	300	Negative	
L	8	17	320	Negative	
L	8	18	340	Negative	
L	8	19	360	Negative	
L	8	20	380	Negative	
L	8	21	400	Negative	
L	8	22	420	Negative	
L	8	23	440	Negative	
L	8	24	460	Negative	
L	8	25	480	Negative	
L	8	26	500	Negative	
L	8	27	520	Negative	
L	8	28	540	Negative	
L	8	29	560	Negative	
L	8	30	580	Negative	
L	8	31	600	Negative	
L	8	32	620	Negative	
L	8	33	640	Negative	
L	8	34	660	Negative	
L	8	35	680	Negative	
L	8	36	700	Negative	
L	8	37	720	Negative	
L	8	38	740	Negative	
L	8	39	760	Negative	
L	8	40	780	Negative	
L	8	41	800	Negative	
L	8	42	820	Negative	
L	8	43	840	Negative	
L	8	44	860	Negative	
L	8	45	880	Negative	
L	8	46	900	Negative	
L	8	47	920	Negative	
L	8	48	940	Negative	
L	8	49	960	Negative	
L	8	50	980	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
L	8	51	1000	Negative	
L	8	52	1020	Negative	
L	8	53	1040	Negative	
L	8	54	1060	Negative	
L	8	55	1080	Negative	
L	8	56	1100	Negative	
L	8	57	1120	Negative	
L	8	58	1140	Negative	
L	8	59	1160	Negative	
L	8	60	1180	Negative	
L	8	61	1200	Negative	
L	8	62	1220	Negative	
L	8	63	1240	Negative	
L	8	64	1260	Negative	
L	9	1	0	Negative	
L	9	2	20	Negative	
L	9	3	40	Negative	
L	9	4	60	Negative	
L	9	5	80	Negative	
L	9	6	100	Negative	
L	9	7	120	Negative	
L	9	8	140	Negative	
L	9	9	160	Negative	
L	9	10	180	Negative	
L	9	11	200	Negative	
L	9	12	220	Negative	
L	9	13	240	Negative	
L	9	14	260	Negative	
L	9	15	280	Negative	
L	9	16	300	Negative	
L	9	17	320	Negative	
L	9	18	340	Negative	
L	9	19	360	Negative	
L	9	20	380	Negative	
L	9	21	400	Negative	
L	9	22	420	Negative	
L	9	23	440	Negative	
L	9	24	460	Negative	
L	9	25	480	Negative	
L	9	26	500	Negative	
L	9	27	520	Negative	
L	9	28	540	Negative	
L	9	29	560	Negative	
L	10	1	0	Negative	
L	10	2	20	Negative	
L	10	3	40	Negative	
L	10	4	60	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
L	10	5	80	Negative	
L	10	6	100	Negative	
L	10	7	120	Negative	
L	10	8	140	Negative	
L	10	9	160	Negative	
L	10	10	180	Negative	
L	10	11	200	Negative	
L	10	12	220	Negative	
L	10	13	240	Negative	
L	10	14	260	Negative	
L	10	15	280	Negative	
L	10	16	300	Negative	
L	10	17	320	Negative	
L	10	18	340	Negative	
L	10	19	360	Negative	
L	10	20	380	Negative	
L	10	21	400	Negative	
L	10	22	420	Negative	
L	10	23	440	Negative	
L	10	24	460	Negative	
L	10	25	480	Negative	
L	10	26	500	Negative	
L	10	27	520	Negative	
L	10	28	540	Negative	
L	10	29	560	Negative	
L	10	30	580	Negative	
L	10	31	600	Negative	
L	10	32	620	Negative	
L	10	33	640	Negative	
L	10	34	660	Negative	
L	10	35	680	Negative	
L	10	36	700	Negative	
L	10	37	720	Negative	
L	10	38	740	Negative	
L	10	39	760	Negative	
L	10	40	780	Negative	
L	10	41	800	Negative	
L	10	42	820	Negative	
L	10	43	840	Negative	
L	10	44	860	Negative	
L	10	45	880	Negative	
L	11	1	0	Negative	
L	11	2	20	Negative	
L	11	3	40	Negative	
L	11	4	60	Negative	
L	11	5	80	Negative	
L	11	6	100	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
L	11	7	120	Negative	
L	11	8	140	Negative	
L	11	9	160	Negative	
L	11	10	180	Negative	
L	11	11	200	Negative	
L	11	12	220	Negative	
L	11	13	240	Negative	
L	11	14	260	Negative	
L	11	15	280	Negative	
L	11	16	300	Negative	
L	11	17	320	Negative	
L	11	18	340	Negative	
L	11	19	360	Negative	
L	11	20	380	Negative	
L	11	21	400	Negative	
L	11	22	420	Negative	
L	11	23	440	Negative	
L	11	24	460	Negative	
L	11	25	480	Negative	
L	11	26	500	Negative	
L	11	27	520	Negative	
L	11	28	540	Negative	
L	11	29	560	Negative	
L	11	30	580	Negative	
L	11	31	600	Negative	
L	11	32	620	Negative	
L	11	33	640	Negative	
L	11	34	660	Negative	
L	11	35	680	Negative	
L	11	36	700	Negative	
L	12	1	0	Negative	
L	12	2	20	Negative	
L	12	3	40	Negative	
L	12	4	60	Negative	
L	12	5	80	Negative	
L	12	6	100	Negative	
L	12	7	120	Negative	
L	12	8	140	Negative	
L	12	9	160	Negative	
L	12	10	180	Negative	
L	12	11	200	Negative	
L	12	12	220	Negative	
L	12	13	240	Negative	
L	12	14	260	Negative	
L	12	15	280	Negative	
L	12	16	300	Negative	
L	12	17	320	Negative	

Appendix C: Shovel Test Inventory for Segment 1

Appendix C: Shovel Test Inventory for Segment 1					
Area	Transect	Shovel Test	Meters	Result	Notes
L	12	18	340	Negative	
L	12	19	360	Negative	
L	12	20	380	Negative	
L	12	21	400	Negative	
L	12	22	420	Negative	
L	12	23	440	Negative	
L	12	24	460	Negative	
L	12	25	480	Negative	
L	12	26	500	Negative	
L	12	27	520	Negative	
L	12	28	540	Negative	
L	12	29	560	Negative	
L	12	30	580	Negative	
L	12	31	600	Negative	
L	12	32	620	Negative	
L	12	33	640	Negative	
L	12	34	660	Negative	
L	13	1	0	Negative	
L	13	2	20	Negative	
L	13	3	40	Negative	
L	13	4	60	Negative	
L	13	5	80	Negative	
L	13	6	100	Negative	
L	13	7	120	Negative	
L	14	1	0	Negative	
L	14	2	20	Negative	
L	14	3	40	Negative	
L	14	4	60	Negative	
L	14	5	80	Negative	
L	14	6	100	Negative	
L	15	1	0	Negative	
L	15	2	20	Negative	
L	15	3	40	Negative	
L	15	4	60	Negative	
L	15	5	80	Negative	
L	15	6	100	Negative	
L	15	7	120	Negative	
L	15	8	140	Negative	
L	15	9	160	Negative	
L	15	10	180	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
A	1	1	0	Negative	
A	1	2	20	Negative	
A	1	3	40	Negative	
A	1	4	60	Negative	
A	1	5	80	Negative	
A	1	6	100		No Dig - Asphalt
A	1	7	120	Negative	
A	1	8	140	Negative	
A	1	9	160	Negative	
A	1	10	180		No Dig - Asphalt
A	1	11	200	Negative	
A	1	12	220	Negative	
A	1	13	240	Negative	
A	2	1	0	Negative	
A	2	2	20	Negative	
A	2	3	40	Negative	
A	2	4	60	Negative	
A	2	5	80	Negative	
A	2	6	100		No Dig - Asphalt
A	2	7	120		No Dig - Asphalt
A	2	8	140		No Dig - Asphalt
A	2	9	160		No Dig - Asphalt
A	2	10	180		No Dig - Asphalt
A	2	11	200		No Dig - Asphalt
A	2	12	220		No Dig - Asphalt
A	2	13	240		No Dig - Asphalt
A	2	14	260		No Dig - Asphalt
A	2	15	280	Negative	
A	2	16	300	Negative	
A	2	17	320	Negative	
A	2	18	340	Negative	
A	2	19	360	Negative	
A	2	20	380	Negative	
A	2	21	400		No Dig - Asphalt
A	2	22	420		No Dig - Asphalt
A	2	23	440		No Dig - Asphalt
A	2	24	460		No Dig - Asphalt
A	2	25	480		No Dig - Asphalt
A	2	26	500		No Dig - Asphalt
A	2	27	520		No Dig - Asphalt
A	2	28	540		No Dig - Asphalt
A	2	29	560		No Dig - Asphalt
A	2	30	580		No Dig - Asphalt
A	2	31	600		No Dig - Asphalt
A	2	32	620		No Dig - Asphalt
A	2	33	640		No Dig - Asphalt

