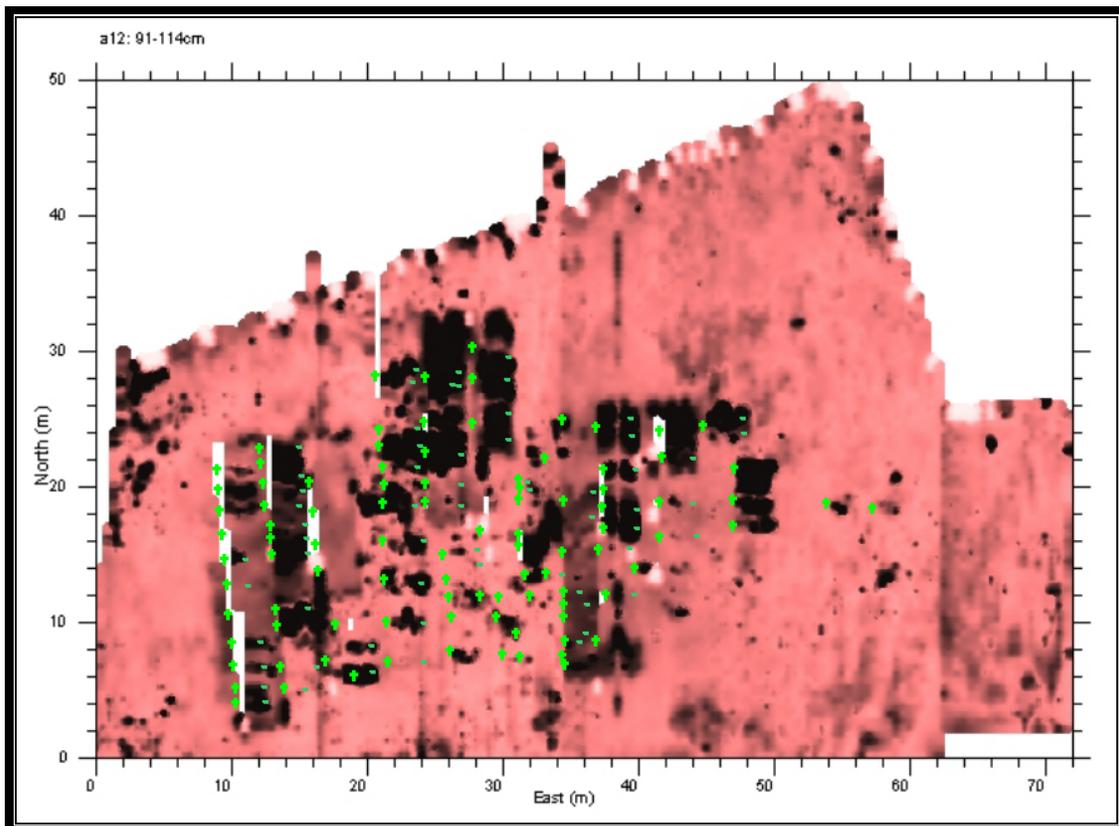


Delineation of the Jameson Family Cemetery, Pickens County, South Carolina

LAMAR Institute Publication Series
Report Number 141



The LAMAR Institute, Inc.
2009

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2009

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I. Introduction

This report presents the delineation of the Jameson Family Cemetery, which is located near the Dacusville Community in southeastern Pickens County, South Carolina. This medium-sized cemetery contains the remains of members of the Jameson and related families. The cemetery contains many 19th and 20th century graves and one 21st century grave. It is a well-kept cemetery that is managed by the Jameson Family Cemetery, Inc. The LAMAR Institute was retained by the Jameson Family Cemetery, Inc. to conduct this research project.

The study area is contained within a 2 acre tract at 517 Jameson Road, Easley, South Carolina (Figure 1, study area shown in yellow). The property is owned by the Jameson Family Cemetery, Inc. The cemetery is contained within a fenced enclosure about 0.6 acres in size. The cemetery is situated on a hilltop, approximately 332 m (1088 feet) above sea level (Pickens County Tax Assessor 2009).

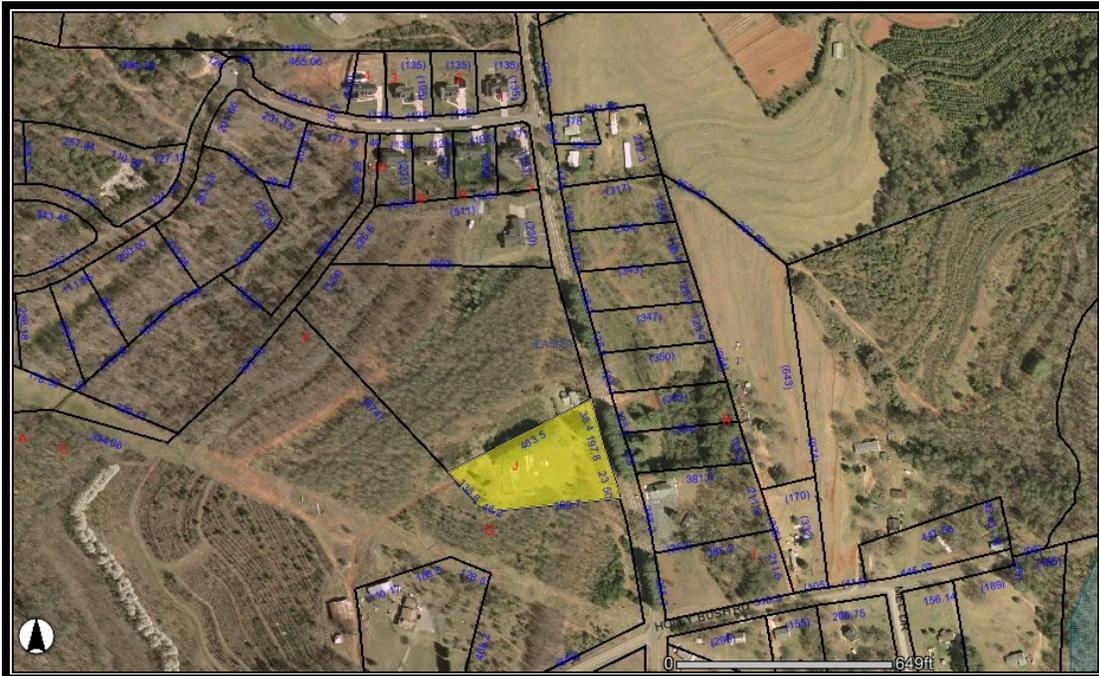


Figure 1. Aerial View of Jameson Family Cemetery Study Area (Cemetery Tract Shown in Yellow (Pickens County Tax Assessor 2009).

Two days of fieldwork were completed in February, 2009 and laboratory analysis and reporting were finalized in April, 2009. The delineation effort included a Ground Penetrating Radar survey, total station mapping, digital photography and other cultural documentation.

This report contains five chapters. Chapter II details the methods used in the study. Chapter III presents the results of the fieldwork. Chapter IV delves into a deeper analysis

of the gathered data and interprets the findings. Chapter V contains a concise summary of the project. The report is followed by list of references cited.

Two appendices are contained on an accompanying CD-Rom disc, which is attached to the inside back cover of the report. Appendix 1 contains a tabulation of the graves and other relevant features in the Jameson Family Cemetery. Appendix 2 contains digital images from the project, including grave marker photographs, Ground Penetrating Radar output, and selected cemetery maps.

II. Methods

The field study of the Jameson Family Cemetery was comprised of three parts: mapping, digital photography, and ground penetrating radar survey. These research tools were used to delineate the cultural features at the cemetery.

The project team made a detailed topographic map with the aid of a Sokkia Total Station and TDS Recon data collector. A primary site datum was established 1 meter north and east of the southwest corner (500 m N, 500 m E) of the cemetery enclosure. The datum had these approximate UTM Coordinates: Zone 17, Easting 355096, Northing 3860107 (North American Datum 1927), which were determined using a Garmin GPSmap 60CSx handheld GPS unit. Grid North for the site grid was oriented along Magnetic North.

The crew took digital photographs of all tombstone markers (and many tombstone footers) as well as general views of the project. The locations chosen for taking the transit reading of the grave markers was along the central western side of each marker. The photographs of the graves were keyed to the topographic map and to the list of graves in the Jameson Family Cemetery in Appendix 1. A complete photographic inventory of the grave markers is contained in Appendix 2.

Ground Penetrating Radar, or GPR, uses high frequency electromagnetic microwaves to acquire subsurface data. The device uses a transmitter antenna and closely spaced receiver antenna to detect changes in electromagnetic properties beneath them. The antennas are suspended just above the ground surface and the antennas are shielded to eliminate interference from sources other than directly beneath the device. The transmitting antenna emits a series of electromagnetic waves, which are distorted by differences in soil conductivity, dielectric permittivity, and magnetic permeability. The receiving antenna records the reflected waves for a specified length of time in nanoseconds (ns). The approximate depth of an object can be estimated with GPR by adjusting for electromagnetic propagation conditions.

The GPR sample blocks in this study area were composed of a series of parallel transects, or traverses, spaced 50 cm apart, which yielded a two-dimensional cross-section or profile of the radar data. These samples are termed radargrams. This two-dimensional image is constructed from a sequence of thousands of individual radar traces. A succession of radar traces bouncing off a large buried object will produce a hyperbola, when viewed graphically in profile. Multiple large objects that are in close proximity may produce multiple, overlapping hyperbolas, which are more difficult to interpret. For example, an isolated historic grave may produce a clear signal, represented by a well-defined hyperbola. A cluster of graves, however, may produce a more garbled signal that is less apparent.

The GPR signals that are captured by the receiving antenna are recorded as an array of numerals, which can be converted to gray scale (or color) pixel values. The radargrams are essentially a vertical map of the radar reflection off objects and other soil anomalies.

It is not an actual map of the objects. The radargram is produced in real time and is viewable on a computer monitor, mounted on the GPR cart. These raw data are later processed in the laboratory to provide additional interpretive information.

GPR has been successfully used for archaeological and forensic anthropological applications to locate relatively shallow features, although the technique also can probe deeply into the ground. The machine is adjusted to best probe to the depth of interest by the use of different frequency range antennas. Higher frequency antennas are more useful at shallow depths, which is most often the case in archaeology. Also, the longer the amount of time (ns) the receiving antenna is set to receive GPR signals, the deeper the search.

The effectiveness of GPR in numerous environments on the North American continent is widely variable and depends on solid conductivity, metallic content, and other pedo-chemical factors. Generally, South Carolina's soils have moderately good properties for its application.

GPR signals cannot penetrate large metal objects and the signals are also significantly affected by the presence of salt water. Although radar does not penetrate metal objects, it does generate a distinctive signal that is usually recognizable, particularly for larger metal objects, such as a cast iron cannon or man-hole cover. The signal beneath these objects is often canceled out, which results in a pattern of horizontal lines on the radargram. For smaller objects, such as a scatter of nails, the signal may ricochet from the objects and produce a confusing signal. Rebar-reinforced concrete, as another example, generates an unmistakable radar pattern of rippled lines on the radargram. Larry Conyers notes: "Ground-penetrating radar works best in sandy and silty soils and sediments that are not saturated with water. The method does not work at all in areas where soils are saturated with salt water because this media is electrically conductive and 'conducts away' the radar energy before it can be reflected in the ground" (Conyers 2002).

The equipment used for this study consisted of a RAMAC/X3M Integrated Radar Control Unit, mounted on a wheeled-cart and linked to a RAMAC XV11 Monitor (Firmware, Version 3.2.36). A 500 megahertz (MHz) shielded antenna was used for the data gathering. MALÅ GeoScience's *Ground Vision* (Version 1.4.5) software was used to acquire and record the radar data (MALÅ GeoScience USA 2006a). Figure 2 shows the GPR survey of the Jameson Family Cemetery in progress.

GPR has proven effective in examining historic cemeteries in Georgia and South Carolina. Using the same RAMAC X3M GPR system as that used in the present study, the author successfully completed several GPR studies of 18th and 19th century archaeological sites in Georgia and South Carolina, including numerous cemeteries (Elliott 2003a-c; 2004; 2006a-d; 2008; Rita Elliott et al. 2002; Battle and Battle 2006).



Figure 2. GPR Survey in Progress.

Upon arrival at the site, the RAMAC X3M Radar Unit was set up for the operation and calibrated. Several trial runs were made on parts of the site to test the machine's effectiveness in the site's soils. Machinery settings and other pertinent logistical attributes included the following:

Machine Settings

Time Window: 75.3 ns
Number of Stacks: 4
Number of Samples: 592
Antenna: 500 MHz shielded
Sampling Frequency: 7462.12 MHz
Antenna Separation: 0.18 m
Radargram Spacing: 50 cm

Various adjustments to the GPR equipment were made in the field during the data collection phase. The time window that was selected allowed data gathering to focus on the upper two meters of soil, which was the zone most likely to yield archaeological deposits relating to human burial. Additional filters were used to refine the radar information during post-processing. These include adjustments to the gain. These alterations to the data are reversible, however, and do not affect the original data that was collected.

The radar information was displayed as a series of radargrams. Output from the survey was viewed using the *GroundVision* software program developed by MALÅ GeoScience, which provided preliminary information about the suitability of GPR survey in the area and the effective operation of the equipment. *Easy 3D* software (Version 1.3.3), also developed by MALÅ GeoScience (2006b), was used in post-processing the radar data and 3-D imaging. This entailed merging the data from the series of radargrams for each block. Once this was accomplished, horizontal slices of the data were examined for important anomalies and patterns of anomalies, which were likely of cultural relevance. These data were displayed as aerial plan maps of the sample areas at varying depths below ground surface. These horizontal views, or time-slices, display the radar information at a set time depth in nanoseconds. Time-depth can be roughly equated to depth below ground.

The GPR data from the present study was further processed with more robust imaging software, *GPR-Slice* (Version 6.0), which was developed by Dean Goodman. Goodman's *GPR-Slice* program is recognized as the world leader in GPR imaging (Goodman 2009). The output from his software, which is superior to that generated by *Easy 3D*, provided the time slices and animations presented in this report.

GPR Block A was an irregular polygon that measured from 12 m to 56 m North-South by 71 m East-West. A total of 185 radargrams, which totaled 4969.4 linear meters of radar data, was collected within this block. The arrangement of these radargrams is depicted in Figure 3. One of these radargrams (DAT_0096) was redundant and was discarded, so 184 radargrams comprise the sample. Radargrams were collected from South to North and data collection progress was from West to East. The Datum for GPR Block A was the primary site datum (500 m N, 500 m E) located at approximate UTM Coordinates: Zone 17, Easting 355096, Northing 3860107 (North American Datum 1927). This sample encompassed nearly all of the available ground within the Jameson Family Cemetery enclosed space. Areas that were not surveyed within this space included tombstones, large shrubs, and areas very close to the cemetery fence.

The survey was accomplished on February 5 and 6, 2009 by the LAMAR Institute survey team (Daniel Elliott and Rita Folse Elliott) and volunteers Michael M. Johnson and John Jameson. The first 95 radargrams were collected on February 5 and Radargrams 96-185 were collected the next day. Weather conditions at the time of the survey were brisk (17 degrees to 50 degrees) with clear skies. The survey conditions included mostly manicured grass with one boxwood shrub and many large rectangular areas delineated by stone or cement coping and raised pea graveled surfaces.

After the survey of the Jameson Family Cemetery was completed on February 6, The LAMAR Institute team conducted a brief reconnaissance of a second cemetery site, which is possibly associated with the burial place of William Jameson, Sr. and wife Margaret Westmoreland. This area is located near the aforementioned Jameson cemetery on property owned by John Gilstrap. It is known as the Freeman-Fowler-Jameson Cemetery and its approximate UTM location is Zone 17, 353624 Easting, and 3863130 Northing (NAD27). This small cemetery is located in a narrow section of hardwoods between the paved state highway and a large cattle pasture. The area was reconnoitered, the GPR equipment was used to sample a few selected transects, and several digital photographs were taken of the tombstones and environs.

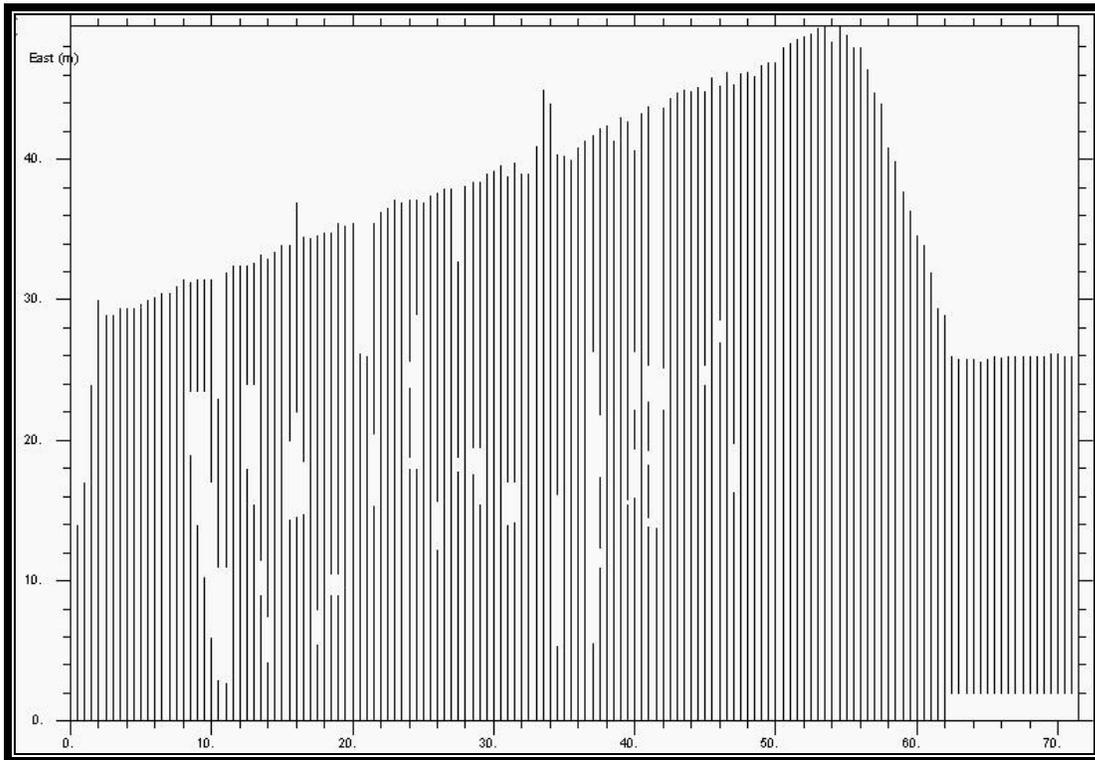


Figure 3. GPR Survey Transect Coverage of Jameson Family Cemetery.

