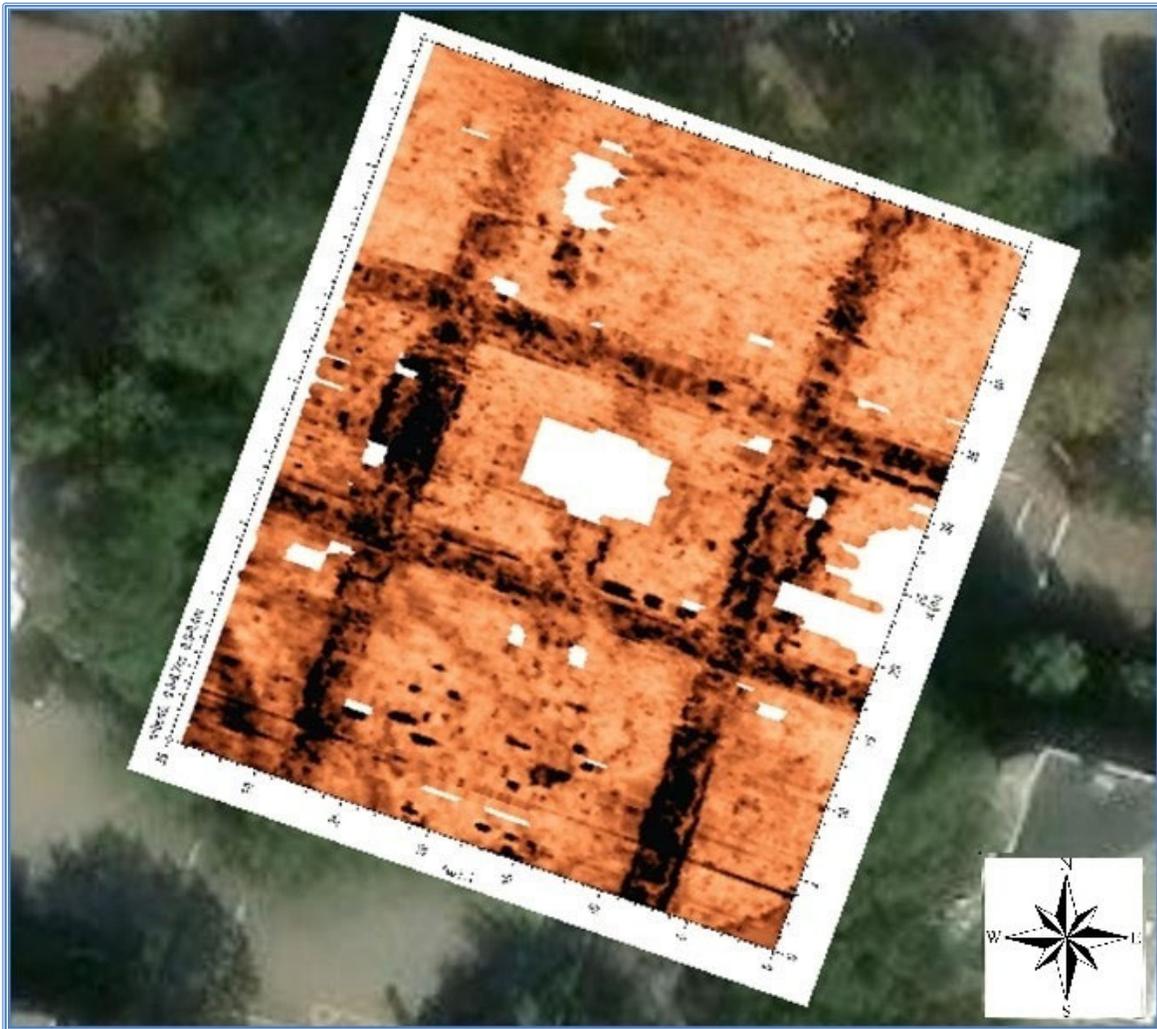


# Ground Penetrating Radar Survey of Whitefield Square, Savannah, Georgia



The LAMAR Institute  
Savannah, Georgia  
2026



# **Ground Penetrating Radar Survey of Whitefield Square Savannah, Georgia**

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Submitted to:

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Dr. Dean Goodman, a world-renowned expert in GPR, generously responded to inquiries related to the unusual GPR signal we suspected might be a blast anomaly associated with a meteor or historic eighteenth-century artillery explosion.

We respectfully note the blessing of the square by Ms. Patt Gunn, Dr. Jamal Touré, and a minister in their group prior to the beginning of the GPR survey.

*We dedicate this report to the innumerable African and African-American men, women, and children whose lives and resting places lie woven through Savannah and its surrounding landscapes. May the work of archaeology and history continue to lift their stories from the soil, carrying their memory into the light.*



# CONTENTS

<b>I. Introduction</b>	<b>1</b>
<b>II. Historical Background</b>	<b>5</b>
<b>III. Research Methods</b>	<b>15</b>
<b>IV. Results of the GPR Survey</b>	<b>23</b>
<b>V. Interpretive Summary</b>	<b>63</b>
<b>VI. References Cited</b>	<b>75</b>



## List of Figures

Figure 1. Whitefield Square GPR Project area (outlined in Red).....	2
Figure 2. Whitefield Square, Facing Southwest.....	3
Figure 3. City's GIS Overlay of the “Negro Burial Ground”, as shown on four early nineteenth-century Savannah maps in relation to Whitefield Square.....	11
Figure 4. Block A, Radargram Plan.....	17
Figure 5. Block B, Radargram Plan.....	18
Figure 6. Block A, GSSI Team, Radargram Plan. ....	19
Figure 7. Immovable obstacles in Whitefield Square (Gazebo outlined in black, large trees are green dots, and electrical utilities are red dots).....	20
Figure 8. Overlay Map of Radargram Plans for MALA GPR Blocks A and B (grid north is to top of page).....	21
Figure 9. GPR Survey of Blocks A and Block GSSI A in Progress, Whitefield Square.....	23
Figure 10. GPR Block A Plan View, Timeslices 2, 4, 6 and 8.....	24
Figure 11. GPR Block A Plan View, Timeslices 10, 12, 14 and 16.....	24
Figure 12. GPR Block A Overlay Map, Timeslices 2-8.....	25
Figure 13. GPR Block A Overlay Map, Timeslices 9-16. ....	26
Figure 14. GPR Block A, Radargram 68, hyperbolas indicated by red arrows. ....	27
Figure 15. GPR Block A, Radargram 74. ....	28
Figure 16. GPR Block A, Radargram 92.....	28
Figure 17. GPR Block A, Radargram 111. ....	29
Figure 18. GPR Block A, Radargram 123. ....	29
Figure 19. GPR Block A, Radargram 184.....	30
Figure 20. GPR Block A, Radargram 207.....	31
Figure 21. GPR Block A, Radargram 219.....	31
Figure 22. GPR Block A, Radargram 225. ....	32
Figure 23. GPR Block A, Radargram 239. ....	32
Figure 24. GPR Block A, Radargram 242. ....	33

Figure 25. GPR Block A, Radargram 252. ....	34
Figure 26. GPR Block A, Radargram 279. ....	34
Figure 27. GPR Block A, Radargram 316. ....	35
Figure 28. GPR Block A, Radargram 326. ....	35
Figure 29. GPR Block A, Radargram 329. ....	36
Figure 30. GPR Block B, Plan of Timeslice 1. ....	37
Figure 31. GPR Block B, Plan of Timeslice 2. ....	38
Figure 32. GPR Block B, Plan of Timeslice 3. ....	39
Figure 33. GPR Block B, Plan of Timeslice 4. ....	40
Figure 34. GPR Block B, Plan of Timeslice 11. ....	41
Figure 35. GPR Block B, Plan of Timeslice 30. ....	42
Figure 36. GPR Block B, Overlay Plan Map, Timeslices 1-6. ....	44
Figure 37. GPR Block B, Overlay Plan Map, Timeslices 1-30. ....	45
Figure 38. GPR Block B, Overlay Plan Map, Timeslices 1-6 (with Bandpass filter applied). .....	46
Figure 39. GPR Block B, Overlay Plan Map, Timeslices 1-5 (with Hilbert transform filter applied). ....	47
Figure 40. GPR Block B, Overlay Plan Map, Timeslices 1-5 (with Kirchhoff Migration filter applied). ....	48
Figure 41. Radargram 146, GPR Block B, Whitefield Square. ....	49
Figure 42. Radargram 147, GPR Block B, Whitefield Square. ....	49
Figure 43. Radargram 167, GPR Block B, Whitefield Square. ....	50
Figure 44. Radargram 247, GPR Block B, Whitefield Square. ....	50
Figure 45. Radargram 257, GPR Block B, Whitefield Square. ....	51
Figure 46. Radargram 259, GPR Block B, Whitefield Square. ....	51
Figure 47. Radargram 279, GPR Block B, Whitefield Square. ....	52
Figure 48. Radargram 313, GPR Block B, Whitefield Square. ....	52

Figure 49. Radargram 315, GPR Block B, Whitefield Square.....	53
Figure 50. Radargram 321, GPR Block B, Whitefield Square. ....	54
Figure 51. Radargram 329, GPR Block B, Whitefield Square.....	54
Figure 52. Radargram 357, GPR Block B, Whitefield Square. ....	55
Figure 53. Radargram 359, GPR Block B, Whitefield Square. ....	55
Figure 54. Radargram 361, GPR Block B, Whitefield Square.....	56
Figure 55. Radargram 366, GPR Block B, Whitefield Square. ....	56
Figure 56. Radargram 376, GPR Block B, Whitefield Square. ....	57
Figure 57. Radargram 392, GPR Block B, Whitefield Square. ....	57
Figure 58. GSSI GPR Block A, Plan of Timeslice 7, Whitefield Square.....	59
Figure 59. Radargram 206, GSSI GPR Block A. ....	60
Figure 60. Radargram 209, GSSI GPR Block A.....	60
Figure 61. Radargram 301, GSSI Block A. ....	61
Figure 62. Radargram 302, GSSI Block A. ....	61
Figure 63. Radargram 305, GSSI Block A. ....	62
Figure 64. Radargram 306, GSSI Block A. ....	62
Figure 65. Distribution of 55 Field-identified Hyperbolas in GPR Block A (shown as black dots).....	64
Figure 66. GPR Block A Overlay plan map of Timeslices 2 through 9 plotted on modern aerial image. ....	65
Figure 67. GPR Block B Hilbert Transform Overlay plan map of Timeslices 1 to 5 plotted on modern aerial image. ....	66
Figure 68. Potential Burial Locations, GPR Blocks A and B, Whitefield Square, Savannah. ....	67
Figure 69. Potential burial clusters A and B in GSSI GPR Block A, Whitefield Square. ....	68
Figure 70. Composite GPR Plan Map, Block A, Timeslices 15-30.....	70
Figure 71. Plan of GPR Block B, Timeslice 30, Whitefield Square. ....	71

Figure 72. Explosion superimposed on modern aerial image..... 72

Figure 73. Dean Goodman's Interpretation of Possible Meteorite Strike Epicenter, Savannah, Georgia (Goodman 2025). ..... 73

# I. Introduction

This report details the Ground Penetrating Radar (GPR) survey and historical research of Whitefield Square in Savannah, Chatham County, Georgia by the LAMAR Institute, Inc. (Figure 1). This historical archaeology research was conducted at the request of the City of Savannah.

Historical evidence suggests potential for Whitefield Square to encompass portions of Savannah's "Negro Burial Ground". This large cemetery dates from the period 1763-1844. The primary goal of this remote sensing project was to ascertain the potential presence or absence of human burials beneath Whitefield Square.

Whitefield Square was created in 1851 as the population of Savannah and its urban footprint expanded southward into what had previously been town commons and farm lots, as envisioned in the Oglethorpe plan. A version of the Oglethorpe plan originally consisted of tythings (sets of 10 residential lots) surrounding a series of town squares.

Whitefield Square is bounded on the north by East Taylor Street, on the south by East Gordon Street and on all sides by Habersham Street, which runs north-south. This square was laid out in 1851 and it was the final town square following the Oglethorpe plan. Whitefield Square is smaller than the original town squares and it is elongated on its north-south axis, forming a rectangle rather than a square. The square measures approximately 52 meters north-south by 34 meters east-west, or about 1,768 m<sup>2</sup>.

The LAMAR Institute GPR team gathered radar information from Whitefield Square, excepting for areas unavailable for survey because of immovable obstacles. The single largest obstacle was a circular gazebo near the center of the square. This gazebo is a replica Victorian building, a Hollywood prop constructed for the 1976 film, "Gator" (Figure 2).

Whitefield Square was covered by three separate GPR collection grids in an effort to maximize the radar information available within it. Radar information was collected from approximately 90 percent of the square. The remaining 10 percent was obscured by immovable objects and thick vegetation.

This GPR survey produced strong evidence for Whitefield Square's prior use as a burial ground. This technical report outlines the goals, research plan, methods, results, and interpretations for this GPR survey. It is organized into five chapters, followed by a bibliography of references cited. Chapter 2 contains the historical context for the study site and the people who were buried there. Chapter 3 presents the research methods used in this study. Chapter 4 presents the results of the GPR survey. Chapter 5 contains an interpretive summary of the project and its findings. The report ends with a bibliography of references cited.



**Figure 1. Whitefield Square GPR Project area (outlined in Red).**



**Figure 2. Whitefield Square, Facing Southwest.**



## II. Historical Background

### HISTORICAL CASE FOR A CEMETERY IN WHITEFIELD SQUARE

Enslaved African-Americans and Freedmen have a rich history in Savannah. The town has had a substantial population of persons of color since the period of Royal Government in the early 1750s. While slavery was not permitted in Georgia during the Trustee Period, work parties of enslaved people were brought to Savannah from South Carolina, where slavery was well entrenched, to assist in major public work projects from the earliest years of Colonial Georgia. It is reasonable to expect a number of these people died while working in Georgia and that their remains were interred nearby. The location of any graves of persons of color from the Trustee Period, who were buried in Savannah is unknown.

Earliest demographic statistics for Savannah's people of color are sketchy to non-existent. By 1825 the City of Savannah's population included 3,230 black residents (Johnson 1996:183). Five years later a total of 3,279 enslaved persons and 404 free people of color were recorded in the Federal census. The population of the rest of Chatham County in 1830 included 6,202 enslaved persons and 22 free people of color (U.S. Census 1830).

The historical record contains no definitive numerical count of deceased African-Americans who lived in Savannah at the time of their deaths for the period of the cemetery's existence. The LAMAR Institute team turned to Artificial Intelligence (AI) search engine Chat GPT5 for an informed estimate of these mortality statistics. The following discussion was composed with AI assistance and edited by this report author.

### Estimated Mortality and Burial Use at Savannah's African-American Cemetery (c. 1763–1844)

This analysis provides a historically grounded estimate of mortality and burial use associated with the African-American population of Savannah during the period in which Whitefield Square functioned as the city's primary African-American cemetery (circa 1763–1844). The estimate is intended to support interpretation of findings from a recent Ground-Penetrating Radar (GPR) survey, offering demographic context for the scale and intensity of burial activity likely present beneath the square.

Due to the absence of comprehensive death registers for enslaved people and the partial survival of burial and municipal records, no precise count of interments is possible. The figures presented here represent modeled estimates, derived from accepted historical-demographic methods and anchored in documented population trends for Savannah.

Archival and secondary historical research identifies the area now known as Whitefield Square a small portion of Savannah's principal burial ground for enslaved Africans and African-Americans, as well as some free persons of color, from approximately 1763 until its closure in 1844. During this period:

- Enslaved people comprised a large proportion—often a plurality or majority—of Savannah's population
- Free persons of color formed one of the largest urban free Black communities in Georgia
- African-Americans were systematically excluded from white burial grounds

- Interments were often unmarked, poorly recorded, or entirely undocumented, particularly for children and newly arrived enslaved persons

As a result, the physical subsurface record is likely the most complete remaining evidence of this burial ground’s use.

### **Methodological Framework for Estimating Deaths and Interments**

Based on federal census reconstructions, city enumerations, tax digests, and scholarly studies, Savannah’s African-American population (enslaved and free) during the burial ground’s active period can be conservatively estimated as follows:

<b>Period</b>	<b>Estimated Average Black Population</b>
1740–1760	~500–1,000
1760–1790	~2,000–3,500
1790–1810	~4,500–6,000
1810–1830	~5,500–6,500
1830–1844	~6,000–7,000

These figures reflect:

- Rapid growth after the legalization of slavery in the mid-18th century
- Savannah’s emergence as a major Atlantic port and urban labor center
- Sustained importation and natural increase of enslaved populations

Historical demographic scholarship consistently shows that urban African-American populations in the 18th and early 19th centuries experienced extremely high mortality, especially under conditions of enslavement.

For Savannah, the following conservative crude death rates (CDRs) are applied:

- Baseline mortality: ~35 deaths per 1,000 persons per year
- Reflects:
  - Subtropical disease environment (yellow fever, malaria, dysentery)
  - Overcrowded urban housing
  - High infant and child mortality
  - Limited or inaccessible medical care for enslaved people

Epidemic mortality (which periodically exceeded 50–80 per 1,000) is averaged into the baseline rather than modeled as spikes, to avoid overstating totals.

### **Implications for Burial Density and GPR Interpretation**

It is critical to emphasize:

- Not all deaths resulted in formal burial records
- Infant deaths were systematically undercounted
- Burial practices for enslaved people often involved:
  - Shallow graves
  - Multiple interments
  - Grave reuse over time
- There is no evidence of an alternative sanctioned burial ground for African-Americans during much of this period

The demographic scale outlined above is consistent with expectations of dense, overlapping subsurface burial features, even if surface markers were removed or never installed.

### **Estimated Deaths During the Burial Ground’s Period of Use (1763–1844)**

Applying the population estimates and mortality rates across the approximate 81-year period during which Whitefield Square

may have formed part of the “Negro Burial Ground” yields the following:

- Lower-bound estimate: ~12,500 deaths
- Upper-bound estimate: ~15,500 deaths

### **Interpretive and Ethical Considerations**

This estimated number of African-American deaths, ranging from about 12,500-15,500, should be understood as:

- A contextual magnitude, not a precise count
- A tool for:
  - Interpreting GPR anomalies
  - Guiding archaeological decision-making
  - Informing preservation and commemoration planning

Given the historic marginalization of this population and the intentional erasure of burial markers, the absence of complete documentation should not be interpreted as absence of burial activity.

If Whitefield Square does lie within the bounds of the African-American cemetery, then it represents a minority percentage of the cemetery. Whitefield Square measures approximately 1,666 square meters, whereas the dimensions of the cemetery, derived from contemporary cartography and written, public documents range from 3,716 to 18,116 square meters.

For the period from 1763-1809, Whitefield Square represents no more than 44.8 percent of the burial ground. Taking the conservative estimate of 12,500 deaths in Savannah and an even spatial distribution of burials across the cemetery landscape,

Whitefield Square could contain 5,600 burials.

After the burial ground was enlarged in 1810, its size was about 11,159 square meters reducing Whitefield Square to only 14.9 percent of the total cemetery size. Using the same death count of 12,500, this represents about 1,863 burials in the square.

Three years later in 1813, the cemetery expanded even more to 18,116 square meters. Then Whitefield Square represents no more than 9.2 percent of the total cemetery space. Using a death count of 12,500, this represents about 1,150 burials in Whitefield Square.

By any standard GPT5’s burial estimates ranging from 1,150 to 1,863 are staggering. The LAMAR Institute’s GPR survey findings does not support a burial density in Whitefield Square even approaching 1,000 deceased for several reasons. It is unlikely that the burials were evenly distributed across the cemetery. In addition, if Whitefield Square encompasses only a portion of the cemetery, then it is likely along one edge and burials may be fewer in such a location.

### **AFRICAN-AMERICAN CHURCHES IN SAVANNAH**

African-American religious beliefs impact their burial traditions. Churches and their cemeteries are often connected, or at least in close proximity. Savannah has an abundance of churches but its number of urban cemeteries is low.

The first organized African-American Church in Georgia was likely the (relocated) Silver Bluff Baptist congregation (Woodson 1921:43). While this church was founded in South Carolina at Silver Bluff in 1773, their arrival in Savannah followed the 1778

retaking of the city by British armed forces. The actual physical location of this early church within Savannah is unknown, as are any human burials associated with it. The British occupation lasted from 1778 to July 11, 1782, when the military troops left town and the keys to the city were turned over to Continental Army and Georgia Battalion troops commanded by Major General Anthony Wayne. It is quite likely that many of the Loyalist African-Americans left along with the other Loyalist citizens. After leaving Georgia many of the former enslaved emigrated to East Florida, the Bahamas, Jamaica, Nova Scotia, New Brunswick, and Quebec. Their connections to Savannah were likely completely severed. Their departure was followed by a several-year hiatus before African-Americans had organized another Baptist church in the city.

The next African-American church congregation was established by African-Americans Reverends George Liele and Andrew Bryan. Liele preached to the enslaved at Brampton plantation, Savannah and Yamacraw before leaving for Jamaica with Loyalist Colonel Moses Kirkland as an indentured servant to Kirkland (Woodson 1921:43-45).

Before leaving Georgia, however, Reverend Liele returned to Savannah and baptized Andrew Bryan and others, all founders of the First Colored Church in Savannah. This church had a shaky start but it survived and by 1788, a second African-American congregation was established at Kiokee Creek, above Augusta (Woodson 1921:44-48).

Jonathan Bryan, the enslaver of Andrew Bryan and his brother Sampson Bryan, sought legal action in their support after the two men were imprisoned by their detractors. Finally, in 1794, the congregation established its first formal church sanctuary, which was located on a town lot, “on what is now known as Mill Street, running to Indian Street Lane

in Savannah”. Indian Street is presently located in northwestern Savannah, west of Martin Luther King, Jr. Boulevard near the Savannah River. Andrew Bryan was able to buy his freedom. His master Jonathan Bryan died in 1788 and by the time of the final division of the Jonathan Bryan estate, the church membership had reached 700 communicants (Woodson 1921:49-51). By the early 19<sup>th</sup> century, the size of the congregation of the First Colored Church reached 850. When the congregation became too large, it divided and a portion became the Second African Baptist Church of Savannah formed in 1802. Its first pastor was Reverend Henry Cunningham, one of Colonel Leroy Hamilton’s enslaved persons. The present church, reconstructed in 1926 following a devastating fire, is located at 123 Houston Street northwest of Greene Square (Woodson 1921:51-52; New York Public Library 2026).

In 1823 when the two churches became part of the Sunbury Association, the First Colored Church and the Second Colored Church were renamed First African Baptist Church and Second African Baptist Church (New York Public Library 2026).

By the time of Andrew Bryan’s death in 1812, the African-American Baptist congregants continued to multiply. In 1833 a Third Colored Church was formed in Savannah, which was soon renamed the First Bryan Baptist Church. Its first pastor was Reverend Thomas Anderson (Love 1888; Woodson 1921:51-52).

The First African Baptist Church and the First Bryan Baptist Church are located on the western side of Savannah. Greene Square and the Second African Baptist Church are on Savannah’s east side. The locations of any cemeteries specifically associated with these three congregations in Savannah remains a mystery. The African-American cemetery in east Savannah may have served this function for all three churches.

Frederick Law Olmsted (1856:406-409) visited Savannah in 1853-1854 and provides a description of Savannah's African-American cemetery. Since the original cemetery was decommissioned in 1844, Olmsted is more likely referring to the cemetery near the hospital, which is several blocks south of Whitefield Square. If so, the graves bearing epitaphs prior to 1844 were likely exhumed and reburied in the newer African-American cemetery. Olmsted wrote,

The burying-ground was a rough "vacant lot" in the midst of the town. The only monuments were a few wooden posts, and one small marble tablet. While riding, aimlessly, in the suburbs of Savannah, on returning from a visit to the beautiful rural cemetery of the wealthy whites, which Willis has, with his usual facility and grace, a little over-pictured, I came upon a square field, in the midst of an open pine-wood, partially inclosed with a dilapidated wooden paling. It proved to be a grave-yard for the negroes of the town. Dismounting, and fastening my horse to a gate-post, I walked in, and found much, in the monuments, to interest me. Some of these were mere billets of wood, others were of brick and marble, and some were pieces of plank, cut in the ordinary form of tombstones. Many family-lots were inclosed with railings, and a few flowers or evergreen shrubs had sometimes been planted on the graves; but these were generally broken down and withered, and the ground was overgrown with weeds and briars. I spent some time in examining the inscriptions, the greater number of which were evidently painted by self-taught negroes, and were curiously illustrative both of their condition and character. I transcribed a few of them, as literally as possible...

Olmsted's monument transcripts include the following summarized cenotaphs and/or grave markers:

- Henry Gleve, died January 19, 1849
- Charles Baldwin, aged 62 years, died November 20, 1846 [wooden marker, partially rotted]
- Wife of James Delbug, Born 1814, died 1852
- Margaret, born August 29 and died October 29, 1852 [infant]
- Reynolda Watts, died May 2, 1829 [24 year old woman's grave marble stone, partially covered by sand]
- Henry Cunningham, Reverend, founder and pastor of 2<sup>nd</sup> African Church for 39 years, died March 29, 1842 [large brick vault, erected by 2<sup>nd</sup> African Church, as a token of respect]
- Andrew Brian, Reverend, pastor of 1<sup>st</sup> colored Baptist church in Savannah, died October 6, 1812 [large stone table "erected by the First Colored Church as a token of love for their most faithful pastor. A.D. 1821", "He was supposed to be 96 years of age, his remains were interred with peculiar respect an address was delivered by the Rev. Mr. Johnston Dr. Kolluck Thomas Williams & Henry Cunningham"]. The stone commemorating Andrew Bryan described by Olmsted, which was erected nine years after Bryan's death, may have been a cenotaph rather than Bryan's tombstone (Love 1888:54).

Olmsted's observations from the cemetery provide useful information. In addition to the seven markers he described, Olmsted added, "There were a few others, of similar character to the above [Reynolda Watts' marble gravestone], erected by whites to the memory of favorite servants." The death dates of the grave markers he identified span the period from 1812 to 1852. His description of the cemetery as a square, vacant lot in disrepair

would have been made after this cemetery a few years after it was officially closed. The date of his visit to the cemetery was between 1853 and 1855 (Olmsted 1856:403).

Savannah's African-American population included those from several denominations, including Baptists, Lutherans, Methodists, Presbyterians, Anglicans, Episcopalians, Catholics, and other denominations. Some fraction of deceased African-Americans from these religious faiths were likely buried in the African-American cemetery during its period of existence (ca. 1763-1844).