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
A	2	34	660		No Dig - Asphalt
A	2	35	680		No Dig - Asphalt
A	2	36	700		No Dig - Asphalt
A	2	37	720		No Dig - Asphalt
A	2	38	740		No Dig - Asphalt
A	2	39	760		No Dig - Asphalt
A	2	40	780		No Dig - Asphalt
A	2	41	800	Negative	
A	2	42	820	Negative	
A	2	43	840	Negative	
A	2	44	860	Negative	
A	2	45	880	Negative	
A	2	46	900	Negative	
A	2	47	920	Negative	
A	2	48	940	Negative	
A	2	49	960	Negative	
A	2	50	980	Negative	
A	2	51	1000	Negative	
A	2	52	1020	Negative	
A	2	53	1040	Negative	
A	2	54	1060	Negative	
A	2	55	1080	Negative	
A	2	56	1100	Negative	
A	2	57	1120	Negative	
B	1	1	0	Negative	
B	1	2	20	Negative	
B	1	3	40	Negative	
B	1	4	60	Negative	
B	1	5	80	Negative	
B	1	6	100	Negative	
B	1	7	120	Negative	
B	1	8	140	Negative	
B	1	9	160		No Dig - Asphalt
B	1	10	180	Negative	
B	1	11	200	Negative	
B	2	1	0	Negative	
B	2	2	20	Negative	
B	2	3	40	Negative	
B	2	4	60	Negative	
B	2	5	80	Negative	
B	2	6	100	Negative	
B	2	7	120	Negative	
B	2	8	140	Negative	
B	2	9	160		No Dig - Asphalt
B	2	10	180	Negative	
B	2	11	200	Negative	
B	2	12	220	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
B	2	13	240	Negative	
B	3	1	0	Negative	
B	3	2	20	Negative	
B	3	3	40	Negative	
B	3	4	60	Negative	
B	3	5	80	Negative	
B	3	6	100	Negative	
B	3	7	120	Negative	
B	3	8	140	Negative	
B	3	9	160		No Dig - Asphalt
B	3	10	180	Negative	
B	3	11	200	Negative	
B	3	12	220	Negative	
B	3	13	240	Negative	
B	4	1	0	Negative	
B	4	2	20	Negative	
B	4	3	40	Negative	
B	4	4	60		No Dig - Asphalt
B	4	5	80	Negative	
B	4	6	100	Negative	
B	4	7	120	Negative	
B	4	8	140		No Dig - Asphalt
B	4	9	160	Negative	
B	4	10	180	Negative	
B	4	11	200	Negative	
B	4	12	220	Negative	
B	4	13	240	Negative	
B	5	1	0	Negative	
B	5	2	20	Negative	
B	5	3	40		No Dig - Asphalt
B	5	4	60	Negative	
B	5	5	80	Negative	
B	5	6	100		No Dig - Asphalt
B	5	7	120	Negative	
B	5	8	140	Negative	
B	5	9	160	Negative	
B	5	10	180	Negative	
B	5	11	200	Negative	
B	5	12	220	Negative	
B	6	1	0	Negative	
B	6	2	20	Negative	
B	6	3	40	Negative	
B	6	4	60	Negative	
B	6	5	80		No Dig - Asphalt
B	6	6	100	Negative	
B	6	7	120	Negative	
B	6	8	140	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
B	6	9	160	Negative	
B	6	10	180	Negative	
B	7	1	0	Negative	
B	7	2	20	Negative	
B	7	3	40	Negative	
B	7	4	60	Negative	
C	1	1	0	Negative	
C	1	2	20	Negative	
C	1	3	40	Negative	
C	1	4	60	Negative	
C	1	5	80	Negative	
C	1	6	100	Negative	
C	1	7	120	Negative	
C	1	8	140	Negative	
C	1	9	160	Negative	
C	1	10	180	Negative	
C	1	11	200	Negative	
C	1	12	220	Negative	
C	1	13	240	Negative	
C	1	14	260	Negative	
C	1	15	280	Negative	
C	1	16	300	Negative	
C	1	17	320	Negative	
C	1	18	340	Negative	
C	1	19	360	Negative	
C	1	20	380	Negative	
C	1	21	400	Negative	
C	1	22	420	Negative	
C	1	23	440	Negative	
C	1	24	460	Negative	
C	1	25	480	Negative	
C	1	26	500	Negative	
C	1	27	520	Negative	
C	1	28	540	Negative	
C	1	29	560	Negative	
C	1	30	580	Negative	
C	1	31	600	Negative	
C	1	32	620	Negative	
C	1	33	640	Negative	
C	1	34	660	Negative	
C	1	35	680	Negative	
C	1	36	700	Negative	
C	1	37	720	Negative	
C	1	38	740	Negative	
C	1	39	760	Negative	
C	1	40	780	Negative	
C	1	41	800	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
C	1	42	820	Negative	
C	1	43	840	Negative	
C	1	44	860	Negative	
C	1	45	880	Negative	
C	1	46	900	Negative	
C	1	47	920	Negative	
C	1	48	940	Negative	
C	1	49	960	Negative	
C	1	50	980	Negative	
C	1	51	1000	Negative	
C	1	52	1020	Negative	
C	1	53	1040	Negative	
C	1	54	1060	Negative	
C	1	55	1080	Negative	
C	1	56	1100	Negative	
C	1	57	1120	Negative	
C	1	58	1140	Negative	
C	1	59	1160	Negative	
C	1	60	1180	Negative	
C	1	61	1200	Negative	
C	1	62	1220	Negative	
C	1	63	1240	Negative	
C	1	64	1260	Negative	
C	1	65	1280	Negative	
C	1	66	1300	Negative	
C	1	67	1320	Negative	
C	1	68	1340	Negative	
C	1	69	1360	Negative	
C	1	70	1380	Negative	
C	1	71	1400	Negative	
C	1	72	1420	Negative	
C	1	73	1440	Negative	
C	1	74	1460	Negative	
C	1	75	1480	Negative	
C	1	76	1500	Negative	
C	1	77	1520	Negative	
C	1	78	1540	Negative	
C	1	79	1560	Negative	
C	1	80	1580	Negative	
C	1	81	1600	Negative	
C	1	82	1620	Negative	
C	1	83	1640	Negative	
C	2	1	0	Negative	
C	2	2	20	Negative	
C	2	3	40	Negative	
C	2	4	60	Negative	
C	2	5	80	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
C	2	6	100	Negative	
C	2	7	120	Negative	
C	2	8	140	Negative	
C	2	9	160	Negative	
C	2	10	180	Negative	
C	2	11	200	Negative	
C	2	12	220	Negative	
C	2	13	240	Negative	
C	2	14	260	Negative	
C	3	1	0	Negative	
C	3	2	20	Negative	
C	3	3	40	Negative	
C	3	4	60	Negative	
C	3	5	80	Negative	
C	3	6	100	Negative	
C	3	7	120	Negative	
C	3	8	140	Negative	
C	3	9	160	Negative	
C	4	1	0	Negative	
C	4	2	20	Negative	
C	4	3	40	Negative	
C	4	4	60	Negative	
D	1	1	0	Negative	
D	1	2	20	Negative	
D	1	3	40	Negative	
D	1	4	60	Negative	
D	1	5	80	Negative	
D	1	6	100	Negative	
D	1	7	120	Negative	
D	1	8	140	Negative	
D	1	9	160	Negative	
D	1	10	180	Negative	
D	1	11	200	Negative	
D	1	12	220	Negative	
D	1	13	240	Negative	
D	2	1	0	Negative	
D	2	2	20	Negative	
D	2	3	40	Negative	
D	2	4	60	Negative	
D	2	5	80	Negative	
D	2	6	100	Negative	
D	2	7	120	Negative	
D	2	8	140	Negative	
D	2	9	160	Negative	
D	2	10	180	Negative	
D	2	11	200	Negative	
D	3	1	0	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
D	3	2	20	Negative	
D	3	3	40	Negative	
D	3	4	60	Negative	
D	3	5	80	Negative	
D	3	6	100	Negative	
D	3	7	120	Negative	
D	3	8	140	Negative	
D	3	9	160	Negative	
D	4	1	0	Negative	
D	4	2	20	Negative	
D	4	3	40	Negative	
D	4	4	60	Negative	
D	5	1	0	Negative	
D	5	2	20	Negative	
D	5	3	40	Negative	
D	5	4	60	Negative	
D	5	5	80	Negative	
D	5	6	100	Negative	
D	5	7	120	Negative	
D	5	8	140	Negative	
D	5	9	160	Negative	
D	5	10	180	Negative	
D	6	1	0	Negative	
D	6	2	20	Negative	
D	6	3	40	Negative	
D	6	4	60	Negative	
E	1	1	0	Negative	
E	1	2	20	Negative	
E	1	3	40	Negative	
E	1	4	60	Negative	
E	1	5	80	Negative	
E	1	6	100	Negative	
E	1	7	120	Negative	
E	1	8	140	Negative	
E	1	9	160	Negative	
E	2	1	0	Negative	
E	2	2	20	Negative	
E	2	3	40	Negative	
E	2	4	60	Negative	
E	2	5	80	Negative	
E	2	6	100	Negative	
E	3	1	0	Negative	
E	3	2	20	Negative	
E	3	3	40	Negative	
E	4	1	0	Negative	
E	4	2	20	Negative	
E	5	1	0	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
E	5	2	20	Negative	
E	5	3	40	Negative	
E	5	4	60	Negative	
E	5	5	80	Negative	
E	5	6	100	Negative	
E	5	7	120	Negative	
F	1	1	0	Negative	
F	1	2	20	Negative	
F	1	3	40	Negative	
F	1	4	60	Negative	
F	1	5	80	Negative	
F	1	6	100	Negative	
F	1	7	120	Negative	
F	1	8	140	Negative	
F	1	9	160	Negative	
F	1	10	180	Negative	
F	1	11	200	Negative	
F	1	12	220	Negative	
F	1	13	240	Negative	
F	1	14	260	Negative	
F	1	15	280	Negative	
F	1	16	300	Negative	
F	1	17	320	Negative	
F	1	18	340	Negative	
F	1	19	360	Negative	
F	1	20	380	Negative	
F	1	21	400	Negative	
F	1	22	420	Negative	
F	1	23	440	Negative	
F	1	24	460	Negative	
F	1	25	480	Negative	
F	2	1	0	Negative	
F	2	2	20	Negative	
F	2	3	40	Negative	
F	2	4	60	Negative	
F	2	5	80	Negative	
F	2	6	100	Negative	
F	2	7	120	Negative	
F	2	8	140	Negative	
F	2	9	160	Negative	
F	2	10	180	Negative	
F	2	11	200	Negative	
F	2	12	220	Negative	
F	2	13	240	Negative	
F	2	14	260	Negative	
F	2	15	280	Negative	
F	2	16	300	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
F	2	17	320	Negative	
F	2	18	340	Negative	
F	2	19	360	Negative	
F	2	20	380	Negative	
F	2	21	400	Negative	
F	2	22	420	Negative	
F	3	1	0	Negative	
F	3	2	20	Negative	
F	3	3	40	Negative	
F	3	4	60	Negative	
F	3	5	80	Negative	
F	3	6	100	Negative	
F	3	7	120	Negative	
F	3	8	140	Negative	
F	3	9	160	Negative	
F	3	10	180	Negative	
F	3	11	200	Negative	
F	3	12	220	Negative	
F	3	13	240	Negative	
F	3	14	260	Negative	
F	3	15	280	Negative	
F	3	16	300	Negative	
F	3	17	320	Negative	
F	4	1	0	Negative	
F	4	2	20	Negative	
F	4	3	40	Negative	
F	4	4	60	Negative	
F	4	5	80	Negative	
F	4	6	100	Negative	
F	4	7	120	Negative	
F	4	8	140	Negative	
F	4	9	160	Negative	
F	4	10	180	Negative	
F	4	11	200	Negative	
F	4	12	220	Negative	
F	4	13	240	Negative	
F	5	1	0	Negative	
F	5	2	20	Negative	
F	5	3	40	Negative	
F	5	4	60	Negative	
F	5	5	80	Negative	
F	5	6	100	Negative	
F	5	7	120	Negative	
F	5	8	140	Negative	
F	5	9	160	Negative	
G	1	1	0	Negative	
G	1	2	20	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
G	1	3	40	Negative	
G	1	4	60	Negative	
G	1	5	80	Negative	
G	1	6	100	Negative	
G	1	7	120	Negative	
G	1	8	140	Negative	
G	1	9	160	Negative	
G	1	10	180	Negative	
G	1	11	200	Negative	
G	1	12	220	Negative	
G	1	13	240	Negative	
G	1	14	260	Negative	
G	1	15	280	Negative	
G	1	16	300	Negative	
G	1	17	320	Negative	
G	1	18	340	Negative	
G	1	19	360	Negative	
G	1	20	380	Negative	
G	1	21	400	Negative	
G	1	22	420	Negative	
G	1	23	440	Negative	
G	1	24	460	Negative	
G	1	25	480	Negative	
G	1	26	500	Negative	
G	1	27	520	Negative	
G	1	28	540	Negative	
G	1	29	560	Negative	
G	1	30	580	Negative	
G	1	31	600	Negative	
G	1	32	620	Negative	
G	1	33	640	Negative	
G	1	34	660	Negative	
G	1	35	680	Negative	
G	1	36	700	Negative	
G	1	37	720	Negative	
G	1	38	740	Negative	
G	1	39	760	Negative	
G	1	40	780	Negative	
G	1	41	800	Negative	
G	2	1	0	Negative	
G	2	2	20	Negative	
G	2	3	40	Negative	
G	2	4	60	Negative	
G	2	5	80	Negative	
G	2	6	100	Negative	
G	2	7	120	Negative	
G	2	8	140	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
G	2	9	160	Negative	
G	2	10	180	Negative	
G	2	11	200	Negative	
G	3	1	0	Negative	
G	3	2	20	Negative	
G	3	3	40	Negative	
G	3	4	60	Negative	
H	1	1	0	Negative	
H	1	2	20	Negative	
H	1	3	40	Negative	
H	1	4	60	Negative	
H	1	5	80	Negative	
H	1	6	100	Negative	
H	1	7	120	Negative	
H	1	8	140	Negative	
H	1	9	160	Negative	
H	1	10	180	Negative	
H	1	11	200	Negative	
H	1	12	220	Negative	
H	1	13	240	Negative	
H	1	14	260	Negative	
H	1	15	280	Negative	
H	1	16	300	Negative	
H	1	17	320	Negative	
H	1	18	340	Negative	
H	1	19	360	Negative	
H	1	20	380	Negative	
H	1	21	400	Negative	
H	2	1	0	Negative	
H	2	2	20	Negative	
H	2	3	40	Negative	
H	2	4	60	Negative	
H	2	5	80	Negative	
H	2	6	100	Negative	
H	2	7	120	Negative	
H	2	8	140	Negative	
H	2	9	160	Negative	
H	2	10	180	Negative	
H	2	11	200	Negative	
H	2	12	220	Negative	
H	2	13	240	Negative	
H	2	14	260	Negative	
H	2	15	280	Negative	
H	2	16	300	Negative	
H	2	17	320	Negative	
H	2	18	340	Negative	
H	2	19	360	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
H	2	20	380	Negative	
H	2	21	400	Negative	
H	2	22	420	Negative	
H	2	23	440	Negative	
H	2	24	460	Negative	
H	2	25	480	Negative	
H	2	26	500	Negative	
H	2	27	520	Negative	
H	2	28	540	Negative	
H	3	1	0	Negative	
H	3	2	20	Negative	
H	3	3	40	Negative	
H	3	4	60	Negative	
H	4	1	80	Negative	
H	4	2	100	Negative	
H	4	3	120	Negative	
H	4	4	140	Negative	
H	4	5	160	Negative	
H	5	1	180	Negative	
H	5	2	200	Negative	
H	5	3	220	Negative	
H	5	4	240	Negative	
H	5	5	260	Negative	
H	5	6	280	Negative	
H	5	7	300	Negative	
H	5	8	320	Negative	
H	5	9	340	Negative	
H	5	10	360	Negative	
H	5	11	380	Negative	
H	5	12	400	Negative	
H	5	13	420	Negative	
H	5	14	440	Negative	
H	5	15	460	Negative	
H	5	16	480	Negative	
H	5	17	500	Negative	
H	5	18	520	Negative	
H	5	19	540	Negative	
H	6	1	0	Negative	
H	6	2	20	Negative	
H	6	3	40	Negative	
H	6	4	60	Negative	
H	6	5	80	Negative	
H	6	6	100	Negative	
H	6	7	120	Negative	
H	7	1	0	Negative	
H	7	2	20	Negative	
H	7	3	40	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
H	7	4	60	Negative	
H	7	5	80	Negative	
H	7	6	100	Negative	
H	7	7	120	Negative	
H	7	8	140	Negative	
H	8	1	160	Negative	
H	8	2	180	Negative	
H	8	3	200	Negative	
H	8	4	220	Negative	
H	8	5	240	Negative	
H	8	6	260	Negative	
H	8	7	280	Negative	
H	9	1	0	Negative	
H	9	2	20	Negative	
H	9	3	40	Negative	
H	9	4	60	Negative	
H	9	5	80	Negative	
H	9	6	100	Negative	
H	9	7	120	Negative	
H	9	8	140	Negative	
H	9	9	160	Negative	
H	9	10	180	Negative	
H	9	11	200	Negative	
H	9	12	220	Negative	
H	9	13	240	Negative	
H	9	14	260	Negative	
H	9	15	280	Negative	
H	10	1	0	Negative	
H	10	2	20	Negative	
H	10	3	40	Negative	
H	10	4	60	Negative	
H	10	5	80	Negative	
H	10	6	100	Negative	
H	10	7	120	Negative	
H	10	8	140	Negative	
H	10	9	160	Negative	
H	10	10	180	Negative	
H	10	11	200	Negative	
H	10	12	220	Negative	
H	10	13	240	Negative	
H	11	1	0	Negative	
H	11	2	20	Negative	
H	11	3	40	Negative	
H	11	4	60	Negative	
H	11	5	80	Negative	
H	11	6	100	Negative	
H	11	7	120	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
I	1	1	0	Negative	
I	1	2	20	Negative	
I	1	3	40	Negative	
I	1	4	60	Negative	
I	1	5	80	Negative	
I	1	6	100	Negative	
I	1	7	120	Negative	
I	1	8	140	Negative	
I	1	9	160	Negative	
I	1	10	180	Negative	
I	1	11	200	Negative	
I	1	12	220	Negative	
I	1	13	240	Negative	
I	1	14	260	Negative	
I	1	15	280	Negative	
I	1	16	300	Negative	
I	1	17	320	Negative	
I	1	18	340	Negative	
I	1	19	360	Negative	
I	1	20	380	Negative	
I	1	21	400	Negative	
I	1	22	420	Negative	
I	1	23	440	Negative	
I	1	24	460	Negative	
I	1	25	480	Negative	
I	1	26	500	Negative	
I	1	27	520	Negative	
I	1	28	540	Negative	
I	1	29	560	Negative	
I	1	30	580	Negative	
I	1	31	600	Negative	
I	1	32	620	Negative	
I	1	33	640	Negative	
I	1	34	660	Negative	
I	1	35	680	Negative	
I	1	36	700	Negative	3PU973
I		Del.		Negative	3PU973 0N, 5E
I		Del.		Positive	3PU973 0N, 10E Stratum I (0-5cmbs) yellowish brown (10YR5/4) gravelly silty clay Stratum II (5-25 cmbs) yellowish brown (10YR5/8) gravelly clay subsoil
I		Del.		Negative	3PU973 0N, 15E
I		Del.		Negative	3PU973 0N, 20E
I	1		705	Negative	3PU973