III. Results

Mapping

A topographic map was completed of the Jameson Family Cemetery and surrounding environs. Various versions of the map were generated and one version of the topographic map is shown in Figure 4. Figure 5 shows a plan map of the Jameson Family Cemetery with headstones, footstones and site topography provided. Other versions are contained in Appendix 2. The dotted green polygon on this maps shows the outer extent of the graveyard as it is currently known from surface features and GPR mapping. The area enclosed by the cemetery fence is a larger tract that includes this polygon. The site elevation is based on an arbitrarily defined elevation of 100 m that was established at the primary site datum (500N, 500E).

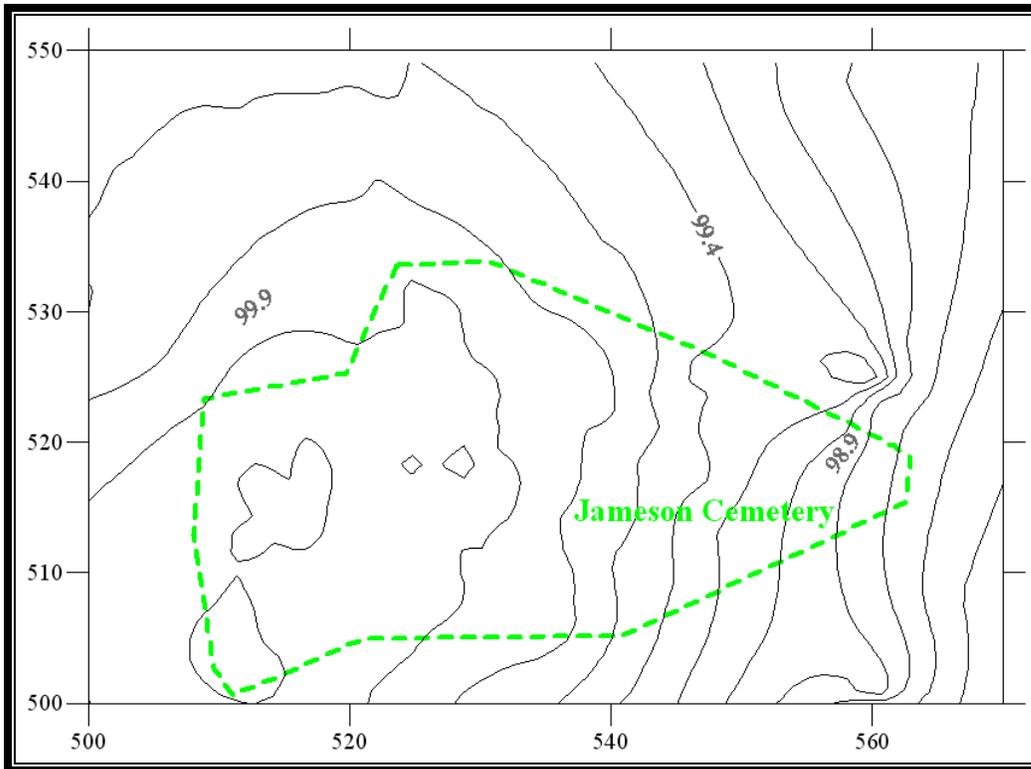


Figure 4. Topography of the Jameson Family Cemetery.

Grave Recordation

Tombstones, footstones and other grave markers were digitally photographed and these images were keyed to geographic locations on the site map. Names, birth and death dates were recorded for each headstone. The type and raw material of each grave marker was noted. Complete recordation of all epitaph data was beyond the scope of the project. Likewise, historical research about those persons buried in the cemetery was not required for this project. Table 1 and Appendix 1 provide summary information for the graves that were identified by epitaph, unmarked headstones, and GPR survey. These lists include

two potential graves identified by cursory historical research, as well as potential graves that were identified by GPR survey only. These data were compared with similar epitaph data collected in October, 2004 (Bruce 2004). Supplemental information on persons buried in the cemetery, which was gathered from historical research, is indicated in brackets [].

Graves that were confirmed by GPR survey are indicated with a “1” in the GPR column in these tables. Those that were not apparent from GPR survey are indicated by a “0”. The Photo column references the file names for digital photographs of the grave markers that are contained in Appendix 2.

This column is hyperlinked so that the files on the CD Rom disc may be easily accessed by clicking the photograph name in the table.

Figure 6 is a close-up showing the layout of the headstones in the Jameson Family Cemetery. The numbers of each grave are shown to the right of the cross symbol and are keyed to the information in Table 1 and Appendices 1 and 2. Site grid coordinates for these grave markers are included in these lists. Footstone information also was completely mapped but these data are not illustrated here. Digital maps of footstones and the cement and stone coping around many family grave plots are included in Appendix 2.

Newspaper obituaries are another important source of mortuary information relating to the Jameson Family Cemetery. The tombstone of Arlington S. Jameson (Grave 24) provides a death date of November 5, 1912 and Arlington’s obituary attributed his death to pneumonia (*The State* 1912:3). A preliminary newspaper search revealed two other examples of obituaries for interments in the Jameson Family Cemetery, including Amanda Melvina McAdams and Fred Bomar Jameson. A class of potential burials in the cemetery is those identified by genealogical research, but who have no marked grave in the cemetery. One example in this category is Sloan Odus Stegall, who was born in 1875 and died on February 12, 1943. The Jameson genealogy research noted that he was buried in the Jameson Family Cemetery in Pickens County but his grave stone was not located.

GPR Survey

The GPR survey of the Jameson Family Cemetery yielded very good GPR data. Signal strength was favorable for successful penetration and mapping to depths greater than three meters.

Radargrams are profile views of the radar data. Figures 7 through 11 are several examples of GPR radargrams collected by the survey. These images were generated with *GroundVision* software. Each of these selected examples contains potential grave information and most contain multiple grave radar signatures. Human burials often appear as pronounced hyperbolic reflections in these radargrams. The full suite of 184 radargrams collected from the Jameson Family Cemetery may be viewed in Appendix 2. Additional views of selected radargrams, generated using GPR-Slice software, are provided in the next chapter. Figure 7 is a radargram for DAT_0040, which was located

in the western portion of the cemetery. This radargram begins at about 500 m N, 514 m E.

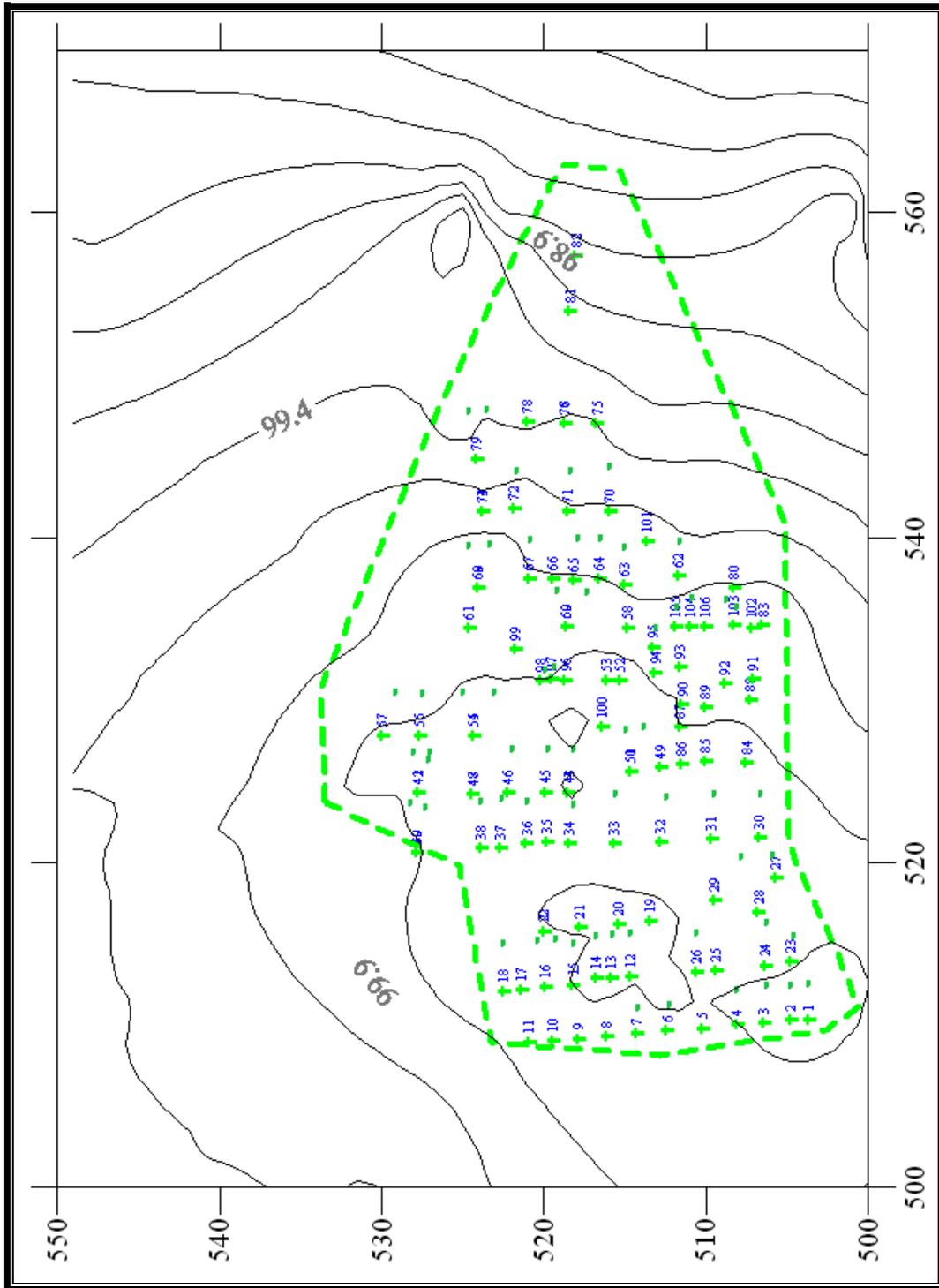


Figure 5. Headstones and Footstones and Site Topography, Jameson Family Cemetery.

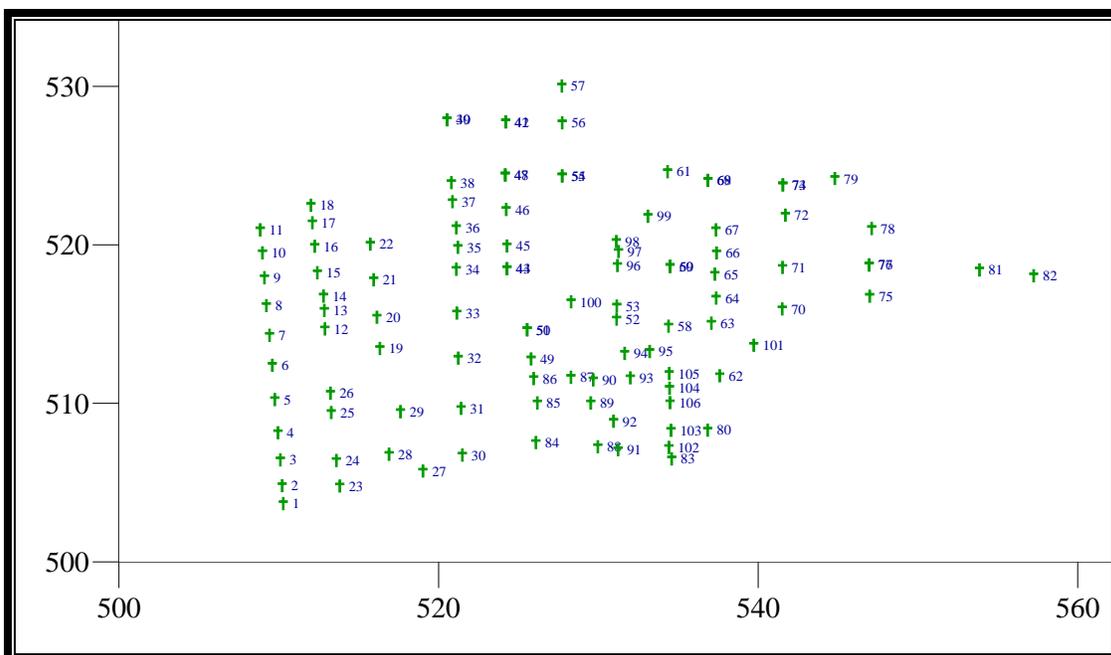


Figure 6. Graves in Jameson Family Cemetery.

Figure 8 shows the radargram for DAT_0081, which is located near the center of the cemetery. This radargram begins at about 500 m N, 528 m E. At least nine probable graves are apparent in this radargram, including two (at 8 m and 27 m) that are either metal coffins, or coffins capped with metal vaults. The microwaves emitted by the GPR radar unit cannot penetrate these two massive metal objects, but they are recognized by the distinctive reflection created by the metal mass.

Figure 9 shows radargram DAT_0108, which is located on the east-central portion of the cemetery. This radargram begins at about 500 m N, 538 m E. It displays seven or more strong reflections that likely represent graves. The surface grave markers along this tract (shown as white triangles) correspond to subsurface anomalies. Several medium sized metal objects are also evidenced in this side view.

Figure 10 shows radargram DAT_0127, which is located on the eastern side of the cemetery. This radargram begins at about 500 m N, 548 m E. This area contains few obvious grave markers.

Figure 11 shows radargram DAT_0151, which is located on the eastern end of the cemetery. This radargram begins at about 500 m N, 558 m E. A small, unmarked cut marble slab (Grave 82) is lying horizontal on the surface along this transect. A small, but pronounced deep radar reflection is apparent beneath this marker. It may represent the burial of a small child. Most of the area covered by this sample yielded few strong reflections, which suggests that minimal ground disturbance took place here and no dense deposit of human burials is evident in this portion of the cemetery.

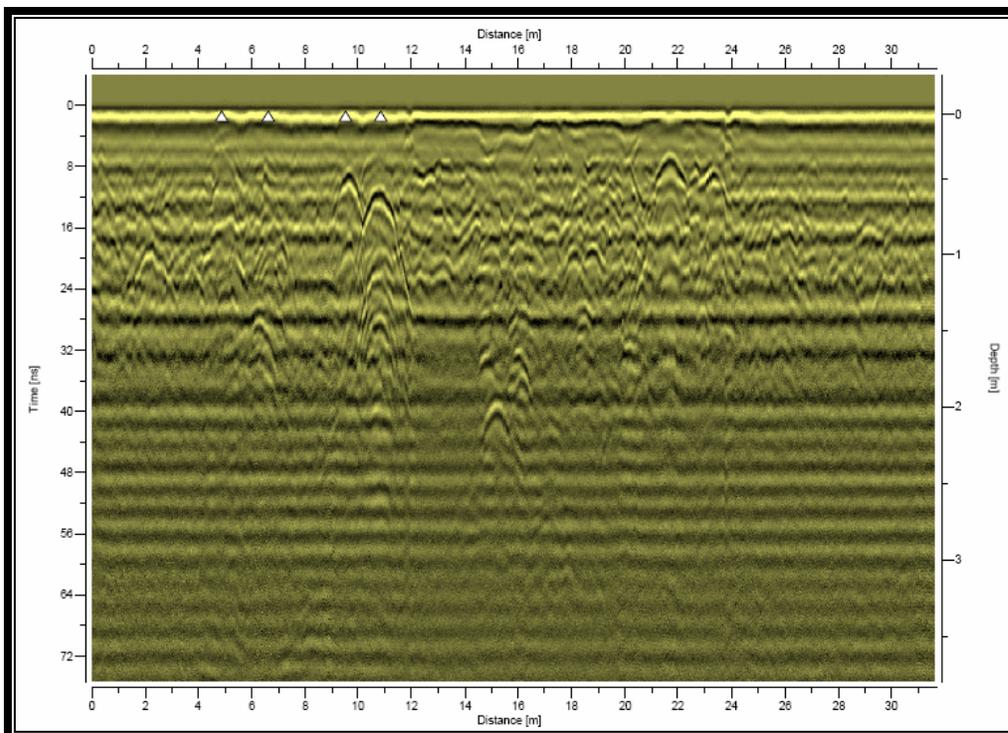


Figure 7. GPR Radargram of DAT-0040, Which Displays Six or More Probable Grave Reflections on the Western Portion of the Cemetery (Grave Markers Indicated by White Triangles) (Approximately 500-532N, 514E).