## RECENT SCHOLARSHIP

Luciana Spracher, Archives & History Officer for the City of Savannah has spent the past several years researching documents pertaining to the cultural resources in the city. Its historic cemeteries have figured prominently in her laudable archival research. One of the city's "lost graveyards" was known historically as the, "Negro Burial Ground" (Spracher 2021). Several early historic maps of Savannah show this expansive mortuary feature, which was located south of the town, as it existed prior to the 1840s. She also has located early text descriptions of this cemetery from her search of local histories, city records and Savannah newspapers.

The City of Savannah's research strongly suggests that a portion of this cemetery was located in present-day Whitefield Square. It is described as, "Savannah's Black cemetery", which was, "intended for all persons of color, whether enslaved or free" (Spracher 2021:1).

Using GIS technology and assisted by the City's Development Services Department, Spracher plotted the location of the cemetery as shown on maps dating to 1805, 1812, 1813 and 1818 (Spracher 2021:2). Two of these maps, the 1805 and 1818 versions, show

Whitefield Square within the cemetery locations. The 1818 map shows Whitefield Square almost entirely within it, while the 1805 map shows the northern half within the cemetery. The two other historic maps place the cemetery northwest of Whitefield Square. Our adaptation of the City's overlay map is shown in Figure 3.

Spracher (2021:2) noted,

In 1763, the British colonial Georgia General Assembly passed an act directing a burial ground for 'negroes' measuring 200 feet square be laid out in the Town Common towards the five-acre garden lots. In 1789, the Savannah Board of Wardens adopted an ordinance authorizing the County Surveyor to measure and lay out the burial ground which the General Assembly had authorized in 1763, implying this had never been completed. Surveyor Claud Thompson completed the survey laying out the 200-foot square burial ground in the Town Common near the garden lots according to Savannah's 1770 Town Plan.

Items II and III of the 1763 Act of the Royal Georgia legislature specifically stated,

And whereas the cemetery in the parish of Christ church belonging to the Said parish is become too small for the occasion, Be it therefore enabled by the authority cemetery of aforesaid That the said cemetery be enlarged and extended to the line of Abercorn- Christ Church Street, to the westward, and one hundred feet to the southward, the whole to contain two hundred and ten feet square, and the church-wardens and vestry-men of the said parish are hereby empowered, at their discretion, to agree with and hire workmen to complete, inclose, and finish the same.

And be it further enabled by the authority aforesaid, That there be laid out, Burial ground and inclosed in a line with the said cemetery, adjoining the lines of the common, towards the

five acre lots, a place of two hundred feet square for the conveniency of a burial-ground for negroes (Watkins and Watkins 1800:850).



**Figure 3. City's GIS Overlay of the “Negro Burial Ground”, as shown on four early nineteenth-century Savannah maps in relation to Whitefield Square.**

Apparently Savannahians continued to bury their African-American dead in other areas of the Town Common, outside of this 200 by 200 foot square, since in 1810 City Council passed

another ordinance designating a space in the South Town Common measuring 330 feet by 364 feet as a ‘burial ground for people of colour’ and repealed the 1789 ordinance. They allotted the new space of ground based

on the area that included the greatest number of graves in one spot in the Town Common at that time. In 1813, City Council increased this burial ground to 300 feet by 650 feet and paid \$20.00 to enclose it. Maps from 1805, circa 1812, and 1813 all show the “Negro Burial Ground” in the vicinity of Whitefield Square near the Fair Lawn property and the five-acre garden lots (see *Supporting Documents* for historical maps). The existence of an 1805 map, which was based on an 1802 survey by John McKinnon, identifying the African-American cemetery in the same general vicinity of the area designated in 1810 as the African-American cemetery indicates this area had long been in use as a burial ground.

Spracher (2021:3) noted further,

In 1844, City Council authorized the City Surveyor to lay out two new cemeteries south of the Hospital (which was located between Drayton and Abercorn streets, east of present day Forsyth Park) to replace the ‘Strangers Burial Ground’ and the ‘Negro Burial Ground’ which were both overcrowded. To date, a survey of these two cemeteries has not been located. In 1849, the Committee on Health and Cemetery was directed to take any measures deemed appropriate in regard to the ‘abandoned Potter’s field and Negro Cemetery’ (presumably the ‘Negro Burial Ground’ located near Whitefield Square and the ‘Strangers Burial Ground’ located adjacent to Calhoun Square were replaced by the new cemeteries south of the hospital). In 1850, the Committee was empowered to remove the vaults from the ‘old Negro Cemetery, or construct new ones for the deposit [sic] of the remains of those now in Vaults in the

new cemetery,’ indicating remains were being shifted from the ‘Negro Burial Ground’ near Whitefield Square to the one south of the hospital.

On February 22, 1855, the Savannah City Council,

Authorized the City Marshal to have the vaults in the ‘old negro Cemetery South of the hospital, together with their contents, removed at the expense of the city, to the new negro Cemetery; provided that the relatives or friends of the deceased persons in the vaults, select ground for that purpose (Spracher 2021:8; *Daily Morning News* 1855:2).

Savannah Mayor Edward C. Anderson in his annual report for the year ending October 31, 1855, reported the completion of relocation of African-American graves from the town cemetery to the Laurel Grove Cemetery (Anderson 1855:7).

Spracher (2021:4) provides a chronology of the African-American burial grounds in Savannah as follows:

- 1789-1810 – 200-foot square burial ground in Town Common near five-acre lots
- 1810-1844 – 330 feet x 364 feet/300 feet x 650 feet in South Town Common (near Whitefield Square)
- 1844-1852 – In Town Common south of the Hospital
- 1852-1855 – Transition to Laurel Grove Cemetery (relocation of vaults and remains).

John Brannen, Interim Director and Cemetery Services Coordinator, City of Savannah Cemeteries Division graciously provided his research findings for Savannah’s African-American cemeteries to the LAMAR Institute. These include numerous clippings

from early Savannah newspapers, as well as additional cartographic evidence (Olmsted 1857; *The Morning News* 1889; *Republican and Savannah Evening Ledger* 1813; McKinnon 1802; Stouf 1818; Stephens 1840; Gamble 1901; Thompson 1857).

The LAMAR Institute provided additional historical evidence concerning Savannah's cemeteries (Lambert 1814; Federal Writers' Project of Georgia 1937; Gally 1989;

McDonogh 1993; Johnson 1996; Probst 2009; Morgan 2020). The LAMAR Institute also offers a rich assortment of previous GPR projects in Savannah and elsewhere in coastal Georgia and South Carolina that provide useful analogs for the present study (Elliott 2006, 2009, 2010a-d, 2013, 2014, 2016a-b, 2017, 2024a-b; Elliott and Ashlock 2025; Elliott and Elliott 2016, 2018, 2022a-b, 2024; Elliott, R. 2015; Elliott, R. and Elliott 2011, 2020, 2023, 2025).



### III. Research Methods

The initial research goal for this project was to conduct a Ground Penetrating Radar (GPR) survey of Whitefield Square in Savannah, Chatham County, Georgia that was suspected to contain a portion of the “Negro Burial Ground”. This was the primary cemetery for African-Americans in the Savannah area circa 1763-1844 (Spracher 2025).

GPR is a useful tool for archaeologists and urban planners. It is the only remote-sensing technology that provides a 3-Dimensional view of the underground environment (Conyers and Goodman 2007; Conyers 2004, 2012; Goodman and Piro 2013). It has been shown to be well suited for the historical archaeology of the southeastern coastal plain, and particularly for delineating historic cemeteries (Elliott 2006, 2009, 2010, 2013, 2014; Elliott and Elliott 2016, 2022a-b). The GPR technology worked well on the present study.

GPR does not generate a photograph of the objects underground. Rather, when processed with the proper software it provides interpolated maps of the hundreds of thousands of individual radar reflections generated by the GPR equipment. It should be noted that large, dense metal objects often inhibit GPR radar signal propagation, and this blocked our remote-sensing views to the underground at some locations. Concrete-reinforced rebar and steel mesh also affects the GPR imagery, although it typically does not completely prohibit its use and effectiveness. GPR does not provide a complete identification of what it is imaging, so ground-truthing excavations

are required to fully understand any curious radar targets.

The LAMAR Institute conducted the GPR survey in December 2025. Mr. Daniel T. Elliott served as the GPR Specialist for this GPR project. He was assisted by GPR Technician, Ms. Rita F. Elliott. The GPR equipment included MALÅ X3M RAMAC radar unit and shielded antenna (500 MHz and 800 MHz) connected to a RAMAC XV monitor and battery, all mounted on a 3-wheeled cart. This hardware suite allowed accurate radar mapping to a depth of about three meters. Data was collected unidirectionally using *GroundVision* software (Version 2.1). Field forms were maintained for each GPR survey cell and contained comments and distance measurements for each radargram collected (sample transects). Radargrams were spaced 50 cm apart and all open areas within the project area were sampled where feasible.

Two large GPR Blocks, designated GPR Block A and GPR Block B, were surveyed. Grid North for Block A was oriented approximately 41 degrees west of True North. Both GPR survey grids included obstacles (trees, shrubs, benches, affixed trash cans, gas lamp posts and a large gazebo), which prevented the use of the GPR equipment. The areas not covered by GPR appear in white on the various plan maps.

Once the field survey of Whitefield Square was completed all GPR data were transported to the LAMAR Institute’s Middleground Laboratory in Rincon, Georgia for post-processing and reporting.

GPR-Slice software (version 7.0) was used for data post-processing and GPR plan map generation. These plan maps and profile views are interpreted and discussed in Chapter 4 of this report. This document conforms to international standards for GPR subsurface surveys (ASTM International 2024).

## **GPR BLOCK A**

GPR Block A measured 49 m North-South by 34.25 m East-West. Figure 4 is a schematic plan of the radargrams collected for GPR Block A. The 0N, 0E point on these plan maps is located at 32.07006 Latitude, -81.0907 Longitude and the northwestern corner of the GPR block (49N 0E) was 32.07049 Latitude, -81.0906 Longitude (Decimal degrees).

Radargrams in GPR Block A were collected using a 500 MHz shielded antenna. A total of 328 radargrams was collected from Block A. Radargrams in Block A were collected from south to north and the collection progressed from west to east. The total length of all radargrams in Block A measured 6.084.8m. The area within this polygon where radar data was collected covered approximately 1,521 m<sup>2</sup>.

## **GPR BLOCK B**

GPR Block B measured 49 m North-South by 34 m East-West. Block B was oriented perpendicular to Block A with data collection made from east to west and survey progress from south to north. Figure 5 is a schematic plan of the radargrams collected for GPR Block B. The 0N, 0E point for Block B maps is located in

the same location as the 0N, 34E grid point, of Block A.

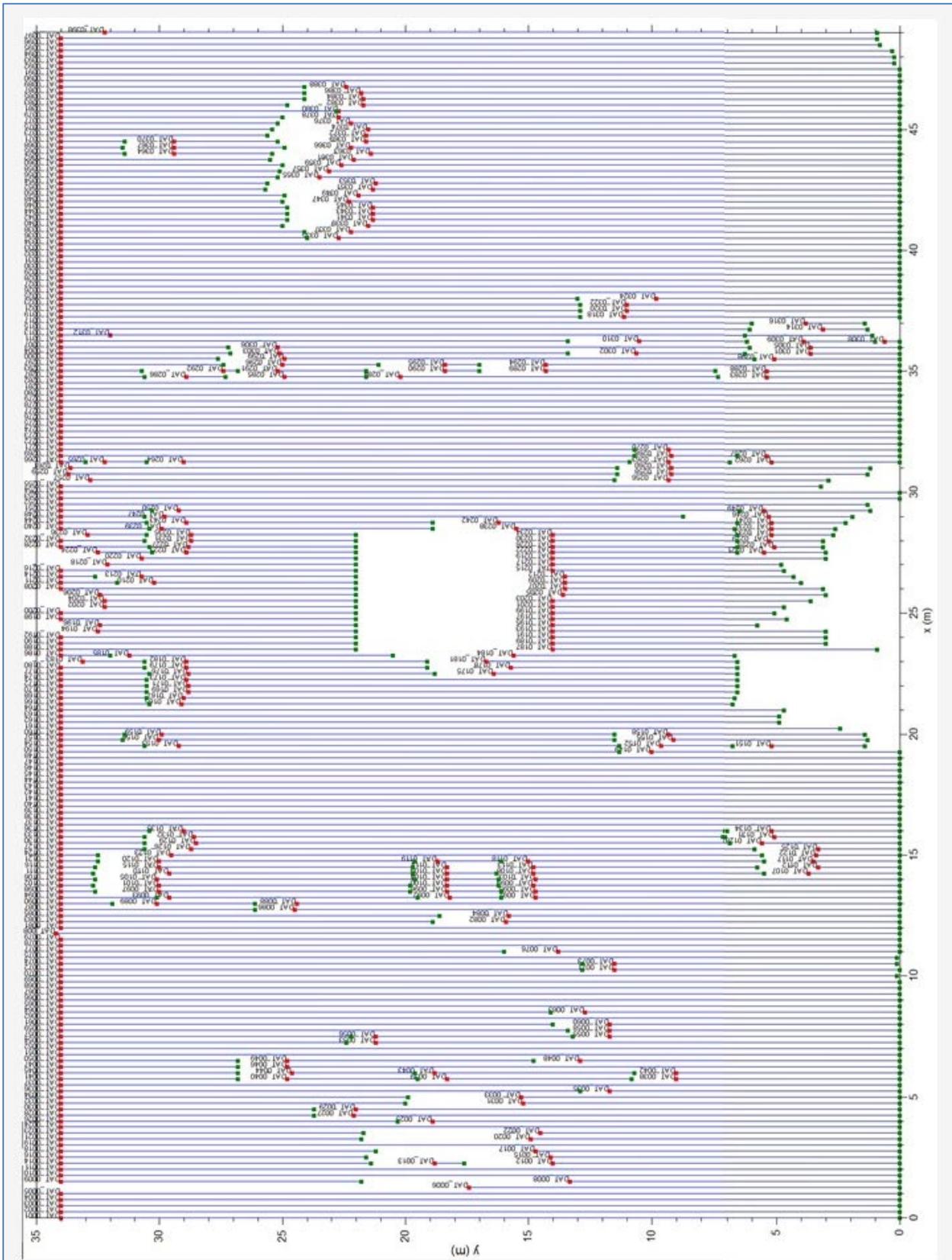
Radargrams in GPR Block B were collected using an 800 MHz shielded antenna. A total of 396 radargrams was collected from Block B. The total length of the radargrams in Block B measured 5,950.6m. The area within this polygon where radar data was collected covered approximately 1,521 m<sup>2</sup>.

## **GSSI GPR BLOCK A**

During the December 2025 field work, a second GPR team was employed to survey Whitefield Square using a different suite of equipment. GPR Technicians Dawn Chapman Ashlock and P.T. Ashlock used a GSSI SIR-3000 radar unit attached to a 400 MHz shielded antenna on a customized wheeled-cart. This survey team employed the same collection strategy: radargram transect paths spaced 25 cm interval apart; collection direction (grid South to North); and survey progress direction (grid West to East) as those covered by the MALA radar equipment in GPR Block A. The 0N, 0E point for the GSSI survey grid was located at 32.06997 Latitude, -81.0904 Longitude. The GSSI equipment used the following machine settings: Number of Samples per scan: 512; Time Window: 60 ns; and Number of Stacks: 0. The GSSI team did not have a Block B survey.

A total of 389 radargrams was collected from GSSI Block A. The total length of the radargrams in this block measured 5,912.12m. The area within this polygon where radar data was collected covered approximately 1,478 m<sup>2</sup>. Avoidance of survey obstacles varied slightly from the other survey team's GPR Block A. Figure 6 is a schematic plan of the radargrams collected by the GSSI GPR unit.





**Figure 5. Block B, Radargram Plan.**

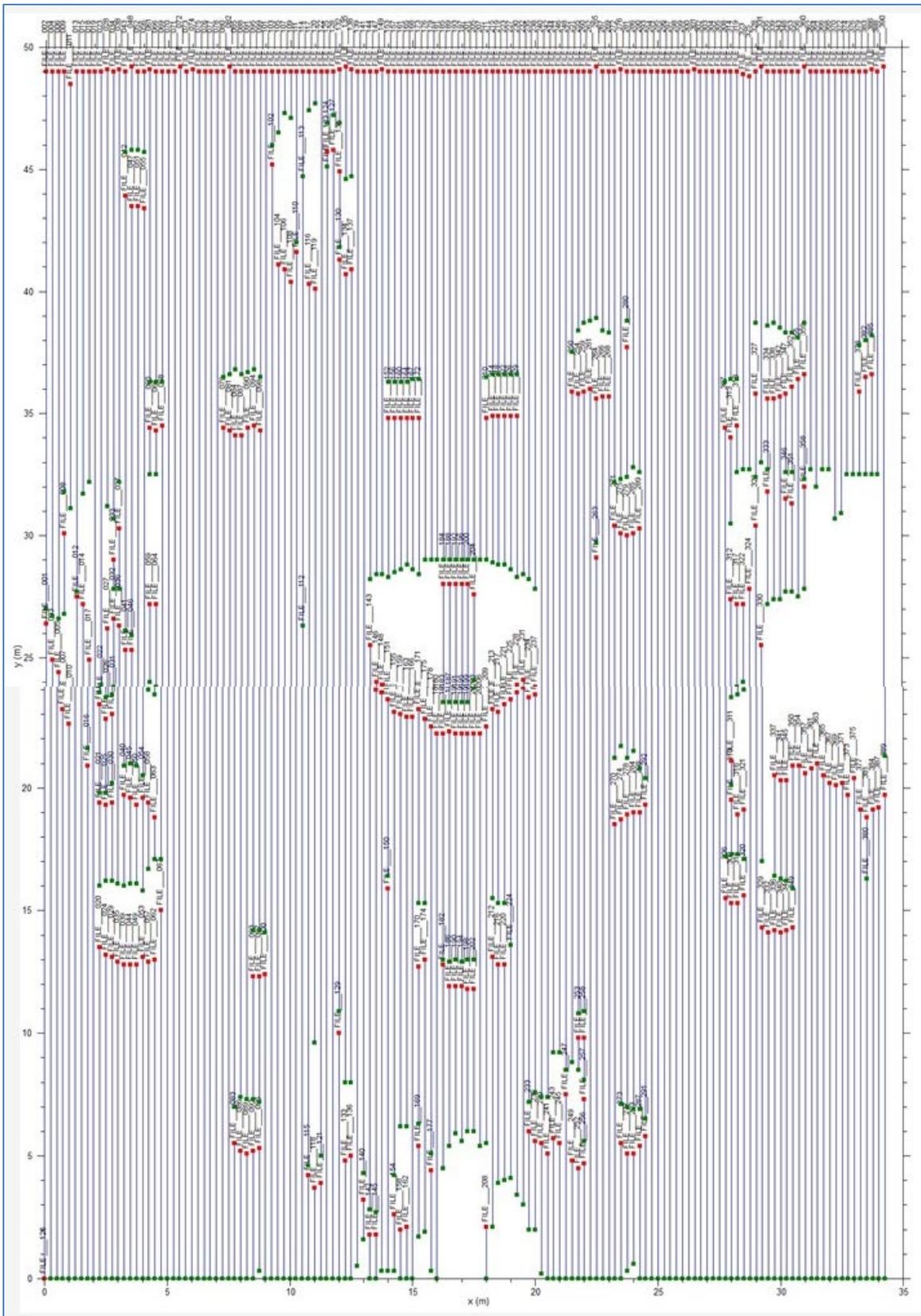


Figure 6. Block A, GSSI Team, Radargram Plan.

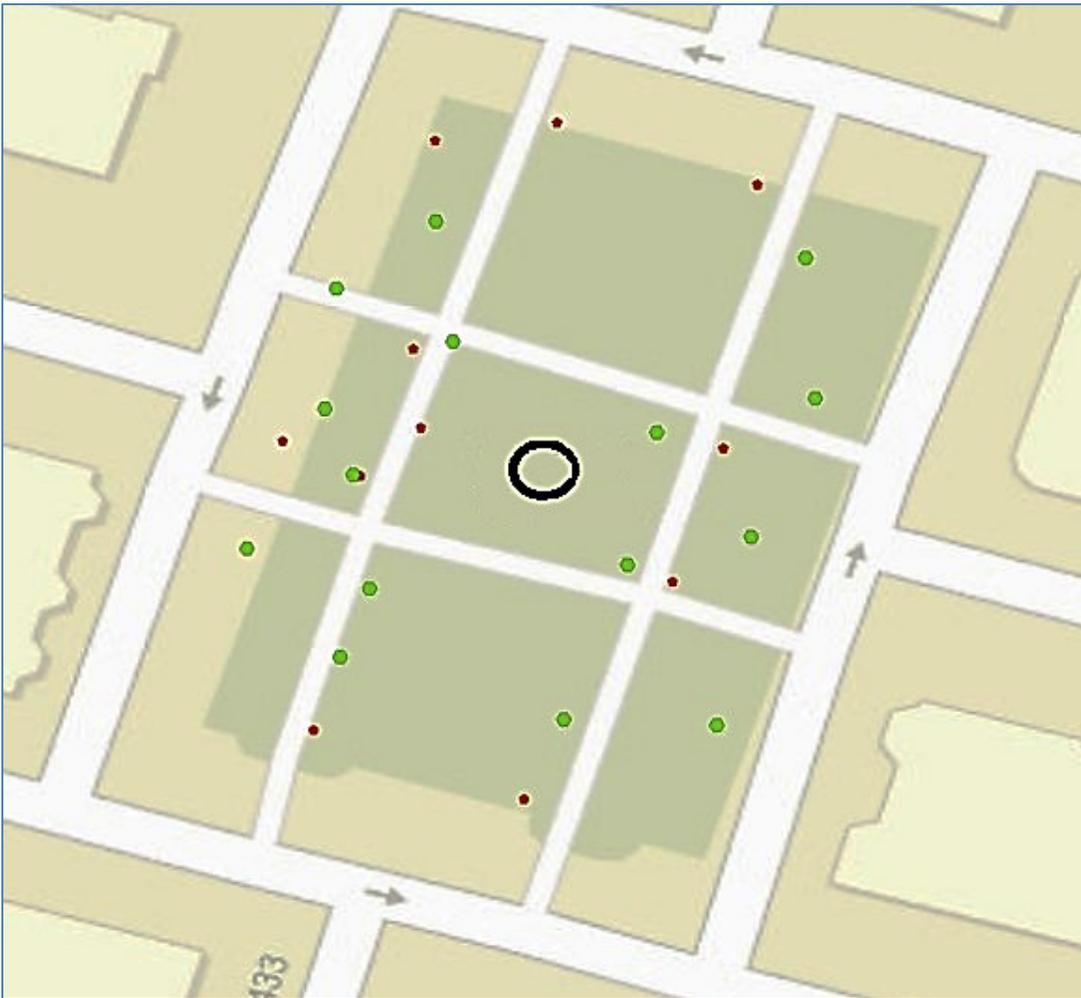
## SURVEY OBSTACLES

As mentioned previously, Whitefield Square contained numerous areas where obstacles prevented the use of the GPR equipment. Consequently, the survey coverage of the square was less than 100 percent. Figure 7 shows the locations of immovable objects, which include the central gazebo, large trees and electrical utility fixtures. Others not shown include fixed metal benches, trash receptacles and thick bush vegetation (azaleas, hydrangeas and other ornamentals). The gaps in coverage are indicated by white

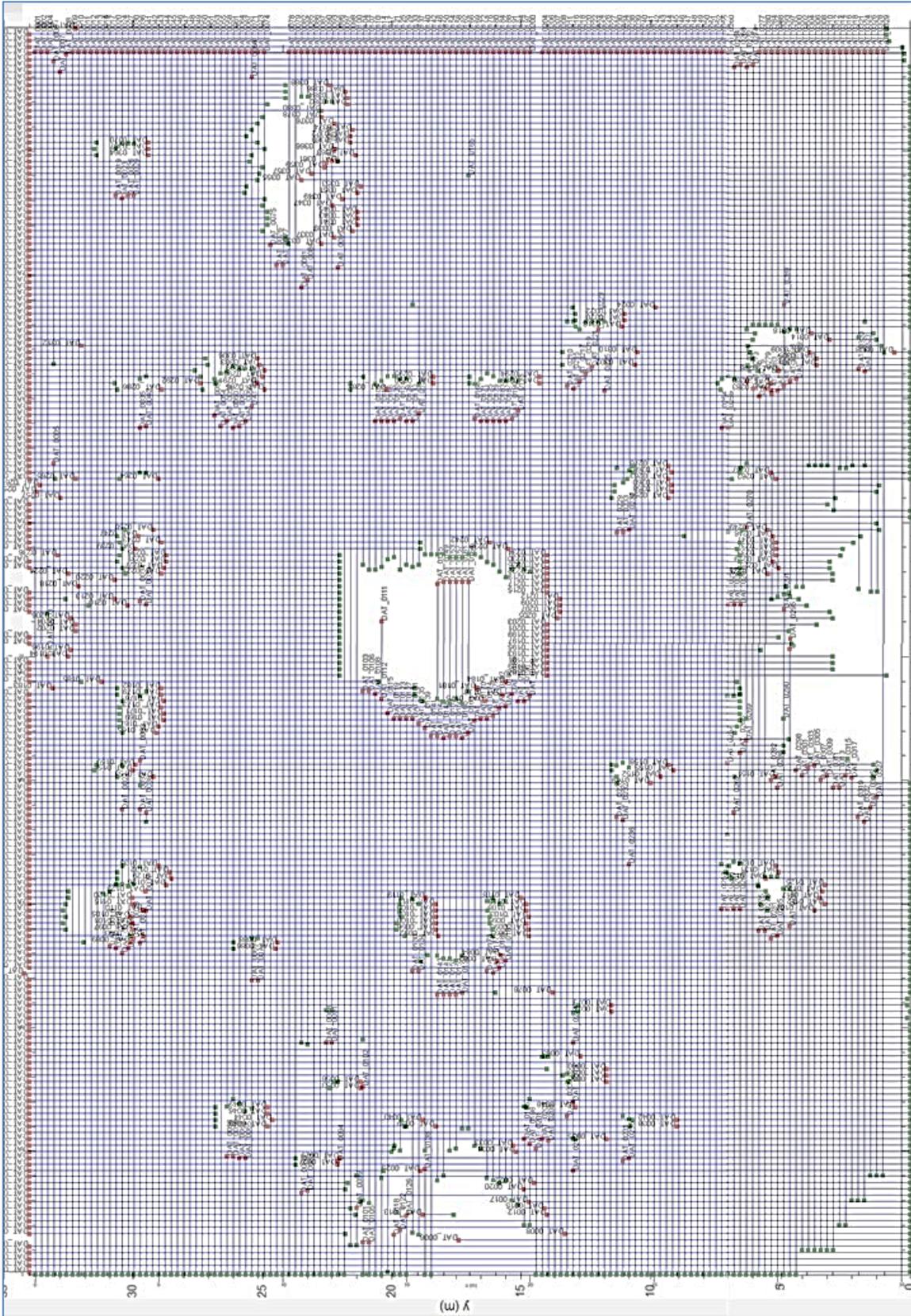
space on the three radargram schematic maps.