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
I		Del.		Positive	3PU973 5S, 5E Stratum I (0-6 cmbs) yellowish brown (10YR5/4) gravelly silty clay Stratum II (6-30 cmbs) yellowish brown (10YR5/8) gravelly clay subsoil
I					3PU973 5S, 15E
I		Del.		Negative	3PU973 5S, 20E
I		Del.		Negative	3PU973 5S, 25E
I		Del.		Negative	3PU973 10S, 10E
I		Del.		Negative	3PU973 10S, 15E
I		Del.		Negative	3PU973 15S, 10E
I		Del.		Negative	3PU973 15S, 15E
I		Del.		Negative	3PU973 5N, 10E
I		Del.		Negative	3PU973 5N, 15E
I		Del.		Negative	3PU973 5N, 20E
I		Del.		Negative	3PU973 10N, 10E
I	1	37	720	Negative	
I	1	38	740	Negative	
I	1	39	760	Negative	
I	1	40	780	Negative	
I	1	41	800	Negative	
I	1	42	820	Negative	
I	1	43	840	Negative	
I	1	44	860	Negative	
I	1	45	880	Negative	
I	1	46	900	Negative	
I	1	47	920	Negative	
I	1	48	940	Negative	
I	1	49	960	Negative	
I	1	50	980	Negative	
I	1	51	1000	Negative	
I	1	52	1020	Negative	
I	1	53	1040	Negative	
I	1	54	1060	Negative	
I	1	55	1080	Negative	
I		Del.	1090	Negative	3PU974 10N, 0E
I		Del.	1095	Negative	3PU974 5N, 0E
I	1	56	1100	Positive	3PU974 Stratum I (0-8 cmbs) dark yellowish brown (10YR4/4) gravelly silty clay Stratum II (8-30 cmbs) yellowish brown (10YR5/8) gravelly clay subsoil
I		Del.	1110	Negative	3PU974 10S, 0E
I		Del.	1115	Negative	3PU974 15S, 0E

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
I		Del.		Positive	3PU974 0N, 5E Stratum I (0-5 cmbs) dark yellowish brown (10YR4/4) gravelly silty clay Stratum II (5-27 cmbs) yellowish brown (10YR5/8) gravelly clay subsoil
I		Del.		Negative	3PU974 15N, 5E
I		Del.		Negative	3PU974 10N, 5E
I		Del.		Negative	3PU974 5N, 5E
I		Del.		Negative	3PU974 8S, 5E
I	1	57	1120	Negative	
I	1	58	1140	Negative	
I	1	59	1160	Negative	
I	1	60	1180	Negative	
I	1	61	1200	Negative	
I	1	62	1220	Negative	
I	1	63	1240	Negative	
I	1	64	1260	Negative	
I	1	65	1280	Negative	
I	1	66	1300	Negative	
I	1	67	1320	Negative	
I	1	68	1340	Negative	
I	1	69	1360	Negative	
I	1	70	1380	Negative	
I	1	71	1400	Negative	
I	1	72	1420	Negative	
I	1	73	1440	Negative	
I	1	74	1460	Negative	
I	1	75	1480	Negative	
I	1	76	1500	Negative	
I	1	77	1520	Negative	
I	2	1	0	Negative	
I	2	2	20	Negative	
I	2	3	40	Negative	
I	2	4	60	Negative	
I	2	5	80	Negative	
I	2	6	100	Negative	
I	2	7	120	Negative	
I	2	8	140	Negative	
I	2	9	160	Negative	
I	2	10	180	Negative	
I	2	11	200	Negative	
I	2	12	220	Negative	
I	2	13	240	Negative	
I	2	14	260	Negative	
I	2	15	280	Negative	
I	2	16	300	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
I	2	17	320	Negative	
I	2	18	340	Negative	
I	2	19	360	Negative	
I	2	20	380	Negative	
I	2	21	400	Negative	
I	2	22	420	Negative	
I	2	23	440	Negative	
I	2	24	460	Negative	
I	2	25	480	Negative	
I	2	26	500	Negative	
I	2	27	520	Negative	
I	2	28	540	Negative	
I	2	29	560	Negative	
I	2	30	580	Negative	
I	2	31	600	Negative	
I	2	32	620	Negative	
I	2	33	640	Negative	
I	2	34	660	Negative	
I	2	35	680	Negative	
I	2	36	700	Negative	
I	2	37	720	Negative	
I	2	38	740	Negative	
I	2	39	760	Negative	
I	2	40	780	Negative	
I	2	41	800	Negative	
I	2	42	820	Negative	
I	2	43	840	Negative	
I	2	44	860	Negative	
I	2	45	880	Negative	
I	2	46	900	Negative	
I	2	47	920	Negative	
I	2	48	940	Negative	
I	2	49	960	Negative	
I	2	50	980	Negative	
I	2	51	1000	Negative	
I	2	52	1020	Negative	
I	2	53	1040	Negative	
I	2	54	1060	Negative	
I	2	55	1080	Negative	
I	2	56	1100	Negative	
I	2	57	1120	Negative	
I	2	58	1140	Negative	
I	2	59	1160	Negative	
I	2	60	1180	Negative	
I	2	61	1200	Negative	
I	2	62	1220	Negative	
I	2	63	1240	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
I	2	64	1260	Negative	
I	2	65	1280	Negative	
I	2	66	1300	Negative	
I	2	67	1320	Negative	
I	2	68	1340	Negative	
I	2	69	1360	Negative	
I	2	70	1380	Negative	
I	2	71	1400	Negative	
I	2	72	1420	Negative	
I	2	73	1440	Negative	
I	2	74	1460	Negative	
I	2	75	1480	Negative	
I	2	76	1500	Negative	
I	2	77	1520	Negative	
I	2	78	1540	Negative	
J	1	1	0	Negative	
J	1	2	20	Negative	
J	1	3	40	Negative	
J	1	4	60	Negative	
J	1	5	80	Negative	
J	1	6	100	Negative	
J	1	7	120	Negative	
J	1	8	140	Negative	
J	1	9	160	Negative	
J	1	10	180	Negative	
J	1	11	200	Negative	
J	1	12	220	Negative	
J	1	13	240	Negative	
J	1	14	260	Negative	
J	1	15	280	Negative	
J	1	16	300	Negative	
J	1	17	320	Negative	
J	1	18	340	Negative	
J	1	19	360	Negative	
J	1	20	380	Negative	
J	1	21	400	Negative	
J	1	22	420	Negative	
J	1	23	440	Negative	
J	1	24	460	Negative	
J	1	25	480	Negative	
J	1	26	500	Negative	
J	1	27	520	Negative	
J	1	28	540	Negative	
J	1	29	560	Negative	
J	1	30	580	Negative	
J	1	31	600	Negative	
J	1	32	620	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
J	1	33	640	Negative	
J	1	34	660	Negative	
J	1	35	680	Negative	
J	1	36	700	Negative	
J	1	37	720	Negative	
J	1	38	740	Negative	
J	1	39	760	Negative	
J	1	40	780	Negative	
J	1	41	800	Negative	
J	1	42	820	Negative	
J	1	43	840	Negative	
J	1	44	860	Negative	
J	1	45	880	Negative	
J	1	46	900	Negative	
J	1	47	920	Negative	
J	1	48	940	Negative	
J	1	49	960	Negative	
J	1	50	980	Negative	
J	1	51	1000	Negative	
J	1	52	1020	Negative	
J	1	53	1040	Negative	
J	1	54	1060	Negative	
J	1	55	1080	Negative	
J	1	56	1100	Negative	
J	1	57	1120	Negative	
J	1	58	1140	Negative	
J	1	59	1160	Negative	
J	1	60	1180	Negative	
J	1	61	1200	Negative	
J	1	62	1220	Negative	
J	1	63	1240	Negative	
J	1	64	1260	Negative	
J	1	65	1280	Negative	
J	1	66	1300	Negative	
J	1	67	1320	Negative	
J	1	68	1340	Negative	
J	1	69	1360	Negative	
J	1	70	1380	Negative	
J	1	71	1400	Negative	
J	1	72	1420	Negative	
J	1	73	1440	Negative	
J	1	74	1460	Negative	
J	1	75	1480	Negative	
J	1	76	1500	Negative	
J	1	77	1520	Negative	
J	1	78	1540	Negative	
J	1	79	1560	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
J	1	80	1580	Negative	
J	1	81	1600	Negative	
J	1	82	1620	Negative	
J	1	83	1640	Negative	
J	1	84	1660	Negative	
J	1	85	1680	Negative	
J	1	86	1700	Negative	
J	1	87	1720	Negative	
J	1	88	1740	Negative	
J	1	89	1760	Negative	
J	1	90	1780	Negative	
J	1	91	1800	Negative	
J	1	92	1820	Negative	
J	1	93	1840	Negative	
J	1	94	1860	Negative	
J	1	95	1880	Negative	
J	1	96	1900	Negative	
J	1	97	1920	Negative	
J	1	98	1940	Negative	
J	1	99	1960	Negative	
J	1	100	1980	Negative	
J	1	101	2000	Negative	
J	1	102	2020	Negative	
J	1	103	2040	Negative	
J	1	104	2060	Negative	
J	1	105	2080	Negative	
J	1	106	2100	Negative	
J	1	107	2120	Negative	
J	1	108	2140	Negative	
J	2	1	0	Negative	
J	2	2	20	Negative	
J	2	3	40	Negative	
J	2	4	60	Negative	
J	2	5	80	Negative	
J	2	6	100	Negative	
J	2	7	120	Negative	
J	2	8	140	Negative	
J	2	9	160	Negative	
J	2	10	180	Negative	
J	2	11	200	Negative	
J	2	12	220	Negative	
J	2	13	240	Negative	
J	2	14	260	Negative	
J	2	15	280	Negative	
J	3	1	0	Negative	
J	3	2	20	Negative	
J	3	3	40	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
J	3	4	60	Negative	
J	3	5	80	Negative	
J	3	6	100	Negative	3PU975 Stratum I (0-7 cmbs) yellowish brown (10YR5/4) silty clay loam Stratum II (7-34 cmbs) yellowish brown (10YR5/8) gravelly clay subsoil
J		Del.		Negative	3PU975
J		Del.		Negative	3PU975
J		Del.		Negative	3PU975
J		Del.		Negative	3PU975
J		Del.		Negative	3PU975
J		Del.		Negative	3PU975
J	3	7	120	Negative	
J	3	8	140	Negative	
J	3	9	160	Negative	
J	3	10	180	Negative	
J	3	11	200	Negative	
J	3	12	220	Negative	
J	3	13	240	Negative	
J	4	1	0	Negative	
J	4	2	20	Negative	
J	4	3	40	Negative	
J	4	4	60	Negative	
J	4	5	80	Negative	
J	4	6	100	Negative	
J	4	7	120	Negative	
J	4	8	140	Negative	
J	4	9	160	Negative	
J	5	1	0	Negative	
J	5	2	20	Negative	
J	5	3	40	Negative	
J	5	4	60	Negative	
J	5	5	80	Negative	
J	5	6	100	Negative	
J	5	7	120	Negative	
J	5	8	140	Negative	
J	5	9	160	Negative	
J	5	10	180	Negative	
J	5	11	200	Negative	
J	5	12	220	Negative	
J	5	13	240	Negative	
J	5	14	260	Negative	
J	5	15	280	Negative	
J	5	16	300	Negative	
J	5	17	320	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
J	5	18	340	Negative	
J	5	19	360	Negative	
J	5	20	380	Negative	
J	5	21	400	Negative	
J	5	22	420	Negative	
J	5	23	440	Negative	
J	5	24	460	Negative	
J	5	25	480	Negative	
J	5	26	500	Negative	
J	5	27	520	Negative	
J	5	28	540	Negative	
J	5	29	560	Negative	
J	5	30	580	Negative	
J	5	31	600	Negative	
J	5	32	620	Negative	
J	5	33	640	Negative	
J	5	34	660	Negative	
J	5	35	680	Negative	
J	5	36	700	Negative	
J	5	37	720	Negative	
J	5	38	740	Negative	
J	5	39	760	Negative	
J	5	40	780	Negative	
J	5	41	800	Negative	
J	5	42	820	Negative	
J	5	43	840	Negative	
J	5	44	860	Negative	
J	5	45	880	Negative	
J	5	46	900	Negative	
J	5	47	920	Negative	
J	5	48	940	Negative	
J	5	49	960	Negative	
J	5	50	980	Negative	
J	5	51	1000	Negative	
J	5	52	1020	Negative	
J	5	53	1040	Negative	
J	5	54	1060	Negative	
J	5	55	1080	Negative	
J	5	56	1100	Negative	
J	5	57	1120	Negative	
J	5	58	1140	Negative	
J	5	59	1160	Negative	
J	5	60	1180	Negative	
J	5	61	1200	Negative	
J	5	62	1220	Negative	
J	5	63	1240	Negative	
J	5	64	1260	Negative	

Appendix D: Shovel Test Inventory for Segment 2

Appendix D: Shovel Test Inventory for Segment 2					
Area	Transect	Shovel Test	Meters	Result	Notes
J	5	65	1280	Negative	
J	5	66	1300	Negative	
J	5	67	1320	Negative	
J	5	68	1340	Negative	
J	5	69	1360	Negative	
J	5	70	1380	Negative	
J	5	71	1400	Negative	
J	5	72	1401	Negative	
J	5	73	1402	Negative	
J	5	74	1403	Negative	

Appendix E: Shovel Test Inventory for Segment 3

Appendix E: Shovel Test Inventory for Segment 3					
Area	Transect	Shovel Test	Meters	Result	Notes
A	1	1	0	Negative	
A	1	2	20	Negative	
A	1	3	40	Negative	
A	1	4	60	Negative	
A	1	5	80	Negative	
A	1	6	100	Negative	
A	1	7	120	Negative	
A	1	8	140	Negative	
A	1	9	160	Negative	
A	1	10	180	Negative	
A	1	11	200	Negative	
A	1	12	220	Negative	
A	1	13	240	Negative	
A	1	14	260	Negative	
A	1	15	280	Negative	
A	1	16	300	Negative	
A	1	17	320	Negative	
A	1	18	340	Negative	
A	1	19	360	Negative	
A	1	20	380	Negative	
A	1	21	400	Negative	
A	1	22	420	Negative	
A	1	23	440	Negative	
A	1	24	460	Negative	
A	1	25	480	Negative	
A	1	26	500	Negative	
A	1	27	520	Negative	
A	1	28	540	Negative	
A	1	29	560	Negative	
A	1	30	580	Negative	
A	1	31	600	Negative	
A	1	32	620	Negative	
A	1	33	640	Negative	
A	1	34	660	Negative	
A	1	35	680	Negative	
A	1	36	700	Negative	
A	1	37	720	Negative	
A	1	38	740	Negative	
A	1	39	760	Negative	
A	1	40	780	Negative	
A	1	41	800	Negative	
A	1	42	820	Negative	
A	1	43	840	Negative	
A	1	44	860	Negative	
A	1	45	880	Negative	
A	1	46	900	Negative	
A	1	47	920	Negative	