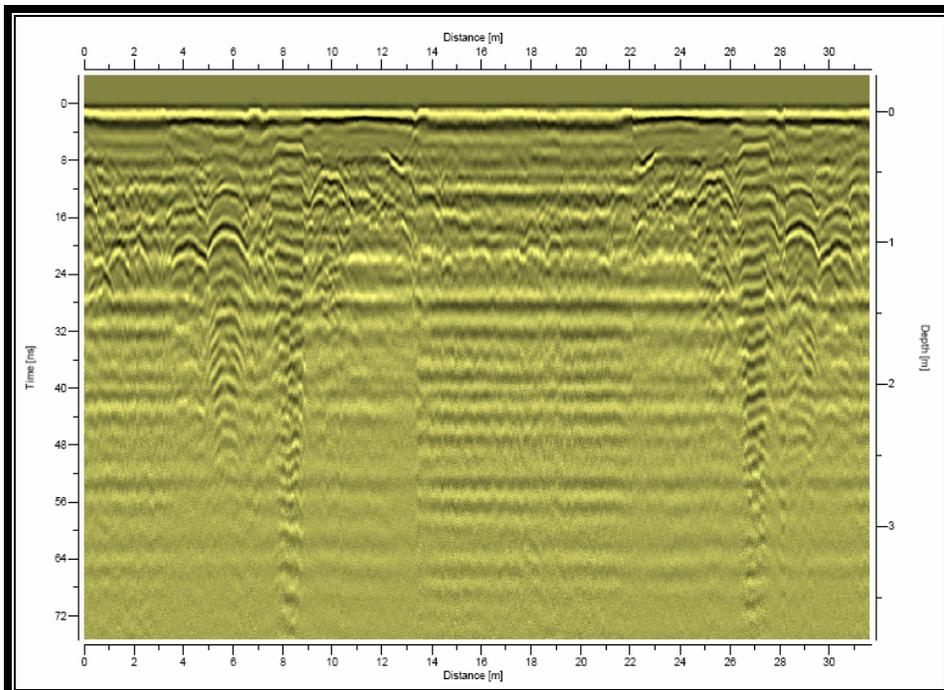


Figure 8. GPR Radargram of DAT-0081, Which Displays Nine or More Probable Grave Reflections on the West Central Portion of the Cemetery (Approximately 500-532N, 528E).

Table 1. Jameson Family Cemetery Inventory.

ID	North	East	Elev (m)	GPR	Photo	Surname	Given name	Birth	Death
1	503.69	510.40	100.25	1	H1	Jameson	Miles Finley	2/28/1912	10/21/1987
2	504.82	510.33	100.24	1	H2	Jameson	John Bryant	3/15/1910	10/21/1964
3	506.45	510.22	100.22	1	H3	Jameson	Mary Ida	2/14/1870	12/1/1922
4	508.16	510.07	100.19	1	H4	Jameson	John B. [Bryant]	3/9/1866	7/26/1921
5	510.25	509.87	100.18	0	H5	Jameson	O.J. Cox [Orgie Jane]	11/5/1871	4/22/1908
6	512.41	509.72	100.18	0	H6	Jameson	Zoa May	2/24/1898	10/19/1900
7	514.30	509.55	100.17	1	H7	Jameson	Orgie Jane	4/9/1903	6/19/1903
8	516.17	509.35	100.14	0	H8	[Jameson]	Infant	Unk.	Unk.
9	517.93	509.23	100.19	1	H9	Jameson	Fred George [George Fred]	8/20/1900	11/1/1965
10	519.50	509.11	100.11	1	H10	Jameson	Jack Stephen	7/7/1950	2/25/1996
11	520.95	508.97	100.13	1	H11	Jameson	Fred Bomar	9/24/1922	2/28/2001
12	514.70	512.98	100.20	1	H12	Miller	J. Sloan [Joel]	8/16/1876	8/11/1941
13	515.87	512.94	100.22	1	H13	Miller	Sarah N.	7/3/1927	1/31/1938
14	516.77	512.89	100.23	1	H14	Miller	[Illegible]	Unk.	9/11/1914
15	518.24	512.51	100.21	1	H15	Miller	William Alexander	c.1860	c. 1879
16	519.91	512.35	100.14	1	H16	Davis	Estelle J.	10/18/1860	5/6/1942
17	521.39	512.20	100.17	1	H16	Davis	Luther (Gus)	9/5/1892	3/2/1914
18	522.49	512.11	100.16	1	H18	Jones	Alice D.	1/17/1970	12/14/1970
19	513.47	516.38	100.22	1	H19	Jameson	John	7/14/1818	2/19/1894
20	515.44	516.20	100.21	0	H20	Jameson	Margaret Caroline Orr	1828	1872
21	517.80	516.00	100.21	0	H21	Jameson	William S.	1858	c.1865
22	520.04	515.79	100.22	1	H22	Jameson	Louisa A.	1856	c.1865
23	504.80	513.90	100.15	0	B1	Welborn	Inf. Son of Thomas & M.F.	11/4/1899	11/7/1899
24	506.41	513.69	100.12	0	B2	Jameson	Arlington S.	1/8/1869	11/5/1912
25	509.43	513.37	100.15	1	B3	Jameson	Inf. Son of A.S. Jameson	7/13/1893	7/13/1893
26	510.65	513.32	100.14	1	B4	Jameson	Lloyd D.	6/4/1896	8/26/1916
27	505.74	519.05	100.04	1	B5	Jameson	McElroy	9/3/1826	1/17/1908
28	506.80	516.95	100.08	1	B6	Jameson	Margaret C.	10/20/1837	2/1/1892
29	509.49	517.66	100.12	0	B7	Jameson	Inf. Son of McElroy & C.A.M.	1/11/1857	1/11/1857
30	506.75	521.49	100.12	0	B8	Jones	Louise Jamison [Louisa Jameson]	7/24/1828	2/9/1908
31	509.69	521.41	100.11	1	B9	Jameson	Pyramus Briggs	8/13/1824	12/26/1846
32	512.86	521.24	100.12	1	B10	Jameson	William, Jr.	10/12/1786	4/4/1850
33	515.70	521.15	100.17	1	B11	Jameson	Rebecah Fowler	[c.1787]	8/13/1851
34	518.46	521.12	100.18	1	B12	Orr	Ethel Troline	7/16/1876	8/5/1878
35	519.84	521.22	100.17	1	B13	Jameson	Frances Lavela	[illegible, ca. 1855]	8/2/1863
36	521.08	521.12	100.15	0	B14	Orr	S.M.	[11/11/1878]	1882 [11/2/1882]
37	522.72	520.88	100.11	1	B15	McAdams	Amanda Melvina	2/2/1838	4/12/1915

Table 1. Jameson Family Cemetery Inventory.

ID	North	East	Elev (m)	GPR	Photo	Surname	Given name	Birth	Death
38	523.92	520.81	100.10	1	B16	Orr	W.W. [William Wallace]	2/12/1848	2/19/1916
39	527.88	520.54	99.98	0	C1	Johnson	Jerome	11/7/1918	1/30/1999
40	527.88	520.54	99.98	1	C1	Johnson	Sybal Jameson	5/20/1922	2/2/1994
41	527.75	524.18	100.06	1	C6	Jameson	Carl Cox	1/5/1912	8/29/1979
42	527.75	524.18	100.06	1	C6	Jameson	Sara McCoy	1/22/1915	10/17/1992
43	518.50	524.26	100.30	1	C2	[illegible]	Inf. Son	[illegible]	[illegible]
44	518.50	524.26	100.30	1	C2	[illegible]	Inf. Dau.	[illegible]	[illegible]
45	519.93	524.26	100.11	1	C3	Jameson	Carrol Wilson	10/21/1876	11/1/1898
46	522.23	524.21	100.15	1	C4	Jameson	Effie	5/16/1887	10/11/1910
47	524.40	524.15	100.09	1	C5	Jameson	Thomas O. [Orr]	5/25/1856	9/21/1933
48	524.40	524.15	100.09	1	C5	Jameson	Rebecca J. [Jane Childers]	12/28/1854	9/6/1937
49	512.81	525.75	100.06	0	C21	Jameson	Darcus [Dorcas D. Couch]	10/5/1825	10/2/1904
50	514.65	525.51	100.07	1	C22	Stegall	Sidney [Sydney Spencer]	6/20/1843	3/23/1919
51	514.65	525.51	100.07	1	C22	Stegall	Mary Jane [Mary E. Jane Jameson]	1/5/1852	10/19/1930
52	515.32	531.05	100.04	1	C10	Hiott	Etta Mae	5/3/1890	8/2/1903
53	516.14	531.06	100.06	1	C11	Hiott	Nancy Milindy	7/25/1861	3/1/1895
54	524.34	527.68	100.15	1	C7	Hendricks	Moses D. [Devoe]	7/22/1900	3/2/1951
55	524.34	527.68	100.15	1	C7	Hendricks	Winnie J. [Winnie Lee Jameson]	11/29/1894	6/23/1953
56	527.69	527.68	100.08	1	C8	Jameson	Thomas M., Jr.	12/23/1909	1/11/1992
57	530.01	527.66	100.07	1	C9	Jameson	Jack D.	10/12/1926	3/10/1993
58	514.88	534.27	99.91	1	C18	Barnes	Hattie V.	10/1/1888	2/12/1893
59	518.64	534.36	99.96	1	C19	Hiott	Julia	3/19/1886	3/6/1916
60	518.64	534.36	99.96	1	C19	Hiott	Haskell	9/11/1906	11/3/1906
61	524.61	534.21	99.87	1	C20	Darnell	Rex Haskell	9/2/1908	11/6/1908
62	511.75	537.44	99.61	1	C23	Nix	Mary [C. or G.]	7/10/1900	3/18/1920
63	515.06	536.92	99.75	1	C24	Barnes	Elizabeth [C. or G.]	3/12/1828	7/3/1898
64	516.64	537.22	99.74	1	C25	Barnes	Custers Ann	8/21/1873	4/6/1915
65	518.15	537.14	99.78	1	C26	Barnes	Jim	1/1/1865	10/4/1928
66	519.49	537.24	99.75	1	D1	Barnes	Mack	9/22/1892	4/9/1928
67	520.95	537.21	99.79	1	D2	Barnes	Hattie H.	3/27/1890	4/2/1966
68	524.06	536.71	99.84	1	E1	Mauldin	Benjamin Anderson	10/31/1888	11/20/1939
69	524.06	536.71	99.84	1	E1a	Green	Mary B. Mauldin	4/20/1895	5/24/1958
70	515.96	541.31	99.62	0	G1	Burdine	J.M.	5/23/1845	1/31/1895
71	518.58	541.33	99.62	1	G2	Burdine	M.C.	11/18/1844	9/28/1901
72	521.87	541.51	99.65	1	J1	Barns	Frank, Jr.	3/18/1933	12/17/1943
73	523.78	541.35	99.72	1	J2	Barnes	Frank J.	8/9/1904	8/6/1975
74	523.78	541.35	99.72	1	J2	Barnes	Evie L.	2/8/1910	4/11/1983

Table 1. Jameson Family Cemetery Inventory.

ID	North	East	Elev (m)	GPR	Photo	Surname	Given name	Birth	Death
75	516.76	546.73	99.44	1	K1	Burdine	James	4/24/1903	9/13/1990
76	518.73	546.70	99.45	1	K2	Watson	Dewitt	3/11/1902	12/9/1972
77	518.73	546.70	99.45	1	K2	Watson	Grace B.	8/18/1900	3/20/1974
78	521.03	546.85	99.36	1	K3	Watson	Theodore	Unk.	Unk.
79	524.18	544.57	99.43	1	K4	Stargel	John D.	11/17/1883	2/3/1960
80	508.32	536.69	99.82	1	C13	Shirley	Clara May	1910	1960
81	518.42	553.53	99.07	1	L1	Unk.	Unk.	Unk.	Unk.
82	518.05	556.89	98.88	1	L2	Unk.	Unk.	Unk.	Unk.
83	506.51	534.46	99.84	1	C12	Unk.	Unk.	7/12/1880	1/21/1938
84	507.54	526.05	100.00	1	M1	Unk.	Unk.	Unk.	Unk.
85	510.04	526.14	100.03	0	M2	Unk.	Unk.	Unk.	Unk.
86	511.57	525.91	100.04	1	M3	Unk.	Unk.	Unk.	Unk.
87	511.65	528.22	99.99	1	M4	Unk.	Unk.	Unk.	Unk.
88	507.28	529.89	99.95	1	M5	Unk.	Unk.	Unk.	Unk.
89	510.04	529.45	99.98	1	M6	Unk.	Unk.	Unk.	Unk.
90	511.49	529.60	99.98	0	M7	Unk.	Unk.	Unk.	Unk.
91	507.09	531.14	99.84	1	M8	Unk.	Unk.	Unk.	Unk.
92	508.88	530.86	99.92	1	M9	Unk.	Unk.	Unk.	Unk.
93	511.62	531.90	99.90	1	M10	Unk.	Unk.	Unk.	Unk.
94	513.16	531.55	99.94	1	M11	Unk.	Unk.	Unk.	Unk.
95	513.28	533.10	99.90	0	M12	Unk.	Unk.	Unk.	Unk.
96	518.70	531.10	100.03	1	M13	Unk.	Unk.	Unk.	Unk.
97	519.58	531.17	99.97	1	M14	Unk.	Unk.	Unk.	Unk.
98	520.21	531.03	99.99	0	M15	Unk.	Unk.	Unk.	Unk.
99	521.80	532.99	99.92	1	M16	Unk.	Unk.	Unk.	Unk.
100	516.41	528.23	100.11	1	M17	Unk.	Unk.	Unk.	Unk.
101	513.67	539.55	99.67	1	M18	Unk.	Unk.	Unk.	Unk.
102	507.23	534.29	99.86	1		Unk.	Unk.	Unk.	Unk.
103	508.31	534.42	99.92	1		Unk.	Unk.	Unk.	Unk.
104	510.96	534.33	99.97	1		Unk.	Unk.	Unk.	Unk.
105	511.89	534.31	99.95	1		Unk.	Unk.	Unk.	Unk.
106	510.05	534.36	99.88	1		Unk.	Unk.	Unk.	Unk.
107	500.5	522		1		Unk.	Unk.	Unk.	Unk.
108	526.5	522		1		Unk.	Unk.	Unk.	Unk.
109	520.5	530		1		Unk.	Unk.	Unk.	Unk.
110	503.5	532		1		Unk.	Unk.	Unk.	Unk.
111	522.5	532		1		Unk.	Unk.	Unk.	Unk.

Table 1. Jameson Family Cemetery Inventory.

ID	North	East	Elev (m)	GPR	Photo	Surname	Given name	Birth	Death
112	505	539		1		Unk.	Unk.	Unk.	Unk.
113	508.5	539		1		Unk.	Unk.	Unk.	Unk.
114	523	566		1		Unk.	Unk.	Unk.	Unk.
115	504.5	534		1		Unk.	Unk.	Unk.	Unk.
116	504	537		1		Unk.	Unk.	Unk.	Unk.
117	511	556		1		Unk.	Unk.	Unk.	Unk.
118	521	558		1		Unk.	Unk.	Unk.	Unk.
119	515	559		1		Unk.	Unk.	Unk.	Unk.
120	524.18	544.57	99.43	1	K4	Stargel	Etta R.	1/31/1886	[no death]
121	530.01	527.66	100.07	1	C9	Jameson	Dorothy Williams	12/22/1926	[no death]
	unknown	unknown	unknown			Stegall	Sloan Odus	1875	2/12/1943
	unknown	unknown	unknown			Jameson	William Couch	1/5/1852	10/19/1930

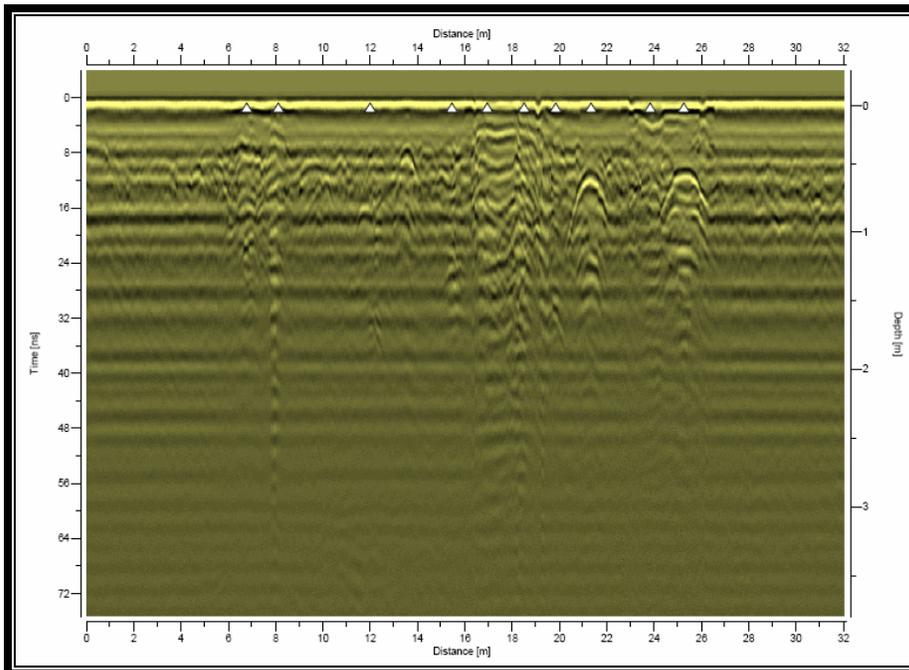


Figure 9. GPR Radargram of DAT-0108, Which Displays Seven or More Probable Grave Reflections on the East-Central Portion of the Cemetery (Gravemarkers Indicated by White Triangles) (Approximately 500-532N, 538E).

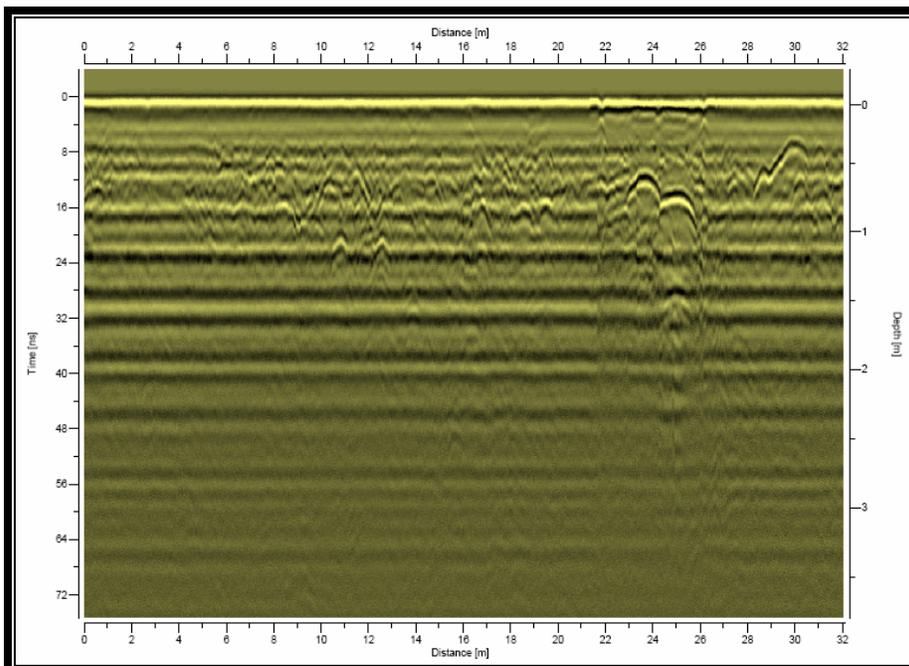


Figure 10. GPR Radargram of DAT-0127, Which Displays Three or More Probable Grave Reflections on the Eastern Portion of the Cemetery (Approximately 500-532N, 548E).