Although the brick walkways did not represent survey obstacles, these features did generate strong radar reflections that lessened the effectiveness of the GPR equipment.

The adverse effects of the various obstacles was lessened somewhat by the combination of data collection methods used in GPR sample blocks A and B. This is illustrated by an overlay map of the two radargram plans, shown in Figure 8.



**Figure 7. Immovable obstacles in Whitefield Square (Gazebo outlined in black, large trees are green dots, and electrical utilities are red dots).**



**Figure 8. Overlay Map of Radargram Plans for MALA GPR Blocks A and B (grid north is to top of page).**



## IV. Results of the GPR Survey

The LAMAR Institute's Geophysical Survey team covered Whitefield Square with three distinct GPR samples. These are described in this chapter as GPR Block A, GPR Block B, and GSSI Block A (Figure 9). The findings from each of the three GPR samples are described below.

### GPR BLOCK A

#### GPR Block A. Selected Plan Maps

Figures 10 and 11 show a sequence of GPR plan maps for GPR Block A. Figure 10 shows (from left to right) views of Timeslices 2, 4, 6 and 8. Timeslice 2 shows radar reflections from 2.9-5.7 nanoseconds (ns), or about 10-30 cm depth. Timeslice 4 shows radar reflections from 8.4-11.3ns, or about 40-60 cm depth. Timeslice 6 shows radar from 14-16.9ns, or 70-80 cm depth. Timeslice 8 shows radar from 19.7-22.6ns, or 1-1.1 m depth.



Figure 9. GPR Survey of Blocks A and Block GSSI A in Progress, Whitefield Square.

Figure 11 shows Timeslices 10, 12, 14 and 16. Timeslice 10 shows radar reflections from 25.3-26.2ns, or about 1.3-1.4 m depth. Timeslice 12 shows radar reflections from 30.6-33.7ns, or 1.5-1.7 m depth. Timeslice 14 shows radar reflections from 36.6-39.5 ns, or 1.8-2 m depth. Timeslice 16 shows radar reflections from 42.2-45 ns, or 2.1-2.3 m depth.

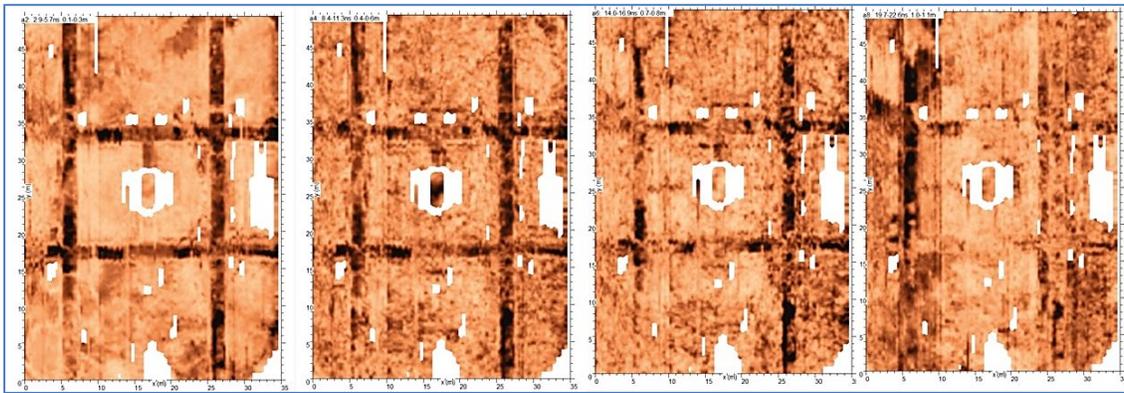
Figures 12 and 13 are GPR Overlay maps, where radar data from multiple time slices are combined. Figure 12 is an overlay of Timeslices 2 through 8, displaying radar data from 2.9-22.6 ns, or about 10 cm to 1.1 m depth. Figure 13 is an overlay of Timeslices 9-16. This map shows radar data from 22.4-45 ns, or about 1.1-2.3 m depth.

### Selected Radargrams, Block A

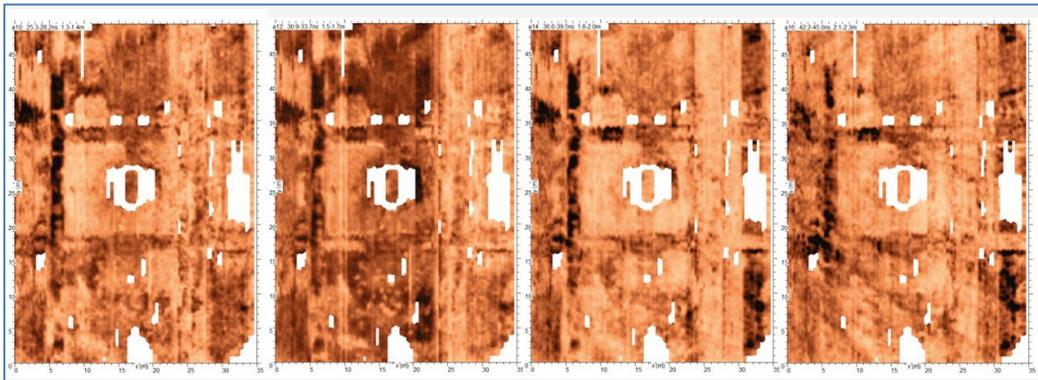
Figures 14-34 show individual radargrams (profile views) from GPR Block A. Grid South is to the left of each of these radargrams. The location of these radargram were shown in the schematic diagram of GPR Block A.

Figure 14 is Radargram 68, which is located at 8.75 m East on the Block A grid. It displays at least two large. broad hyperbolas whose origins are about 30 cm below surface (indicated by red arrows). These hyperbolas are not likely burial related.

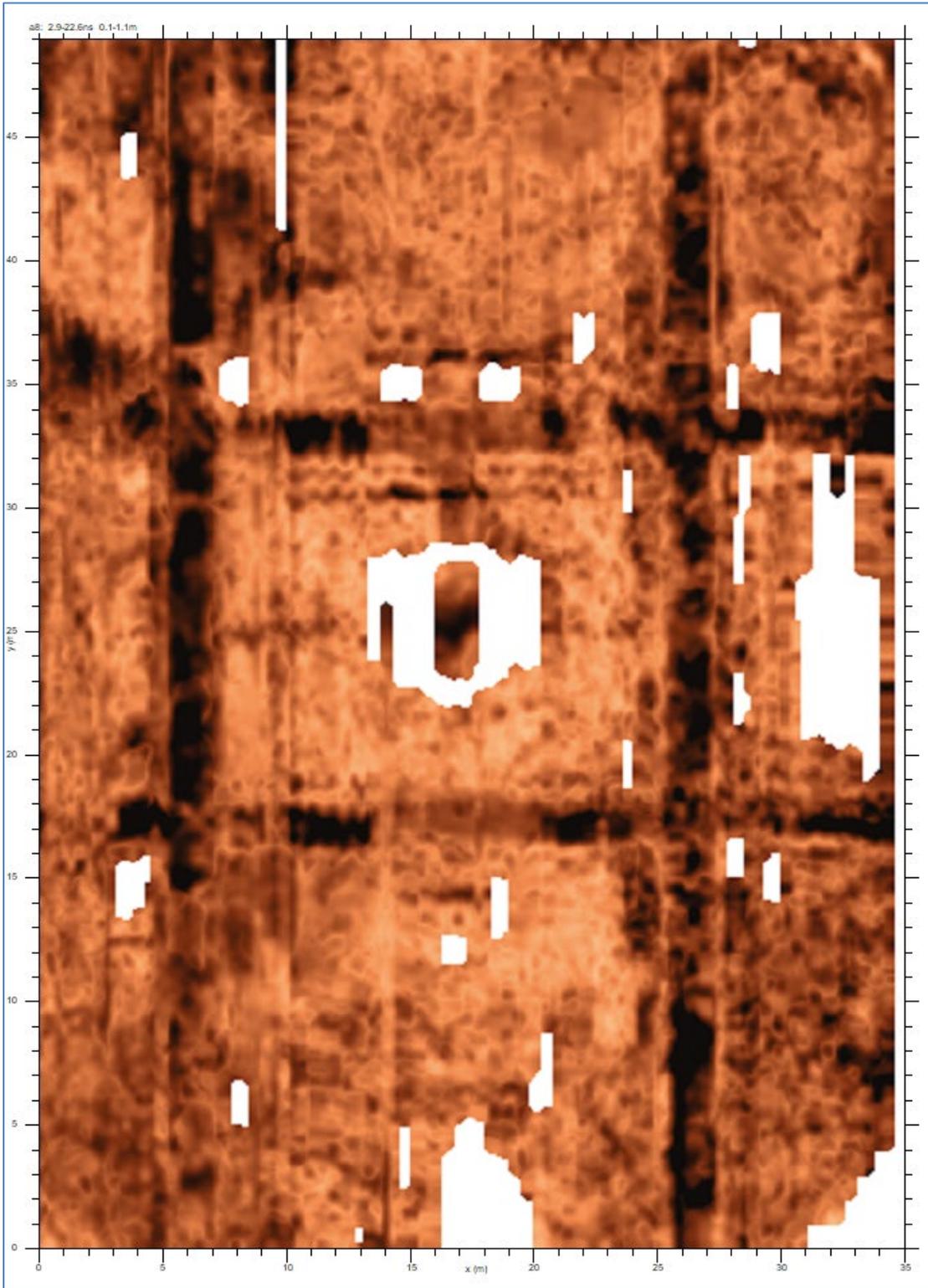
Figure 15 is Radargram 74, which is located at 9.25 m East on the Block A grid. It displays one large curious radar anomaly (indicated by red arrow). It is a probable depression that begins about 50 cm below ground surface and spans about 6 m north-south.



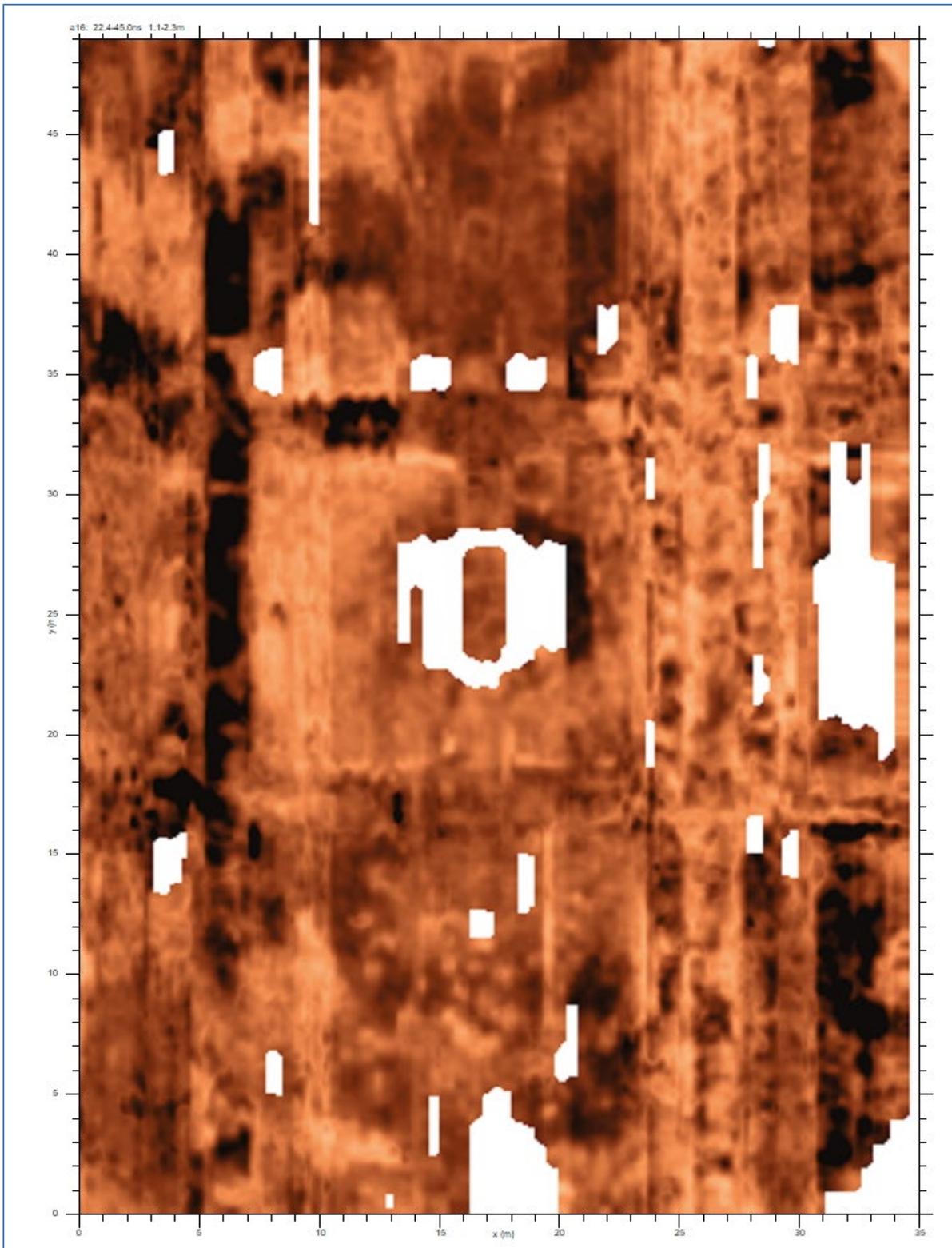
**Figure 10. GPR Block A Plan View, Timeslices 2, 4, 6 and 8.**



**Figure 11. GPR Block A Plan View, Timeslices 10, 12, 14 and 16.**



**Figure 12. GPR Block A Overlay Map, Timeslices 2-8.**



**Figure 13. GPR Block A Overlay Map, Timeslices 9-16.**

This depression in Radargram 74 contains a large object (or multiple objects) at its center. This object originates about 60 cm depth. This object is flanked on both sides by large, radar anomalies that originate near the ground surface, each spanning about 3 m north-south (modern features indicated by yellow arrows). Similar modern radar anomalies, mostly related to the existing brick walkways were observed throughout the GPR dataset.

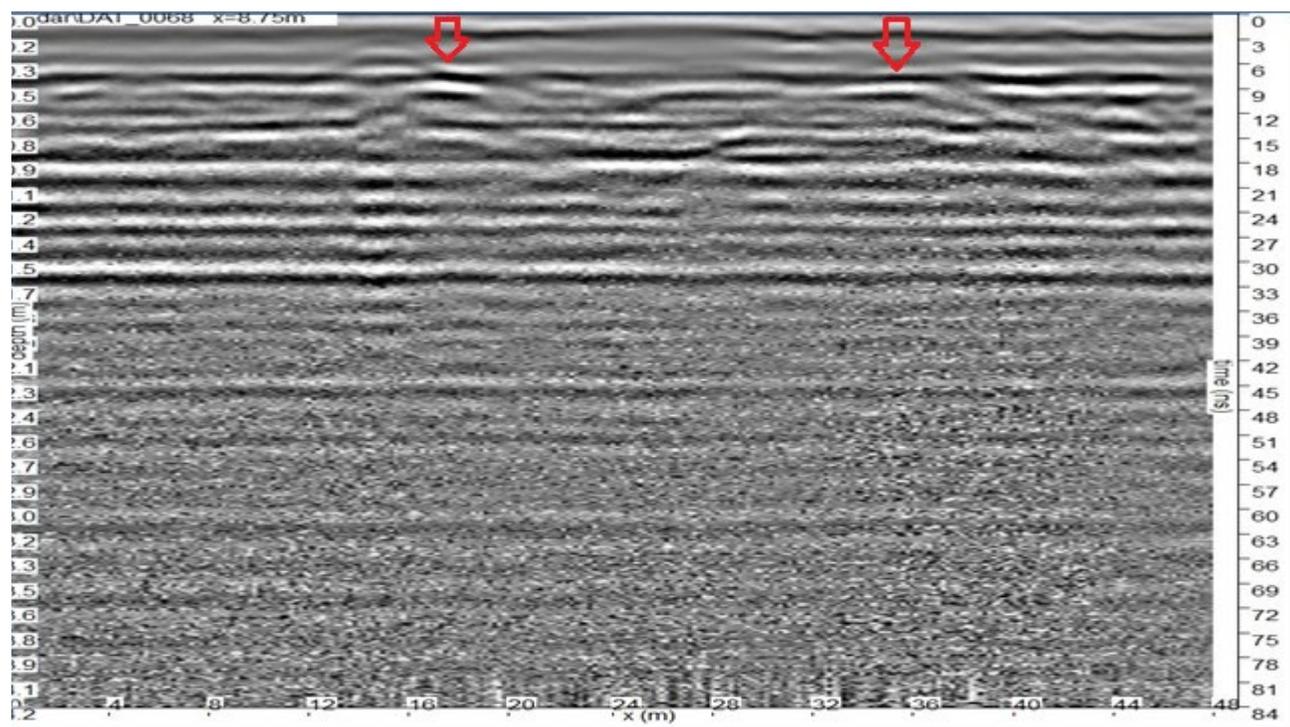
Figure 16 is Radargram 92, which is located at 12 m East on the Block A grid. This radargram contains three pronounced hyperbolas originating between 30-50cm below ground surface (indicated by red arrows). This radargram also contains two large, radar anomalies that originate near the ground surface (indicated by yellow arrows), related to a modern brick pathway.

Figure 17 is Radargram 111, which is located at 14 m East on the Block A grid. This radargram contains a large area of interest

consisting of gradually declining areas on the north and south with a central concentration of small to medium metal objects (indicated by three red arrows). These anomalies originate between 60 and 80 cm below ground surface. The entire area spans about 15 m north-south. This anomaly is too large to represent a single human burial, and its function remains undermined.

Figure 18 is Radargram 123, which is located further North along the 14 m East transect on the Block A grid. It contains two hyperbolas that originate at 30 cm below ground level (marked by red arrows).

Figure 19 is Radargram 184, which is located at 18.75 m East on the Block A grid. This area contains numerous small hyperbolas originating at depths from 30-50 cm below ground. Two more prominent hyperbolas are indicated by red arrows.



**Figure 14. GPR Block A, Radargram 68, hyperbolas indicated by red arrows.**

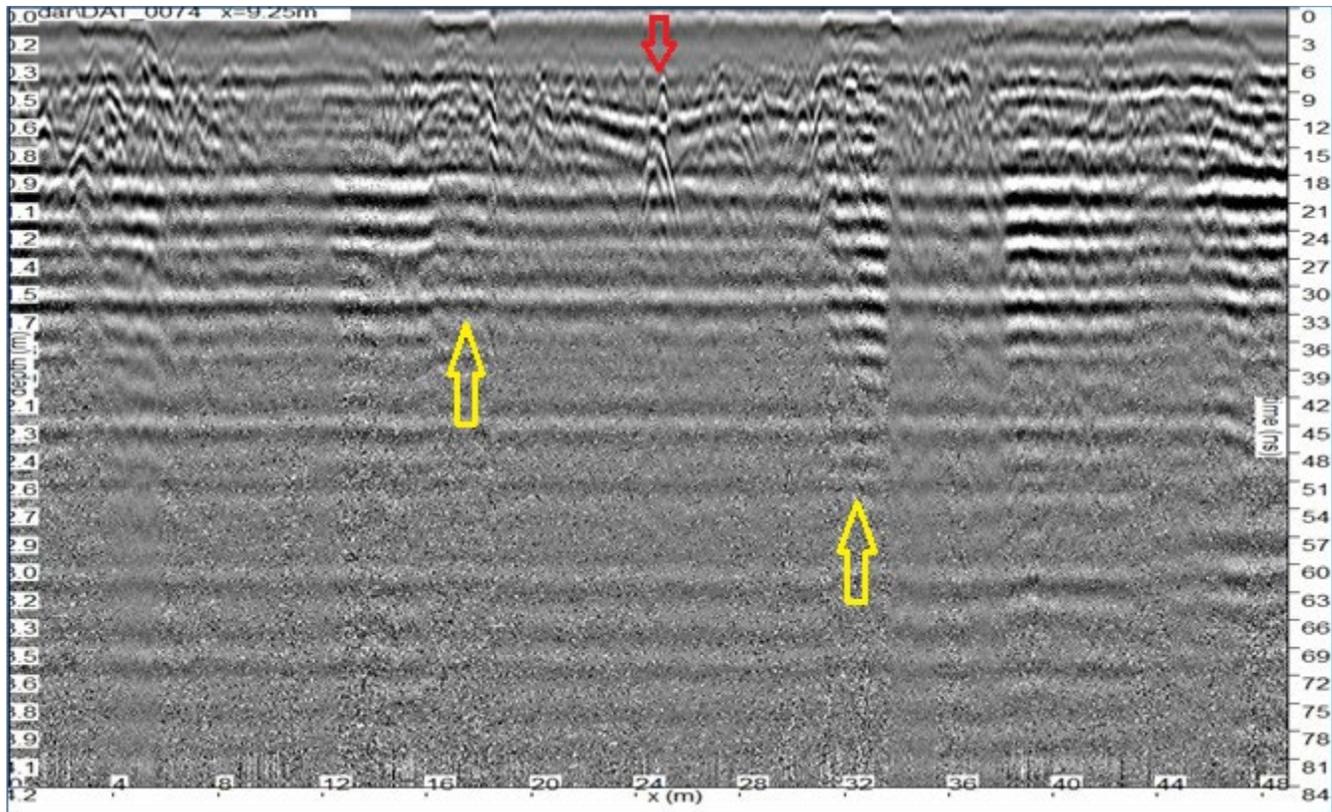


Figure 15. GPR Block A, Radargram 74.

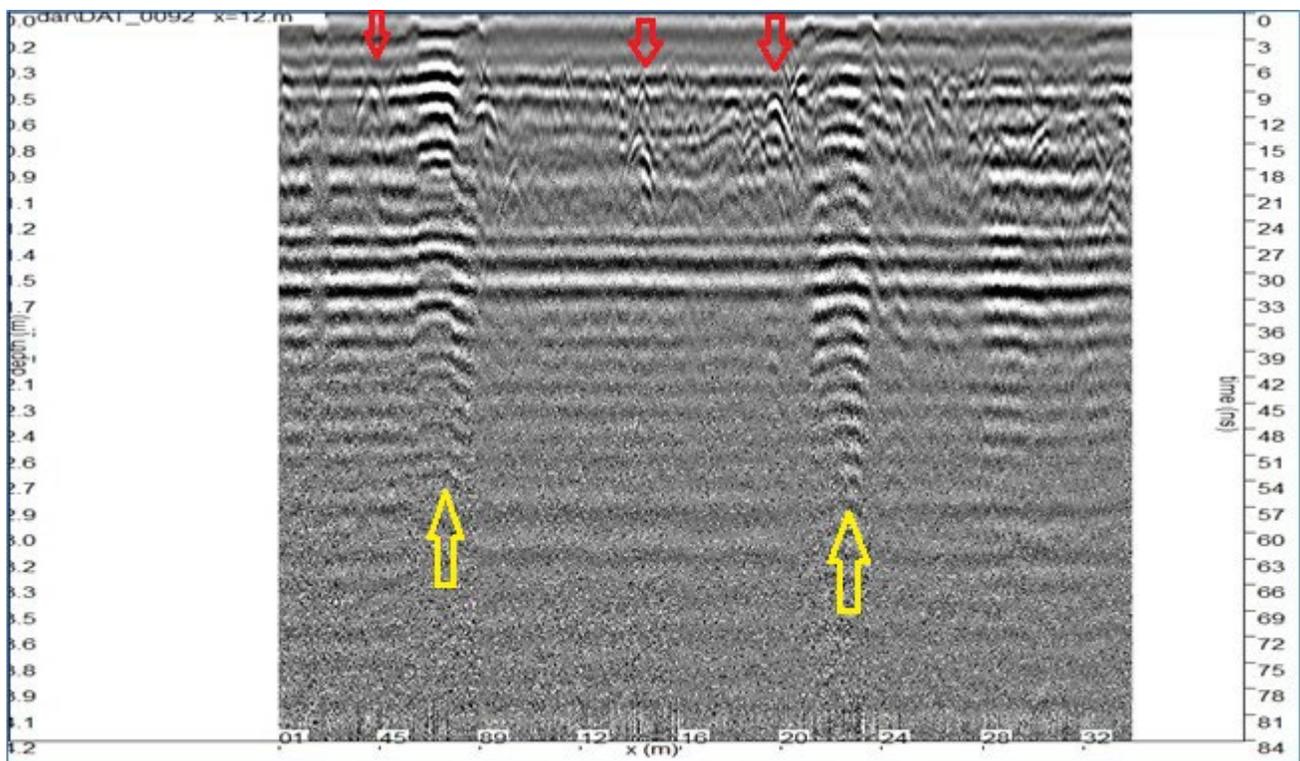


Figure 16. GPR Block A, Radargram 92.