Appendix E: Shovel Test Inventory for Segment 3

Appendix E: Shovel Test Inventory for Segment 3					
Area	Transect	Shovel Test	Meters	Result	Notes
A	1	48	940	Negative	
A	1	49	960	Negative	
A	1	50	980	Negative	
A	1	51	1000	Negative	
A	1	52	1020	Negative	
A	1	53	1040	Negative	
A	1	54	1060	Negative	
A	1	55	1080	Negative	
A	1	56	1100	Negative	
A	1	57	1120	Negative	
A	1	58	1140	Negative	
A	1	59	1160	Negative	
A	1	60	1180	Negative	
A	1	61	1200	Negative	
A	1	62	1220	Negative	
A	1	63	1240	Negative	
A	1	64	1260	Negative	
A	1	65	1280	Negative	
A	1	66	1300	Negative	
A	1	67	1320	Negative	
A	1	68	1340	Negative	
A	1	69	1360	Negative	
A	1	70	1380	Negative	
A	1	71	1400	Negative	
A	1	72	1420	Negative	
A	1	73	1440	Negative	
A	1	74	1460	Negative	
A	1	75	1480	Negative	
A	1	76	1500	Negative	
A	1	77	1520	Negative	
A	1	78	1540	Negative	
A	1	79	1560	Negative	
A	1	80	1580	Negative	
A	1	81	1600	Negative	
A	1	82	1620	Negative	
A	1	83	1640	Negative	
A	1	84	1660	Negative	
A	1	85	1680	Negative	
A	1	86	1700	Negative	
A	1	87	1720	Negative	
A	1	88	1740	Negative	
A	1	89	1760	Negative	
A	1	90	1780	Negative	
A	1	91	1800	Negative	
A	1	92	1820	Negative	
A	1	93	1840	Negative	
A	1	94	1860	Negative	

Appendix E: Shovel Test Inventory for Segment 3

Appendix E: Shovel Test Inventory for Segment 3					
Area	Transect	Shovel Test	Meters	Result	Notes
A	1	95	1880	Negative	
A	1	96	1900	Negative	
A	1	97	1920	Negative	
A	1	98	1940	Negative	
A	1	99	1960	Negative	
A	1	100	1980	Negative	
A	1	101	2000	Negative	
A	1	102	2020	Negative	
A	1	103	2040	Negative	
A	1	104	2060	Negative	
A	1	105	2080	Negative	
A	1	106	2100	Negative	
A	1	107	2120	Negative	
A	1	108	2140	Negative	
A	1	109	2160	Negative	
A	1	110	2180	Negative	
A	1	111	2200	Negative	
A	1	112	2220	Negative	
A	1	113	2240	Negative	
A	2	1	0	Negative	
A	2	2	20	Negative	
A	2	3	40	Negative	
A	2	4	60	Negative	
A	2	5	80	Negative	
A	2	6	100	Negative	
A	2	7	120	Negative	
A	2	8	140	Negative	
A	2	9	160	Negative	
A	2	10	180	Negative	
A	2	11	200	Negative	
A	2	12	220	Negative	
A	2	13	240	Negative	
A	2	14	260	Negative	
A	2	15	280	Negative	
A	2	16	300	Negative	
A	2	17	320	Negative	
A	2	18	340	Negative	
A	2	19	360	Negative	
A	2	20	380	Negative	
A	2	21	400	Negative	
A	2	22	420	Negative	
A	2	23	440	Negative	
A	2	24	460	Negative	
A	2	25	480	Negative	near Structure 58
A	2	26	485	Negative	near Structure 58
A	2	27	490	Negative	near Structure 58
A	2	28	495	Negative	near Structure 58

Appendix E: Shovel Test Inventory for Segment 3

Appendix E: Shovel Test Inventory for Segment 3					
Area	Transect	Shovel Test	Meters	Result	Notes
A	2	29	500	Negative	near Structure 58
A	2	30	505	Negative	near Structure 58
A	2	31	510	Negative	near Structure 58
A	2	32	520	Negative	near Structure 58
A	2	33	525	Negative	near Structure 58
A	2	34	530	Negative	near Structure 58
A	2	35	535	Negative	near Structure 58
A	2	36	540	Negative	near Structure 58
A	2	37	560	Negative	
A	2	38	580	Negative	
A	2	39	600	Negative	
A	2	40	620	Negative	
A	2	41	640	Negative	
A	2	42	660	Negative	
A	2	43	680	Negative	
A	2	44	700	Negative	
A	2	45	720	Negative	
A	2	46	740	Negative	
A	2	47	760	Negative	
A	2	48	780	Negative	
A	2	49	800	Negative	
A	2	50	820	Negative	
A	2	51	840	Negative	
A	2	52	860	Negative	
A	2	53	880	Negative	
A	2	54	900	Negative	
A	2	55	920	Negative	
A	2	56	940	Negative	
A	2	57	960	Negative	
A	2	58	980	Negative	
A	2	59	1000	Negative	
A	2	60	1020	Negative	
A	2	61	1040	Negative	
A	2	62	1060	Negative	
A	2	63	1080	Negative	
B	1	1	0	Negative	
B	1	2	20	Negative	
B	1	3	40	Negative	
B	1	4	60	Negative	
B	1	5	80	Negative	
B	1	6	100	Negative	
B	1	7	120	Negative	
B	1	8	140	Negative	
B	1	9	160	Negative	
B	1	10	180	Negative	
B	1	11	200	Negative	
B	1	12	220	Negative	

Appendix E: Shovel Test Inventory for Segment 3

Appendix E: Shovel Test Inventory for Segment 3					
Area	Transect	Shovel Test	Meters	Result	Notes
B	1	13	240	Negative	
B	1	14	260	Negative	
B	1	15	280	Negative	
B	1	16	300	Negative	
B	1	17	320	Negative	
B	1	18	340	Negative	
B	1	19	360	Negative	
B	1	20	380	Negative	
B	1	21	400	Negative	
B	1	22	420	Negative	
B	1	23	440	Negative	
B	1	24	460	Negative	
B	1	25	480	Negative	
B	1	26	500	Negative	
B	1	27	520	Negative	
B	1	28	540	Negative	
B	1	29	560	Negative	
B	1	30	580	Negative	
B	1	31	600	Negative	
B	1	32	620	Negative	
B	1	33	640	Negative	
B	1	34	660	Negative	
B	1	35	680	Negative	
B	1	36	700	Negative	
B	1	37	720	Negative	
B	1	38	740	Negative	
B	1	39	760	Negative	
B	1	40	780	Negative	
B	1	41	800	Negative	
B	1	42	820	Negative	
B	1	43	840	Negative	
B	1	44	860	Negative	
B	1	45	880	Negative	
B	1	46	900	Negative	
B	1	47	920	Negative	
B	1	48	940	Negative	
B	1	49	960	Negative	
B	1	50	980	Negative	
B	1	51	1000	Negative	
B	1	52	1020	Negative	
B	1	53	1040	Negative	
B	1	54	1060	Negative	
B	1	55	1080	Negative	
B	1	56	1100	Negative	
B	1	57	1120	Negative	
B	1	58	1140	Negative	
B	1	59	1160	Negative	

Appendix E: Shovel Test Inventory for Segment 3

Appendix E: Shovel Test Inventory for Segment 3					
Area	Transect	Shovel Test	Meters	Result	Notes
B	1	60	1180	Negative	
B	1	61	1200	Negative	
B	1	62	1220	Negative	
B	1	63	1240	Negative	
B	1	64	1260	Negative	
B	1	65	1280	Negative	
B	1	66	1300	Negative	
B	1	67	1320	Negative	
B	1	68	1340	Negative	
B	1	69	1360	Negative	
B	1	70	1380	Negative	
B	1	71	1400	Negative	
B	1	72	1420	Negative	
B	1	73	1440	Negative	
B	1	74	1460	Negative	
B	1	75	1480	Negative	
B	1	76	1500	Negative	
B	1	77	1520	Negative	
B	1	78	1540	Negative	
B	1	79	1560	Negative	
B	1	80	1580	Negative	
B	1	81	1600	Negative	
B	1	82	1620	Negative	
B	1	83	1640	Negative	
B	1	84	1660	Negative	
B	1	85	1680	Negative	
B	1	86	1700	Negative	
B	1	87	1720	Negative	
B	1	88	1740	Negative	
B	1	89	1760	Negative	
B	1	90	1780	Negative	
B	1	91	1800	Negative	
B	1	92	1820	Negative	
B	1	93	1840	Negative	
B	1	94	1860	Negative	
B	1	95	1880	Negative	
B	1	96	1900	Negative	
B	1	97	1920	Negative	
B	1	98	1940	Negative	
B	1	99	1960	Negative	
B	1	100	1980	Negative	
B	1	101	2000	Negative	
B	1	102	2020	Negative	
B	1	103	2040	Negative	

Appendix E: Shovel Test Inventory for Segment 3

Appendix E: Shovel Test Inventory for Segment 3					
Area	Transect	Shovel Test	Meters	Result	Notes
B	1	104	2060	Positive	3PU972 Stratum I (0-4 cmbs) brown (10YR5/3) silty clay loam Stratum II (4-27 cmbs) dark grayish brown (10YR4/2) gravelly clay subsoil
B		Del.		Positive	3PU972 5N, 0E
B		Del.		Positive	3PU972 10N, 0E
B		Del.		Negative	3PU972 0N, 5W
B		Del.		Negative	3PU972 5N, 5W
B		Del.		Negative	3PU972 10N, 5W
B		Del.		Positive	3PU972 0N, 5E
B		Del.		Negative	3PU972 5N, 5E
B		Del.		Negative	3PU972 0N, 10E
B		Del.		Negative	3PU972 5N, 10E
B		Del.		Negative	3PU972 5S, 0E
B		Del.		Negative	3PU972 10S, 0E
B	1	105	2080	Negative	
B	1	106	2100	Negative	
B	1	107	2120	Negative	
B	1	108	2140	Negative	
B	1	109	2160	Negative	
B	2	1	0	Negative	
B	2	2	20	Negative	
B	2	3	40	Negative	
B	2	4	60	Negative	
B	2	5	80	Negative	
B	2	6	100	Negative	
B	2	7	120	Negative	
B	2	8	140	Negative	
B	2	9	160	Negative	
B	2	10	180	Negative	
B	2	11	200	Negative	
B	2	12	220	Negative	
B	2	13	240	Negative	
B	2	14	260	Negative	
B	2	15	280	Negative	
B	2	16	300	Negative	
B	2	17	320	Negative	
B	2	18	340	Negative	
B	2	19	360	Negative	
B	2	20	380	Negative	
B	3	1	0	Negative	
B	3	2	20	Negative	
B	3	3	40	Negative	
B	3	4	60	Negative	
B	3	5	80	Negative	

Appendix E: Shovel Test Inventory for Segment 3

Appendix E: Shovel Test Inventory for Segment 3					
Area	Transect	Shovel Test	Meters	Result	Notes
B	3	6	100	Negative	
B	3	7	120	Negative	
B	4	1	0	Negative	
B	4	2	20	Negative	
B	4	3	40	Negative	
B	4	4	60	Negative	
B	4	5	80	Negative	
B	5	1	0	Negative	
B	5	2	20	Negative	
B	5	3	25	Negative	near Structure 63
B	5	4	30	Negative	near Structure 63
B	5	5	35	Negative	near Structure 63
B	5	6	40	Negative	near Structure 63
B	5	7	45	Negative	near Structure 63
B	5	8	50	Negative	near Structure 63
B	5	9	55	Negative	near Structure 63
B	5	10	60	Negative	near Structure 63
B	5	11	80	Negative	
B	5	12	100	Negative	
B	5	13	120	Negative	
B	5	14	140	Negative	
B	5	15	160	Negative	
B	5	16	180	Negative	
B	5	17	200	Negative	
B	5	18	220	Negative	
B	5	19	240	Negative	
B	5	20	260	Positive	3PU971 Stratum (0-9 cmbs) yellowish brown (10YR5/4) silty clay loam Stratum II (9-31 cmbs) yellowish brown (10YR5/8) gravelly clay subsoil
B		Del.		Positive	3PU971 0N, 5E
B		Del.		Positive	3PU971 0N, 10E
B		Del.		Positive	3PU971 0N, 15E
B		Del.		Negative	3PU971 0N, 20E
B		Del.		Negative	3PU971 5N, 0E
B		Del.		Negative	3PU971 5N, 5E
B		Del.		Positive	3PU971 5S, 0E
B		Del.		Positive	3PU971 5S, 5E
B		Del.		Positive	3PU971 5S, 10E
B		Del.		Positive	3PU971 5S, 15E
B		Del.		Negative	3PU971 10S, 0E
B		Del.		Positive	3PU971 10S, 5E
B		Del.		Negative	3PU971 15S, 0E
B		Del.		Negative	3PU971 15S, 5E