The GPR data from the Jameson Family Cemetery also can be viewed as a plan map using GPR-Slice software. Dozens of plan view images were generated in the laboratory analysis and a several examples are included in the text. Additional plan views of the GPR data from the Jameson Family Cemetery are contained in Appendix 2. Appendix 2 contains two GPR animations that may be viewed by following the directions in the “Read Me” file that is provided. In the color palette that was chosen for this display, strong ground disturbances appear as dark reddish to black and relatively undisturbed ground is shown as light reddish to pink. Areas shown in white were not surveyed because of grave markers (or other physical obstacles). Figure 12 shows a plan view of the GPR radar reflections at approximately at approximately 41-64 cm below ground. At this depth most graves in the cemetery are readily apparent as brown rectangular stains. The white spaces delineate rows of headstones.

Figure 13 shows a composite view of the GPR data. It combines GPR information from all levels. This image provides a more complete representation of the ground disturbance and human burials that exist in the Jameson Family Cemetery. The “core” area of the cemetery is readily apparent from this image. Some outlying graves or other large subsurface anomalies also are evident.

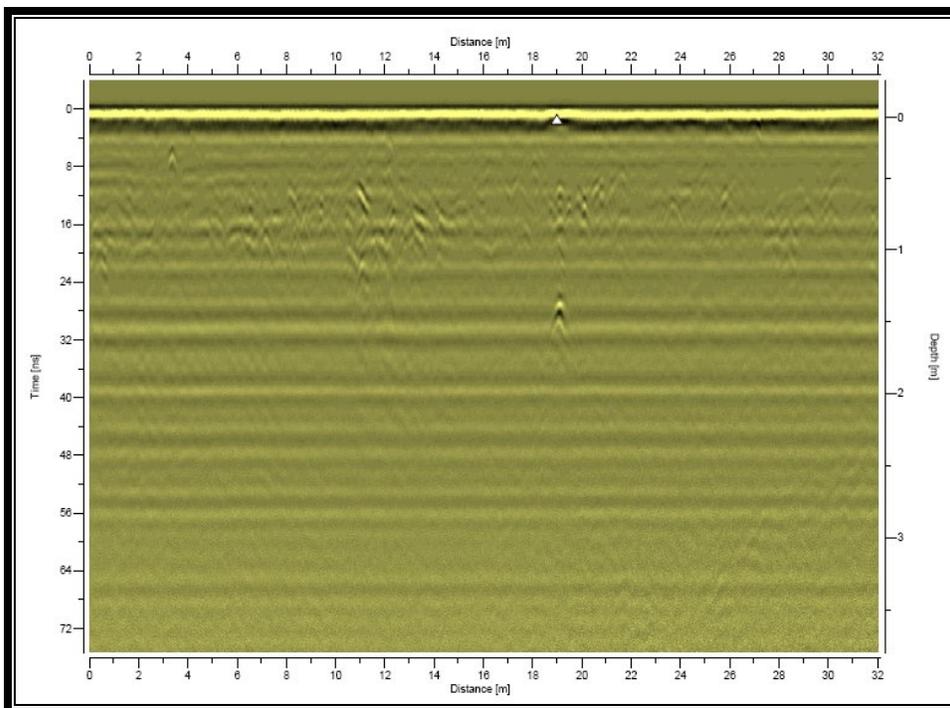


Figure 11. GPR Radargram of DAT-0151, Which Displays One Possible Grave Reflection on the Eastern Portion of the Cemetery (Gravemarker Indicated by White Triangle) (Approximately 500-532N, 558E).

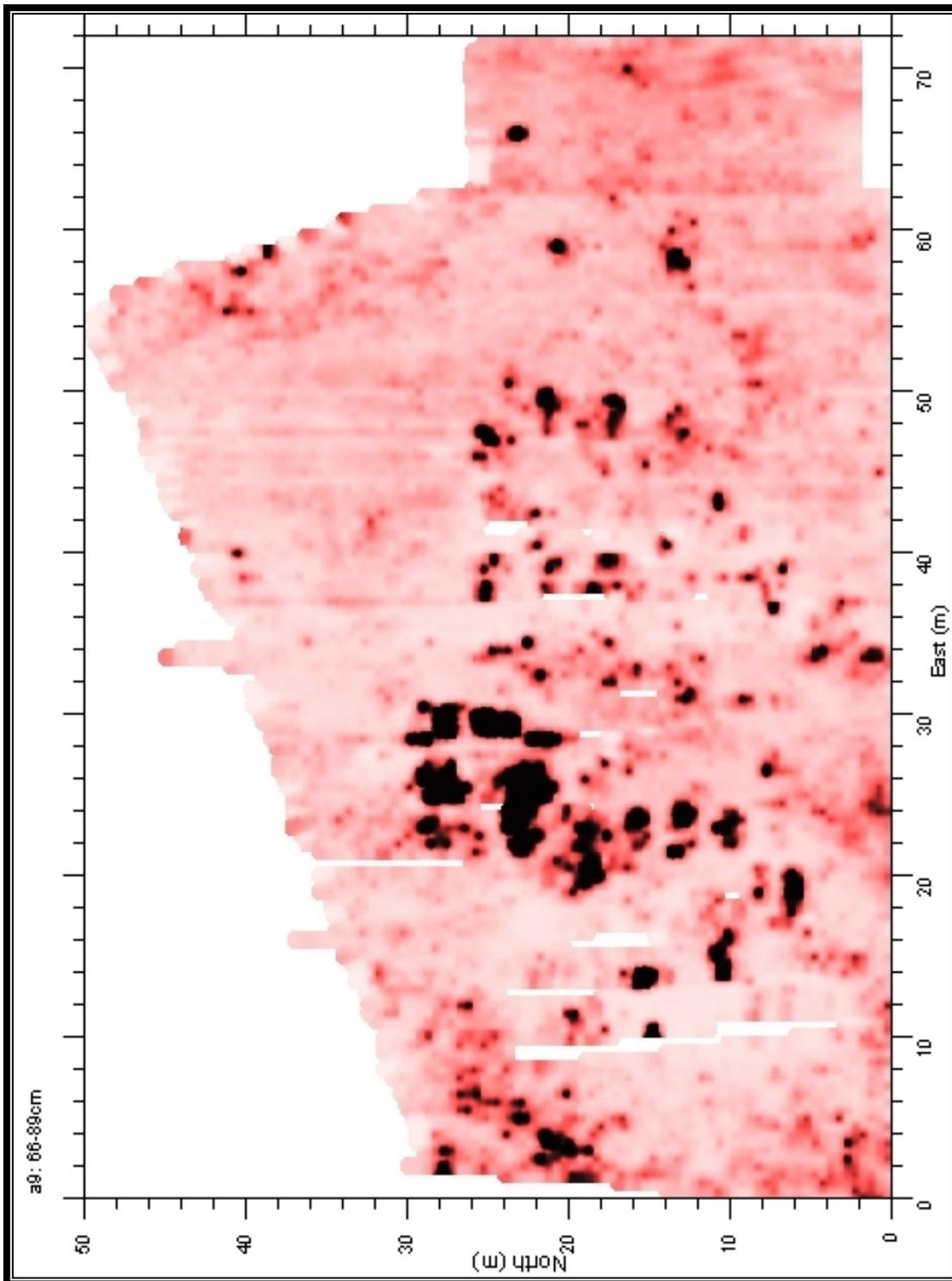


Figure 12. GPR Plan View of Jameson Family Cemetery Between 41-64 cm Below Ground.

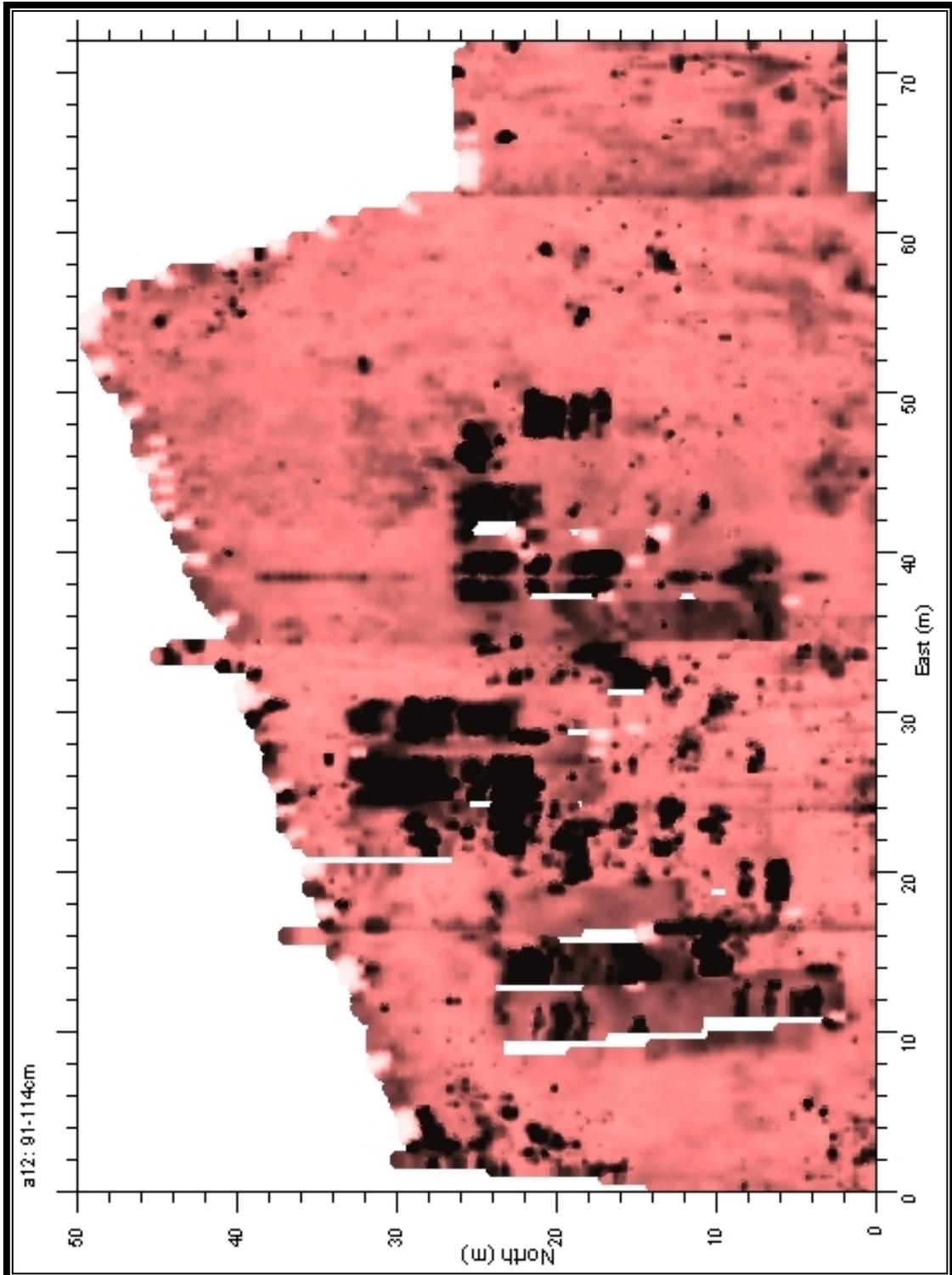


Figure 13. GPR Plan View of Jameson Family Cemetery Overlay at 66-89 cm Below Ground.

Freeman-Fowler-Jameson Cemetery Reconnaissance

The LAMAR Institute team, accompanied by Michael Johnson, John Jameson, and John Gilstrap, reconnoitered the Freeman-Fowler-Jameson Cemetery in rural Pickens County, South Carolina. The cemetery is located immediately southeast of the Dacusville Highway (State Route 135). The Garmin GPS handheld unit determined its approximate UTM location at Zone 17, 353624 Easting, and 3863130 Northing (NAD27). The cemetery is also located on the 7.5 minute USGS topographic quadrangle. This small cemetery lies in a narrow strip of hardwoods between the paved state highway and a large cattle pasture. This tract is currently owned by John Gilstrap. The area was reconnoitered, the GPR equipment was used to sample a few selected transects, and several digital photographs were taken of the tombstones and environs.

Hunt (2004) provided transcriptions of the grave markers in this cemetery, as well as additional historical information concerning the cemetery. Hunt's location for the cemetery is at Latitude N 34 54.116, Longitude W 82 36.117. Hunt identified it as the "Freeman-Jameson-Westmoreland Family Cemetery" and he described six graves, including:

Joshua
Son of Mark and Elizabeth Freeman
Born, Nov. 10, 1823
Died, Feb. 24, 1826

Elizabeth Rebekah
Daughter of Mark and Elizabeth Freeman
Born, May 23, 1832
Aged 25 years.

Elizabeth Fowler
1st wife of Mark Freeman
Born, January 1, 1796
Died, March 23, 1832

Three graves marked by fieldstones with "no writing on these rocks these three appear to be adult graves" (Hunt 2004).

Hunt (2004) noted, "The Freeman Cemetery is where we believe William Jameson Sr. (1737-1818) and wife Margaret Westmoreland are buried... This was handed down by word of mouth to Don Jameson... via his great grand-uncle, Joshua Jameson. Some Fowlers are also buried there. Rebecca Fowler married William Jameson, Jr. (1786-1850). William Jr. and Rebecca Fowler are buried in Jameson Cemetery on Jameson Road". The cemetery reconnaissance in the present study confirmed Hunt's earlier observations. Figure 14 shows a view of the three identified graves in the cemetery.



Figure 14. Southwestern View of Freeman-Fowler-Jameson Cemetery (from left to right are the graves of Joshua, Elizabeth Rebekah, and Elizabeth Fowler).

Figure 15 shows one sample radargram from the Freeman-Fowler-Jameson Cemetery using *GroundVision* software. This sample crossed over areas of two suspected graves, as indicated by fieldstone markers. Figure 16 shows another radargram viewed with *GPR-Slice* software. The first image fails to provide conclusive support for the existence of graves at this location. The Figure 16 image yielded slightly more information, although the burial signatures in this cemetery are not as pronounced as that observed in the Jameson Family Cemetery. One explanation for this is the wooded conditions at the Freeman-Fowler-Jameson Cemetery. The numerous tree roots create radar reflections that obscure the grave shafts and contents. Quite possibly this shortcoming would be rectified by a more thorough survey of the cemetery with closely-spaced radargrams, following removal of branches and vines on the ground. Such a survey, however, was not feasible in the present effort.

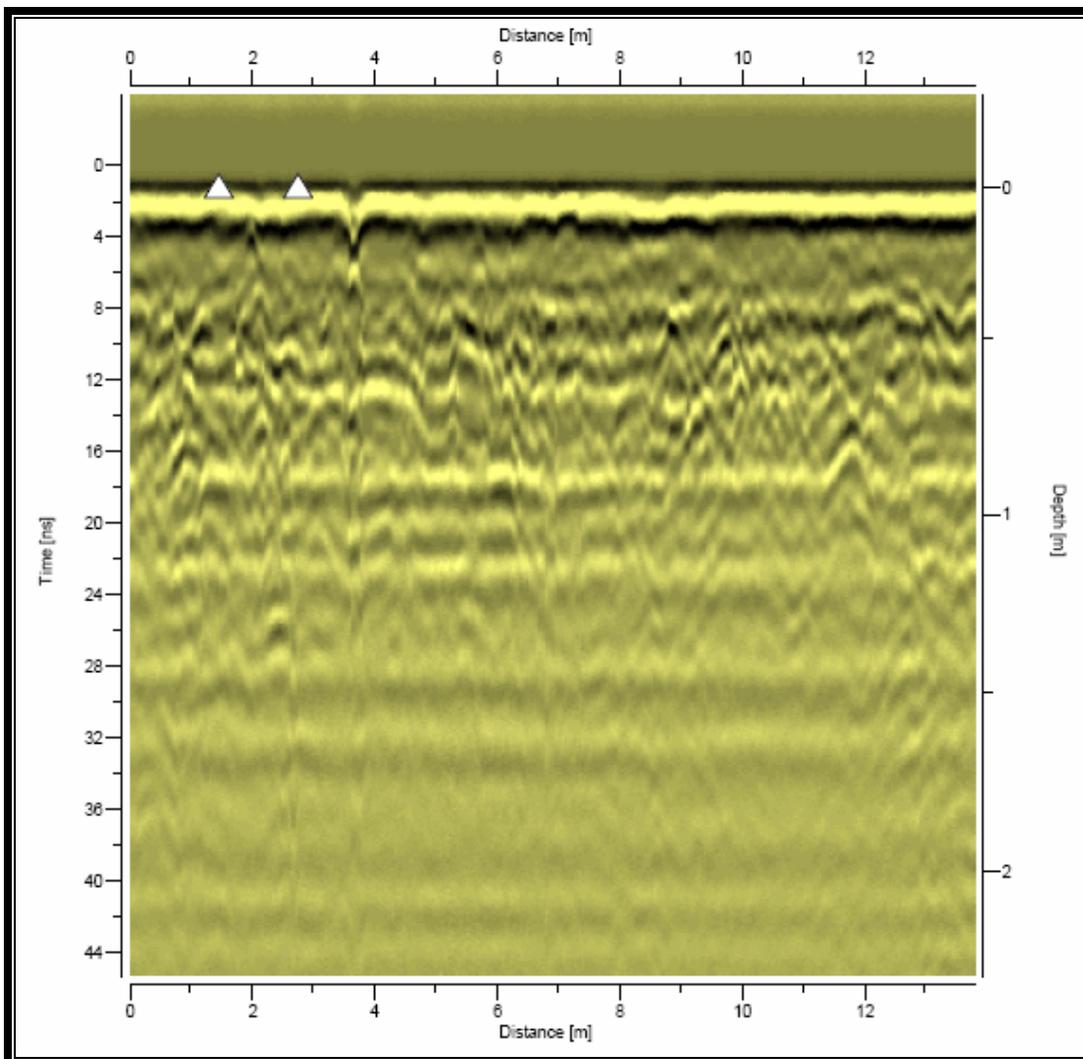


Figure 15. Sample GPR Radargram at Freeman-Fowler-Jameson Cemetery (Gravestones denoted by white triangles).