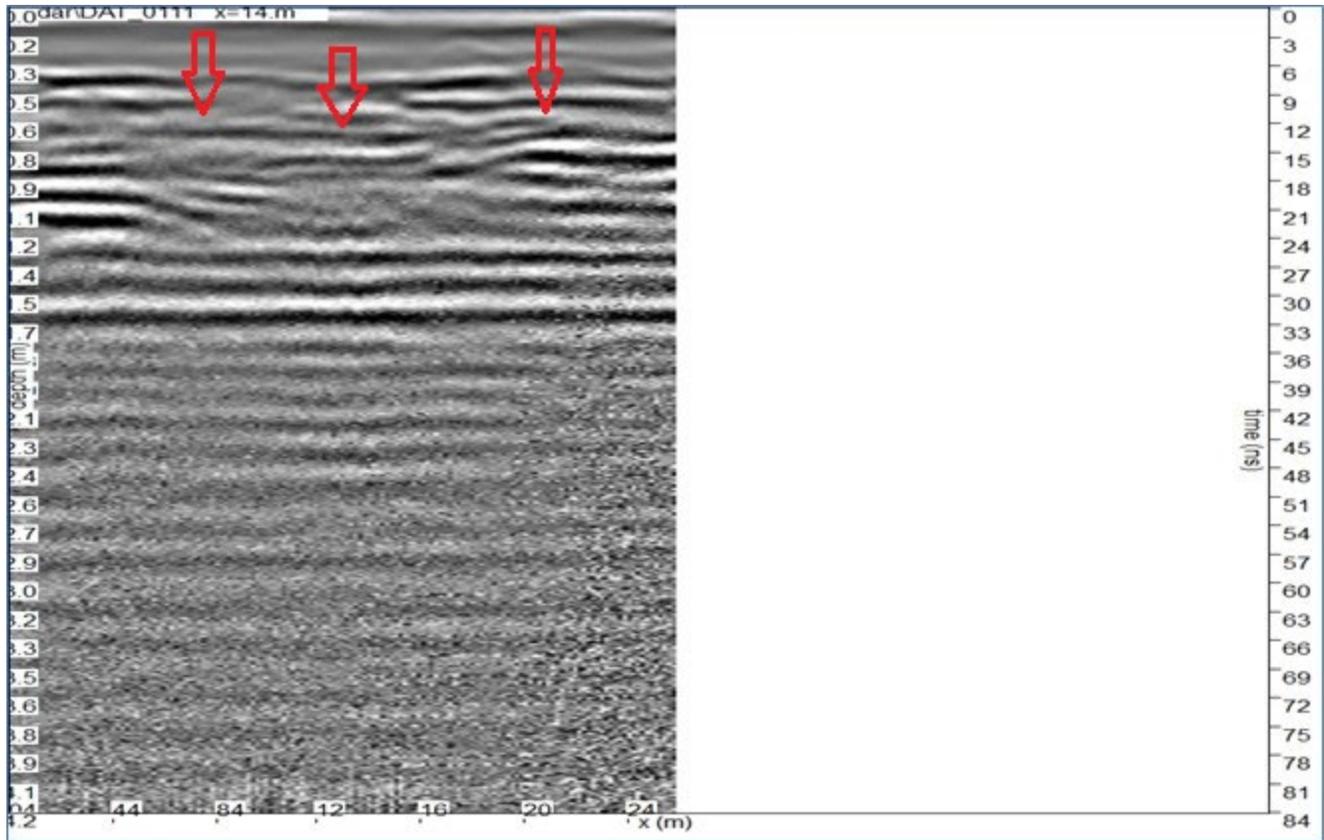


Figure 17. GPR Block A, Radargram 111.

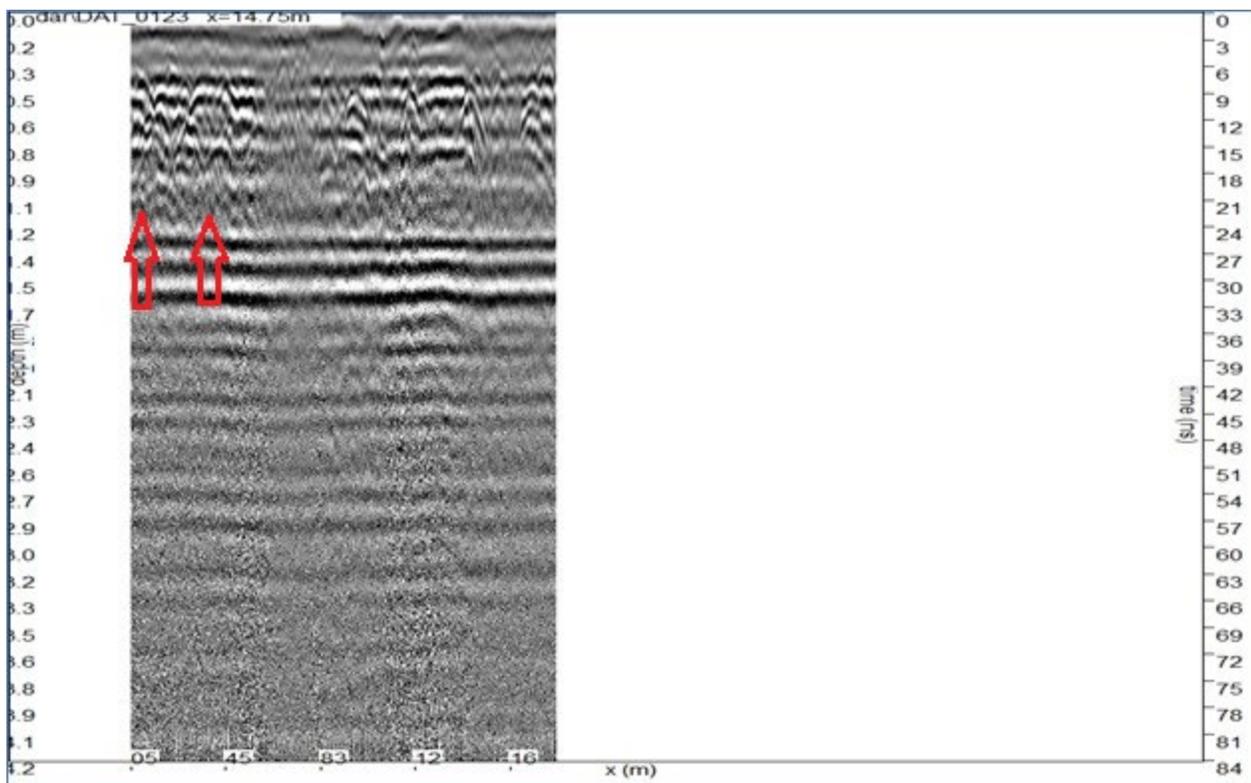
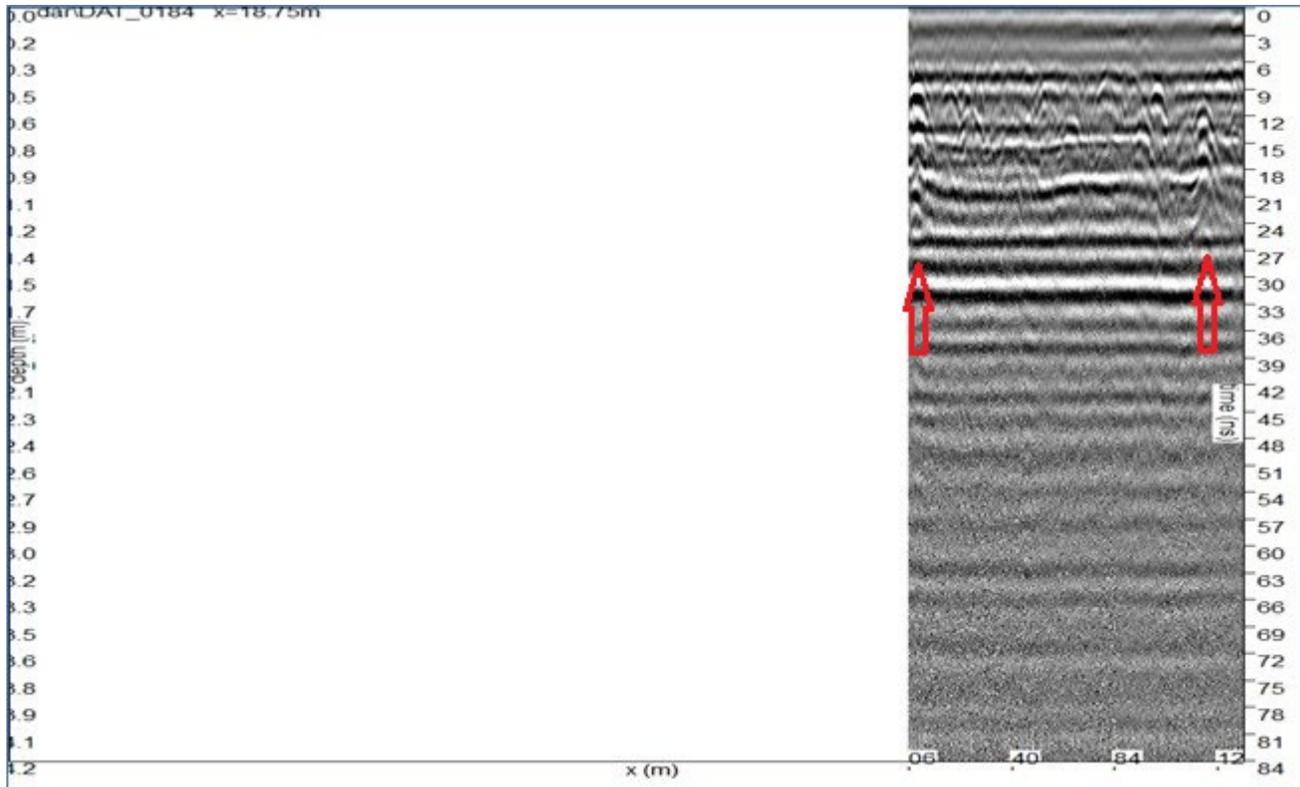


Figure 18. GPR Block A, Radargram 123.



**Figure 19. GPR Block A, Radargram 184.**

Figure 20 is Radargram 207, which is located at 21 m East on the Block A grid. Many small hyperbolas are visible across this sample. These anomalies mostly originate at 30 cm below ground level. Two areas of interest are marked by red arrows. The largest anomaly is not a hyperbola but is a horizontal anomaly that originates about 25 cm below ground and spans about 5 m north-south. It contains numerous metal objects in its fill. It is likely too large to represent a single human burial. The other marked anomaly is a small, strong hyperbola north of it.

Figure 21 is Radargram 219, which is located at 22.25 m East on the Block A grid. It contains numerous small hyperbolas, including three marked by red arrows, which originate from 40-60 cm below ground level.

Figure 22 is Radargram 225, which is located at 23 m East on the Block A grid. It contains many small hyperbolas. One stronger one,

which originates about 50 cm below ground, is marked by a red arrow.

Figure 23 is Radargram 239, which is located at 24.25 m East on the Block A grid. This radargram contains many small hyperbolas, many originating at 30 cm depth. One larger hyperbola is indicated by a red arrow.

Figure 24 is Radargram 242, which is located at 25 m East on the Block A grid. One stronger anomaly, which originates about 30 cm depth, is marked with a red arrow.

Figure 25 is Radargram 252, which is located at 27.5 m East on the Block A grid. Two deeper hyperbolas, one originating about 70 cm depth and the other about 50 cm depth, are marked by red arrows.

Figure 26 is Radargram 279, which is located 29.5 m East on the Block A grid. One hyperbola, which originates about 50 cm depth, is marked by a red arrow.

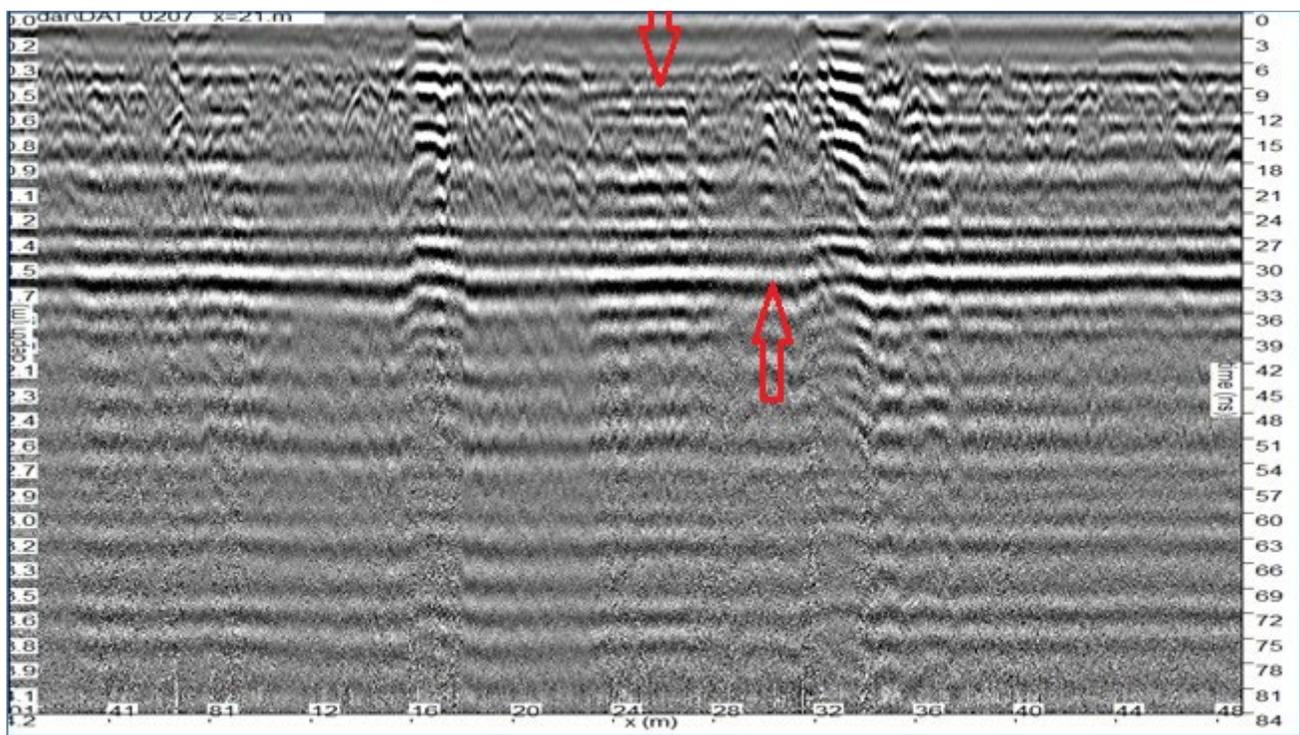


Figure 20. GPR Block A, Radargram 207.

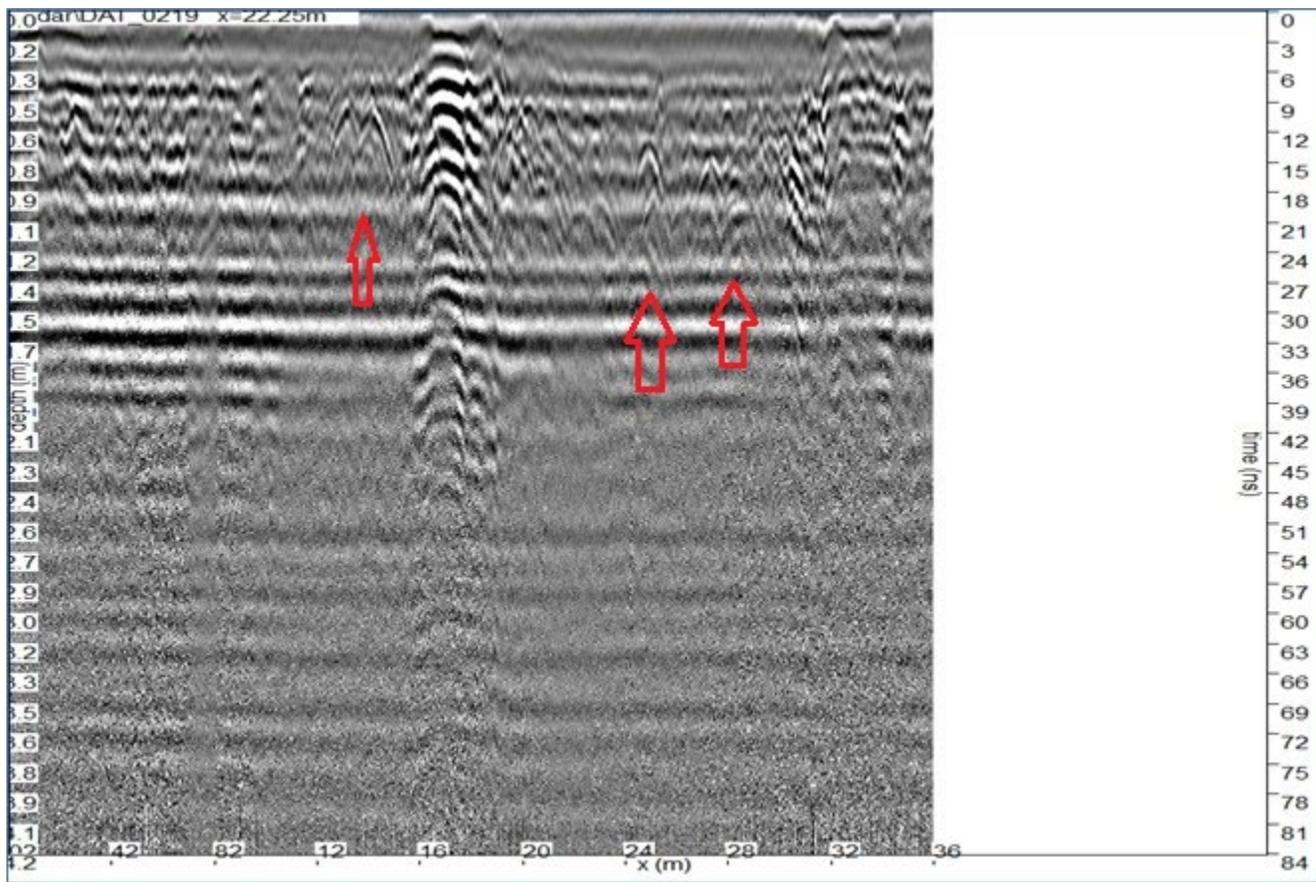


Figure 21. GPR Block A, Radargram 219.

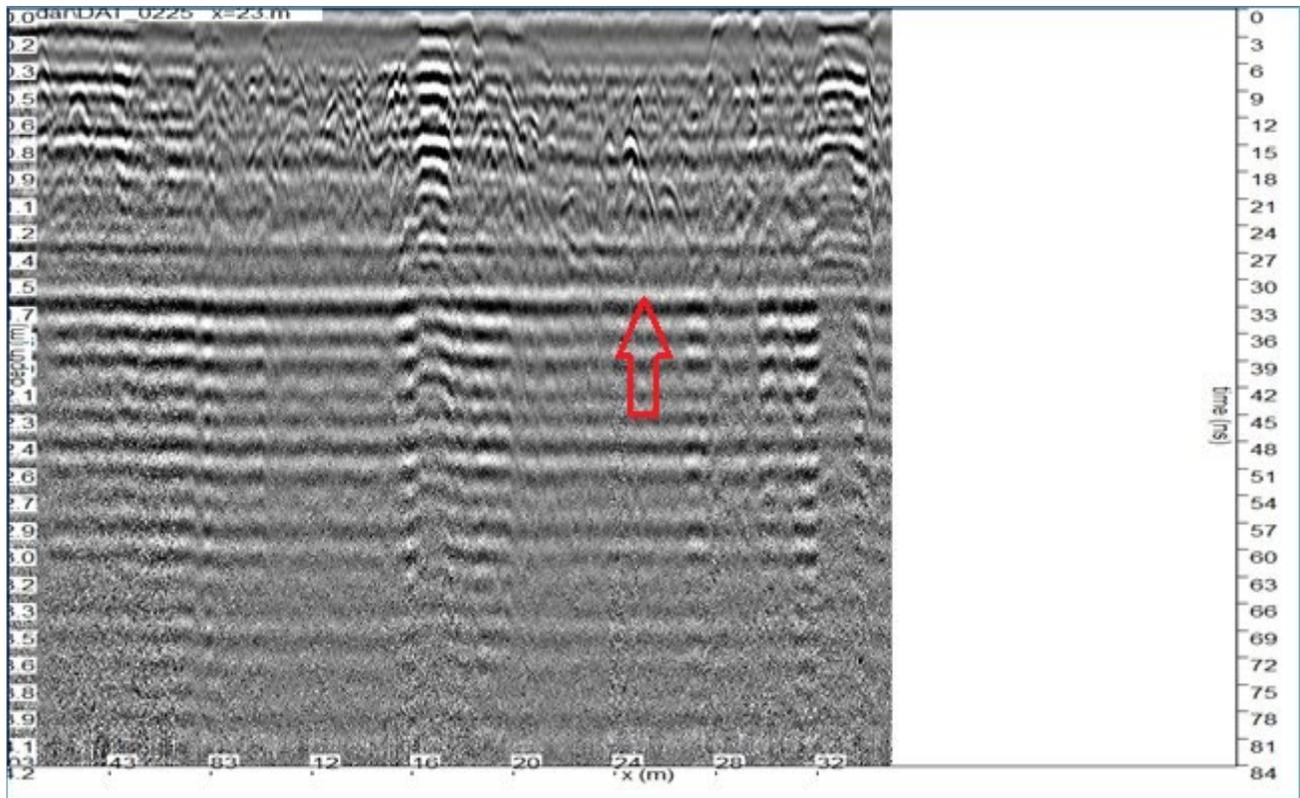


Figure 22. GPR Block A, Radargram 225.

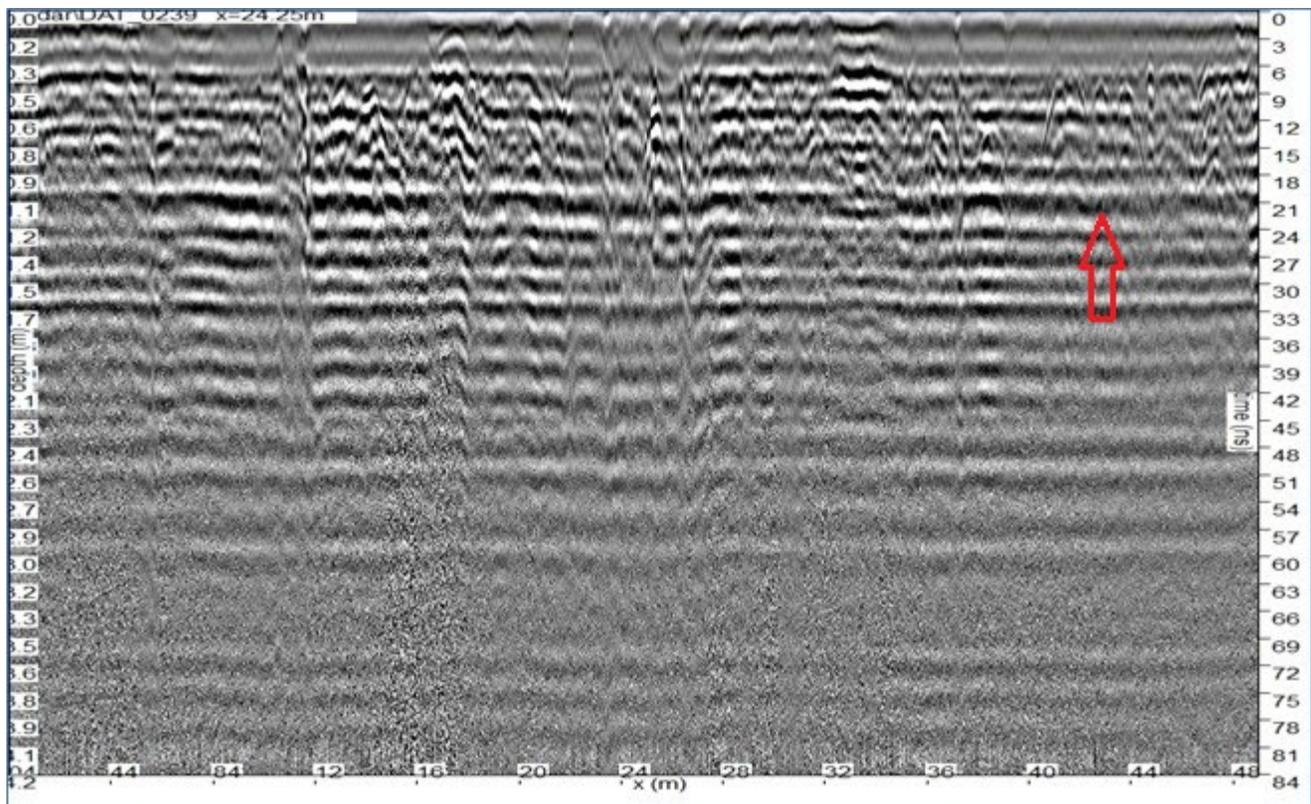


Figure 23. GPR Block A, Radargram 239.

Figure 24 is Radargram 242, which is located at 25 m East on the Block A grid. One stronger anomaly, which originates about 30 cm depth, is marked with a red arrow.

Figure 25 is Radargram 252, which is located at 27.5 m East on the Block A grid. Two deeper hyperbolas, one originating about 70 cm depth and the other about 50 cm depth, are marked by red arrows.

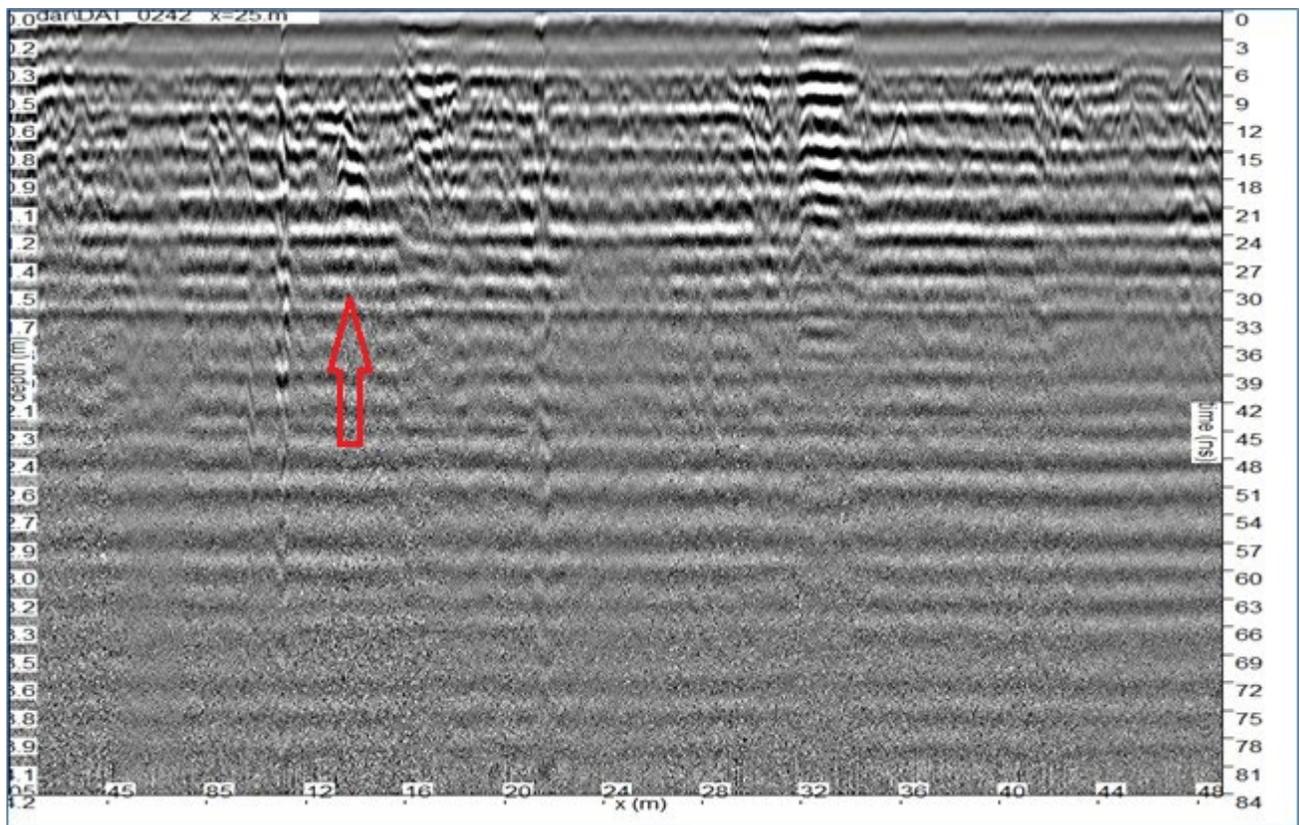
Figure 26 is Radargram 279, which is located 29.5 m East on the Block A grid. One hyperbola, which originates about 50 cm depth, is marked by a red arrow.