Appendix E: Shovel Test Inventory for Segment 3

Appendix E: Shovel Test Inventory for Segment 3					
Area	Transect	Shovel Test	Meters	Result	Notes
B		Del.		Negative	3PU971 20S, 0E
B	5	21	280	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
A	1	1	0	Negative	
A	1	2	20	Negative	
A	1	3	40	Negative	
A	1	4	60	Negative	
A	1	5	80	Negative	
A	1	6	100	Negative	
A	1	7	120	Negative	
A	1	8	140	Negative	
A	1	9	160	Negative	
A	1	10	180	Negative	
A	1	11	200	Negative	
A	1	12	220	Negative	
A	1	13	240	Negative	
A	1	14	260	Negative	
A	1	15	280	Negative	
A	1	16	300	Negative	
A	1	17	320	Negative	
A	1	18	340	Negative	
A	1	19	360	Negative	
A	1	20	380	Negative	
A	1	21	400	Negative	
A	1	22	420	Negative	
A	1	23	440	Negative	
A	1	24	460	Negative	
A	1	25	480	Negative	
A	1	26	500	Negative	
A	1	27	520	Negative	
A	1	28	540	Negative	
A	1	29	560	Negative	
A	1	30	580	Negative	
A	1	31	600	Negative	
A	1	32	620	Negative	
A	1	33	640	Negative	
A	1	34	660	Negative	
A	1	35	680	Negative	
A	1	36	700	Negative	
A	1	37	720	Negative	
A	1	38	740	Negative	
A	1	39	760	Negative	
A	1	40	780	Negative	
A	1	41	800	Negative	
A	1	42	820	Negative	
A	1	43	840	Negative	
A	1	44	860	Negative	
A	1	45	880	Negative	
A	1	46	900	Negative	
A	1	47	920	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
A	1	48	940	Negative	
A	1	49	960	Negative	
A	1	50	980	Negative	
A	1	51	1000	Negative	
A	1	52	1020	Negative	
A	1	53	1040	Negative	
A	1	54	1060	Negative	
A	1	55	1080	Negative	
A	1	56	1100	Negative	
A	1	57	1120	Negative	
A	1	58	1140	Negative	
A	1	59	1160	Negative	
A	1	60	1180	Negative	
A	1	61	1200	Negative	
A	1	62	1220	Negative	
A	1	63	1240	Negative	
A	1	64	1260	Negative	
A	1	65	1280	Negative	
A	1	66	1300	Negative	
A	1	67	1320	Negative	
A	1	68	1340	Negative	
A	1	69	1360	Negative	
A	1	70	1380	Negative	
A	1	71	1400	Negative	
A	1	72	1420	Negative	
A	1	73	1440	Negative	
A	1	74	1460	Negative	
A	1	75	1480	Negative	
A	1	76	1500	Negative	
A	1	77	1520	Negative	
A	1	78	1540	Negative	
A	1	79	1560	Negative	
A	1	80	1580	Negative	
A	1	81	1600	Negative	
A	1	82	1620	Negative	
A	1	83	1640	Negative	
A	1	84	1660	Negative	
A	1	85	1680	Negative	
A	1	86	1700	Negative	
A	1	87	1720	Negative	
A	1	88	1740	Negative	
A	1	89	1760	Negative	
A	2	1	0	Negative	
A	2	2	20	Negative	
A	2	3	40	Negative	
A	2	4	60	Negative	
A	2	5	80	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
A	2	6	100	Negative	
A	2	7	120	Negative	
A	2	8	140	Negative	
A	2	9	160	Negative	
A	2	10	180	Negative	
A	2	11	200	Negative	
A	2	12	220	Negative	
A	2	13	240	Negative	
A	2	14	260	Negative	
A	2	15	280	Negative	
A	2	16	300	Negative	
A	2	17	320	Negative	
A	2	18	340	Negative	
A	2	19	360	Negative	
A	3	1	0	Negative	
A	3	2	20	Negative	
A	3	3	40	Negative	
A	3	4	60	Negative	
A	3	5	80	Negative	
A	3	6	100	Negative	
A	3	7	120	Negative	
A	3	8	140	Negative	
A	3	9	160	Negative	
A	3	10	180	Negative	
A	3	11	200	Negative	
A	3	12	220	Negative	
A	3	13	240	Negative	
A	4	1	0	Negative	
A	4	2	20	Negative	
A	4	3	40	Negative	
A	4	4	60	Negative	
A	4	5	80	Negative	
A	4	6	100	Negative	
A	4	7	120	Negative	
A	4	8	140	Negative	
A	4	9	160	Negative	
A	4	10	180	Negative	
A	4	11	200	Negative	
A	4	12	220	Negative	
A	4	13	240	Negative	
A	4	14	260	Negative	
A	4	15	280	Negative	
A	5	1	0	Negative	
A	5	2	20	Negative	
A	5	3	40	Negative	
A	5	4	60	Negative	
A	5	5	80	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
A	5	6	100	Negative	
A	5	7	120	Negative	
A	5	8	140	Negative	
A	5	9	160	Negative	
A	6	1	180	Negative	
A	6	2	200	Negative	
A	6	3	220	Negative	
A	6	4	240	Negative	
A	6	5	260	Negative	
A	6	6	280	Negative	
A	6	7	300	Negative	
A	6	8	320	Negative	
A	6	9	340	Negative	
A	6	10	360	Negative	
A	6	11	380	Negative	
A	6	12	400	Negative	
A	6	13	420	Negative	
A	6	14	440	Negative	
A	6	15	460	Negative	
A	6	16	480	Negative	
A	6	17	500	Negative	
A	7	1	0	Negative	
A	7	2	20	Negative	
A	7	3	40	Negative	
A	8	1	60	Negative	
A	8	2	80	Negative	
A	8	3	100	Negative	
A	8	4	120	Negative	
A	8	5	140	Negative	
A	9	1	0	Negative	
A	9	2	20	Negative	
A	9	3	40	Negative	
A	9	4	60	Negative	
A	9	5	80	Negative	
A	9	6	100	Negative	
A	9	7	120	Negative	
A	10	1	0	Negative	
A	10	2	20	Negative	
A	10	3	40	Negative	
A	10	4	60	Negative	
A	10	5	80	Negative	
A	10	6	100	Negative	
A	11	1	0	Negative	
A	11	2	20	Negative	
A	11	3	40	Negative	
A	11	4	60	Negative	
A	11	5	80	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
A	11	6	100	Negative	
A	12	1	0	Negative	
A	12	2	20	Negative	
A	12	3	40	Negative	
A	12	4	60	Negative	
A	12	5	80	Negative	
B	1	1	0	Negative	
B	1	2	20	Negative	
B	1	3	40	Negative	
B	1	4	60	Negative	
B	1	5	80	Negative	
B	1	6	100	Negative	
B	1	7	120	Negative	
B	1	8	140	Negative	
B	1	9	160	Negative	
B	1	10	180	Negative	
B	1	11	200	Negative	
B	1	12	220	Negative	
B	1	13	240	Negative	
B	1	14	260	Negative	
B	1	15	280	Negative	
B	1	16	300	Negative	
B	1	17	320	Negative	
B	1	18	340	Negative	
B	1	19	360	Negative	
B	1	20	380	Negative	
B	1	21	400	Negative	
B	1	22	420	Negative	
B	1	23	440	Negative	
B	1	24	460	Negative	
B	1	25	480	Negative	
B	1	26	500	Negative	
B	1	27	520	Negative	
B	1	28	540	Negative	
B	1	29	560	Negative	
B	1	30	580	Negative	
B	1	31	600	Negative	
B	1	32	620	Negative	
B	1	33	640	Negative	
B	1	34	660	Negative	
B	1	35	680	Negative	
B	1	36	700	Negative	
B	1	37	720	Negative	
B	1	38	740	Negative	
B	1	39	760	Negative	
B	1	40	780	Negative	
B	1	41	800	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
B	1	42	820	Negative	
B	1	43	840	Negative	
B	1	44	860	Negative	
B	1	45	880	Negative	
B	1	46	900	Negative	
B	1	47	920	Negative	
B	1	48	940	Negative	
B	1	49	960	Negative	
B	1	50	980	Negative	
B	1	51	1000	Negative	
B	1	52	1020	Negative	
B	1	53	1040	Negative	
B	1	54	1060	Negative	
B	1	55	1080	Negative	
B	1	56	1100	Negative	
B	1	57	1120	Negative	
B	1	58	1140	Negative	
B	1	59	1160	Negative	
C	1	1	0	Negative	
C	1	2	20	Negative	
C	1	3	40	Negative	
C	1	4	60	Negative	
C	1	5	80	Negative	
C	1	6	100	Negative	
C	1	7	120	Negative	
C	1	8	140	Negative	
C	1	9	160	Negative	
C	1	10	180	Negative	
C	1	11	200	Negative	
C	1	12	220	Negative	
C	1	13	240	Negative	
C	1	14	260	Negative	
C	1	15	280	Negative	
C	1	16	300	Negative	
C	1	17	320	Negative	
C	1	18	340	Negative	
C	1	19	360	Negative	
C	1	20	380	Negative	
C	1	21	400	Negative	
C	1	22	420	Negative	
C	1	23	440	Negative	
C	1	24	460	Negative	
C	1	25	480	Negative	
C	1	26	500	Negative	
C	1	27	520	Negative	
C	1	28	540	Negative	
C	1	29	560	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
C	1	30	580	Negative	
C	1	31	600	Negative	
C	1	32	620	Negative	
C	1	33	640	Negative	
C	1	34	660	Negative	
C	1	35	680	Negative	
C	1	36	700	Negative	
C	1	37	720	Negative	
C	1	38	740	Negative	
C	1	39	760	Negative	
C	1	40	780	Negative	
C	1	41	800	Negative	
C	1	42	820	Negative	
C	1	43	840	Negative	
C	1	44	860	Negative	
C	1	45	880	Negative	
C	1	46	900	Negative	
C	1	47	920	Negative	
C	1	48	940	Negative	
C	1	49	960	Negative	
C	1	50	980	Negative	
C	1	51	1000	Negative	
C	1	52	1020	Negative	
C	1	53	1040	Negative	
C	1	54	1060	Negative	
C	1	55	1080	Negative	
C	1	56	1100	Negative	
C	1	57	1120	Negative	
C	1	58	1140	Negative	
C	1	59	1160	Negative	
C	1	60	1180	Negative	
C	1	61	1200	Negative	
C	1	62	1220	Negative	
C	1	63	1240	Negative	
C	1	64	1260	Negative	
C	1	65	1280	Negative	
C	1	66	1300	Negative	
C	1	67	1320	Negative	
C	1	68	1340	Negative	
C	1	69	1360	Negative	
C	1	70	1380	Negative	
C	1	71	1400	Negative	
C	1	72	1420	Negative	
C	1	73	1440	Negative	
C	1	74	1460	Negative	
C	1	75	1480	Negative	
C	1	76	1500	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
C	1	77	1520	Negative	
C	2	1	0	Negative	
C	2	2	20	Negative	
C	2	3	40	Negative	
C	2	4	60	Negative	
C	2	5	80	Negative	
C	2	6	100	Negative	
C	2	7	120	Negative	
C	2	8	140	Negative	
C	2	9	160	Negative	
C	2	10	180	Negative	
C	2	11	200	Negative	
C	2	12	220	Negative	
C	2	13	240	Negative	
C	2	14	260	Negative	
C	2	15	280	Negative	
C	2	16	300	Negative	
C	2	17	320	Negative	
C	3	1	0	Negative	
C	3	2	20	Negative	
C	3	3	40	Negative	
C	3	4	60	Negative	
C	3	5	80	Negative	
C	3	6	100	Negative	
C	3	7	120	Negative	
C	4	1	0	Negative	
C	4	2	20	Negative	