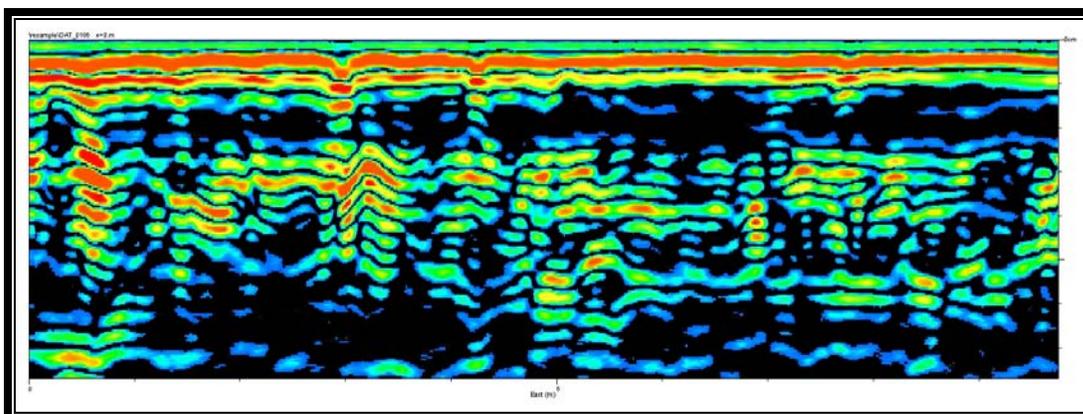


Figure 16. Radargram at Freeman-Fowler-Jameson Cemetery.

IV. Interpretations

Jameson Family Cemetery

Based on the combined historical and archaeological evidence, the Jameson Family Cemetery contains approximately 121 interments. Eighty-two of these are identified by the name of the deceased. Epitaphs for three people were illegible or destroyed. Another 20 graves are marked by rough granite gneiss fieldstones, or blank marble slabs, with no apparent epitaphs. The GPR survey located an additional 13 probable graves in the cemetery that were not detected by surface clues. The death dates for the marked graves ranged from 1846 to 2001. The cemetery is an active one and more interments are expected. The present study reflects the conditions at the cemetery in early February 2009.

Oral history and tombstone evidence serve to support that this cemetery has been in use since the mid-1800s. While most of those interred in the cemetery whose remains are identified by epitaphs were members of the Jameson family, other families are also represented. Most of these people are kinfolk of the Jamesons, while others are likely unrelated.

The patriarch of the Jamesons in Pickens County, South Carolina was William Jameson, [Sr.], who was an Irish immigrant who arrived in America in 1737. He settled with his family in Pickens County following the American Revolution, where he established a water mill and other improvements. William Jameson died in 1818. His burial site remains undetermined, although he most likely was not buried in the Jameson Family Cemetery. His remains may be interred in the Freeman-Fowler-Jameson Cemetery, which was briefly reconnoitered. Genealogical information about William Jameson, Sr. and his descendants has been compiled and is available on the internet. According to oral family tradition, the Jameson Family Cemetery was established around 1820 by William Jameson, Jr., son of the above-mentioned William Jameson. This date of establishment is likely too early, however. A review of the 1830 census for South Carolina revealed no William Jameson in the vicinity. William Jameson is listed in the 1840 census for Pickens County and his widow, Rebecca Jameson, is listed as head of household in the 1850 census.

William Jameson, Jr. and his wife Rebecca had a large family of 11 children, four of whom are interred in the Jameson Family Cemetery. The children who are known to be buried in the family cemetery include: Pyramus Briggs Jameson, who died in 1846 (Grave 31); McElroy Jameson, who died in 1908 (Grave 27); Louisa Jane Jameson Jones, who died in 1908 (Grave 31); and John Jameson who died in 1894 (Grave 19) (Rubery 2003).

The children of William Jameson, Jr. and Rebecca Jameson known to be buried elsewhere include: Frances, Wilkerson, Wesley, (James) Carrol, and Madison. Frances Jameson, the wife of William H. Perry, who settled in Georgia where Frances died in 1863. Wilkerson Jameson settled in Georgia where he died in 1905. Wesley Jameson

settled in Georgia and he died in 1864. (James) Carrol Jameson died during the Civil War in 1862 and was buried in a cemetery in Virginia. Madison Jameson (died in 1894) and his wife, Elizabeth Jameson who were buried in the Boiling Springs Primitive Baptist Church Cemetery. The burial sites for the other children of William Jameson, Jr. and Rebecca Jameson were not determined. These include William Milton Jameson, who died in the battle of Spotsylvania, Virginia in 1864 and Joshua Jameson, who died in 1906 (Rubery 2003).

Figure 17 shows a group photograph of members of various branches of the Jameson family, including several who were buried in the Jameson Family Cemetery. This photograph was taken in May, 1909 in front of the Thomas Jameson house, which remains standing just north of the Jameson Family Cemetery. The people in the photograph were identified (from back to front and left to right) as: Carrol Wilson Jameson, Icy Jameson, Effie Jameson, Winnie Jameson, Burl Lee Jameson, Jeter Boyd Jameson, Viola Jameson, Thomas Milton Jameson Sr, Minnie Cox Jameson, Bee Burdine, Amanda Orr Jameson McAdams, Gerald Morgan, Thomas Orr Jameson, Jim Burdine, Jane Rebecca Childress Jameson, Eva Burdine, Nora Jameson Burdine, Mason Burdine, Grace Burdine, and Milton Burdine (Jameson 2009).



Figure 17. Jameson Family, 1909.

Nineteen family surnames of those buried in the cemetery, other than Jameson, include the following, along with death dates:

- ☑ Barns—1943
- ☑ Barnes—1893, 1898, 1928, 1928, 1966, 1975, 1983
- ☑ Burdine—1895, 1901, 1990
- ☑ Darnell--1908
- ☑ Davis—1914, 1942
- ☑ Green--1958
- ☑ Hendricks—1951, 1953
- ☑ Hiott—1895, 1903
- ☑ Johnson—1994, 1999
- ☑ Jones--1970
- ☑ McAdams--1915
- ☑ Mauldin--1939
- ☑ Miller—1914, 1938, 1942
- ☑ Nix--1920
- ☑ Orr—1882, 1916
- ☑ Shirley--1960
- ☑ Stargel--1960
- ☑ Stegall—1919, 1930
- ☑ Watson--1974
- ☑ Welborn—1899

In our cursory analysis of the Jameson lineage, we noticed numerous incongruencies between epitaph information to other genealogical data. For example, William Wallace Orr [Grave 38] married Sarah A. Rebecca Jameson. His tombstone states that he was born on February 12, 1848 and died on February 19, 1916, whereas genealogical data states that he was born on January 12, 1847 and died on January 21, 1916.

Two tombstones list the spouses of male interments for whom no death information is engraved on the stone. These include Dorothy W. Jameson (born in 1926, wife of Jack D. Jameson [Grave 57]) and Etta R. Stargel (born in 1886, wife of John D. Stargel [Grave 79]). The GPR data reveals a large radar anomaly where Dorothy W. Jameson's remains probably exist, suggesting that perhaps family descendants neglected to add her death date information to the tombstone epitaph. Similar GPR anomaly evidence was observed for Etta R. Stargel suggesting that her remains were interred just north of her husband. Further evidence for her burial is a footstone marked, "EDS". These two probable interments were designated Graves 104 and 105, respectively in the cemetery inventory.

Two grave markers were redundant. These included a duplicate marker for McElroy Jameson whose grave had been marked earlier by a C.S.A. Veteran stone and Rex Haskell Darnell.

The most unusual grave architecture in the cemetery is represented by the slab crypt for the infant child of McElroy and C.A.M. Jameson, which was erected sometime after January 11, 1857. It is made from rough-dressed granite gneiss (available locally) and is carefully engraved in contemporary font. The flat slab is supported by four vertical flat

slabs. Because of its raised situation, the area beneath this crypt was not examined by the GPR equipment.

Many graves in the cemetery are marked by rough granite gneiss fieldstones. Some stones were placed horizontally and vertically. This stone outcrops locally. Two graves on the eastern side of the cemetery were identified by horizontal, blank marble slabs.

If one relies solely on the surface evidence for graves, in this case grave markers and coping, then one version of the cemetery's geographical extent emerges. Grave depressions, which are often observed in early historic graveyards, were not apparent at the Jameson Family Cemetery. Their absence is likely the result of diligent effort to fill in these depressions by cemetery caretakers in years past. The geographic integrity of the grave markers in the cemetery is not absolute. Several stones are obviously displaced from their original location. Others are currently standing upright but oral informants in the Jameson family indicated that some movement of these stones took place in the past during various "clean-up" activities. Several of the grave markers were erected many decades after the original interment. In some of these cases, the length of time between the death and the memorial erection spans more than one lifetime. For example, the markers for William S. Jameson and Louisa A. Jameson (Graves 21 and 22), both of whom died around 1865, were erected sometime in the mid to late 20th century. In both cases, the GPR evidence does not clearly indicate a corresponding grave for these two markers. This likely indicates that the remains of William S. Jameson and Louisa A. Jameson are located elsewhere in the cemetery. The graves may be slightly offset from the marker, they may be beneath one of the unlabeled field stone markers, or they may be otherwise located in the cemetery.

The earliest inscribed grave in the Jameson Family Cemetery is that of Pyramus Briggs Jameson (Grave 31). He died in 1846 at the age of 22. This grave was verified by the GPR survey, which indicates a large soil disturbance in plan view that has grave-like profile characteristics. This early grave is located in the west-central part of the cemetery. Although his is a 19th century stone, it is a style that may date several decades after his death. The style and workmanship of this grave is quite similar to Graves 32 and 33. The grave of William Jameson, Jr. (Grave 32) is the second earliest known interment in the Jameson Family Cemetery (1850). Figure 18 shows Radargram DAT_0064, which crosses the grave of William Jameson, Jr. (Grave 32) at approximately 513 m North and 523 m East. His grave is evident as a pronounced hyperbola reflection. Other graves observed in this sample include: Graves 30-31, and 33-39. Thus, there is complete correspondence between the surface features and the grave-like GPR radar anomalies along this transect.

The most recent grave in the Jameson Family Cemetery is that of Fred Bomar Jameson (Grave 11), whose remains were interred in 2001. Figure 19 shows radargram DAT_0030, which traversed portions of 11 known interments (Graves 1-11). The radargram is annotated to indicate the names of those buried along this line. Fred Bomar Jameson's grave is the northernmost grave on this line. These graves range in age from 1900 to 2001. They include nine adults and two children. The children (Graves 7 and 8)

exhibit relatively weak radar reflections but they are detectable. Additional deep soil disturbances are evident both north and south of Graves 1 through 11, although these do not appear to represent human burials. No previously unknown graves were detected along this radargram.

Figure 20 shows radargram DAT_0041 (500-534N, 515E). This sample crosses 11 graves (Graves 23 through 26, and 12 through 18). No previously unknown graves were detected along this radargram.

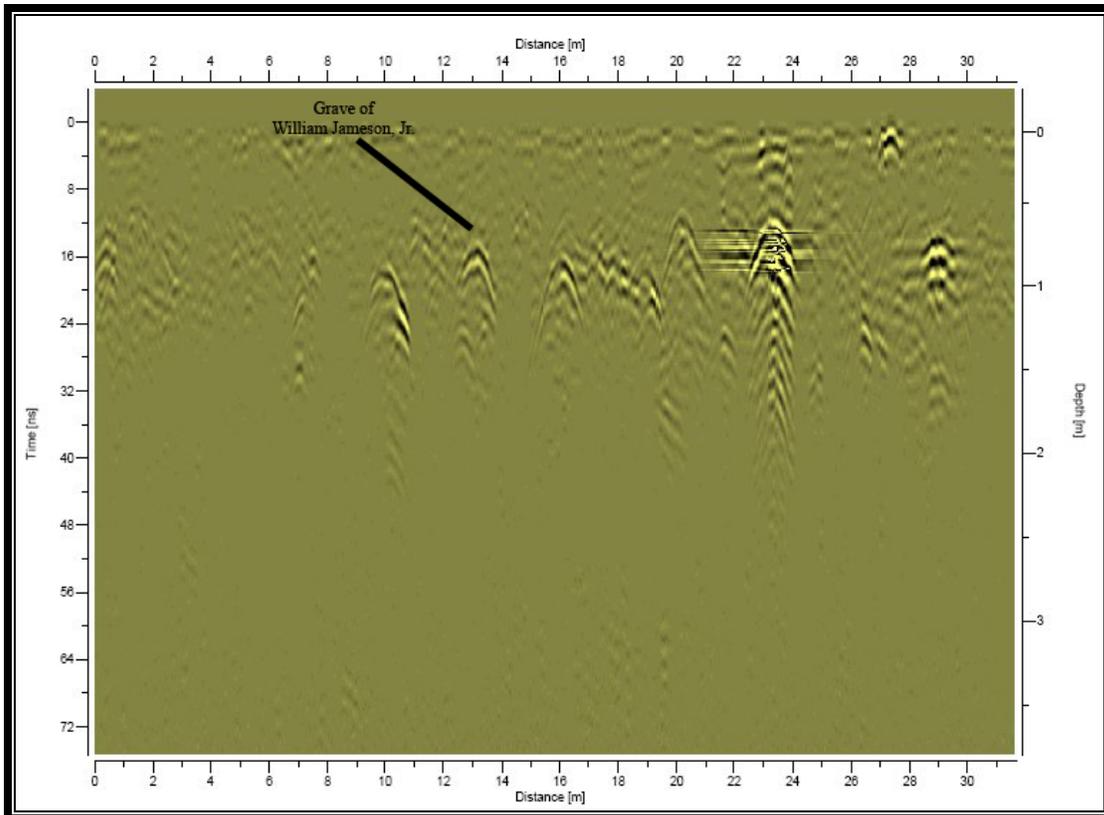


Figure 18. GPR Radargram DAT_0064, Which Shows the Profile of William Jameson, Jr.'s Grave and Five or More Others (500-532.5 North, 523 East).

Figure 21 shows Radargram DAT_0063 (500-536.6N, 522E). This line crosses known graves (Graves 30-40). This sample contains two probable graves, which were previously unknown. The first was designated Grave 107 and is located at 500-501N, 522E. The second (Grave 108) is located at 526-527N, 522E. The latter is a large excavation that may contain a small coffin, perhaps that of a child. Strong radar reflections were identified for Graves 30 through 36, 38, and 40. The radar reflection in the vicinity of Grave 37 (Amanda McAdams) is problematic. Quite likely the grave fill of Mrs. McAdams, who was buried in 1915, was disturbed the next year (1916) when Mr. Orr was buried immediately north of her grave. The absence of a strong radar reflection for Grave 39 (Jerome Johnson) is addressed below.

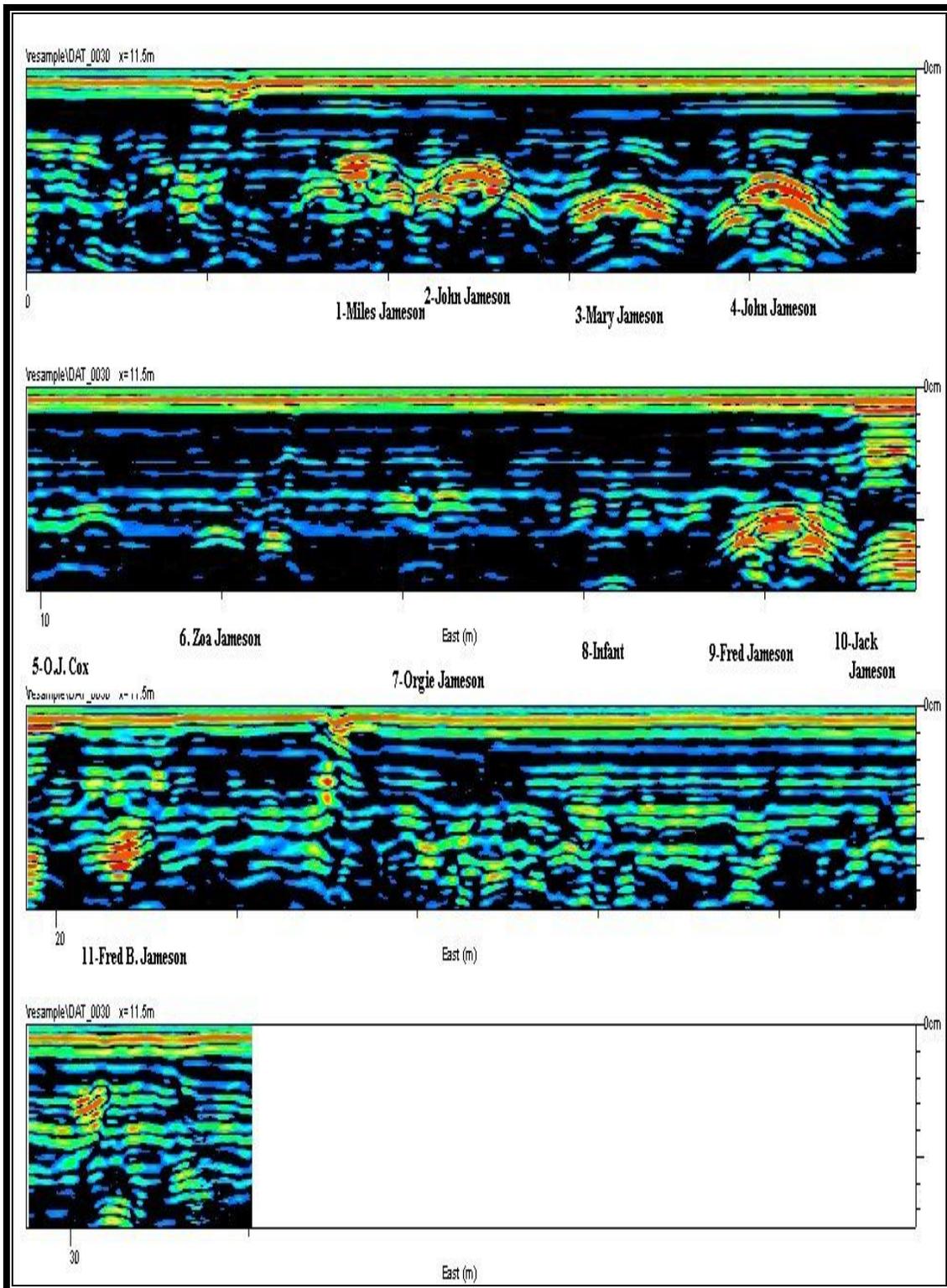


Figure 19. Radargram DAT_0030 (500-532 N, 511.5E) Showing Graves 1 Through 11, Jameson Family Cemetery.