Figure 27 is Radargram 316, which is located at 32.75 m East on the Block A grid. Two

hyperbolas, both containing metal, are marked by red arrows. They originate about 70-80 cm depth.

Figure 28 is Radargram 326, which is located at 33.75 m East on the Block A grid. Two anomalies, both originating about 30 cm depth, are marked by red arrows. One is a small hyperbola and the other is a horizontal area containing metal objects, spanning about 4 m.

Figure 29 is Radargram 329, which is located at 34.27 m East on the Block A grid. One strong hyperbola, originating about 30 cm depth, is marked by a red arrow.



**Figure 24. GPR Block A, Radargram 242.**

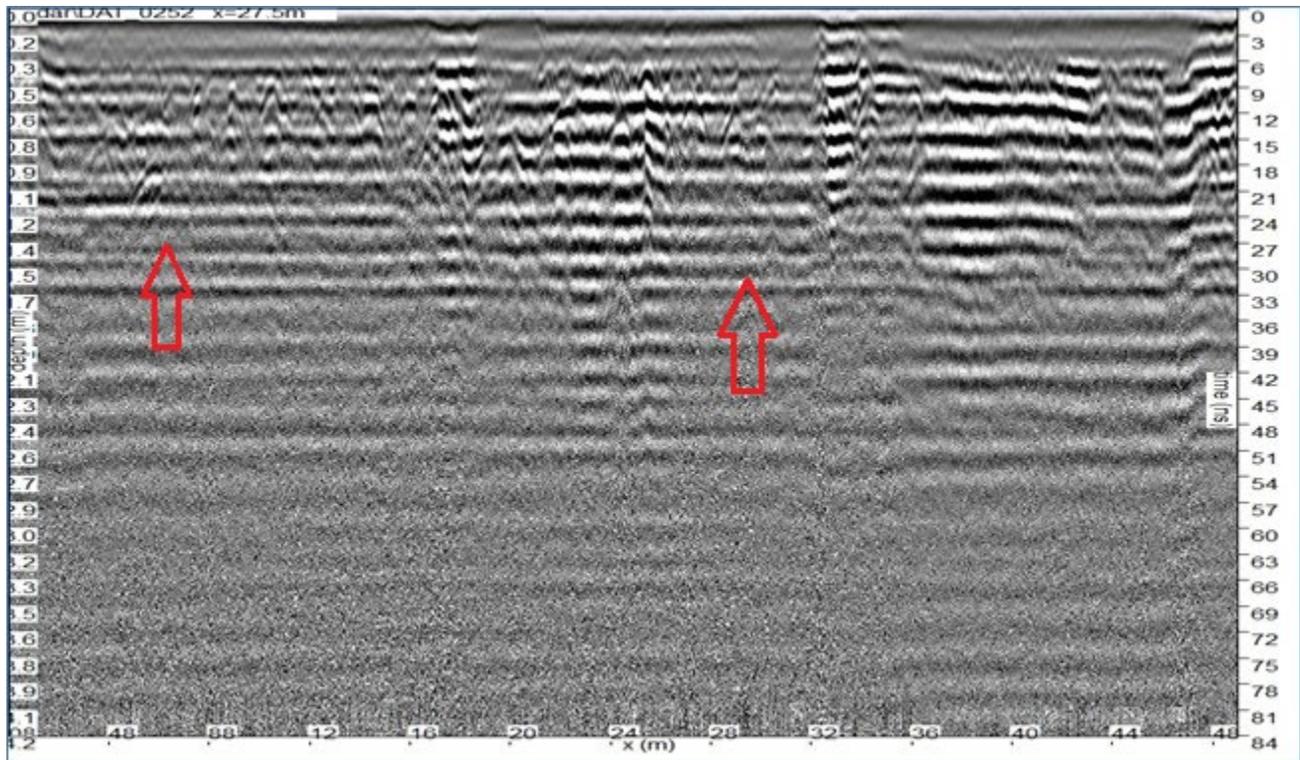


Figure 25. GPR Block A, Radargram 252.

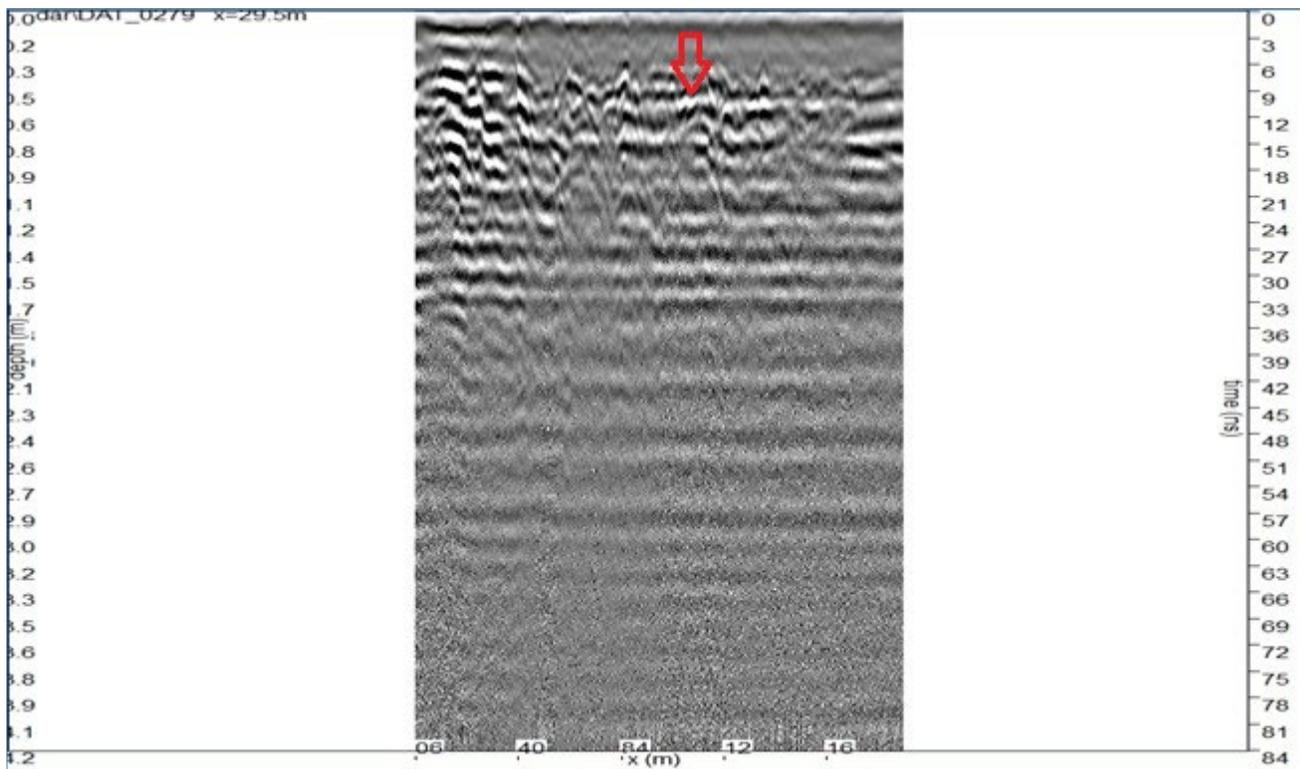


Figure 26. GPR Block A, Radargram 279.

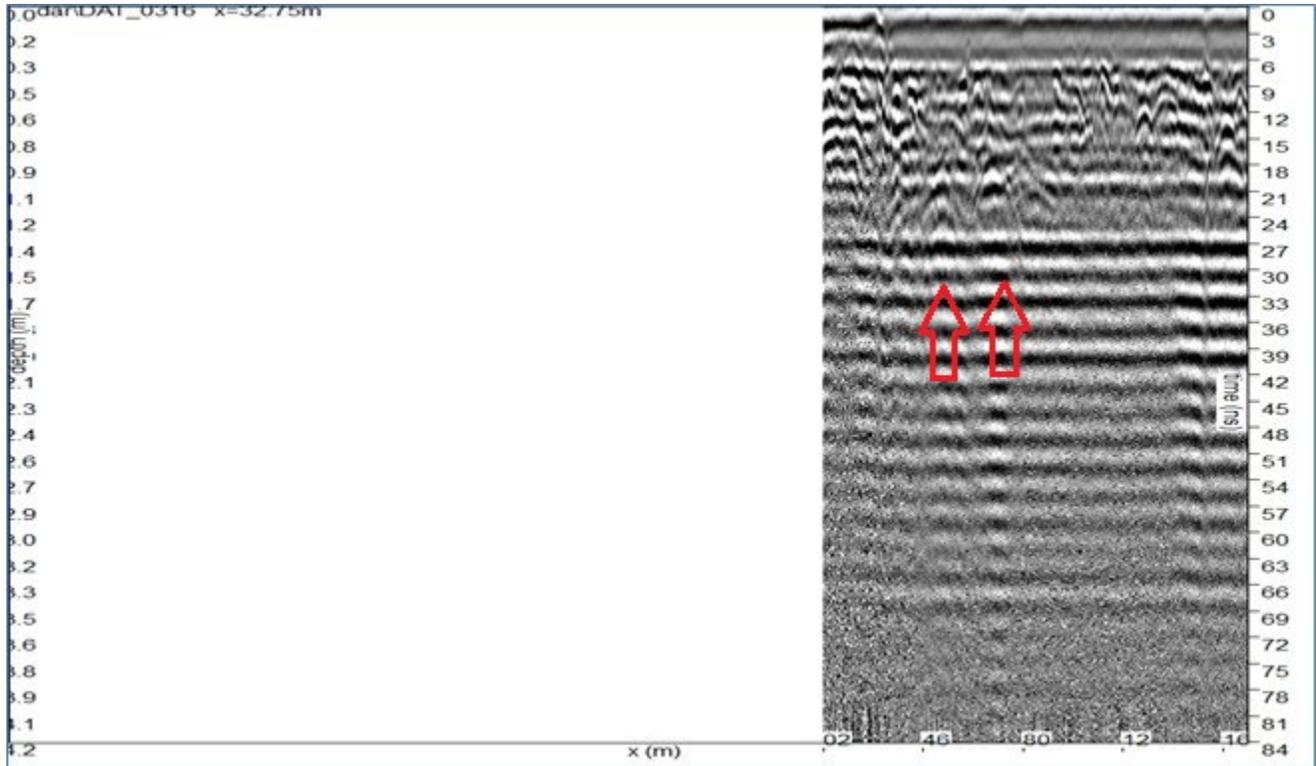


Figure 27. GPR Block A, Radargram 316.

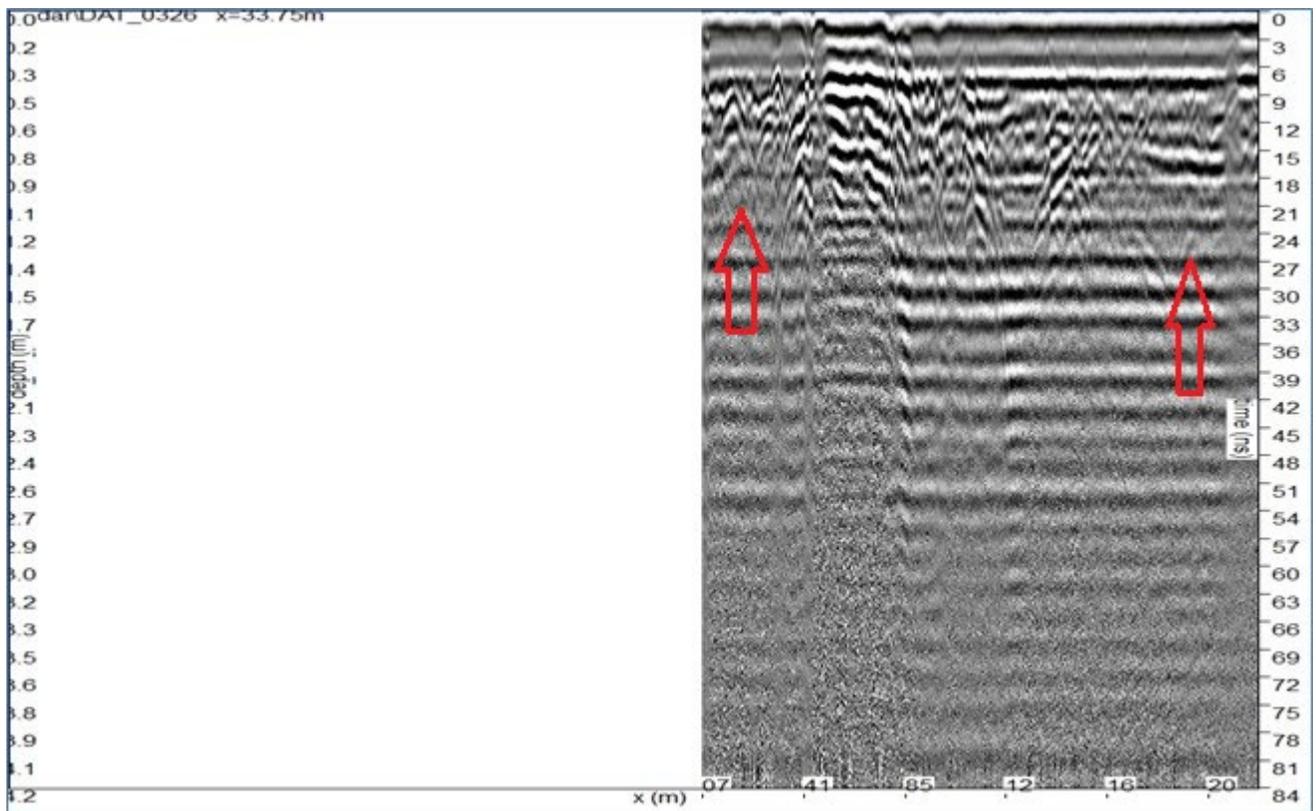
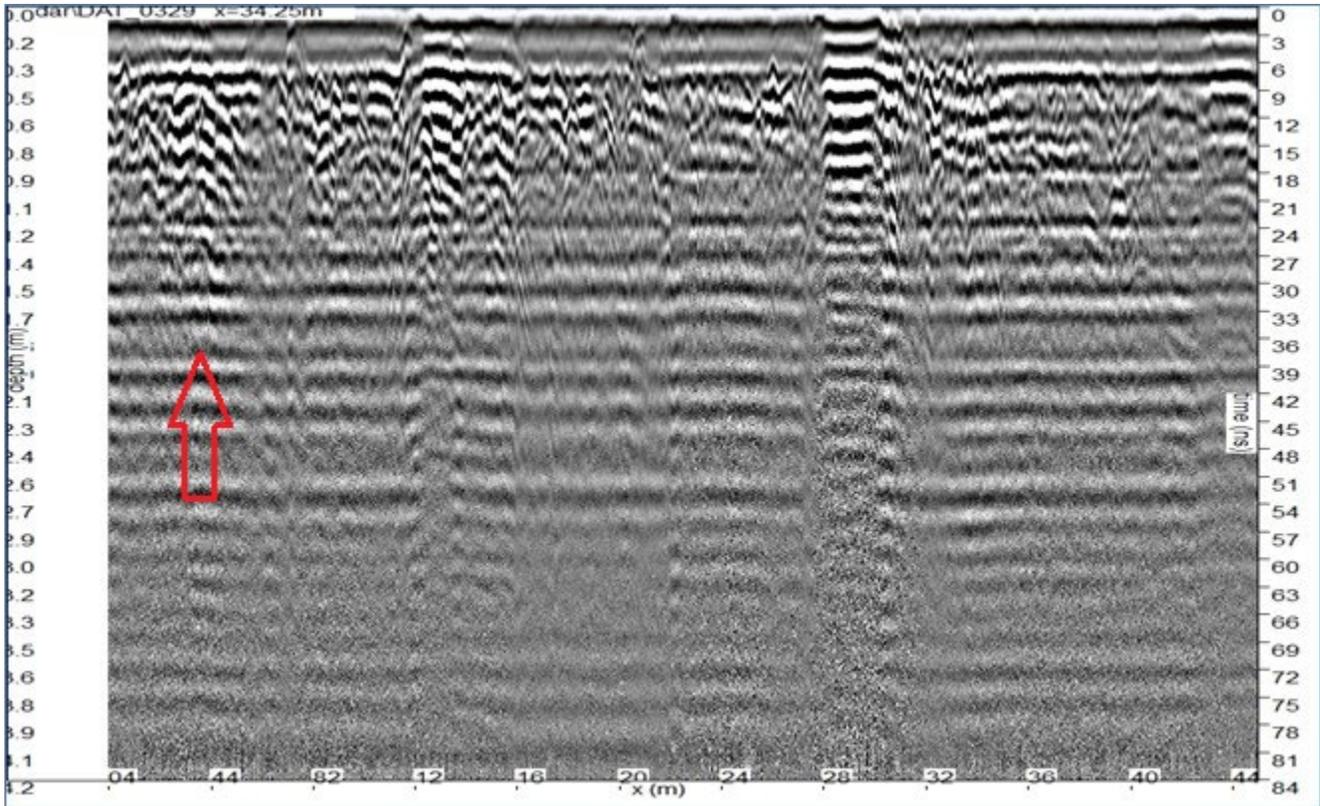


Figure 28. GPR Block A, Radargram 326.



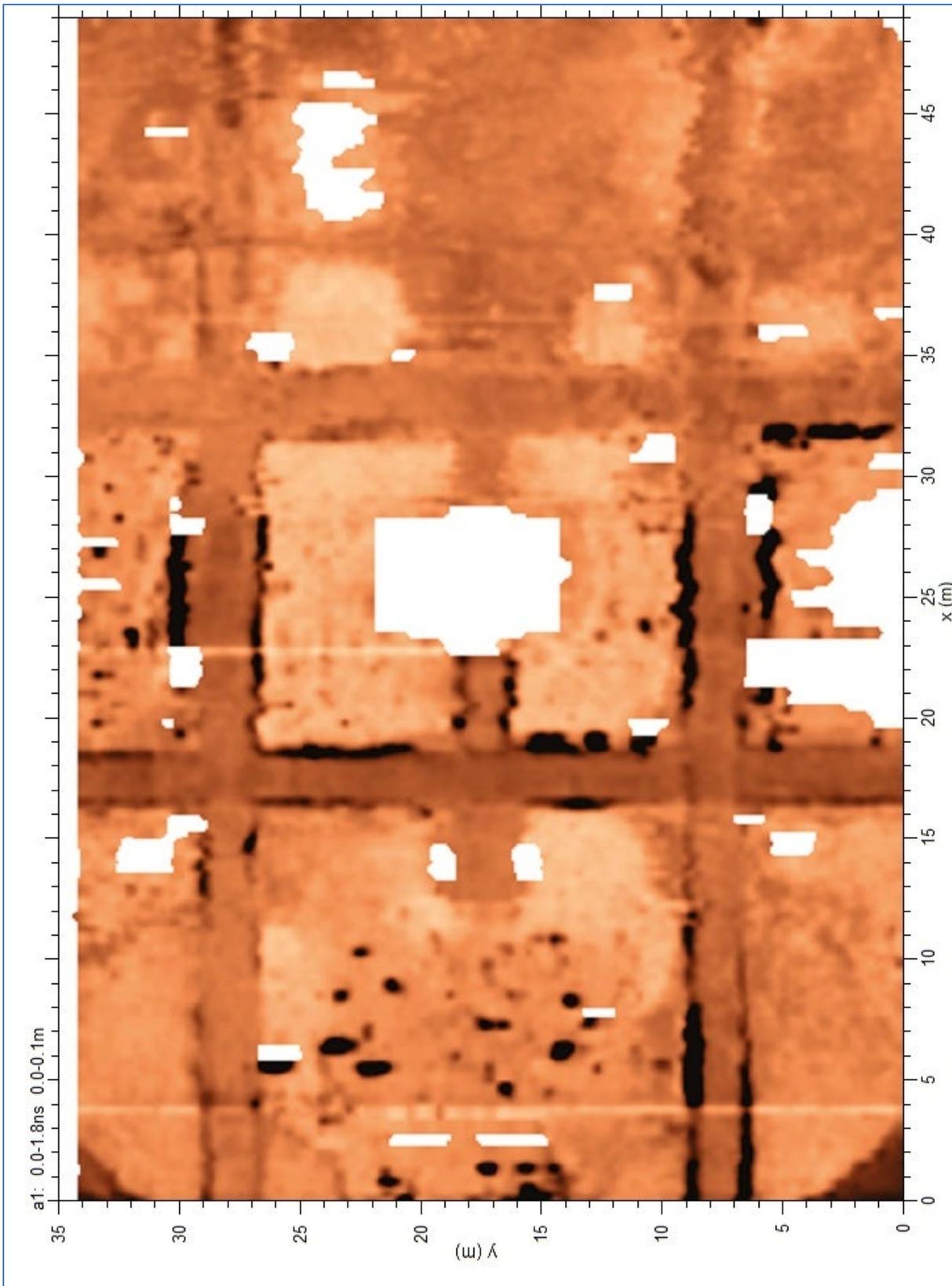
**Figure 29. GPR Block A, Radargram 329.**

## **GPR BLOCK B**

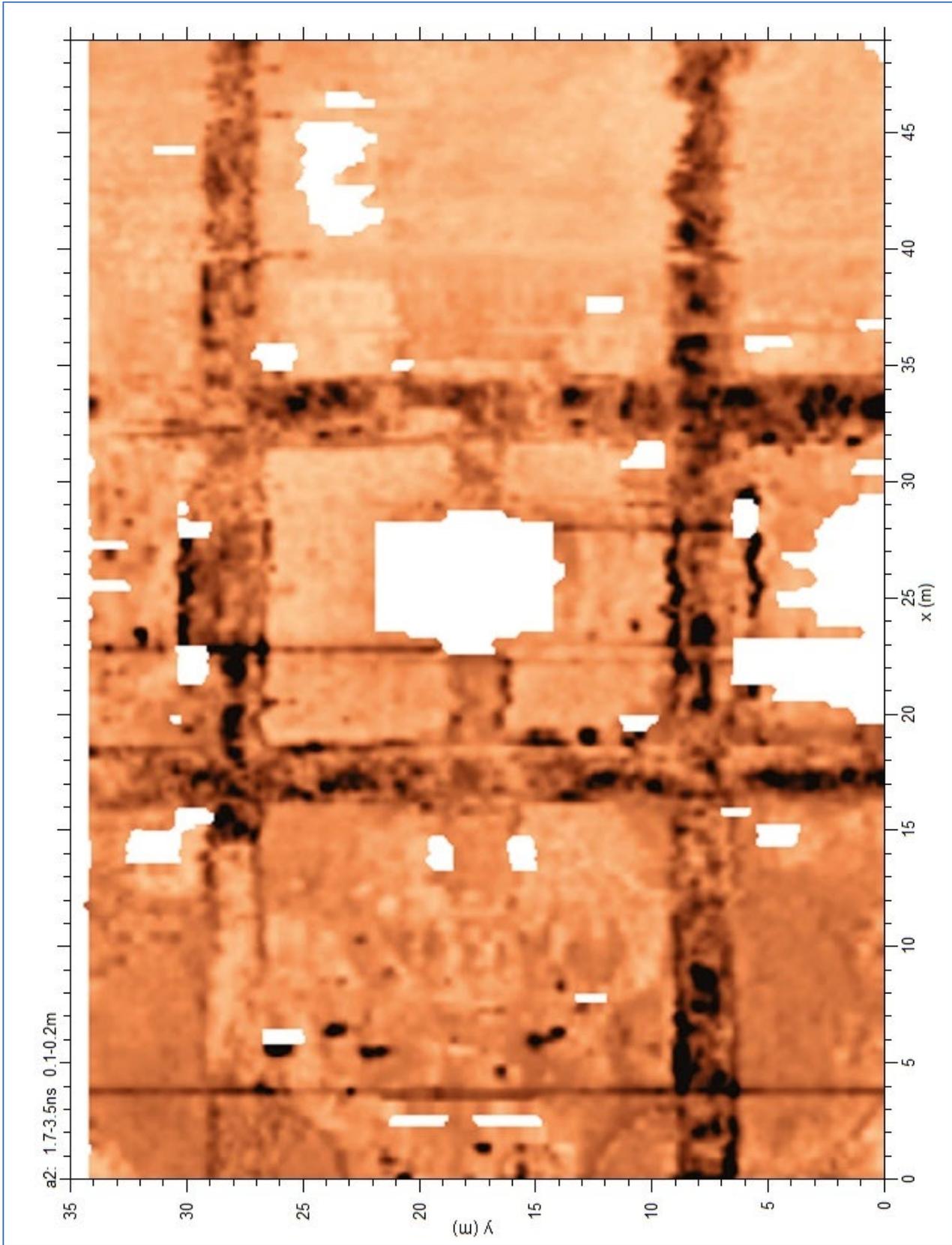
### **GPR Block B. Plan Maps**

Figures 30-35 show a series of plan maps of GPR Block B. Figure 30 shows Timeslice 1 from 0-1.8 ns, or about 0-10 cm depth. Figure 31 shows Timeslice 2 from 1.7-3.5 ns, or 10-20 cm depth. Figure 32 shows Timeslice 3 from 3.5-5.3 ns, or 20-30 cm depth. Figure 33 shows Timeslice 4 from 5.2-7 ns, or about 30 cm depth. Several shallow, potential burial anomalies are present in the three upper plan views but have disappeared by Timeslice 4 (or around 30 cm below ground).

Figures 34 and 35 show plans of GPR Block B at greater depth. No potential burials are visible in either of these two views. What are visible are anomalies resembling rays of sunshine, or a starburst. This curious radar feature is discussed at the end of the next chapter. Figure 34 shows Timeslice 11 from 17.4-19.2 ns, or 90 cm to 1 m depth. Figure 35 shows Timeslice 30 from 50.3-51.9 ns, or 2.5-2.6 m depth.