C	4	3	40	Negative	
C	4	4	60	Negative	
C	4	5	80	Negative	
C	4	6	100	Negative	
C	4	7	120	Negative	
C	4	8	140	Negative	
C	4	9	160	Negative	
C	4	10	180	Negative	
C	4	11	200	Negative	
C	4	12	220	Negative	
C	4	13	240	Negative	
C	4	14	260	Negative	
C	4	15	280	Negative	
C	4	16	300	Negative	
C	4	17	320	Negative	
C	4	18	340	Negative	
C	4	19	360	Negative	
C	4	20	380	Negative	
C	4	21	400	Negative	
C	4	22	420	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
C	4	23	440	Negative	
C	4	24	460	Negative	
C	4	25	480	Negative	
C	4	26	500	Negative	
C	4	27	520	Negative	
C	5	1	0	Negative	
C	5	2	20	Negative	
C	5	3	40	Negative	
C	5	4	60	Negative	
C	5	5	80	Negative	
C	5	6	100	Negative	
C	5	7	120	Negative	
C	5	8	140	Negative	
C	5	9	160	Negative	
C	5	10	180	Negative	
C	5	11	200	Negative	
C	5	12	220	Negative	
C	6	1	0	Negative	
C	6	2	20	Negative	
C	6	3	40	Negative	
C	6	4	60	Negative	
C	6	5	80	Negative	
C	6	6	100	Negative	
C	6	7	120	Negative	
C	7	1	0	Negative	
C	7	2	20	Negative	
C	7	3	40	Negative	
C	7	4	60	Negative	
C	7	5	80	Negative	
C	8	1	0	Negative	
C	8	2	20	Negative	
C	8	3	40	Negative	
C	8	4	60	Negative	
C	8	5	80	Negative	
C	8	6	100	Negative	
C	8	7	120	Negative	
C	8	8	140	Negative	
C	8	9	160	Negative	
C	8	10	180	Negative	
C	8	11	200	Negative	
C	8	12	220	Negative	
C	8	13	240	Negative	
C	8	14	260	Negative	
C	8	15	280	Negative	
C	8	16	300	Negative	
C	8	17	320	Negative	
C	8	18	340	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
C	8	19	360	Negative	
C	8	20	380	Negative	
C	9	1	0	Negative	
C	9	2	20	Negative	
C	9	3	40	Negative	
C	9	4	60	Negative	
D	1	1	0	Negative	
D	1	2	20	Negative	
D	1	3	40	Negative	
D	1	4	60	Negative	
D	1	5	80	Negative	
D	1	6	100	Negative	
D	1	7	120	Negative	
D	1	8	140	Negative	
D	1	9	160	Negative	
D	1	10	180	Negative	
D	1	11	200	Negative	
D	1	12	220	Negative	
D	1	13	240	Negative	
D	1	14	260	Negative	
D	1	15	280	Negative	
D	1	16	300	Negative	
D	1	17	320	Negative	
D	1	18	340	Negative	
D	1	19	360	Negative	
D	1	20	380	Negative	
D	1	21	400	Negative	
D	1	22	420	Negative	
D	1	23	440	Negative	
D	1	24	460	Negative	
D	1	25	480	Negative	
D	1	26	500	Negative	
D	1	27	520	Negative	
D	1	28	540	Negative	
D	1	29	560	Negative	
D	1	30	580	Negative	
D	1	31	600	Negative	
D	1	32	620	Negative	
D	1	33	640	Negative	
D	1	34	660	Negative	
D	1	35	680	Negative	
D	1	36	700	Negative	
D	1	37	720	Negative	
D	1	38	740	Negative	
D	1	39	760	Negative	
D	1	40	780	Negative	
D	1	41	800	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
D	2	1	0	Negative	
D	2	2	20	Negative	
D	2	3	40	Negative	
D	2	4	60	Negative	
D	2	5	80	Negative	
D	2	6	100	Negative	
D	2	7	120	Negative	
D	2	8	140	Negative	
D	2	9	160	Negative	
D	2	10	180	Negative	
D	2	11	200	Negative	
D	2	12	220	Negative	
D	2	13	240	Negative	
D	2	14	260	Negative	
D	2	15	280	Negative	
D	2	16	300	Negative	
D	2	17	320	Negative	
D	2	18	340	Negative	
D	2	19	360	Negative	
D	2	20	380	Negative	
D	2	21	400	Negative	
D	2	22	420	Negative	
D	2	23	440	Negative	
D	2	24	460	Negative	
D	2	25	480	Negative	
D	2	26	500	Negative	
D	2	27	520	Negative	
D	2	28	540	Negative	
D	2	29	560	Negative	
D	2	30	580	Negative	
D	2	31	600	Negative	
D	2	32	620	Negative	
D	2	33	640	Negative	
D	2	34	660	Negative	
D	2	35	680	Negative	
D	2	36	700	Negative	
D	2	37	720	Negative	
D	3	1	0	Negative	
D	3	2	20	Negative	
D	3	3	40	Negative	
D	3	4	60	Negative	
D	3	5	80	Negative	
D	3	6	100	Negative	
D	3	7	120	Negative	
D	3	8	140	Negative	
D	3	9	160	Negative	
D	3	10	180	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
D	3	11	200	Negative	
D	3	12	220	Negative	
D	3	13	240	Negative	
D	3	14	260	Negative	
D	3	15	280	Negative	
D	3	16	300	Negative	
D	3	17	320	Negative	
D	3	18	340	Negative	
D	3	19	360	Negative	
D	3	20	380	Negative	
D	3	21	400	Negative	
D	3	22	420	Negative	
D	3	23	440	Negative	
D	3	24	460	Negative	
D	3	25	480	Negative	
D	3	26	500	Negative	
D	3	27	520	Negative	
D	3	28	540	Negative	
D	3	29	560	Negative	
D	3	30	580	Negative	
D	3	31	600	Negative	
D	3	32	620	Negative	
D	3	33	640	Negative	
D	3	34	660	Negative	
D	4	1	0	Negative	
D	4	2	20	Negative	
D	4	3	40	Negative	
D	4	4	60	Negative	
D	4	5	80	Negative	
D	4	6	100	Negative	
D	4	7	120	Negative	
D	4	8	140	Negative	
D	4	9	160	Negative	
D	4	10	180	Negative	
D	4	11	200	Negative	
D	4	12	220	Negative	
D	4	13	240	Negative	
D	4	14	260	Negative	
D	4	15	280	Negative	
D	4	16	300	Negative	
D	4	17	320	Negative	
D	4	18	340	Negative	
D	4	19	360	Negative	
D	4	20	380	Negative	
D	4	21	400	Negative	
D	4	22	420	Negative	
D	4	23	440	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
D	4	24	460	Negative	
D	4	25	480	Negative	
D	4	26	500	Negative	
D	4	27	520	Negative	
D	5	1	0	Negative	
D	5	2	20	Negative	
D	5	3	40	Negative	
D	5	4	60	Negative	
D	5	5	80	Negative	
D	5	6	100	Negative	
D	5	7	120	Negative	
D	5	8	140	Negative	
D	5	9	160	Negative	
D	5	10	180	Negative	
D	5	11	200	Negative	
D	5	12	220	Negative	
D	5	13	240	Negative	
D	5	14	260	Negative	
D	5	15	280	Negative	
D	5	16	300	Negative	
D	5	17	320	Negative	
D	5	18	340	Negative	
D	6	1	0	Negative	
D	6	2	20	Negative	
D	6	3	40	Negative	
D	6	4	60	Negative	
D	6	5	80	Negative	
D	6	6	100	Negative	
D	6	7	120	Negative	
D	6	8	140	Negative	
D	6	9	160	Negative	
D	6	10	180	Negative	
D	6	11	200	Negative	
D	6	12	220	Negative	
D	6	13	240	Negative	
D	6	14	260	Negative	
D	6	15	280	Negative	
D	6	16	300	Negative	
D	6	17	320	Negative	
D	6	18	340	Negative	
D	6	19	360	Negative	
D	6	20	380	Negative	
D	7	1	0	Negative	
D	7	2	20	Negative	
D	7	3	40	Negative	
D	7	4	60	Negative	
D	7	5	80	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
D	7	6	100	Negative	
D	7	7	120	Negative	
D	7	8	140	Negative	
D	7	9	160	Negative	
D	7	10	180	Negative	
D	7	11	200	Negative	
D	7	12	220	Negative	
D	7	13	240	Negative	
D	7	14	260	Negative	
D	7	15	280	Negative	
D	8	1	0	Negative	
D	8	2	20	Negative	
D	8	3	40	Negative	
D	8	4	60	Negative	
D	8	5	80	Negative	
D	8	6	100	Negative	
D	8	7	120	Negative	
D	8	8	140	Negative	
D	8	9	160	Negative	
D	8	10	180	Negative	
D	8	11	200	Negative	
D	8	12	220	Negative	
D	9	1	0	Negative	
D	9	2	20	Negative	
D	9	3	40	Negative	
D	9	4	60	Negative	
D	9	5	80	Negative	
D	9	6	100	Negative	
D	9	7	120	Negative	
D	9	8	140	Negative	
D	9	9	160	Negative	
D	9	10	180	Negative	
D	10	1	0	Negative	
D	10	2	20	Negative	
D	10	3	40	Negative	
D	10	4	60	Negative	
D	10	5	80	Negative	
D	10	6	100	Negative	
D	10	7	120	Negative	
D	11	1	0	Negative	
D	11	2	20	Negative	
D	11	3	40	Negative	
D	11	4	60	Negative	
D	11	5	80	Negative	
D	11	6	100	Negative	
D	12	1	0	Negative	
D	12	2	20	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
D	12	3	40	Negative	
D	12	4	60	Negative	
D	12	5	80	Negative	
D	13	1	0	Negative	
D	13	2	20	Negative	
D	13	3	40	Negative	
D	14	1	0	Negative	
D	14	2	20	Negative	
E	1	1	0	Negative	
E	1	2	20	Negative	
E	1	3	40	Negative	
E	1	4	60	Negative	
E	1	5	80	Negative	
E	1	6	100	Negative	Location of Site 3PU415
E	1	7	105	Negative	Location of Site 3PU415
E	1	8	110	Negative	Location of Site 3PU415
E	1	9	115	Negative	Location of Site 3PU415
E	1	10	120	Negative	Location of Site 3PU415
E	1	11	125	Negative	Location of Site 3PU415
E	1	12	130	Negative	Location of Site 3PU415
E	1	13	135	Negative	Location of Site 3PU415
E	1	14	140	Negative	Location of Site 3PU415
E	1	15	145	Negative	Location of Site 3PU415
E	1	16	150	Negative	Location of Site 3PU415
E	1	17	155	Negative	Location of Site 3PU415
E	1	18	160	Negative	Location of Site 3PU415
E	1	19	165	Negative	Location of Site 3PU415
E	1	20	170	Negative	Location of Site 3PU415
E	1	21	175	Negative	Location of Site 3PU415
E	1	22	180	Negative	Location of Site 3PU415
E	1	23	185	Negative	Location of Site 3PU415
E	1	24	190	Negative	Location of Site 3PU415
E	1	25	195	Negative	Location of Site 3PU415
E	1	26	200	Negative	Location of Site 3PU415
E	1	27	220	Negative	
E	1	28	240	Negative	
E	1	29	260	Negative	
E	1	30	280	Negative	
E	1	31	300	Negative	
E	1	32	320	Negative	
E	2	1	0	Negative	
E	2	2	20	Negative	
E	2	3	40	Negative	
E	2	4	60	Negative	
E	2	5	80	Negative	
E	2	6	100	Negative	Location of Site 3PU415
E	2	7	105	Negative	Location of Site 3PU415