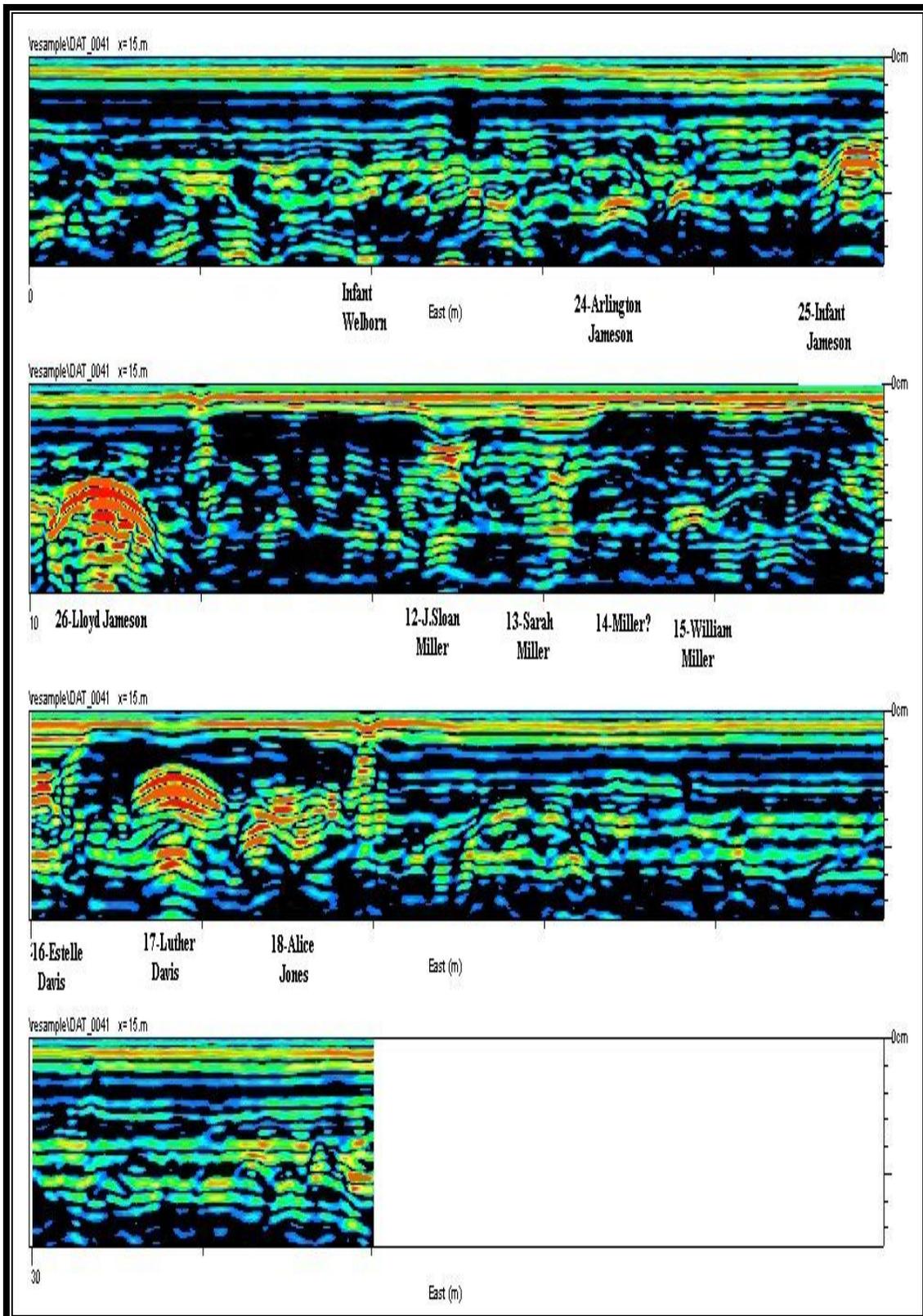


Figure 20. Radargram DAT_0041 (500-534N, 515E) Showing Graves 23-26 and 12-18.

Another recent “grave”, which poses an interesting problem, is that of Jerome Johnson (Grave 39). According to his son, Mr. Johnson was actually cremated and his ashes were scattered over his grave plot in 1999, so no coffin or vault was ever placed in association with his memorial (cenotaph). The remains of Sybal Johnson, Jerome Johnson’s wife, who died five years earlier, are buried in their cemetery plot and the Johnson couple’s remains were marked by a dual granite stone (Michael M. Johnson personal communication, April 22, 2009).

Figure 22 shows a segment of Radargram DAT_0062, which includes the radar signatures beneath Graves 38 (W.W. Orr, buried in 1916), 39 (Jerome Johnson, cremated in 1999), and 40 (Sybal Johnson, buried in 1994). As can be seen from this graphic, the GPR reflections for Graves 38 and 40 are pronounced, whereas weaker anomalies exist in the vicinity of Grave 39. Thus, the radargram data confirms the family oral information that Jerome Johnson was not buried at this location. The same evidence viewed in plan is not so apparent however. The GPR plan map reveals an extensively disturbed subsurface in the vicinity of Graves 39 and 40, so the absence of Jerome Johnson’s coffin was not obvious from studying the GPR plan view data alone.

The research did not determine if any other graves in the cemetery are actual cenotaphs memorializing cremated remains, although this is a possibility, particularly for deaths occurring after the mid-20th century. A similar situation was encountered by the author in a previous GPR survey of the Jones Family cemetery on Greenwood Plantation in Thomas County, Georgia. A grouping of grave markers there dating to the 20th century failed to generate any substantial GPR anomalies in association. The 19th century interments, however, were nearly all identified by GPR reflections. This puzzle was resolved when a family descendant independently advised the GPR survey team that the 20th century interments were actually cremations with no coffins. In that case, the GPR data corroborated this assertion. Other situations where grave markers may simply be cenotaphs include people lost at sea, killed in battle, or others whose remains were never reclaimed. The cursory historical research did not identify any people in this category.

Figure 23 shows radargram DAT_0086 (500-539.6N, 530E), which is located in the central portion of the Jameson Family Cemetery. This line crosses three graves marked by fieldstones whose identity is not indicated (Graves 84-86), Grave 49 (Darcus Jameson), Grave 50 (Sidney Stegall), Grave 51 (Mary Stegall), Grave 41 (Carl Jameson), and Grave 42 (Sara Jameson). The three graves marked by fieldstones display well-defined GPR reflections that support the interpretation of these areas as human graves. Grave 49 is indicated by a moderately strong GPR reflection. Graves 50 and 51 did not display strong hyperbolic reflections, although the vicinity does exhibit significant ground disturbance. Sidney Stegall (Grave 50), who died in 1919, is the earlier of these two associated graves. The death of his wife (Grave 51), who died in 1930, suggests that the excavation of her grave intruded into the previous excavation of her husband’s grave. Their remains are likely in very close proximity, which would also account for a confusing GPR display. Graves 41 and 42 (also a husband and wife grouping) exhibit very strong GPR reflections.

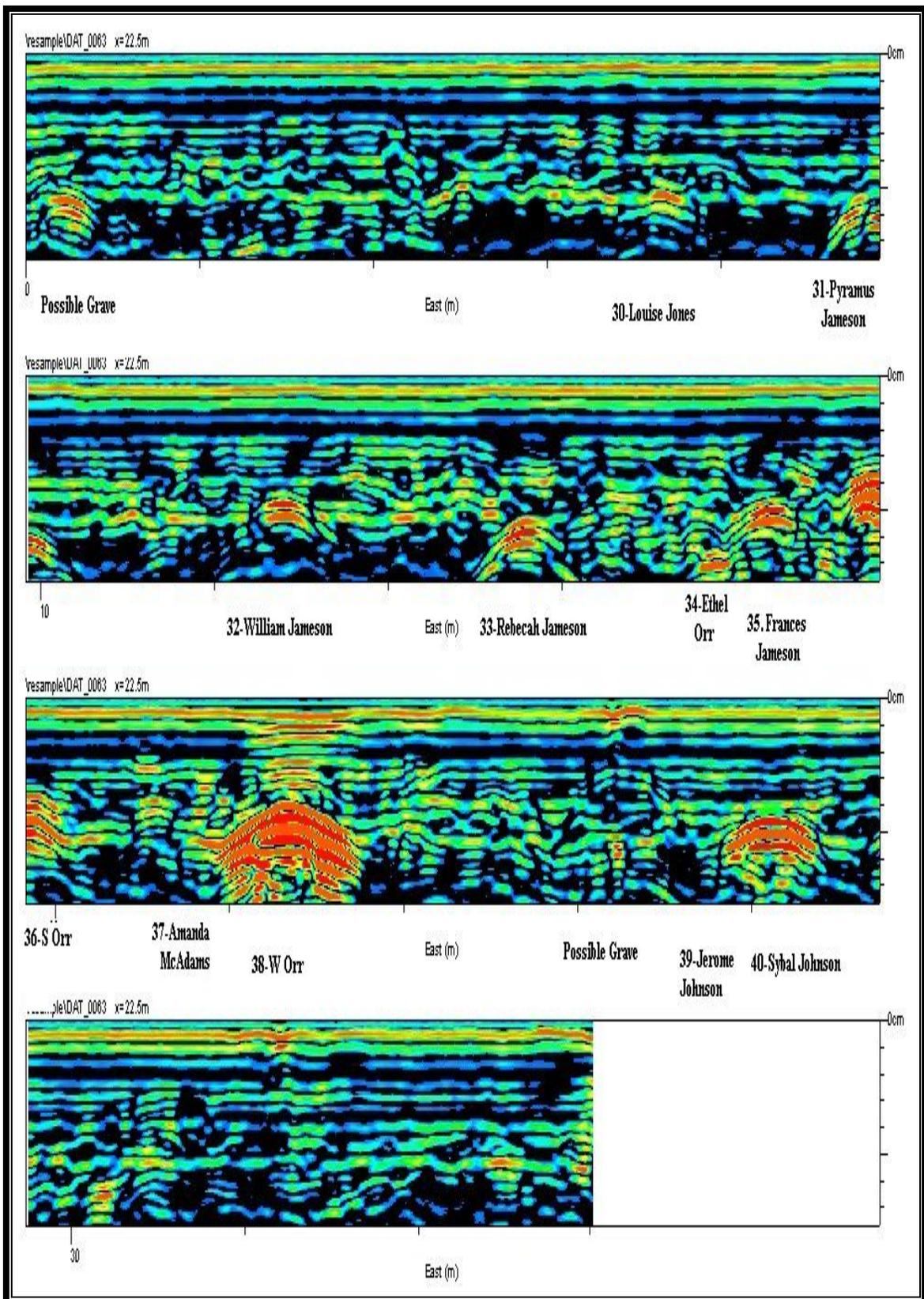


Figure 21. Radargram DAT-0063(500-536.6N, 522E).

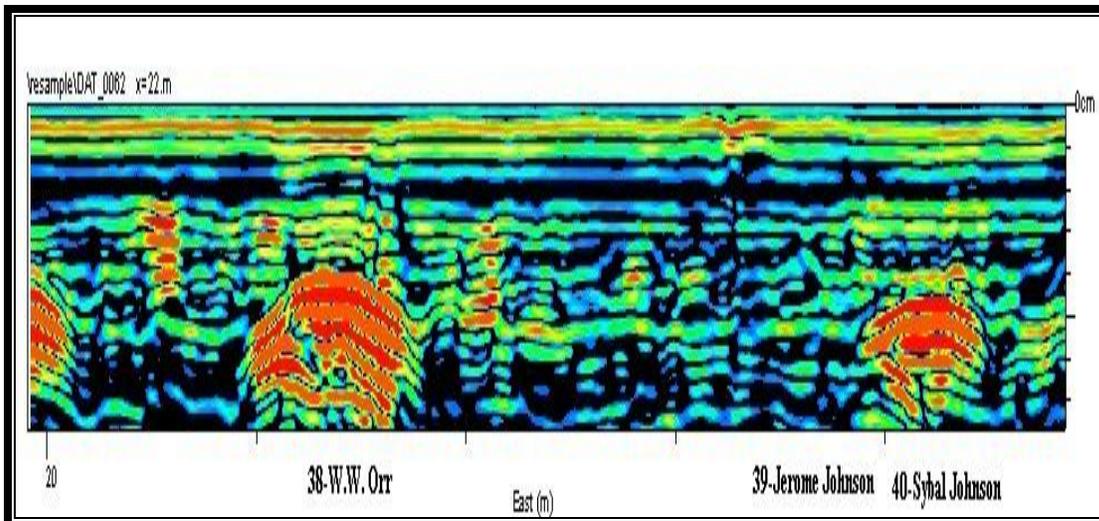


Figure 22. Close-up of Portion of Radargram DAT_0082 Showing Vicinity of Graves 38 (W.W. Orr), 39 (Jerome Johnson), and 40 (Sybal Johnson).

In addition, one previously unidentified possible grave (designated Grave 109) also was observed along this transect at 520-521 North and 530 East. This radargram also reveals two large, deep soil disturbances on the northern part of this line at about 532 N, 530E and 538N, 530E. The function and association of these two disturbances remains undetermined, although they do not resemble human graves. Ground-truthing archaeological tests should be conducted in these areas prior to any major ground alteration to determine if they do contain human remains.

Figure 24 shows radargram DAT_92 (500-539N, 532E) near the center of the Jameson Family Cemetery. This line crosses Graves 91 through 94, 52 and 53, and 96 through 98. This radargram includes two previously unknown graves, including one potential grave (Grave 110) at 503-504N, 532E and another (Grave 111) at 522-523N, 532E. Grave 94 (marked only by fieldstones) generated the strongest hyperbolic radar reflection on this radargram, which indicates it is almost certainly a human burial. Graves 91, 92, 93, 96, 97, and 98 were also marked only by fieldstones. Of these, only Grave 96 yielded a strong GPR hyperbolic reflection. The others were either weak reflections or barely recognizable features. Graves 52 and 53 (Etta and Nancy Hiott) were recognizable as GPR reflections, although some large reflection in the upper soil zone rendered them less easily spotted. A large, deep soil disturbance also was recognized at 538-539N, 530E. The function of this feature will require ground-truthing to fully assess it.

Figure 25 shows radargram DAT_110 (500-543N, 539E), which is located in the east-central part of the Jameson Family Cemetery. It traverses Graves 62 through 69. This radargram includes two or more previously unknown graves, including one potential grave (Grave 112) at 503-507N, 539E and another (Grave 113) at 508-509N, 539E. Graves 62 and 63 (Mary Nix and Elizabeth Barnes, respectively) revealed weak GPR reflections and were barely identifiable in the radargram. Graves 64 and 65 (Custers Barnes and Jim Barnes) were evidenced by strong radar reflections beneath a thick zone

of disturbed earth, which corresponds to the area enclosed by the coping. Grave 66 (Mack Barnes) is obscured by Grave 67 (Hattie Barnes), whose interment displays a prominent

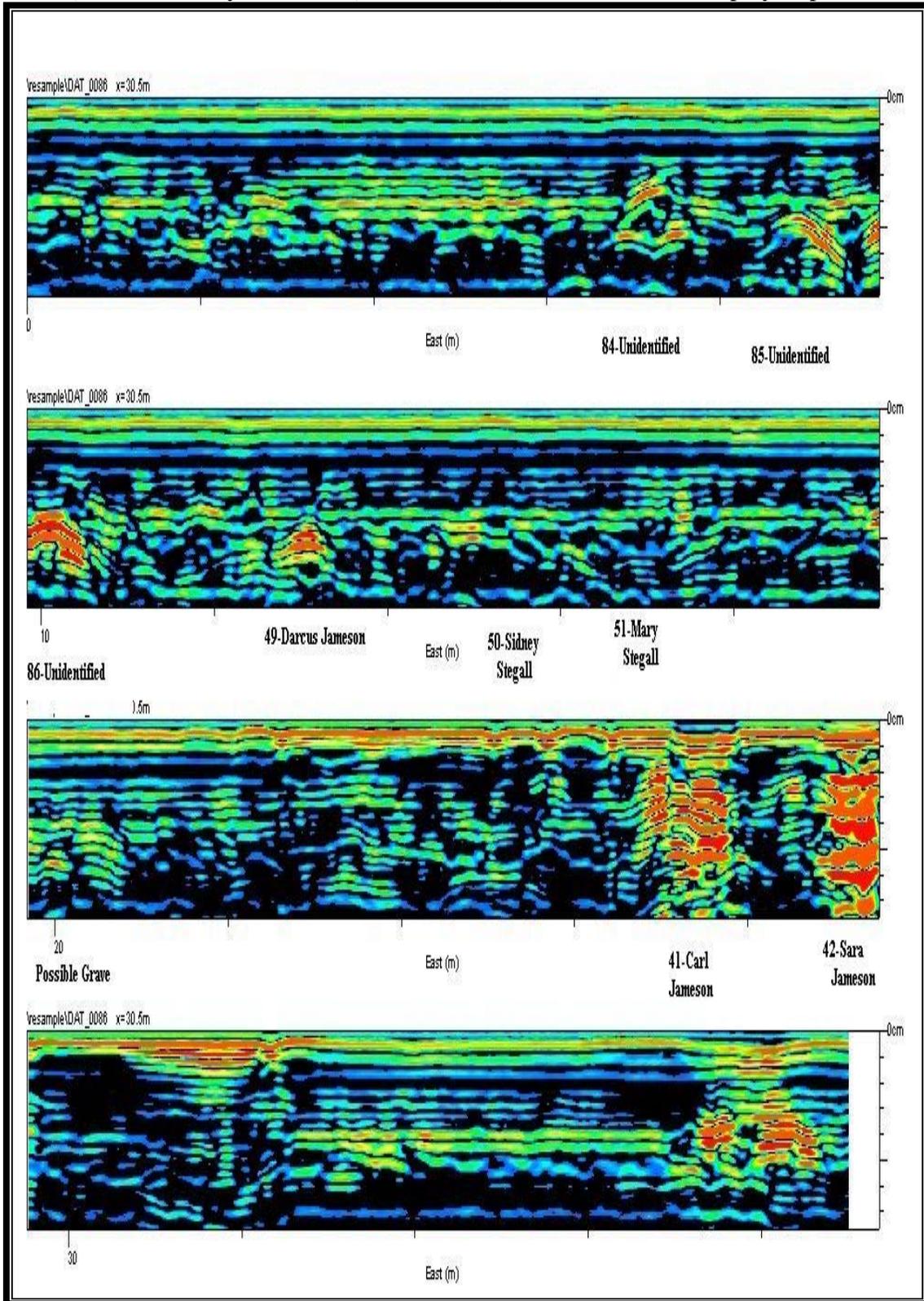


Figure 23. Radargram DAT_0086 (500-539.6 N, 530E).