**Figure 30. GPR Block B, Plan of Timeslice 1.**



**Figure 31. GPR Block B, Plan of Timeslice 2.**

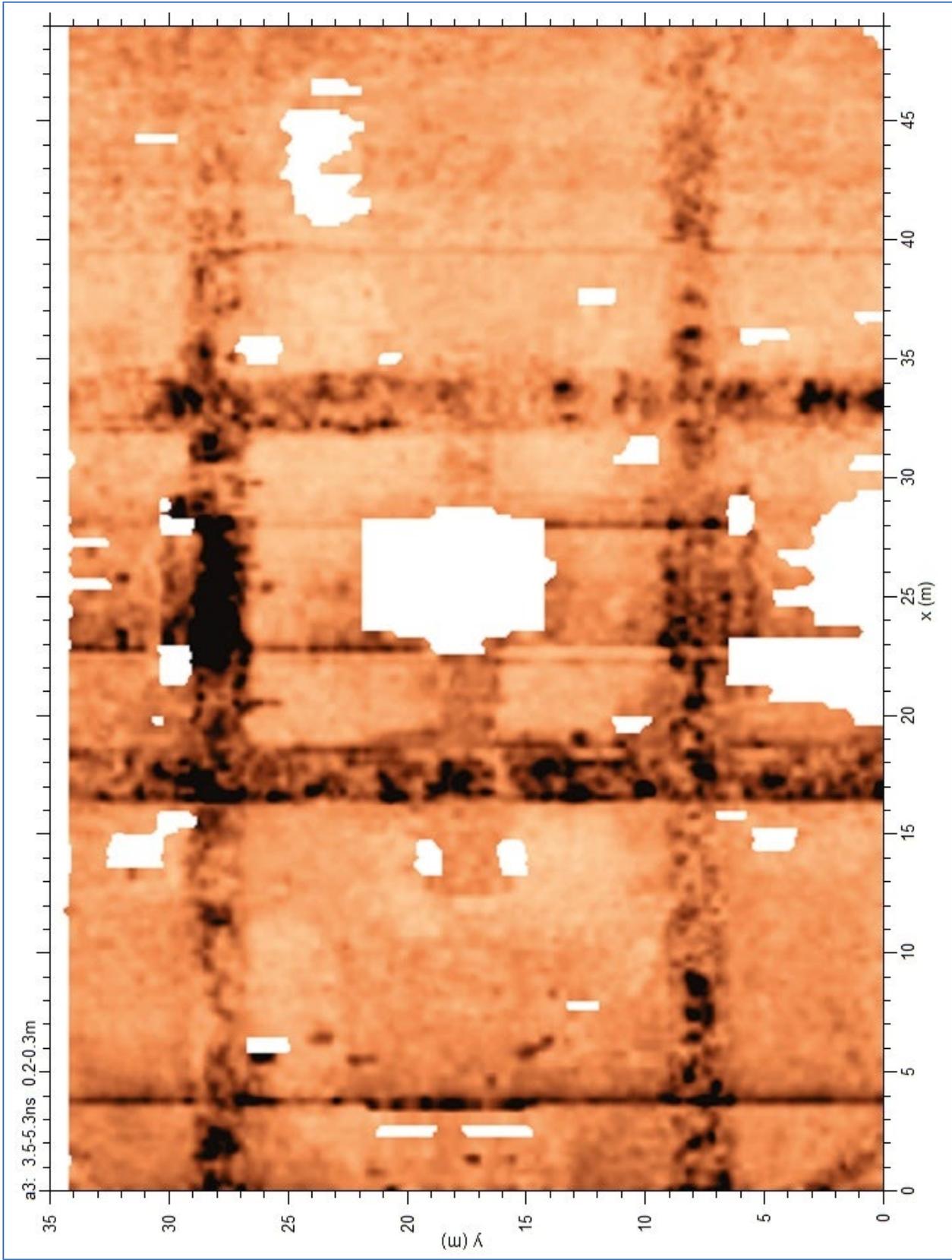
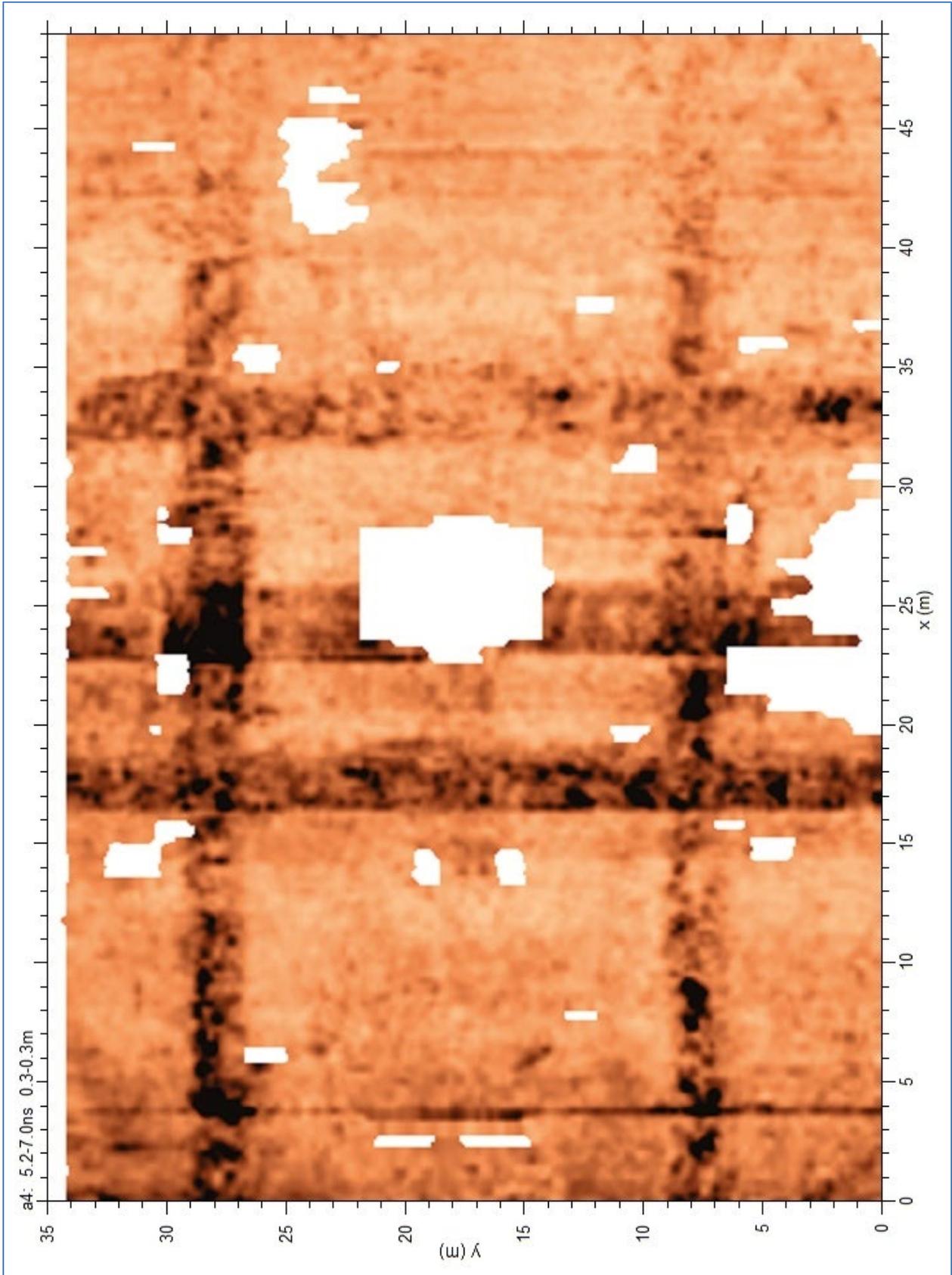
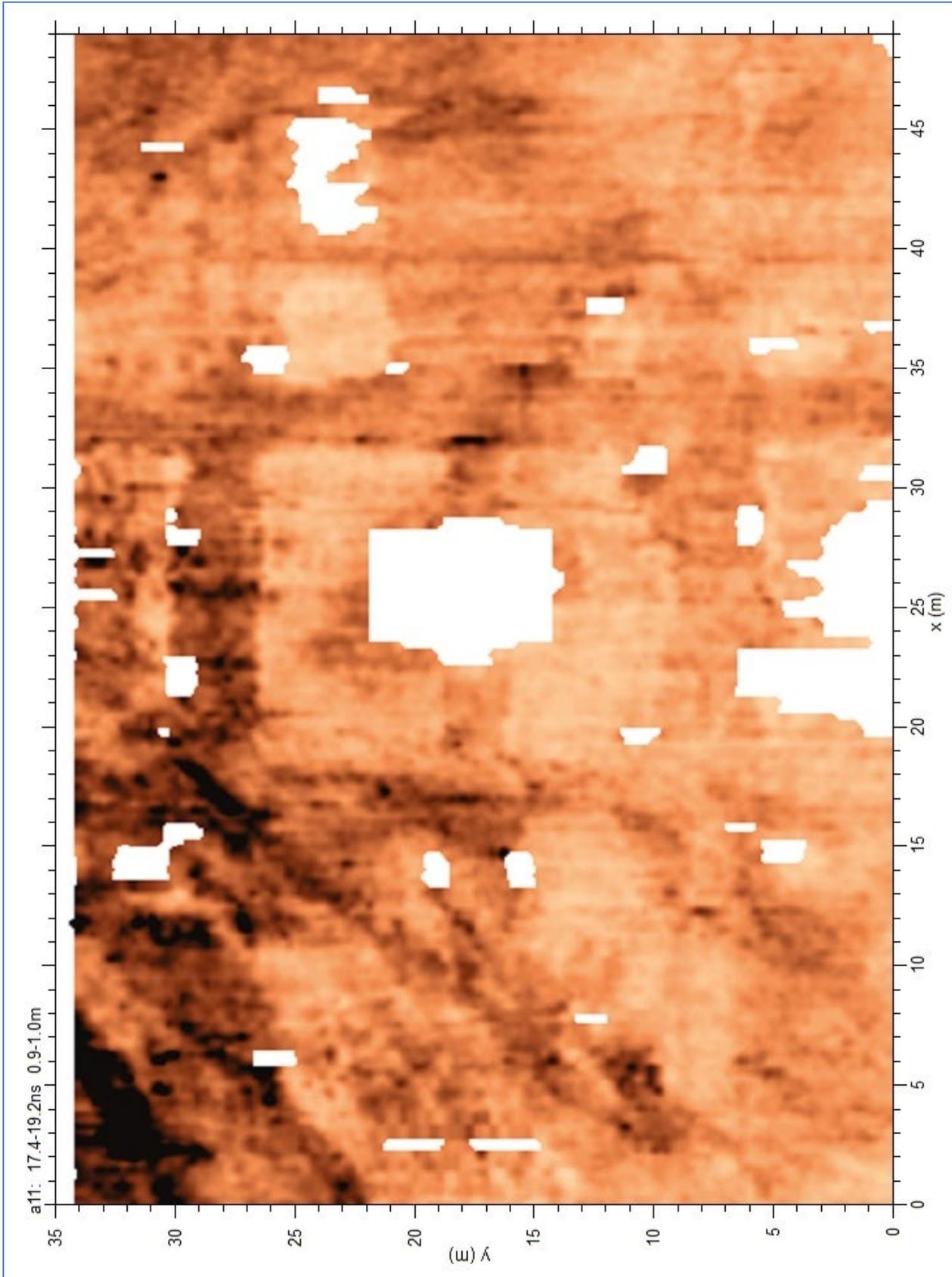


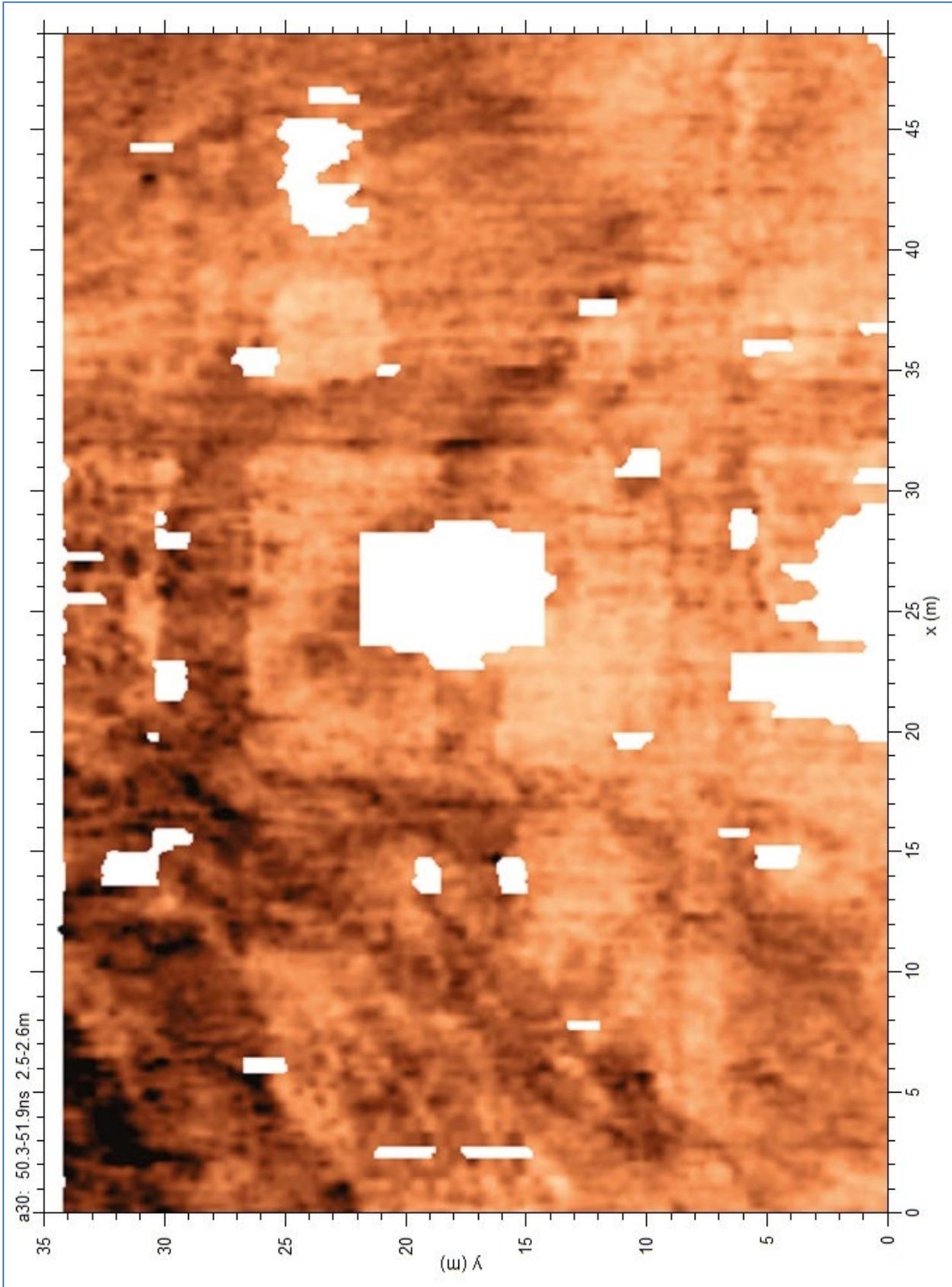
Figure 32. GPR Block B, Plan of Timeslice 3.



**Figure 33. GPR Block B, Plan of Timeslice 4.**



**Figure 34. GPR Block B, Plan of Timeslice 11.**



**Figure 35. GPR Block B, Plan of Timeslice 30.**

Figures 36-40 are GPR Overlay maps of GPR Block B that combine radar information from multiple timeslices. Figure 36 is an overlay map of Timeslices 1-6, or from 0-10.4 ns (0-50 cm depth). Figure 37 is an overlay map combining radar data from all 30 timeslices (0-51.9 ns, or 0-2.6 m depth).

Figures 38-40 show the radar data with various filters applied. Figure 38 is an overlay map of Timeslices 1-6 with the Bandpass filter applied. Figure 39 is an overlay map of Timeslices 1-5 (0-8.7ns, or 0-40 cm depth) with a Hilbert Transform filter applied. Figure 40 is another overlay map of Timeslices 1-5 with a Kirchhoff Migration filter applied.

### **GPR Block B, Selected Radargrams**

Figure 41 is Radargram 146, which is located at 18.5 m East on the Block B grid. It contains a cluster of hyperbolas originating between 50-80 cm depth. This general area is indicated by a red arrow.

Figure 42 is Radargram 147, which is located at 18.75 m East on the Block B grid. A horizontal anomaly is visible at about 60 cm depth. It spans 4 m along the radargram.

Figure 43 is Radargram 167, which is located at 21.5 m East on the Block B grid. It contains numerous smaller hyperbolas originating at 40-60 cm depth. One example is marked by a red arrow.

Figure 44 is Radargram 247, which is located at 29 m East on the Block B grid. It contains numerous smaller hyperbola originating at 30-50 cm depth. One example is marked by a red arrow.

Figure 45 is Radargram 257, which is located at 30.5 m East on the Block B grid. A cluster of small hyperbolas span about 6 m in the central part of the radargram (see red arrow).

Figure 46 is Radargram 259, which is located at 30.75 m East on the Block B grid. It contains numerous smaller hyperbolas originating at 45-60 cm depth. One example is marked by a red arrow.

Figure 47 is Radargram 279, which is located at 33.75 m East on the Block B grid. It contains a few smaller hyperbolas originating about 35 cm depth. One stronger example is marked by a red arrow. Figure 48 is Radargram 313, which is located 36.5 m East on the Block B grid. One strong hyperbola, originating about 35 cm depth, is marked by a red arrow.

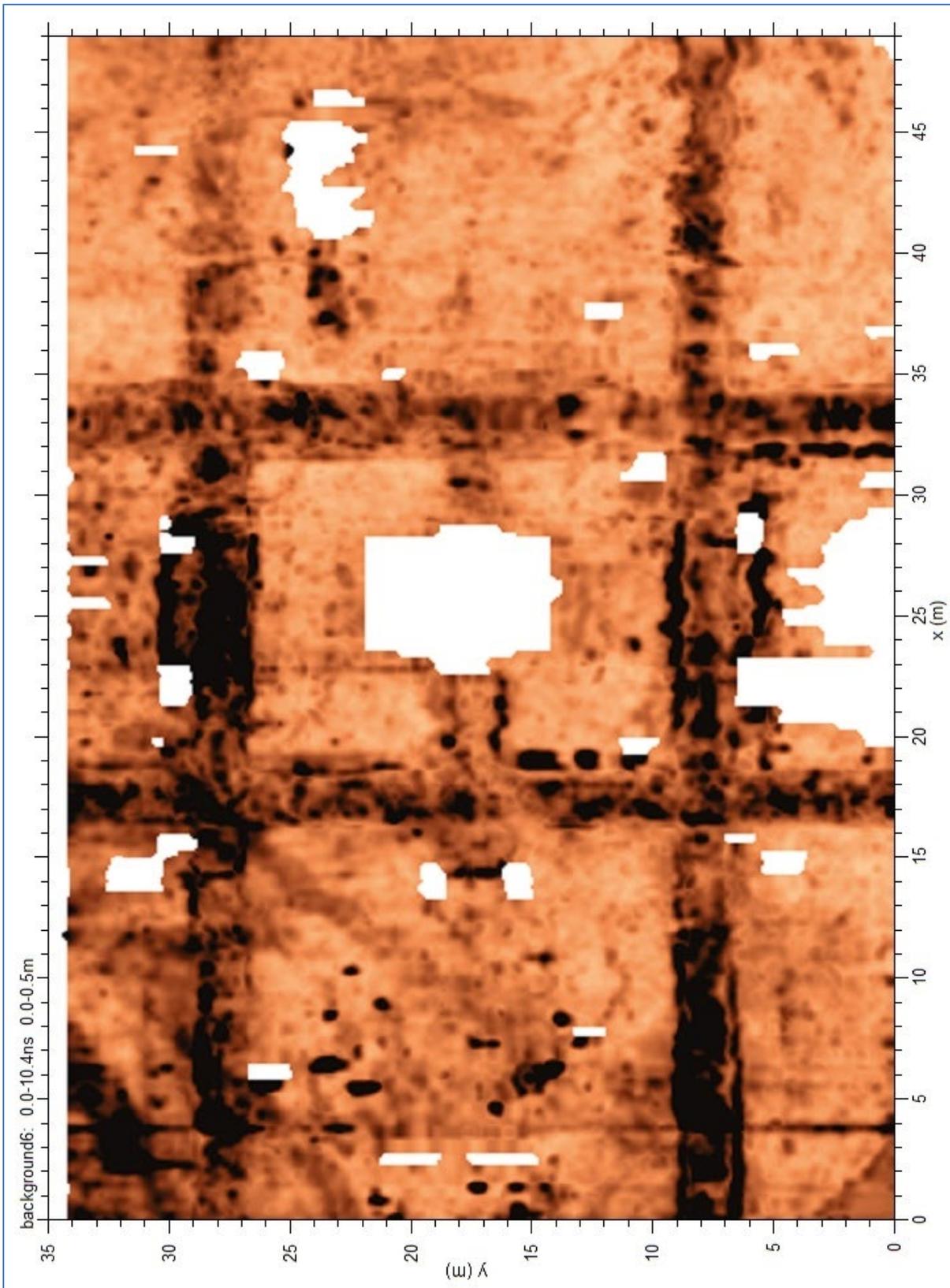
Figure 49 is Radargram 315, which is located at 36.75 m East on the Block B grid. Red arrows point to one of several small hyperbolas, originating at 35-45 cm depth and a larger basin-like disturbances originating about 40 cm depth and spanning 3 m along the radargram.

Figure 57 is Radargram 39, which is located at 47.5 m East on the Block B grid. One strong, small hyperbola, originating at 50-55 cm depth, is marked by a red arrow.

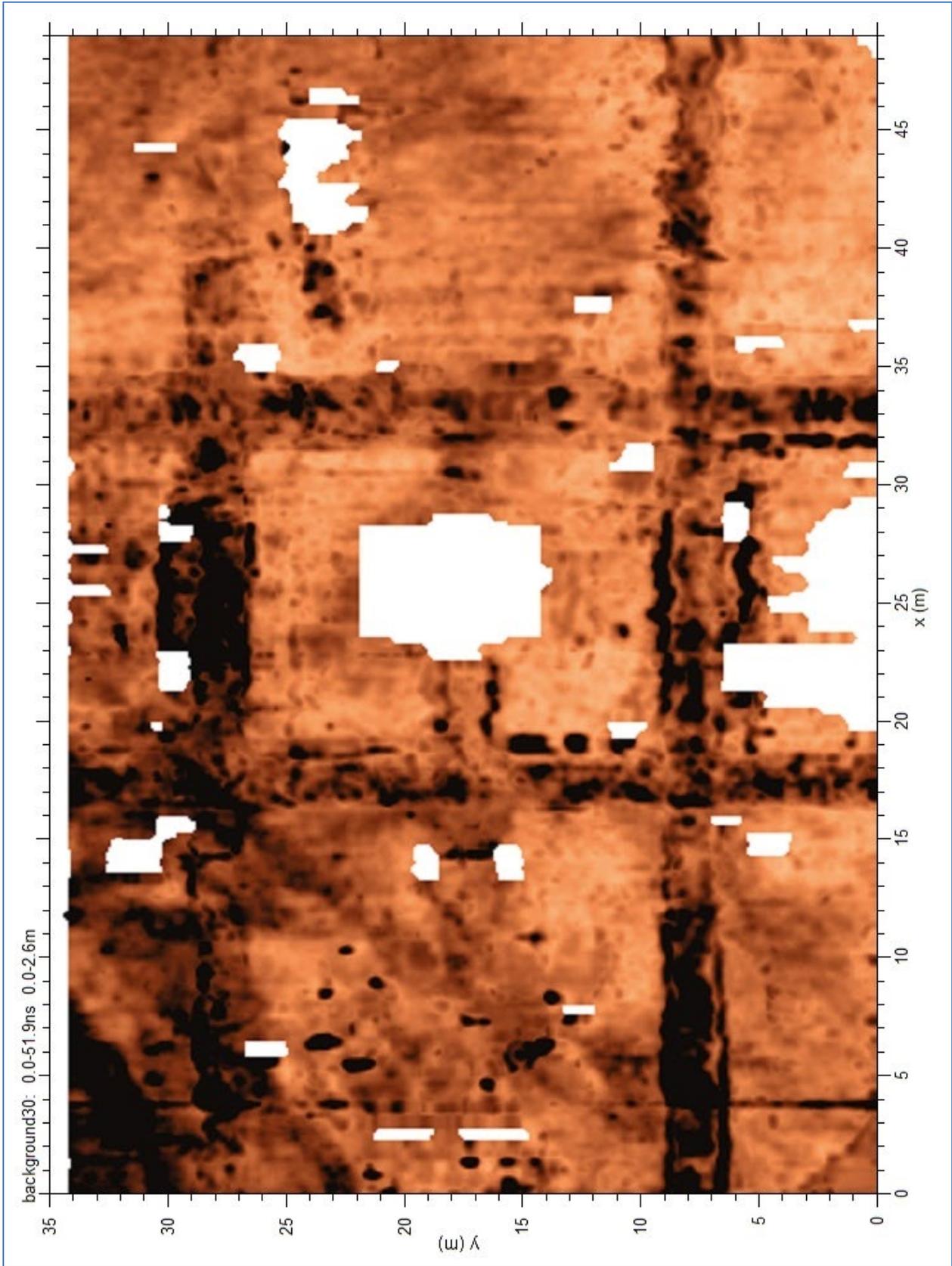
Figure 50 is Radargram 321 which is located at 37.5 m East on the Block B grid. The central portion of the radargram contains several smaller anomalies originating at depths of 30-50 cm below ground. Two stronger examples are marked by red arrows.

Figure 51 is Radargram 329 which is located at 39 m East on the Block B grid. One strong, irregular anomaly, originating at about 30 cm depth, is marked by a red arrow.