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
E	2	8	110	Negative	Location of Site 3PU415
E	2	9	115	Negative	Location of Site 3PU415
E	2	10	120	Negative	Location of Site 3PU415
E	2	11	125	Negative	Location of Site 3PU415
E	2	12	130	Negative	Location of Site 3PU415
E	2	13	135	Negative	Location of Site 3PU415
E	2	14	140	Negative	Location of Site 3PU415
E	2	15	145	Negative	Location of Site 3PU415
E	2	16	150	Negative	Location of Site 3PU415
E	2	17	155	Negative	Location of Site 3PU415
E	2	18	160	Negative	Location of Site 3PU415
E	2	19	165	Negative	Location of Site 3PU415
E	2	20	170	Negative	Location of Site 3PU415
E	2	21	175	Negative	Location of Site 3PU415
E	2	22	180	Negative	Location of Site 3PU415
E	2	23	200	Negative	
E	2	24	220	Negative	
E	2	25	240	Negative	
E	2	26	260	Negative	
E	3	1	0	Negative	
E	3	2	20	Negative	
E	3	3	40	Negative	
E	3	4	60	Negative	
E	3	5	80	Negative	
E	3	6	100	Negative	
E	3	7	120	Negative	
E	3	8	140	Negative	
E	3	9	160	Negative	
E	3	1	0	Negative	
E	3	2	20	Negative	
E	3	3	40	Negative	
E	3	4	60	Negative	
E	3	5	80	Negative	
E	3	6	100	Negative	
E	3	7	120	Negative	
E	3	8	140	Negative	
E	3	9	160	Negative	
E	3	10	180	Negative	
E	3	11	200	Negative	
E	4	1	0	Negative	
E	4	2	20	Negative	
E	4	3	40	Negative	
E	4	4	60	Negative	
E	4	5	80	Negative	
E	4	6	100	Negative	
E	4	7	120	Negative	
E	4	8	140	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
E	4	9	160	Negative	
F	1	1	0	Negative	
F	1	2	20	Negative	
F	1	3	40	Negative	
F	1	4	60	Negative	
F	1	5	80	Negative	
F	1	6	100	Negative	
F	1	7	120	Negative	
F	1	8	140	Negative	
F	1	9	160	Negative	
F	1	10	180	Negative	
F	1	11	200	Negative	
F	1	12	220	Negative	
F	1	13	240	Negative	
F	1	14	260	Negative	
F	1	15	280	Negative	
F	1	16	300	Negative	
F	1	17	320	Negative	
F	1	18	340	Negative	
F	1	19	360	Negative	
F	1	20	380	Negative	
F	1	21	400	Negative	
F	1	22	420	Negative	
F	1	23	440	Negative	
F	1	24	460	Negative	
F	1	25	480	Negative	
F	1	26	500	Negative	
F	1	27	520	Negative	
F	1	28	540	Negative	
F	1	29	560	Negative	
F	1	30	580	Negative	
F	1	31	600	Negative	
F	1	32	620	Negative	
F	1	33	640	Negative	
F	1	34	660	Negative	
F	1	35	680	Negative	
F	1	36	700	Negative	
F	1	37	720	Negative	
F	1	38	740	Negative	
F	1	39	760	Negative	
F	1	40	780	Negative	
F	1	41	800	Negative	
F	1	42	820	Negative	
F	1	43	840	Negative	
F	1	44	860	Negative	
F	1	45	880	Negative	
F	1	46	900	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
F	1	47	920	Negative	
F	1	48	940	Negative	
F	1	49	960	Negative	
F	1	50	980	Negative	
F	1	51	1000	Negative	
F	1	52	1020	Negative	
F	1	53	1040	Negative	
F	1	54	1060	Negative	
F	1	55	1080	Negative	
F	1	56	1100	Negative	
F	1	57	1120	Negative	
F	1	58	1140	Negative	
F	1	59	1160	Negative	
F	1	60	1180	Negative	
F	1	61	1200	Negative	
F	1	62	1220	Negative	
F	1	63	1240	Negative	
F	1	64	1260	Negative	
F	1	65	1280	Negative	
F	1	66	1300	Negative	
F	1	67	1320	Negative	
F	1	68	1340	Negative	
F	1	69	1360	Negative	
F	1	70	1380	Negative	
F	2	1	0	Negative	
F	2	2	20	Negative	
F	2	3	40	Negative	
F	2	4	60	Negative	
F	2	5	80	Negative	
F	2	6	100	Negative	
F	2	7	120	Negative	
F	2	8	140	Negative	
F	2	9	160	Negative	
F	2	10	180	Negative	
F	2	11	200	Negative	
F	2	12	220	Negative	
F	2	13	240	Negative	
F	2	14	260	Negative	
F	2	15	280	Negative	
F	2	16	300	Negative	
F	2	17	320	Negative	
F	2	18	340	Negative	
F	2	19	360	Negative	
F	2	20	380	Negative	
F	2	21	400	Negative	
F	2	22	420	Negative	
F	2	23	440	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
F	2	24	460	Negative	
F	2	25	480	Negative	
F	2	26	500	Negative	
F	2	27	520	Negative	
F	2	28	540	Negative	
F	2	29	560	Negative	
F	2	30	580	Negative	
F	2	31	600	Negative	
F	2	32	620	Negative	
F	2	33	640	Negative	
F	2	34	660	Negative	
F	2	35	680	Negative	
F	2	36	700	Negative	
F	2	37	720	Negative	
F	2	38	740	Negative	
F	2	39	760	Negative	
F	2	40	780	Negative	
F	2	41	800	Negative	
F	2	42	820	Negative	
F	2	43	840	Negative	
F	2	44	860	Negative	
F	2	45	880	Negative	
F	2	46	900	Negative	
F	2	47	920	Negative	
F	2	48	940	Negative	
F	2	49	960	Negative	
F	2	50	980	Negative	
F	2	51	1000	Negative	
F	2	52	1020	Negative	
F	2	53	1040	Negative	
F	2	54	1060	Negative	
F	2	55	1080	Negative	
F	2	56	1100	Negative	
F	2	57	1120	Negative	
F	2	58	1140	Negative	
F	2	59	1160	Negative	
F	2	60	1180	Negative	
F	2	61	1200	Negative	
F	2	62	1220	Negative	
F	2	63	1240	Negative	
F	2	64	1260	Negative	
F	2	65	1280	Negative	
F	2	66	1300	Negative	
F	2	67	1320	Negative	
F	3	1	0	Negative	
F	3	2	20	Negative	
F	3	3	40	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
F	3	4	60	Negative	
F	3	5	80	Negative	
F	3	6	100	Negative	
F	3	7	120	Negative	
F	3	8	140	Negative	
F	3	9	160	Negative	
F	3	10	180	Negative	
F	3	11	200	Negative	
F	3	12	220	Negative	
F	3	13	240	Negative	
F	3	14	260	Negative	
F	3	15	280	Negative	
F	3	16	300	Negative	
F	3	17	320	Negative	
F	3	18	340	Negative	
F	3	19	360	Negative	
F	3	20	380	Negative	
F	3	21	400	Negative	
F	3	22	420	Negative	
F	3	23	440	Negative	
F	3	24	460	Negative	
F	3	25	480	Negative	
F	3	26	500	Negative	
F	3	27	520	Negative	
F	3	28	540	Negative	
F	3	29	560	Negative	
F	3	30	580	Negative	
F	3	31	600	Negative	
F	3	32	620	Negative	
F	3	33	640	Negative	
F	3	34	660	Negative	
F	3	35	680	Negative	
F	3	36	700	Negative	
F	3	37	720	Negative	
F	3	38	740	Negative	
F	3	39	760	Negative	
F	3	40	780	Negative	
F	3	41	800	Negative	
F	3	42	820	Negative	
F	3	43	840	Negative	
F	3	44	860	Negative	
F	3	45	880	Negative	
F	3	46	900	Negative	
F	3	47	920	Negative	
F	3	48	940	Negative	
F	3	49	960	Negative	
F	3	50	980	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
F	3	51	1000	Negative	
F	3	52	1020	Negative	
F	3	53	1040	Negative	
F	3	54	1060	Negative	
F	3	55	1080	Negative	
F	3	56	1100	Negative	
F	3	57	1120	Negative	
F	3	58	1140	Negative	
F	3	59	1160	Negative	
F	3	60	1180	Negative	
F	3	61	1200	Negative	
F	3	62	1220	Negative	
F	3	63	1240	Negative	
F	4	1	0	Negative	
F	4	2	20	Negative	
F	4	3	40	Negative	
F	4	4	60	Negative	
F	4	5	80	Negative	
F	4	6	100	Negative	
F	4	7	120	Negative	
F	4	8	140	Negative	
F	4	9	160	Negative	
F	4	10	180	Negative	
F	4	11	200	Negative	
F	4	12	220	Negative	
F	4	13	240	Negative	
F	4	14	260	Negative	
F	4	15	280	Negative	
F	4	16	300	Negative	
F	4	17	320	Negative	
F	4	18	340	Negative	
F	4	19	360	Negative	
F	4	20	380	Negative	
F	4	21	400	Negative	
F	4	22	420	Negative	
F	4	23	440	Negative	
F	4	24	460	Negative	
F	4	25	480	Negative	
F	4	26	500	Negative	
F	4	27	520	Negative	
F	4	28	540	Negative	
F	4	29	560	Negative	
F	4	30	580	Negative	
F	4	31	600	Negative	
F	4	32	620	Negative	
F	4	33	640	Negative	
F	4	34	660	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
F	4	35	680	Negative	
F	4	36	700	Negative	
F	4	37	720	Negative	
F	4	38	740	Negative	
F	4	39	760	Negative	
F	4	40	780	Negative	
F	4	41	800	Negative	
F	4	42	820	Negative	
F	4	43	840	Negative	
F	4	44	860	Negative	
F	4	45	880	Negative	
F	4	46	900	Negative	
F	4	47	920	Negative	
F	4	48	940	Negative	
F	4	49	960	Negative	
F	4	50	980	Negative	
F	5	1	0	Negative	
F	5	2	20	Negative	
F	5	3	40	Negative	
F	5	4	60	Negative	
F	5	5	80	Negative	
F	5	6	100	Negative	
F	5	7	120	Negative	
F	5	8	140	Negative	
F	5	9	160	Negative	
F	5	10	180	Negative	
F	5	11	200	Negative	
F	5	12	220	Negative	
F	5	13	240	Negative	
F	5	14	260	Negative	
F	5	15	280	Negative	
F	5	16	300	Negative	
F	5	17	320	Negative	
F	5	18	340	Negative	
F	5	19	360	Negative	
F	5	20	380	Negative	
F	5	21	400	Negative	
F	5	22	420	Negative	
F	5	23	440	Negative	
F	5	24	460	Negative	
F	5	25	480	Negative	
F	5	26	500	Negative	
F	5	27	520	Negative	
F	5	28	540	Negative	
F	5	29	560	Negative	
F	5	30	580	Negative	
F	5	31	600	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
F	5	32	620	Negative	
F	5	33	640	Negative	
F	6	1	0	Negative	
F	6	2	20	Negative	
F	6	3	40	Negative	
F	6	4	60	Negative	
F	6	5	80	Negative	
F	6	6	100	Negative	
F	6	7	120	Negative	
F	6	8	140	Negative	
F	6	9	160	Negative	
F	6	10	180	Negative	
F	6	11	200	Negative	
F	6	12	220	Negative	
F	6	13	240	Negative	
F	6	14	260	Negative	
F	6	15	280	Negative	
F	6	16	300	Negative	
G	1	1	0	Negative	
G	1	2	20	Negative	
G	1	3	40	Negative	
G	1	4	60	Negative	
G	1	5	80	Negative	
G	1	6	100	Negative	
G	1	7	120	Negative	
G	1	8	140	Negative	
G	1	9	160	Negative	
G	1	10	180	Negative	
G	1	11	200	Negative	
G	1	12	220	Negative	
G	1	13	240	Negative	
G	1	14	260	Negative	
G	1	15	280	Negative	
G	1	16	300	Negative	
G	1	17	320	Negative	
G	1	18	340	Negative	
G	1	19	360	Negative	
G	1	20	380	Negative	
G	1	21	400	Negative	
G	1	22	420	Negative	
G	1	23	440	Negative	
G	1	24	460	Negative	
G	1	25	480	Negative	
G	1	26	500	Negative	
G	1	27	520	Negative	
G	1	28	540	Negative	
G	1	29	560	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
G	1	30	580	Negative	
G	1	31	600	Negative	
G	1	32	620	Negative	
G	1	33	640	Negative	
G	1	34	660	Negative	
G	1	35	680	Negative	
G	1	36	700	Negative	
G	1	37	720	Negative	
G	1	38	740	Negative	
G	1	39	760	Negative	
G	1	40	780	Negative	
G	1	41	800	Negative	
G	1	42	820	Negative	
G	1	43	840	Negative	
G	1	44	860	Negative	
G	1	45	880	Negative	
G	1	46	900	Negative	
G	1	47	920	Negative	
G	1	48	940	Negative	
G	1	49	960	Negative	
G	1	50	980	Negative	
G	1	51	1000	Negative	
G	1	52	1020	Negative	
G	1	53	1040	Negative	
G	1	54	1060	Negative	
G	1	55	1080	Negative	
G	1	56	1100	Negative	
G	1	57	1120	Negative	
G	1	58	1140	Negative	
G	1	59	1160	Negative	
G	1	60	1180	Negative	
G	1	61	1200	Negative	
G	1	62	1220	Negative	
G	1	63	1240	Negative	
G	1	64	1260	Negative	
G	1	65	1280	Negative	
G	1	66	1300	Negative	
G	1	67	1320	Negative	
G	1	68	1340	Negative	
G	1	69	1360	Negative	
G	1	70	1380	Negative	
G	1	71	1400	Negative	
G	1	72	1420	Negative	
G	1	73	1440	Negative	
G	1	74	1460	Negative	
G	1	75	1480	Negative	
G	1	76	1500	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
G	1	77	1520	Negative	
G	1	78	1540	Negative	
G	1	79	1560	Negative	
G	1	80	1580	Negative	
G	1	81	1600	Negative	
G	1	82	1620	Negative	
G	1	83	1640	Negative	
G	1	84	1660	Negative	
G	1	85	1680	Negative	
G	1	86	1700	Negative	
G	1	87	1720	Negative	
G	2	1	0	Negative	
G	2	2	20	Negative	
G	2	3	40	Negative	
G	2	4	60	Negative	
G	2	5	80	Negative	
G	2	6	100	Negative	
G	2	7	120	Negative	
G	2	8	140	Negative	
G	2	9	160	Negative	
G	2	10	180	Negative	
G	2	11	200	Negative	
G	2	12	220	Negative	
G	2	13	240	Negative	
G	2	14	260	Negative	
G	2	15	280	Negative	
G	2	16	300	Negative	
G	2	17	320	Negative	
G	2	18	340	Negative	
G	2	19	360	Negative	
G	2	20	380	Negative	
G	2	21	400	Negative	
G	2	22	420	Negative	
G	2	23	440	Negative	
G	2	24	460	Negative	
G	2	25	480	Negative	
G	2	26	500	Negative	
G	2	27	520	Negative	
G	2	28	540	Negative	
G	2	29	560	Negative	
G	2	30	580	Negative	
G	2	31	600	Negative	
G	2	32	620	Negative	
G	2	33	640	Negative	
G	2	34	660	Negative	
G	2	35	680	Negative	
G	2	36	700	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
G	2	37	720	Negative	
G	2	38	740	Negative	
G	2	39	760	Negative	
G	2	40	780	Negative	
G	2	41	800	Negative	
G	2	42	820	Negative	
G	2	43	840	Negative	
G	2	44	860	Negative	
G	2	45	880	Negative	
G	2	46	900	Negative	
G	2	47	920	Negative	
G	2	48	940	Negative	
G	2	49	960	Negative	
G	2	50	980	Negative	
G	2	51	1000	Negative	
G	2	52	1020	Negative	
G	2	53	1040	Negative	
G	2	54	1060	Negative	
G	2	55	1080	Negative	
G	2	56	1100	Negative	
G	2	57	1120	Negative	
G	2	58	1140	Negative	
G	2	59	1160	Negative	
G	2	60	1180	Negative	
G	2	61	1200	Negative	
G	2	62	1220	Negative	
G	2	63	1240	Negative	
G	2	64	1260	Negative	
G	2	65	1280	Negative	
G	2	66	1300	Negative	
G	2	67	1320	Negative	
G	2	68	1340	Negative	
G	2	69	1360	Negative	
G	2	70	1380	Negative	
G	2	71	1400	Negative	
G	2	72	1420	Negative	
G	2	73	1440	Negative	
G	2	74	1460	Negative	
G	2	75	1480	Negative	
G	2	76	1500	Negative	
G	2	77	1520	Negative	
G	2	78	1540	Negative	
G	2	79	1560	Negative	
G	2	80	1580	Negative	
G	2	81	1600	Negative	
G	2	82	1620	Negative	
G	2	83	1640	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
G	2	84	1660	Negative	
G	2	85	1680	Negative	