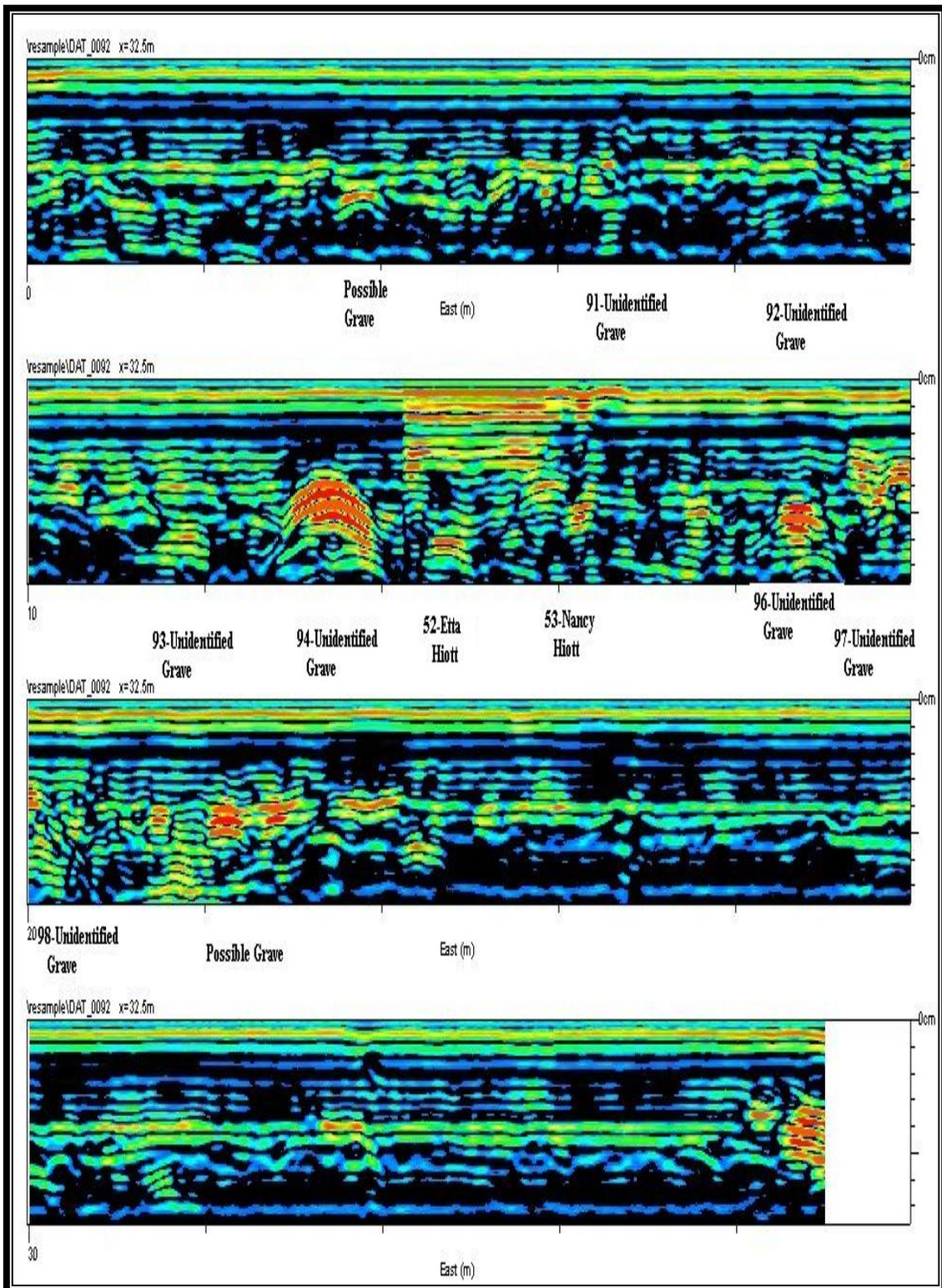


Figure 24. Radargram DAT_0092 (500-539N, 532E).

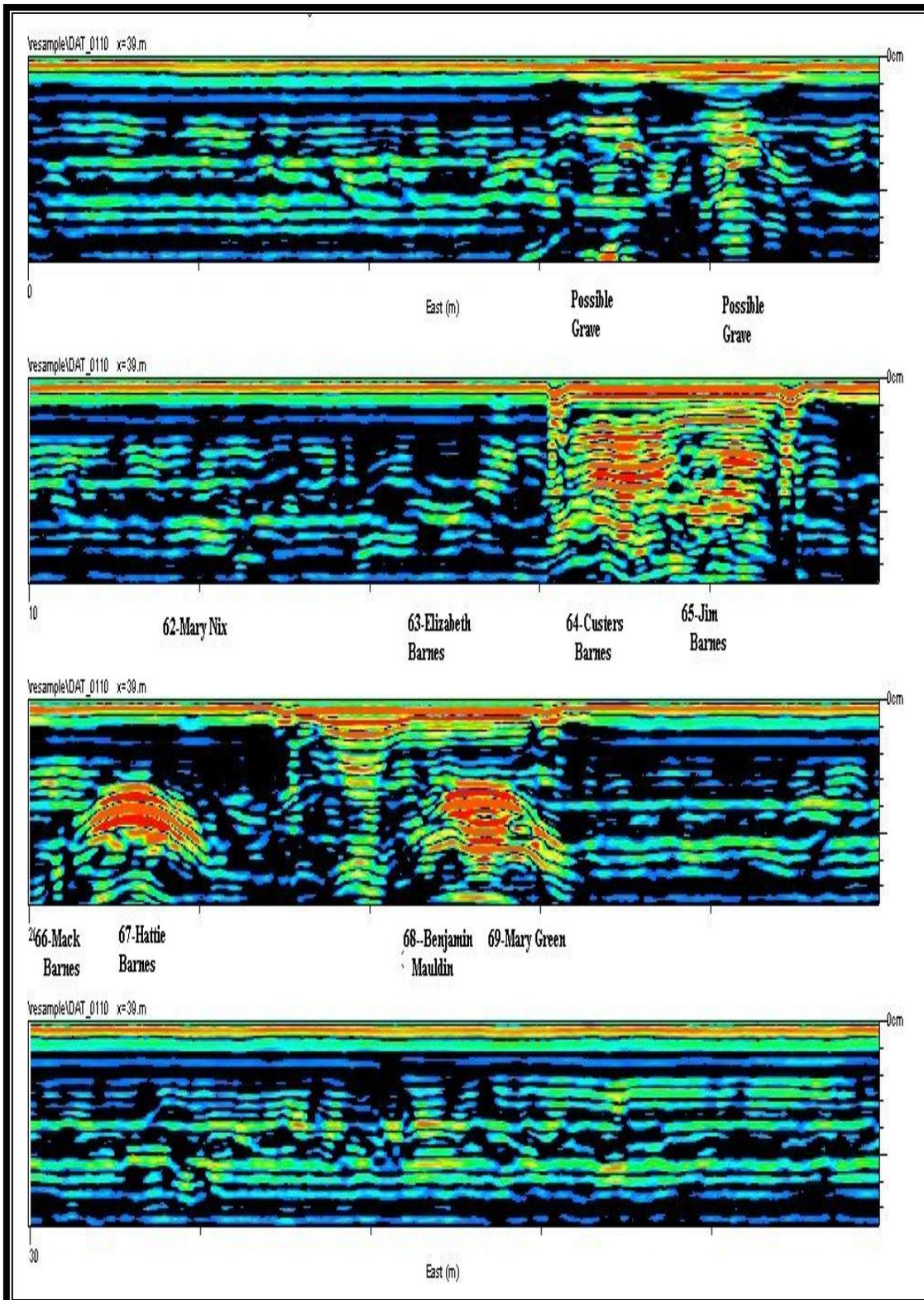


Figure 25. Radargram DAT_0110 (500-543N, 539E).

hyperbolic reflection indicative of a human grave. Mack Barnes died in 1928 while Hattie died in 1966. The excavators of Hattie's grave apparently disrupted the previous excavation for Mack Barnes. Similarly, Grave 68 of Benjamin Mauldin, who died in 1939, is obscured by the subsequent burial of his spouse, Mary Green (Grave 69), who died in 1958. Mary's grave is a well-defined hyperbolic reflection, characteristic of a human burial.

Figure 26 shows radargram DAT_0174 (500-525.9N, 566E), which was located on the eastern side of the Jameson Family Cemetery. Several minor GPR anomalies are seen in this sample. One strong hyperbolic reflection, possibly indicative of a human burial or other large cultural feature, is visible at 523N, 566E. This probable feature is also apparent in plan view. It was designated Grave 114.

The GPR survey provides an additional layer of information that enlightens our understanding of the Jameson Family Cemetery. The GPR survey results suggest that the cemetery is slightly larger than is apparent from surface clues. The GPR survey findings also provide information about previously unknown graves within the area of known graves. The GPR survey results were compared with the gravestone evidence that was mapped. Figure 27 is a map of the cemetery that shows the headstones overlaying the GPR plan map. The GPR radargrams and plan maps provide confirmation of graves at most locations where tombstones were erected. Of 106 unique graves identified by surface evidence, 92 (85%) had corresponding GPR reflections that suggest extensive ground disturbance characteristic of a human grave shaft. The GPR reflections had a tendency to be located immediately east of the headstones. The remaining 16 of the grave markers (15% of the total) displayed no strong radar reflections in their immediate vicinity. Of this latter group, six (38%) were deceased under 10 years of age. Four of the group (25%) was marked by fieldstones with no identity indicated. The remaining six of this group (38%) were adults. The dates of the markers that lacked corresponding GPR reflections ranged from 1857 to 1908. The 1857 grave was a crypt whose architecture prohibited GPR survey beneath it.

Determining the number of previously unknown graves in the cemetery, based on the GPR data, is a complex task. Many moderate to strong GPR reflections, which may represent human burials, are evident in the overlay map. Many of these anomalies may represent soil disturbances other than human interments. Some may represent natural disturbances, such as tree stumps. Others, particularly those located on the northern end of the GPR survey, may represent machine noise, or other false signals, which are unrelated to the cemetery. Some of the anomalies may represent prehistoric features. The strong reflections along the northern edge of the cemetery were interpreted as a combination of road ruts, tree stumps, and machine noise. The cluster of reflections located in the northwestern corner of the cemetery has an unknown function, although these were not suspected to be human graves.

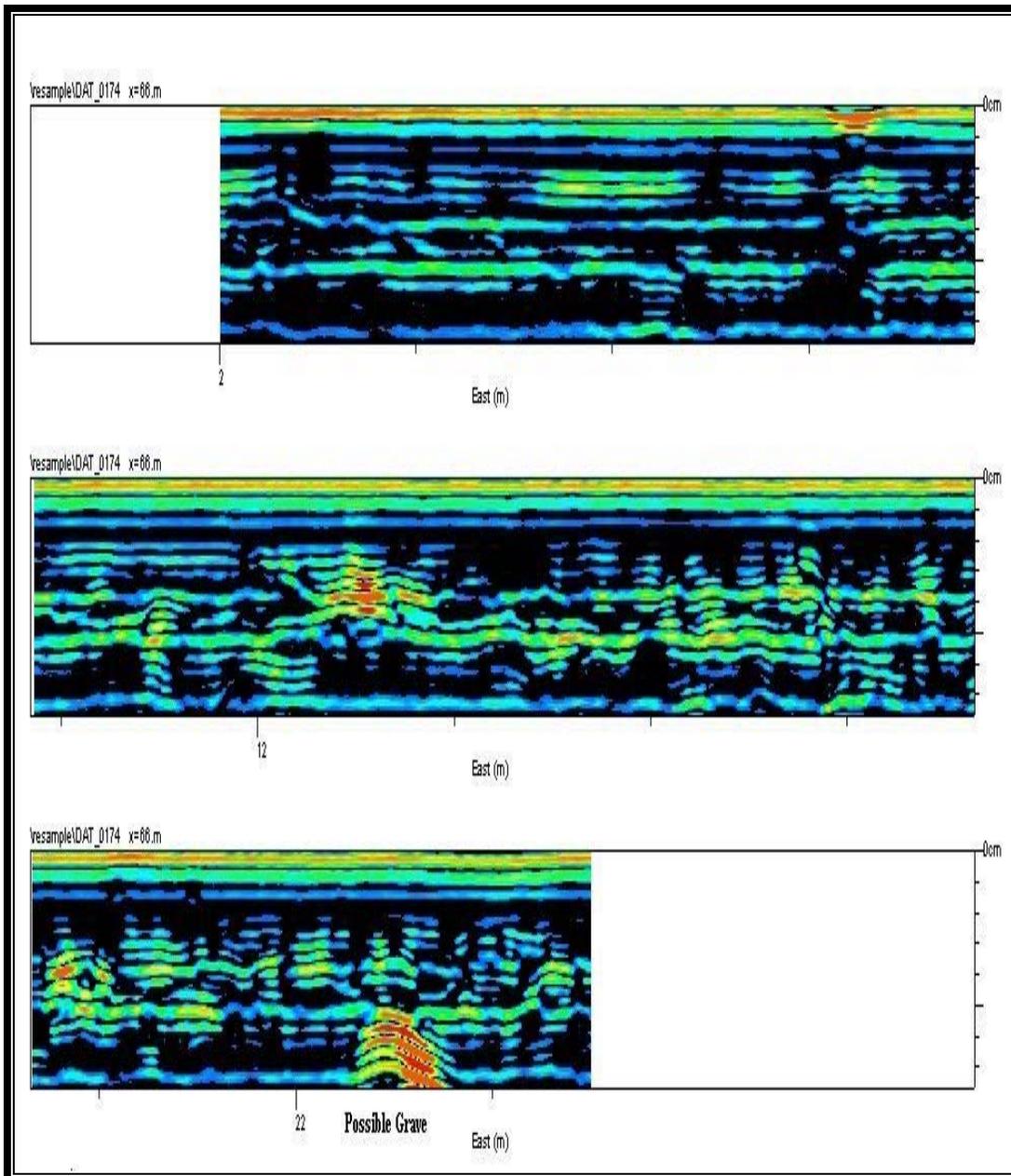


Figure 26. Radargram DAT_0174 (500-525.9N, 566E).

Many of the GPR grave signatures in the cemetery follow an expected form in that they are generally rectangular and oriented east-west and situated immediately east of their corresponding headstone. Quite a few of them, however, lack the rectangular trait and appear as circular to oval (or irregular blobs). The areal extent of the grave disturbances is another general distinguishing characteristic in that most are less than 2 m in length (east-west) and about 1 m in width (north-south). Small graves, such as that excavated for an infant or adolescent, create smaller “footprints” and, consequently, are more difficult to detect. Previous GPR experience on a cemetery in Beaufort County, South Carolina indicated that many infant burials are quite shallow and therefore, extremely difficult, if not impossible, to detect with existing GPR equipment (Elliott 2006d; Battle and Battle

2006). At very shallow depths the radar reflection generated by a child's grave is not drastically different from other common shallow soil disturbances.

Another situation where GPR survey has its shortcomings is when graves are tightly spaced. Quite often the radar signals created by reflected off of multiple graves makes recognition and isolation of individual graves nearly impossible. At best the surveyor is able to recognize an extensive area of ground disturbance likely representing multiple graves, but is unable to isolate radar signals for individual graves.

As expected, many of the more recent burials display very strong GPR reflections and are larger anomalies than many of the 19th century interments. Since the more recent graves were excavated with the aid of heavy machinery, their larger size and more obvious recognition is understandable.

With all these caveats considered, Figure 28 shows the distribution of 13 suspected human burials that were detected solely by GPR survey in the Jameson Family Cemetery. These were designated Graves 107 through 119. Their identification as burials is tentative and will require archaeological excavation to fully verify. Figure 29 shows a distribution plot of all graves (and suspected graves) in the Jameson Family Cemetery. Based on these data a tentative perimeter delineation of the graveyard also is shown.