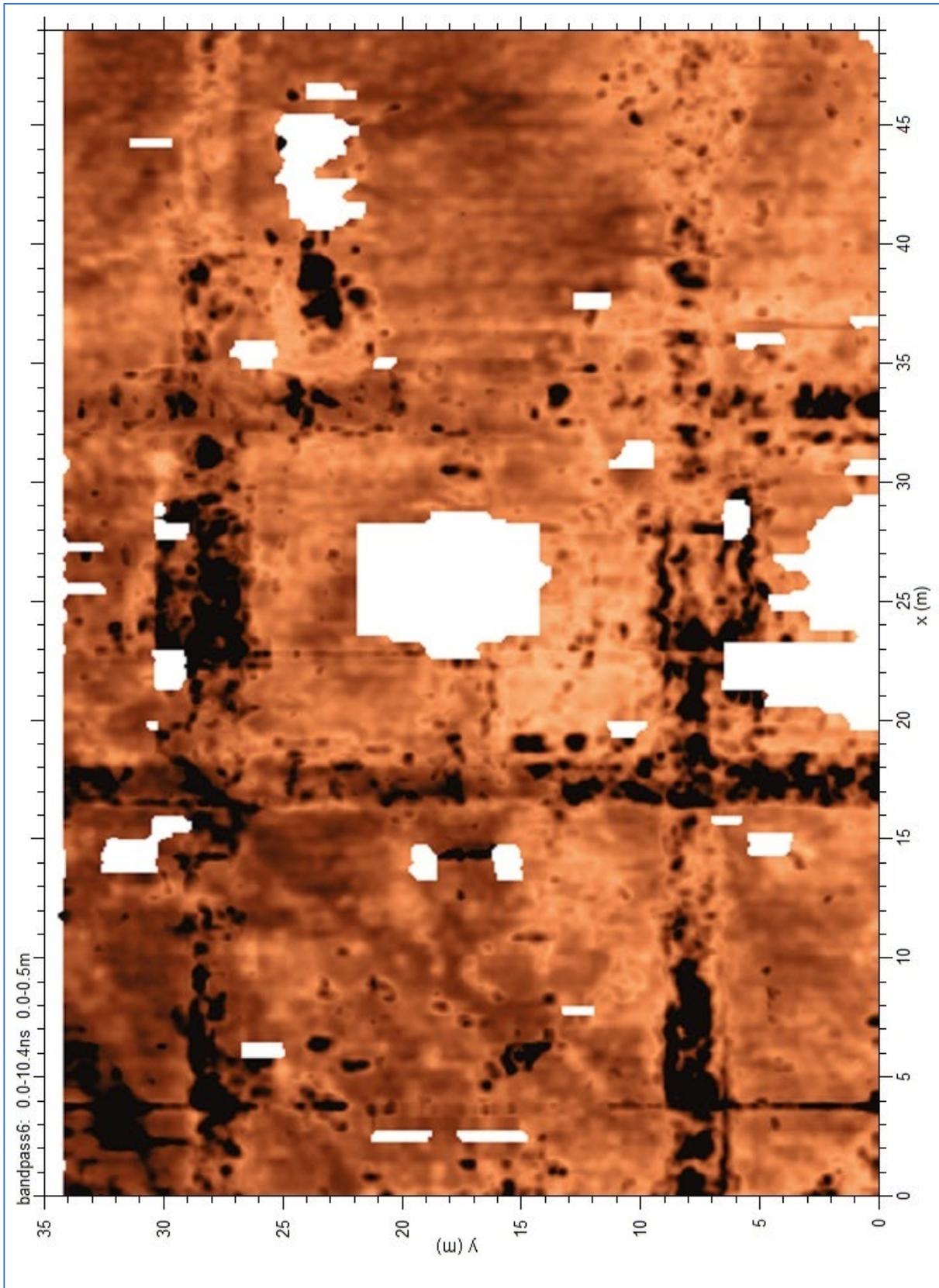
Figure 52 is Radargram 357, which is located at 43.25 m East on the Block B grid. Two smaller, strong hyperbolas, originating at depths of 40 and 50 cm below ground are marked by red arrows.



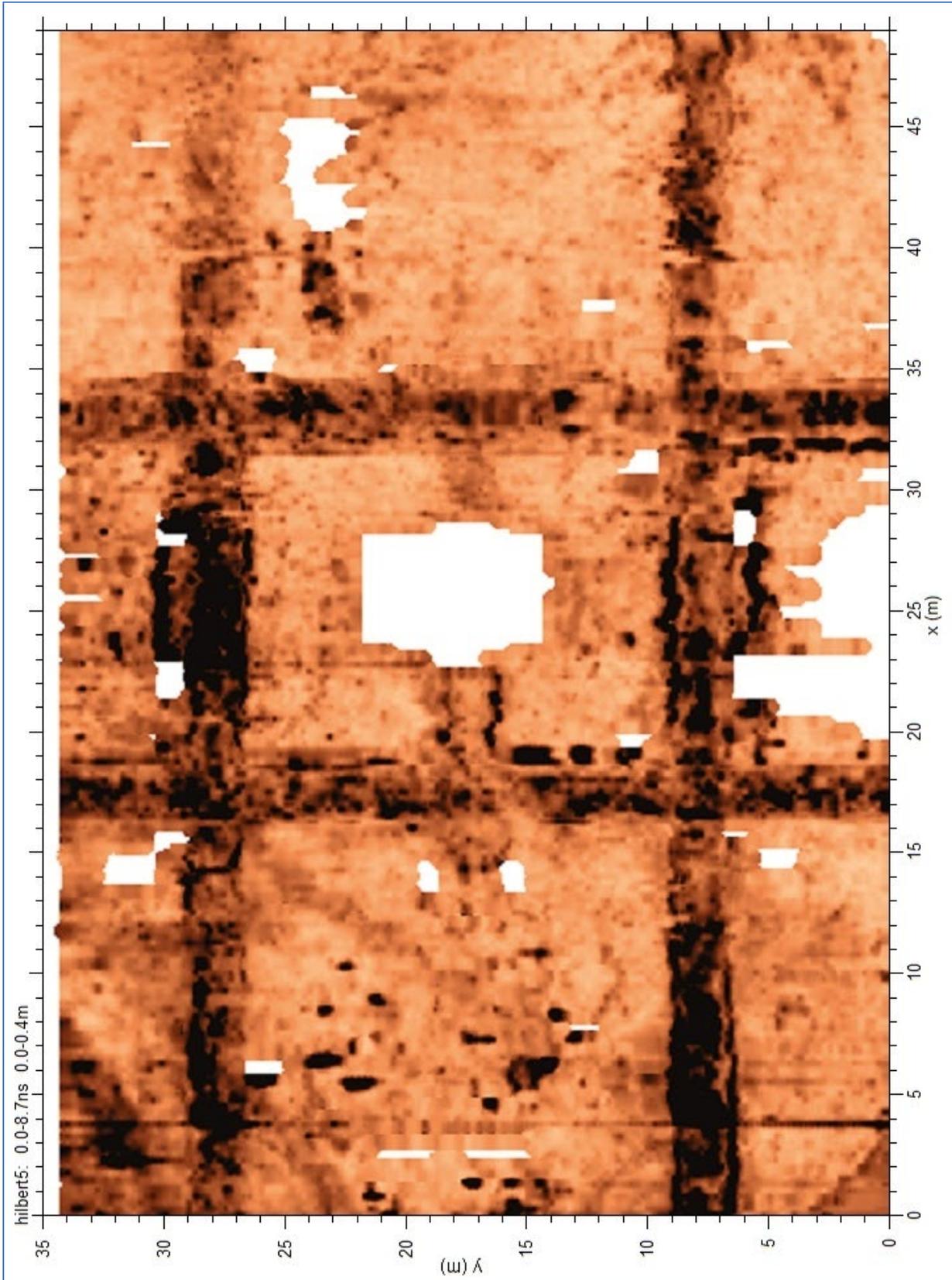
**Figure 36. GPR Block B, Overlay Plan Map, Timeslices 1-6.**



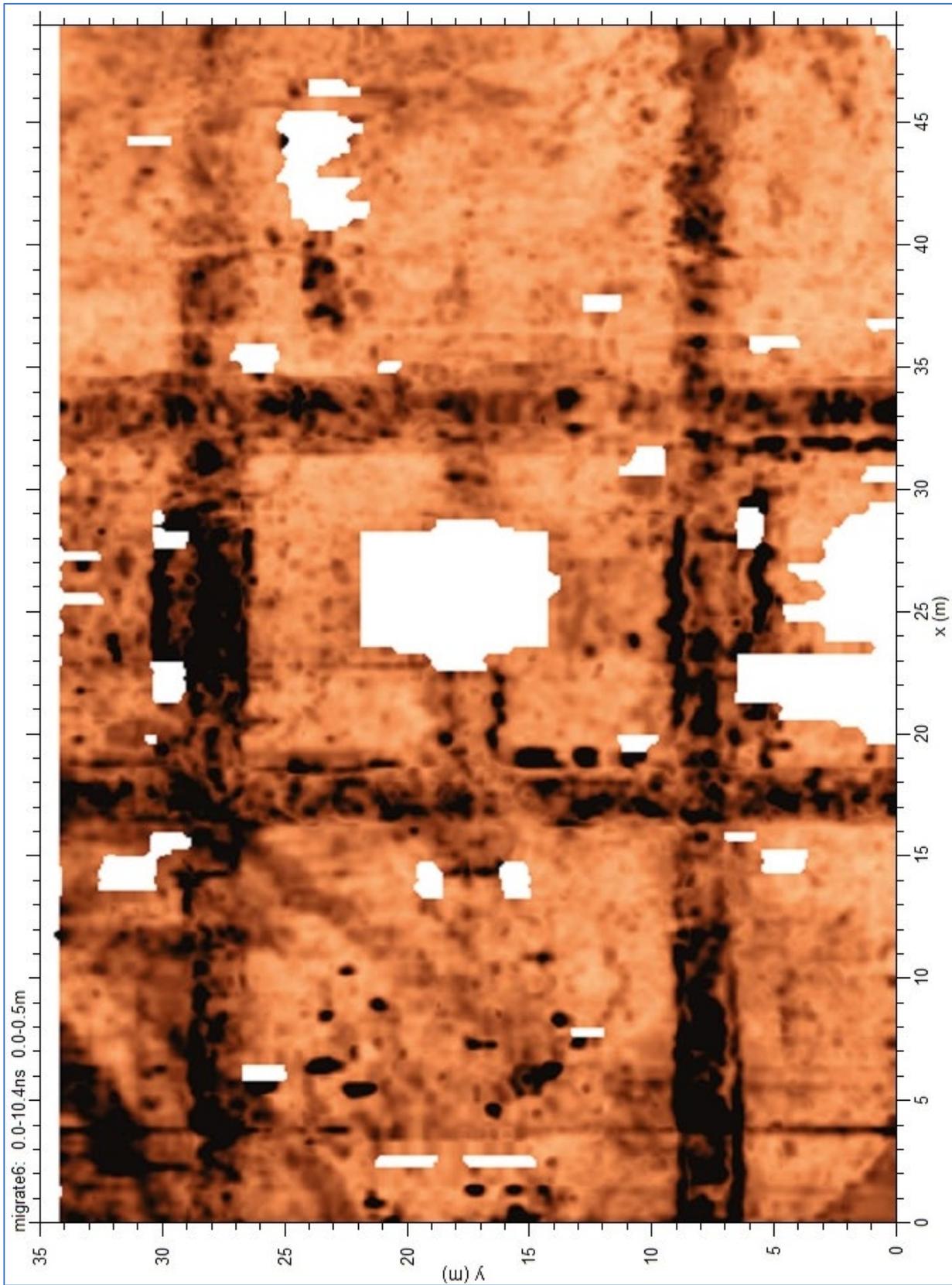
**Figure 37. GPR Block B, Overlay Plan Map, Timeslices 1-30.**



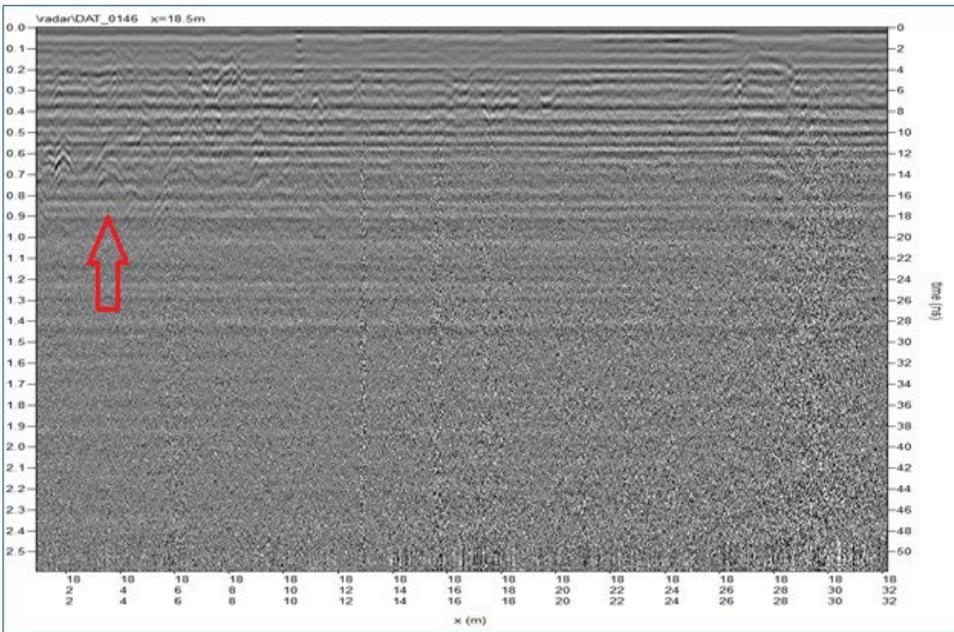
**Figure 38. GPR Block B, Overlay Plan Map, Timeslices 1-6 (with Bandpass filter applied).**



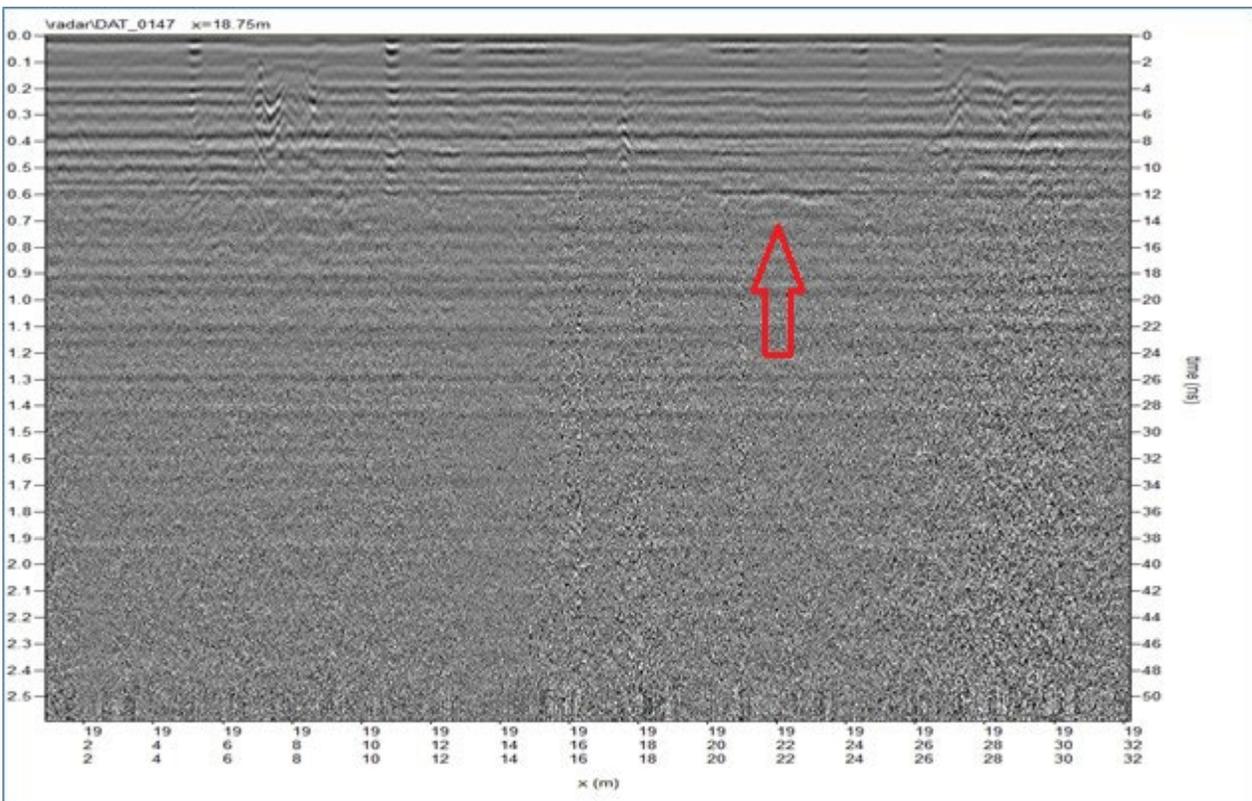
**Figure 39. GPR Block B, Overlay Plan Map, Timeslices 1-5 (with Hilbert transform filter applied).**



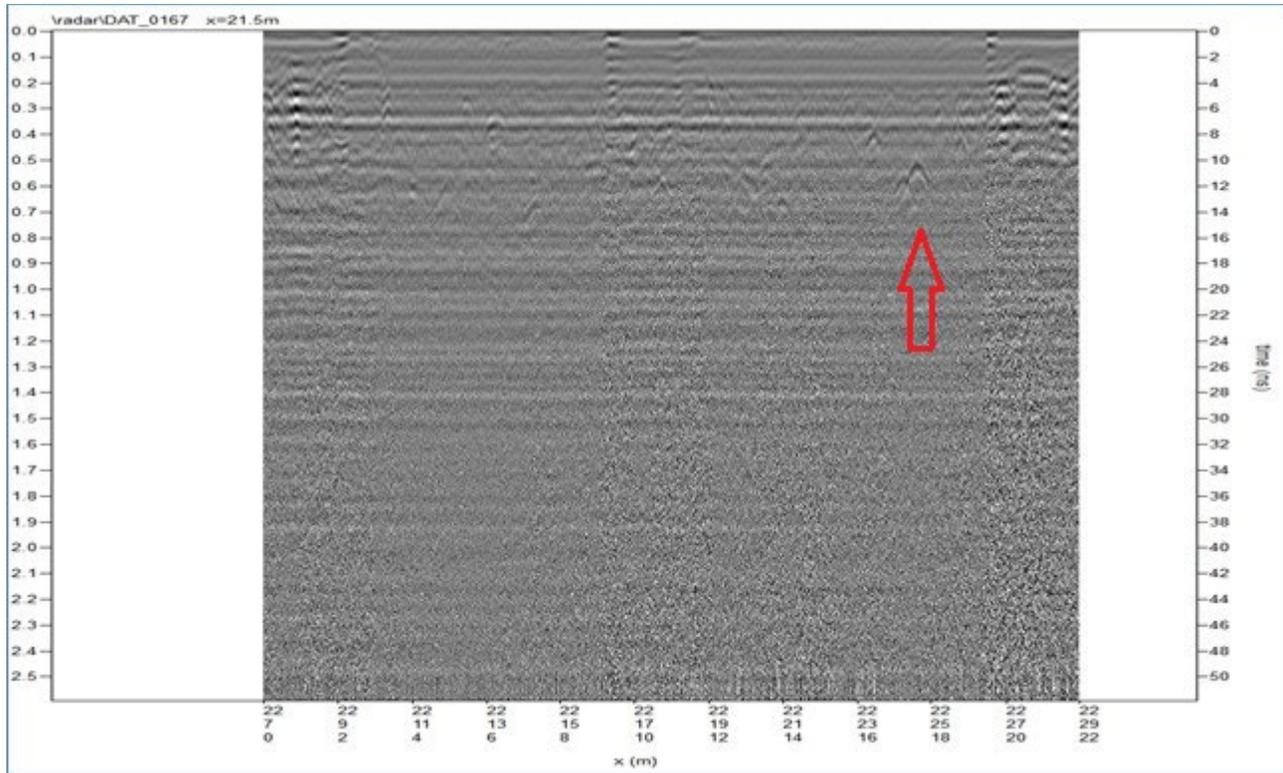
**Figure 40. GPR Block B, Overlay Plan Map, Timeslices 1-5 (with Kirchhoff Migration filter applied).**



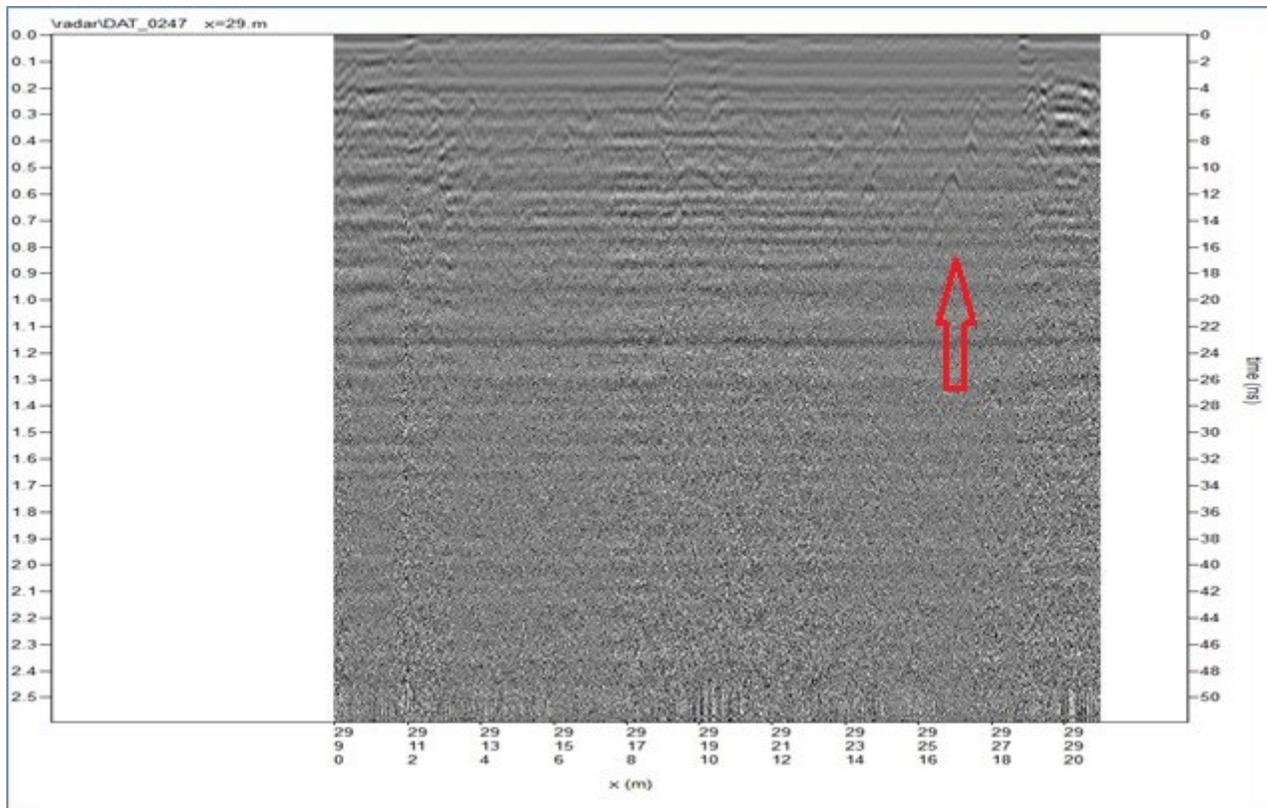
**Figure 41. Radargram 146, GPR Block B, Whitefield Square.**



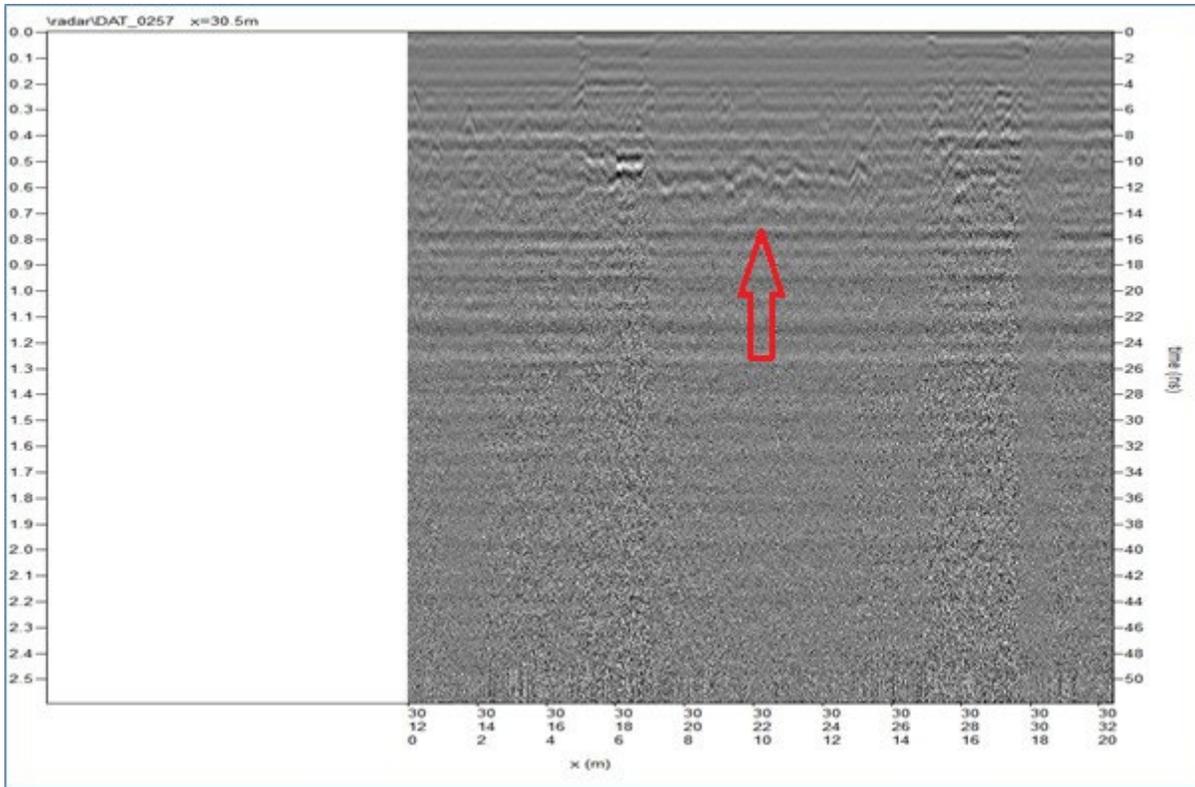
**Figure 42. Radargram 147, GPR Block B, Whitefield Square.**