G	3	1	0	Negative	
G	3	2	20	Negative	
G	3	3	40	Negative	
G	3	4	60	Negative	
H	1	1	0	Negative	
H	1	2	20	Negative	
H	1	3	40	Negative	
H	1	4	60	Negative	
H	1	5	80	Negative	
H	1	6	100	Negative	
H	1	7	120	Negative	
H	1	8	140	Negative	
H	1	9	160	Negative	
H	1	10	180	Negative	
H	1	11	200	Negative	
H	1	12	220	Negative	
H	1	13	240	Negative	
H	1	14	260	Negative	
H	1	15	280	Negative	
H	1	16	300	Negative	
H	1	17	320	Negative	
H	1	18	340	Negative	
H	1	19	360	Negative	
H	1	20	380	Negative	
H	1	21	400	Negative	
H	1	22	420	Negative	
H	1	23	440	Negative	
H	1	24	460	Negative	
H	1	25	480	Negative	
H	1	26	500	Negative	
H	1	27	520	Negative	
H	1	28	540	Negative	
H	1	29	560	Negative	
H	1	30	580	Negative	
H	1	31	600	Negative	
H	1	32	620	Negative	
H	1	33	640	Negative	
H	1	34	660	Negative	
H	1	35	680	Negative	
H	1	36	700	Negative	
H	1	37	720	Negative	
H	1	38	740	Negative	
H	1	39	760	Negative	
H	1	40	780	Negative	
H	1	41	800	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
H	1	42	820	Negative	
H	1	43	840	Negative	
H	1	44	860	Negative	
H	1	45	880	Negative	
H	1	46	900	Negative	
H	1	47	920	Negative	
H	1	48	940	Negative	
H	1	49	960	Negative	
H	1	50	980	Negative	
H	1	51	1000	Negative	
H	1	52	1020	Negative	
H	1	53	1040	Negative	
H	1	54	1060	Negative	
H	1	55	1080	Negative	
H	1	56	1100	Negative	
H	1	57	1120	Negative	
H	1	58	1140	Negative	
H	1	59	1160	Negative	
H	1	60	1180	Negative	
H	1	61	1200	Negative	
H	1	62	1220	Negative	
H	1	63	1240	Negative	
H	1	64	1260	Negative	
H	1	65	1280	Negative	
H	1	66	1300	Negative	
H	1	67	1320	Negative	
H	1	68	1340	Negative	
H	1	69	1360	Negative	
H	1	70	1380	Negative	
H	1	71	1400	Negative	
H	1	72	1420	Negative	
H	1	73	1440	Negative	
H	1	74	1460	Negative	
H	1	75	1480	Negative	
H	1	76	1500	Negative	
H	1	77	1520	Negative	
H	1	78	1540	Negative	
H	1	79	1560	Negative	
H	1	80	1580	Negative	
H	1	81	1600	Negative	
H	1	82	1620	Negative	
H	1	83	1640	Negative	
H	1	84	1660	Negative	
H	1	85	1680	Negative	
H	1	86	1700	Negative	
H	1	87	1720	Negative	
H	1	88	1740	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
H	1	89	1760	Negative	
H	1	90	1780	Negative	
H	2	1	0	Negative	
H	2	2	20	Negative	
H	2	3	40	Negative	
H	2	4	60	Negative	
H	2	5	80	Negative	
H	2	6	100	Negative	
H	2	7	120	Negative	
H	2	8	140	Negative	
H	2	9	160	Negative	
H	2	10	180	Negative	
H	2	11	200	Negative	
H	2	12	220	Negative	
H	2	13	240	Negative	
H	2	14	260	Negative	
H	2	15	280	Negative	
H	2	16	300	Negative	
H	2	17	320	Negative	
H	2	18	340	Negative	
H	2	19	360	Negative	
H	2	20	380	Negative	
H	2	21	400	Negative	
H	2	22	420	Negative	
H	2	23	440	Negative	
H	2	24	460	Negative	
H	2	25	480	Negative	
H	2	26	500	Negative	
H	2	27	520	Negative	
H	2	28	540	Negative	
H	2	29	560	Negative	
H	2	30	580	Negative	
H	2	31	600	Negative	
H	2	32	620	Negative	
H	2	33	640	Negative	
H	2	34	660	Negative	
H	2	35	680	Negative	
H	2	36	700	Negative	
H	2	37	720	Negative	
H	2	38	740	Negative	
H	2	39	760	Negative	
H	2	40	780	Negative	
H	2	41	800	Negative	
H	2	42	820	Negative	
H	2	43	840	Negative	
H	2	44	860	Negative	
H	2	45	880	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
H	2	46	900	Negative	
H	2	47	920	Negative	
H	2	48	940	Negative	
H	2	49	960	Negative	
H	2	50	980	Negative	
H	2	51	1000	Negative	
H	2	52	1020	Negative	
H	2	53	1040	Negative	
H	2	54	1060	Negative	
H	2	55	1080	Negative	
H	2	56	1100	Negative	
H	2	57	1120	Negative	
H	2	58	1140	Negative	
H	2	59	1160	Negative	
H	2	60	1180	Negative	
H	2	61	1200	Negative	
H	2	62	1220	Negative	
H	2	63	1240	Negative	
H	2	64	1260	Negative	
H	2	65	1280	Negative	
H	2	66	1300	Negative	
H	2	67	1320	Negative	
H	2	68	1340	Negative	
H	2	69	1360	Negative	
H	2	70	1380	Negative	
H	2	71	1400	Negative	
H	2	72	1420	Negative	
H	2	73	1440	Negative	
H	2	74	1460	Negative	
H	2	75	1480	Negative	
H	2	76	1500	Negative	
H	2	77	1520	Negative	
H	2	78	1540	Negative	
H	2	79	1560	Negative	
H	2	80	1580	Negative	
H	2	81	1600	Negative	
H	2	82	1620	Negative	
H	2	83	1640	Negative	
H	2	84	1660	Negative	
H	2	85	1680	Negative	
H	2	86	1700	Negative	
H	2	87	1720	Negative	
H	2	88	1740	Negative	
H	2	89	1760	Negative	
H	2	90	1780	Negative	
H	2	91	1800	Negative	
I	1	1	0	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
I	1	2	20	Negative	
I	1	3	40	Negative	
I	1	4	60	Negative	
I	1	5	80	Negative	
I	1	6	100	Negative	
I	1	7	120	Negative	
I	1	8	140	Negative	
I	1	9	160	Negative	
I	1	10	180	Negative	
I	1	11	200	Negative	
I	1	12	220	Negative	
I	1	13	240	Negative	
I	1	14	260	Negative	
I	1	15	280	Negative	
I	1	16	300	Negative	
I	1	17	320	Negative	
I	1	18	340	Negative	
I	1	19	360	Negative	
I	1	20	380	Negative	
I	1	21	400	Negative	
I	1	22	420	Negative	
I	1	23	440	Negative	
I	1	24	460	Negative	
I	1	25	480	Negative	
I	1	26	500	Negative	
I	1	27	520	Negative	
I	1	28	540	Negative	
I	1	29	560	Negative	
I	1	30	580	Negative	
I	1	31	600	Negative	
I	1	32	620	Negative	
I	1	33	640	Negative	
I	2	1	0	Negative	
I	2	2	20	Negative	
I	2	3	40	Negative	
I	2	4	60	Negative	
I	2	5	80	Negative	
I	2	6	100	Negative	
I	2	7	120	Negative	
I	2	8	140	Negative	
I	2	9	160	Negative	
I	2	10	180	Negative	
I	2	11	200	Negative	
I	2	12	220	Negative	
I	2	13	240	Negative	
I	2	14	260	Negative	
I	2	15	280	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
I	2	16	300	Negative	
I	2	17	320	Negative	
I	2	18	340	Negative	
I	2	19	360	Negative	
I	2	20	380	Negative	
I	2	21	400	Negative	
I	2	22	420	Negative	
I	2	23	440	Negative	
I	2	24	460	Negative	
I	2	25	480	Negative	
I	2	26	500	Negative	
I	3	1	0	Negative	
I	3	2	20	Negative	
I	3	3	40	Negative	
I	3	4	60	Negative	
I	3	5	80	Negative	
I	3	6	100	Negative	
I	3	7	120	Negative	
I	3	8	140	Negative	
I	3	9	160	Negative	
I	3	10	180	Negative	
I	3	11	200	Negative	
I	3	12	220	Negative	
I	3	13	240	Negative	
I	3	14	260	Negative	
I	3	15	280	Negative	
I	3	16	300	Negative	
I	3	17	320	Negative	
I	3	18	340	Negative	
I	3	19	360	Negative	
I	4	1	0	Negative	
I	4	2	20	Negative	
I	4	3	40	Negative	
I	4	4	60	Negative	
I	4	5	80	Negative	
I	4	6	100	Negative	
I	4	7	120	Negative	
I	4	8	140	Negative	
I	4	9	160	Negative	
I	4	10	180	Negative	
I	4	11	200	Negative	
I	4	12	220	Negative	
I	4	13	240	Negative	
I	4	14	260	Negative	
J	1	1	0	Negative	
J	1	2	20	Negative	
	1	3	40	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
J	1	4	60	Negative	
J	1	5	80	Negative	
J	1	6	100	Negative	
J	1	7	120	Negative	
J	1	8	140	Negative	
J	1	9	160	Negative	
J	1	10	180	Negative	
J	1	11	200	Negative	
J	1	12	220	Negative	
J	1	13	240	Negative	
J	2	1	0	Negative	
J	2	2	20	Negative	
J	2	3	40	Negative	
J	2	4	60	Negative	
J	2	5	80	Negative	
J	2	6	100	Negative	
J	2	7	120	Negative	
J	2	8	140	Negative	
J	2	9	160	Negative	
J	2	10	180	Negative	
J	2	11	200	Negative	
J	2	12	220	Negative	
J	2	13	240	Negative	
J	3	1	0	Negative	
J	3	2	20	Negative	
J	3	3	40	Negative	
J	3	4	60	Negative	
J	3	5	80	Negative	
J	3	6	100	Negative	
J	3	7	120	Negative	
J	3	8	140	Negative	
J	3	9	160	Negative	
J	3	10	180	Negative	
J	3	11	200	Negative	
J	4	1	0	Negative	
J	4	2	20	Negative	
J	4	3	40	Negative	
J	4	4	60	Negative	
J	4	5	80	Negative	
J	4	6	100	Negative	
J	4	7	120	Negative	
J	4	8	140	Negative	
J	4	9	160	Negative	
J	4	10	180	Negative	
J	4	11	200	Negative	
J	4	12	220	Negative	
J	5	1	0	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
J	5	2	20	Negative	
J	5	3	40	Negative	
J	5	4	60	Negative	
J	5	5	80	Negative	
J	5	6	100	Negative	
J	5	7	120	Negative	
J	5	8	140	Negative	
J	5	9	160	Negative	
J	5	10	180	Negative	
J	5	11	200	Negative	
J	5	12	220	Negative	
K	1	1	0	Negative	
K	1	2	20	Negative	
K	1	3	40	Negative	
K	1	4	60	Negative	
K	1	5	80	Negative	
K	1	6	100	Negative	
K	1	7	120	Negative	
K	1	8	140	Negative	
K	1	9	160	Negative	
K	1	10	180	Negative	
K	1	11	200	Negative	
K	1	12	220	Negative	
K	1	13	240	Negative	
K	1	14	260	Negative	
K	1	15	280	Negative	
K	1	16	300	Negative	
K	1	17	320	Negative	
K	1	18	340	Negative	
K	1	19	360	Negative	
K	1	20	380	Negative	
K	1	21	400	Negative	
K	1	22	420	Negative	
K	2	1	0	Negative	
K	2	2	20	Negative	
K	2	3	40	Negative	
K	2	4	60	Negative	
K	2	5	80	Negative	
K	2	6	100	Negative	
K	2	7	120	Negative	
K	2	8	140	Negative	
K	2	9	160	Negative	
K	2	10	180	Negative	
K	2	11	200	Negative	
K	2	12	220	Negative	
K	2	13	240	Negative	
K	2	14	260	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
K	2	15	280	Negative	
K	2	16	300	Negative	
K	2	17	320	Negative	
K	2	18	340	Negative	
K	2	19	360	Negative	
K	2	20	380	Negative	
K	2	21	400	Negative	
K	3	1	0	Negative	
K	3	2	20	Negative	
K	3	3	40	Negative	
K	3	4	60	Negative	
K	3	5	80	Negative	
K	3	6	100	Negative	
K	3	7	120	Negative	
K	3	8	140	Negative	
K	3	9	160	Negative	
K	3	10	180	Negative	
K	3	11	200	Negative	
K	3	12	220	Negative	
K	4	1	0	Negative	
K	4	2	20	Negative	
K	4	3	40	Negative	
K	4	4	60	Negative	
K	4	5	80	Negative	
K	4	6	100	Negative	
K	5	1	0	Negative	
K	5	2	20	Negative	
K	5	3	40	Negative	
K	6	1	0	Negative	
K	6	2	20	Negative	
K	7	1	0	Negative	
K	7	2	20	Negative	
K	7	3	40	Negative	
K	7	4	60	Negative	
K	7	5	80	Negative	
K	7	6	100	Negative	
K	7	7	120	Negative	
K	7	8	140	Negative	
K	7	9	160	Negative	
K	7	10	180	Negative	
K	7	11	200	Negative	
K	7	12	220	Negative	
K	7	13	240	Negative	
K	7	14	260	Negative	
K	7	15	280	Negative	
K	8	1	0	Negative	
K	8	2	20	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
K	8	3	40	Negative	
K	8	4	60	Negative	
K	8	5	80	Negative	
K	8	6	100	Negative	
K	8	7	120	Negative	
K	8	8	140	Negative	
K	8	9	160	Negative	
K	8	10	180	Negative	
K	8	11	200	Negative	
K	8	12	220	Negative	
K	8	13	240	Negative	
K	8	14	260	Negative	
K	8	15	280	Negative	
K	8	16	300	Negative	
K	8	17	320	Negative	
K	8	18	340	Negative	
K	8	19	360	Negative	
K	8	20	380	Negative	
K	8	21	400	Negative	
K	8	22	420	Negative	
K	8	23	440	Negative	
K	8	24	460	Negative	
K	8	25	480	Negative	
K	8	26	500	Negative	
L	1	1	0	Negative	
L	1	2	20	Negative	
L	1	3	40	Negative	
L	1	4	60	Negative	
L	1	5	80	Negative	
L	1	6	100	Negative	
L	1	7	120	Negative	
L	1	8	140	Negative	
L	1	9	160	Negative	
L	1	10	180	Negative	
L	1	11	200	Negative	
L	1	12	220	Negative	
L	1	13	240	Negative	
L	1	14	260	Negative	
L	1	15	280	Negative	
L	1	16	300	Negative	
L	1	17	320	Negative	
L	1	18	340	Negative	
L	1	19	360	Negative	
L	1	20	380	Negative	
L	1	21	400	Negative	
L	1	22	420	Negative	
L	2	1	0	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
L	2	2	20	Negative	
L	2	3	40	Negative	
L	2	4	60	Negative	
L	2	5	80	Negative	
L	2	6	100	Negative	
L	2	7	120	Negative	
L	2	8	140	Negative	
L	2	9	160	Negative	
L	2	10	180	Negative	
L	2	11	200	Negative	
L	2	12	220	Negative	
L	2	13	240	Negative	
L	2	14	260	Negative	
L	2	15	280	Negative	
L	2	16	300	Negative	
L	2	17	320	Negative	
M	1	1	0	Negative	
M	1	2	20	Negative	
M	1	3	40	Negative	
M	1	4	60	Negative	
M	1	5	80	Negative	
M	1	6	100	Negative	
M	1	7	120	Negative	
M	1	8	140	Negative	
M	1	9	160	Negative	
M	1	10	180	Negative	
M	1	11	200	Negative	
M	1	12	220	Negative	
M	1	13	240	Negative	
M	1	14	260	Negative	
M	1	15	280	Negative	
M	1	16	300	Negative	
M	1	17	320	Negative	
M	1	18	340	Negative	
M	1	19	360	Negative	
M	1	20	380	Negative	
M	1	21	400	Negative	
M	1	22	420	Negative	
M	1	23	440	Negative	
M	1	24	460	Negative	
M	1	25	480	Negative	
M	1	26	500	Negative	
M	1	27	520	Negative	
M	1	28	540	Negative	
M	1	29	560	Negative	
M	1	30	580	Negative	
M	1	31	600	Negative	

Appendix F: Shovel Test Inventory for Segment 4

Appendix F: Shovel Test Inventory for Segment 4					
Area	Transect	Shovel Test	Meters	Result	Notes
M	1	32	620	Negative	
M	1	33	640	Negative	
M	1	34	660	Negative	
M	1	35	680	Negative	
M	1	36	700	Negative	
M	1	37	720	Negative	
M	1	38	740	Negative	
M	1	39	760	Negative	
M	1	40	780	Negative	
M	1	41	800	Negative	
M	1	42	820	Negative	
M	1	43	840	Negative	
M	1	44	860	Negative	
M	1	45	880	Negative	
M	1	46	900	Negative	
M	1	47	920	Negative	
M	1	48	940	Negative	
M	1	49	960	Negative	
M	1	50	980	Negative	
M	1	51	1000	Negative	
M	1	52	1020	Negative	
M	1	53	1040	Negative	
M	1	54	1060	Negative	
M	1	55	1080	Negative	
M	1	56	1100	Negative	
M	1	57	1120	Negative	