The Jameson Family Cemetery evolved and expanded over the past century and a half. Figure 30 shows the outer extent of the Jameson Family Cemetery (Figure 30C), the extent of identified 19th century graves (Figure 30A), and the extent of graves of unknown age marked only by fieldstones (Figure 30B). Areas of Figure 30A and B constitute the original core of the cemetery. The unidentified graves display considerable overlap with the 19th century graves. The southeastern part of this cemetery core also contains probable graves with no surface features that were identified by GPR survey. These GPR-delineated graves extend south and east of the core area.

Freeman-Fowler-Jameson Cemetery Reconnaissance

The brief reconnaissance of the Freeman-Fowler-Jameson Cemetery provided some new information about this graveyard. The cemetery was heavily wooded with under story vines and saplings, which precluded a completed GPR survey. Several GPR radar transects were collected. Examination of these radargrams was inconclusive as to the subsurface features on the site. The surface clues included three formal gravestones with formal footstones and three sets of rough fieldstones, indicating a total burial population of six. The GPR sampling did not locate any additional graves, although the field conditions were less than optimal for their location. Furthermore, less than one hour was spent at the cemetery, so the investigations also were limited by time. This is an important early historic cemetery in Pickens County and additional study of this site is warranted. With proper site preparation a more thorough GPR survey may reveal additional graves and provide information on the full geographical extent of the burying ground. Fieldwork for such a survey could be conducted in two-days or less.

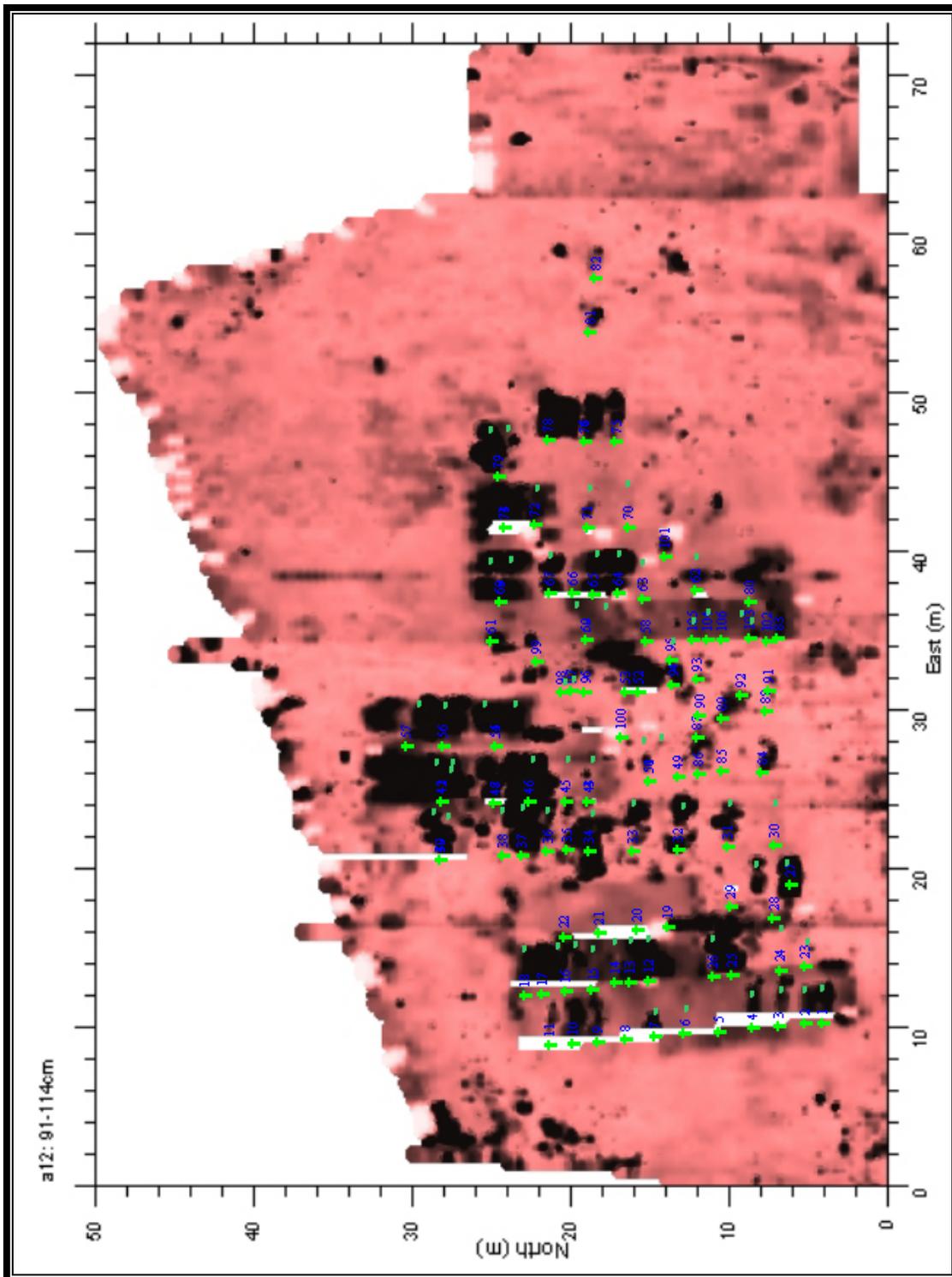


Figure 27. Map of Jameson Family Cemetery, Showing Gravestones Superimposed on the GPR Plan Map.

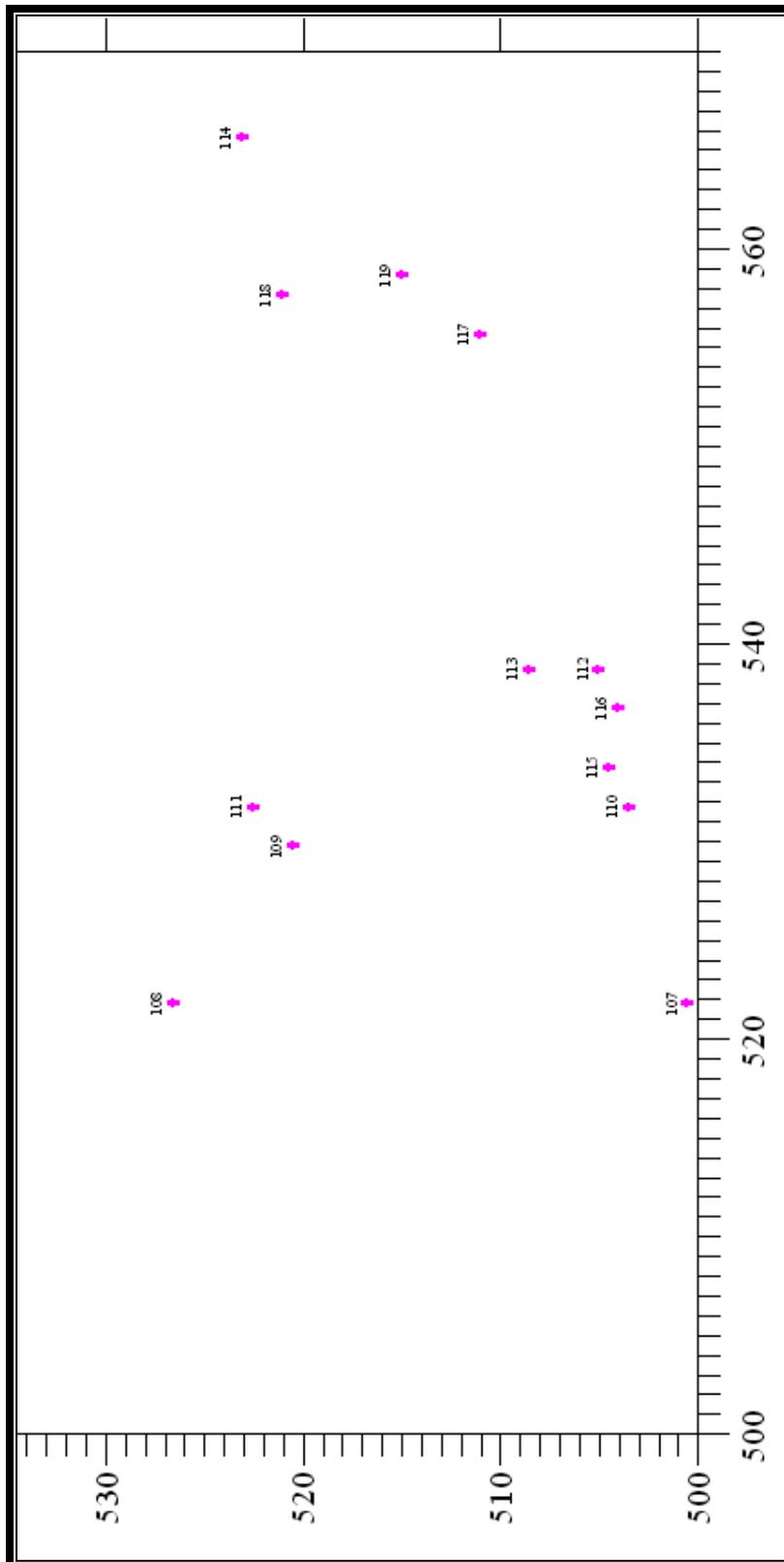


Figure 28. Tentatively Defined Graves by GPR Only, Jameson Family Cemetery.

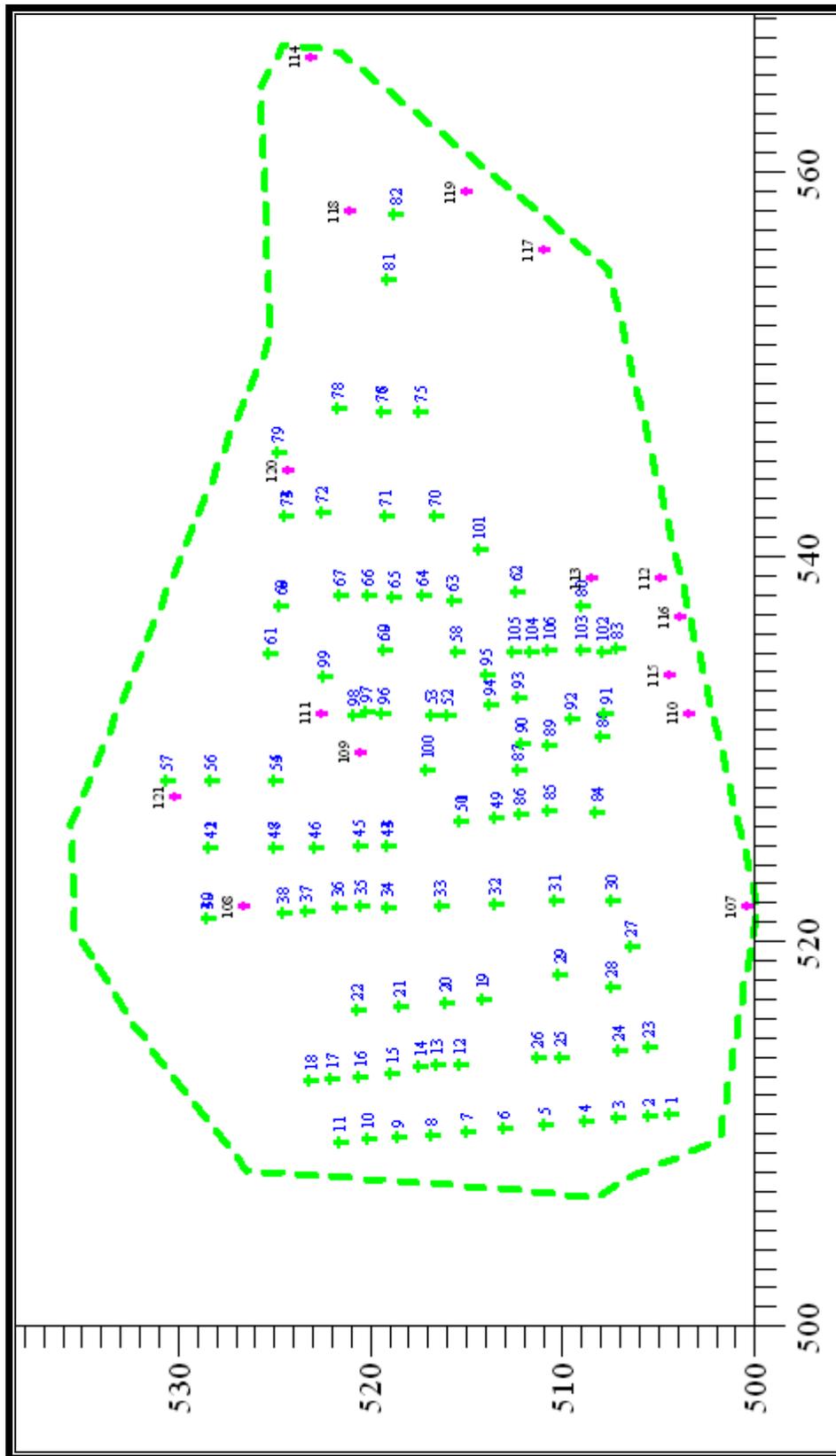


Figure 29. Distribution of Graves, Jameson Family Cemetery.

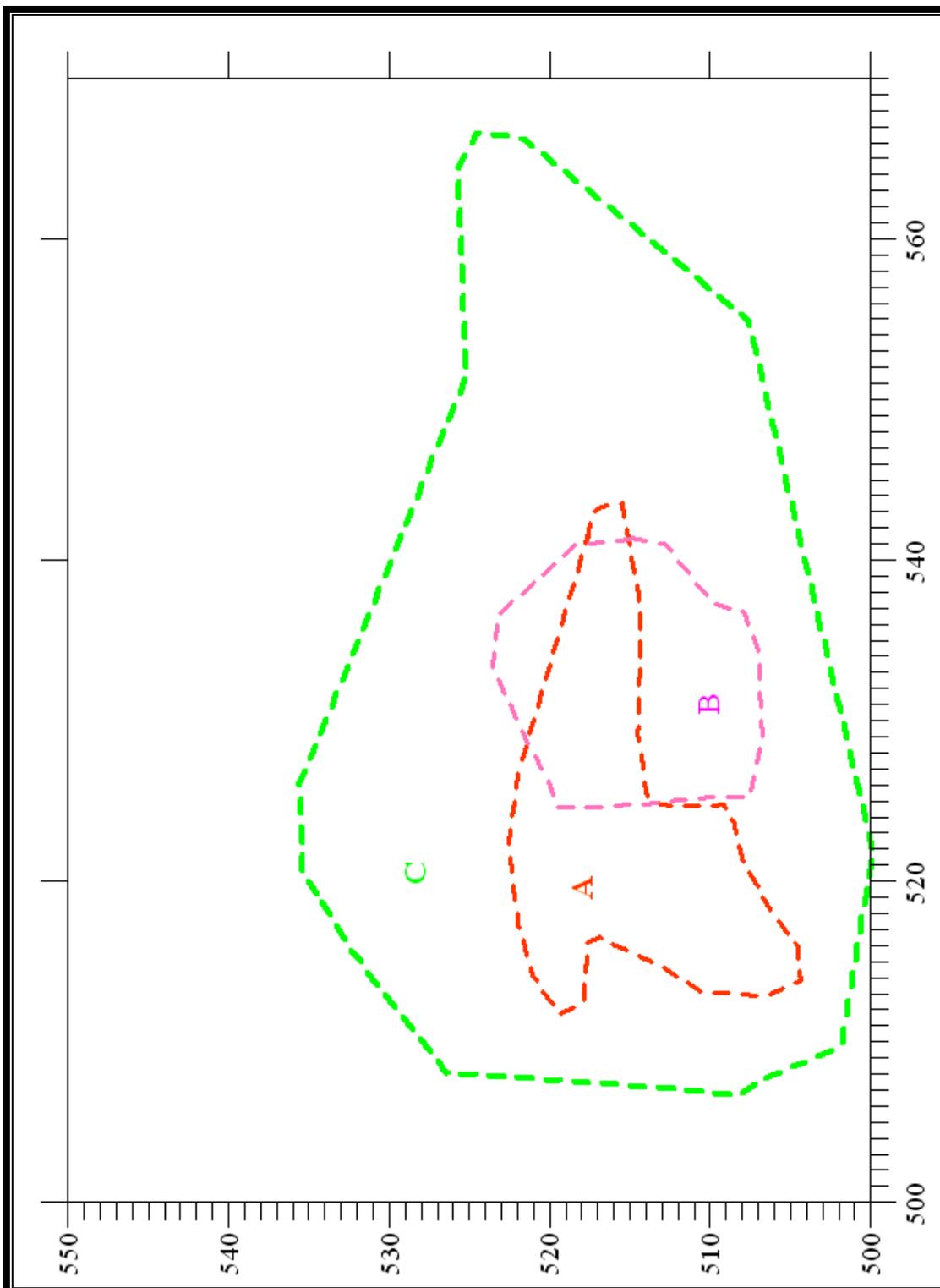


Figure 30. Jameson Family Cemetery (A. 19th century graves; B. Unknown age graves; C. Current extent of graves).

V. Summary

The LAMAR Institute researchers were employed by the Jameson Family Cemetery, Inc. to delineate the Jameson Family Cemetery in rural Pickens County, South Carolina. Fieldwork for this two-day project was completed on February 6, 2009. The survey was accomplished by transit mapping, grave documentation, and Ground Penetrating Radar (GPR) data collection. The data was post-processed in the lab using multiple software programs. The results include a series of scaled maps that show various features within the cemetery, a set of digital photographs of the grave markers, tabular data on the graves identified by surface markers and historical search, and GPR radargrams, plan maps and animated jpeg maps of the subsurface of the cemetery. These lines of evidence were integrated to create a more complete story of the cemetery and its contents. A total of 121 graves was identified in the cemetery. This study represents the first documented use of GPR technology to define cemeteries in Pickens County, South Carolina. GPR proved to be a highly effective and useful tool in documenting the Jameson Family Cemetery.

A brief reconnaissance visit to the Freeman-Fowler-Jameson Cemetery, which is located within a few miles of the Jameson Family Cemetery, also was conducted by the LAMAR Institute team. Only one hour was spent in this effort, however, so the findings were quite limited. Field conditions in the wooded setting also restricted the GPR survey that could be accomplished. More fieldwork is recommended to properly delineate this historic cemetery.

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