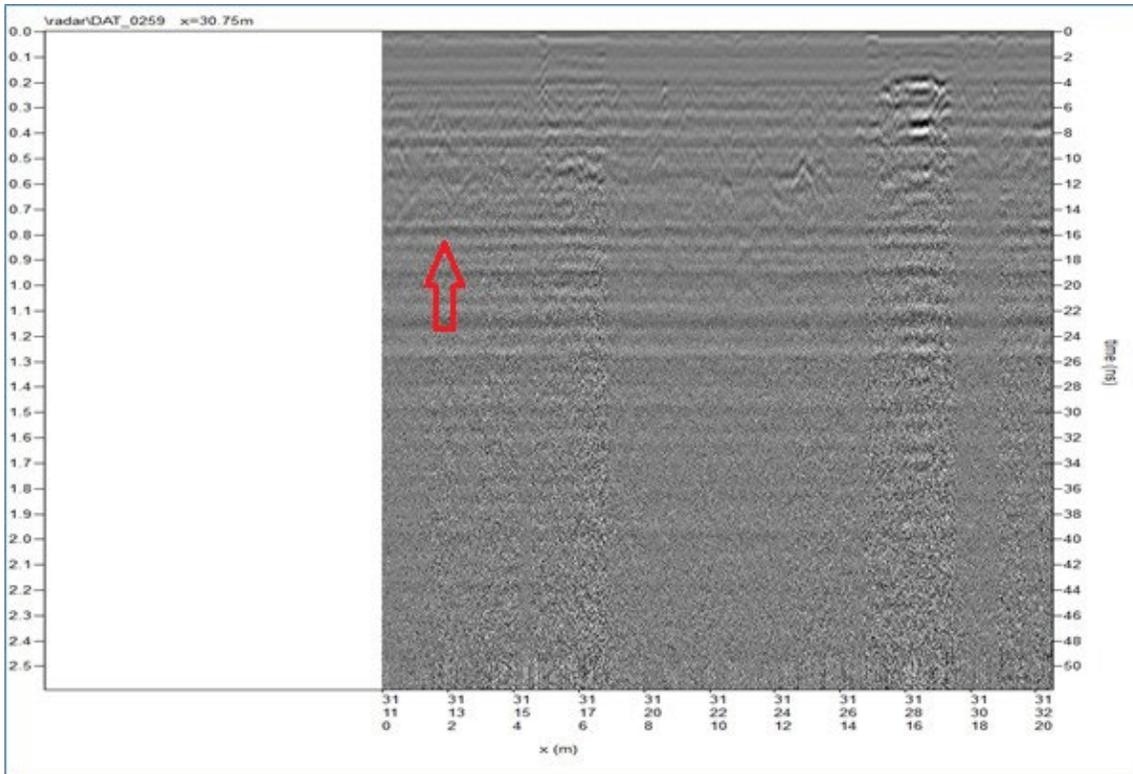
**Figure 43. Radargram 167, GPR Block B, Whitefield Square.**



**Figure 44. Radargram 247, GPR Block B, Whitefield Square.**

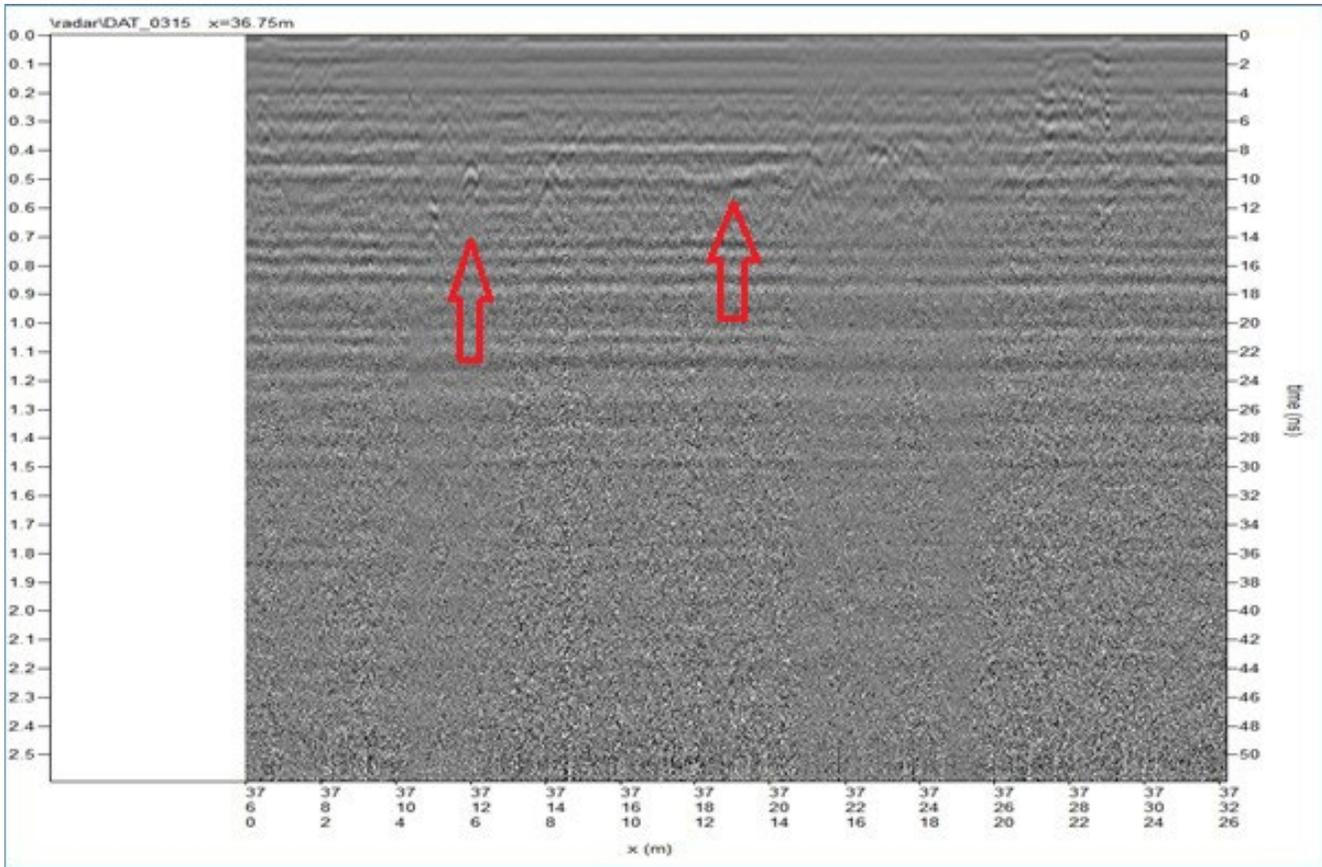


**Figure 45. Radargram 257, GPR Block B, Whitefield Square.**



**Figure 46. Radargram 259, GPR Block B, Whitefield Square.**





**Figure 49. Radargram 315, GPR Block B, Whitefield Square.**

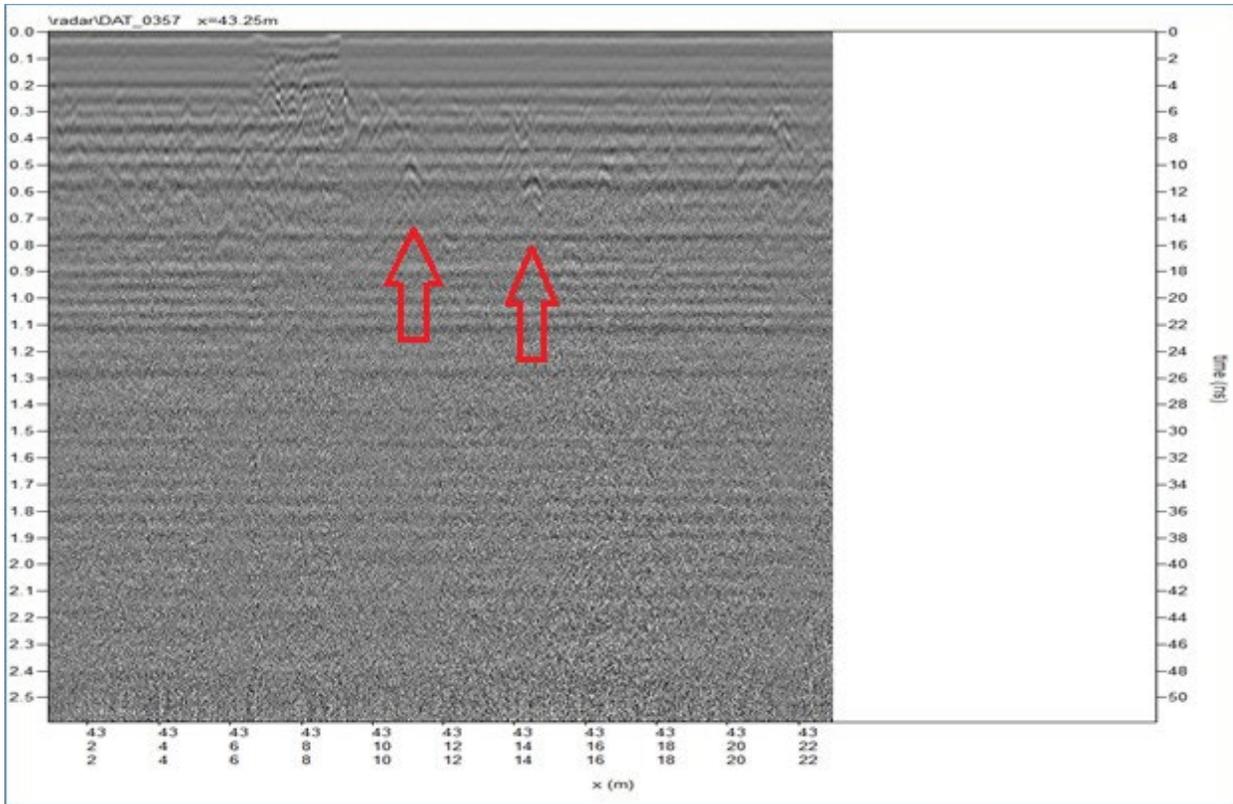
Figure 53 is Radargram 359, which is located at 43.5 m East on the Block B grid. It displays several anomalies originating at depths of 30-50 cm below ground. One example is marked by a red arrow.

Figure 54 is Radargram 361, which is located at 43.75 m East on the Block B grid. It displays several radar anomalies originating at depths of 40-60 cm below ground. One example is marked by a red arrow.

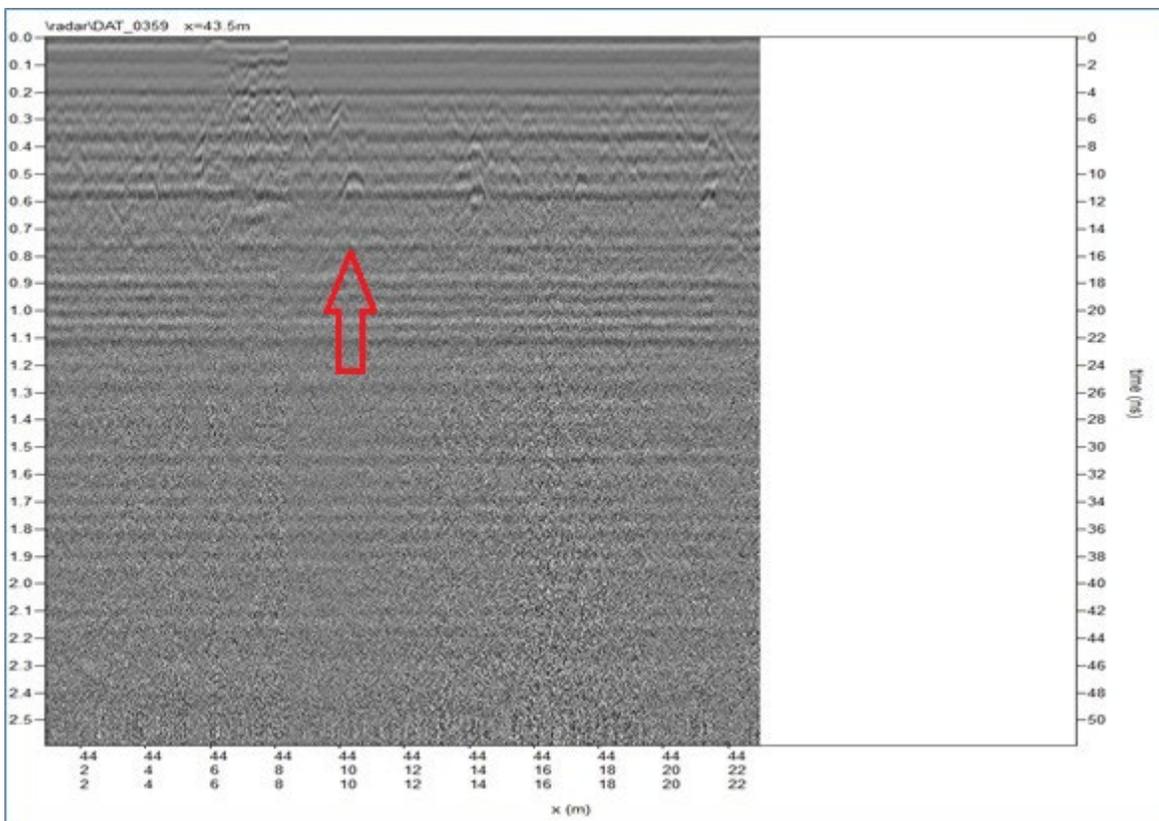
Figure 55 is Radargram 366, which is located at 44.25 m East on the Block B grid. It displays several anomalies originating at depths of 40-50 cm below ground. One example is marked by a red arrow.

Figure 56 is Radargram 376, which is located at 45.25 m East on the Block B grid. It displays a cluster of small hyperbolas originating at depths of 40-50 cm below ground. It is marked by a red arrow.

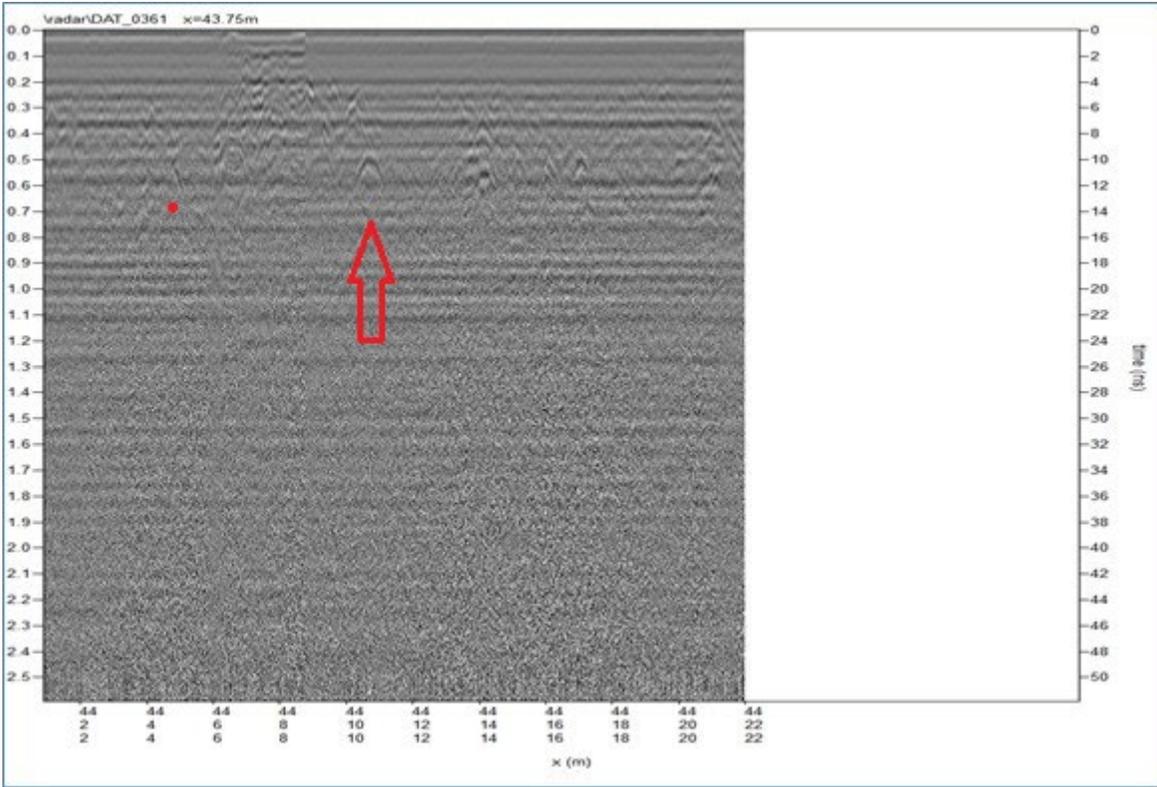




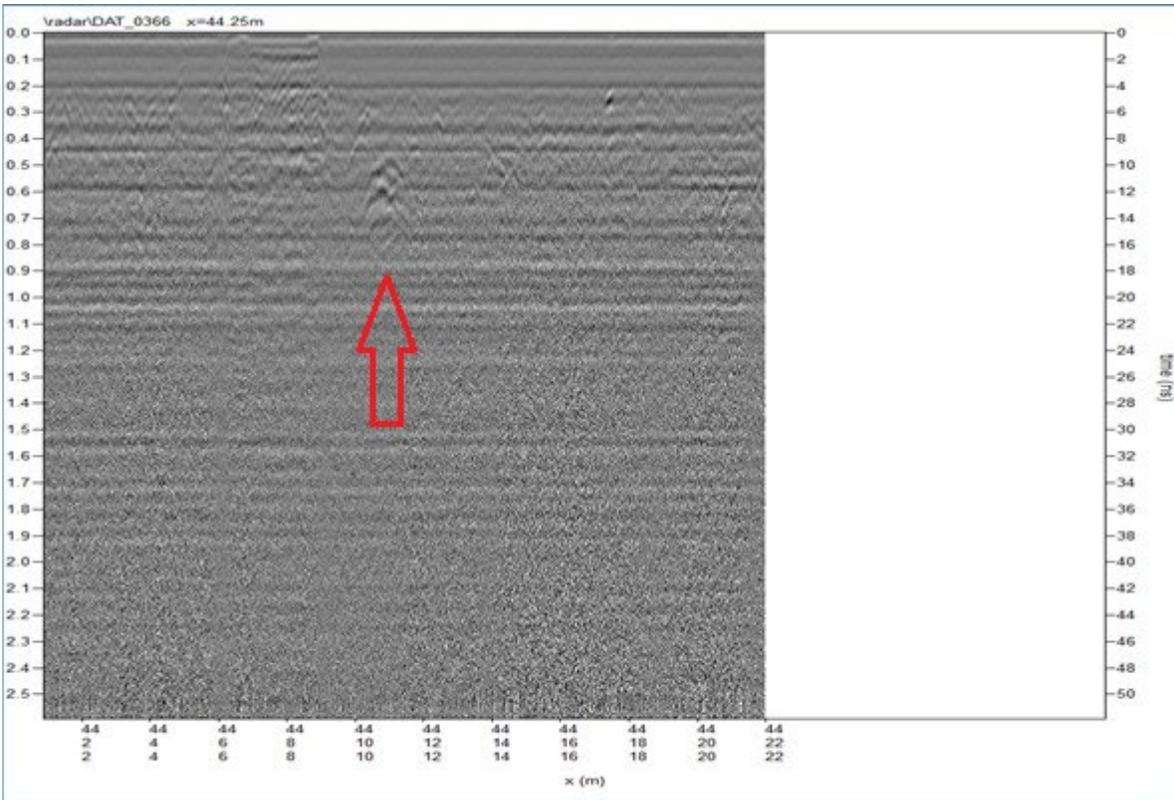
**Figure 52. Radargram 357, GPR Block B, Whitefield Square.**



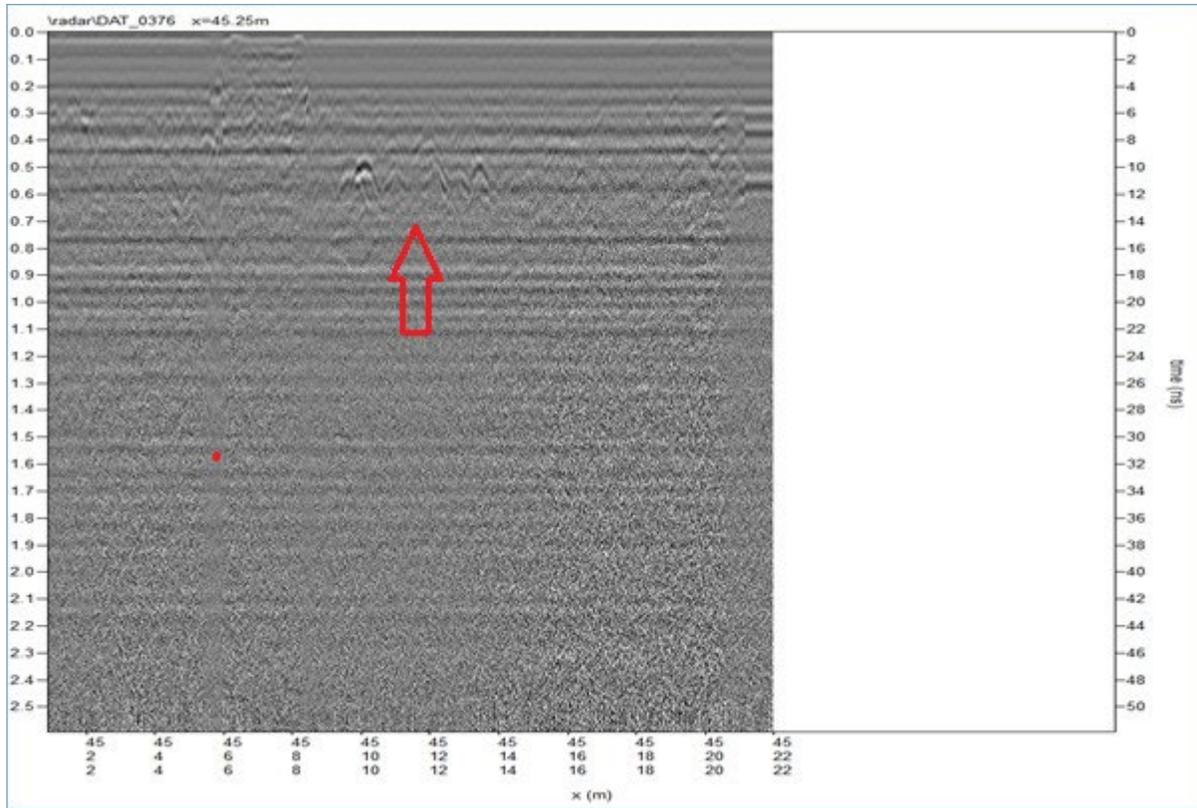
**Figure 53. Radargram 359, GPR Block B, Whitefield Square.**



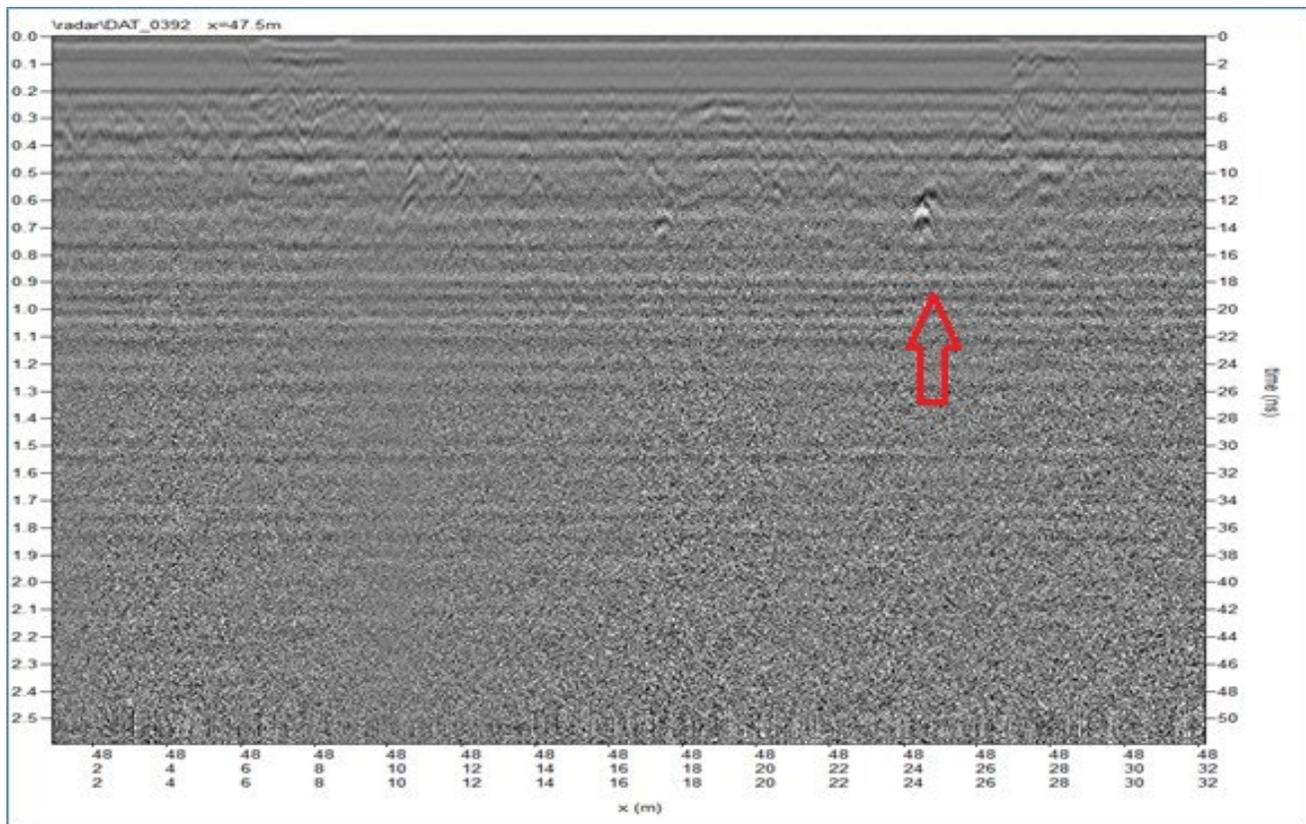
**Figure 54. Radargram 361, GPR Block B, Whitefield Square.**



**Figure 55. Radargram 366, GPR Block B, Whitefield Square.**



**Figure 56. Radargram 376, GPR Block B, Whitefield Square.**



**Figure 57. Radargram 392, GPR Block B, Whitefield Square.**

## **GSSI GPR BLOCK A**

The GSSI radar equipment is a relatively new addition to the LAMAR Institute's GPR tools. Its deployment at Whitefield Square was both a training experience for the equipment operators and a physical test of the radar hardware. The GSSI GPR equipment used a 400 MHz antenna, which allowed for deeper penetration than the MALA's 500 MHz.

Figure 58 shows an unfiltered plan of Timeslice 7 in GSSI Block A. This view contains radar information from 12-13.9ns, or about 70-90 cm below ground surface. At this depth numerous potential burials are visible, although they are difficult to distinguish because of the uneven coloration of the GPR-Slice output and many surrounding non-burial radar anomalies (both natural and human-related ground disturbances).

Figures 59-64 show four radargram examples from the GSSI's survey of GPR Block A that contain potentially significant radar anomalies (possible human burials).

Radargrams 206 and 209 are shown in Figures 59 and 60. These radargrams are located south of the gazebo, near its east-west midpoint at 17.75 m and 18 m East, respectively. These adjacent radargrams both show a strong hyperbola at 14 m north of the Block A baseline. These hyperbolas originate at about 45 cm below ground surface (indicated by red arrow). We classified this

anomaly as part of a potential burial cluster (Cluster A). Other less pronounced hyperbola examples are visible in these two radargrams in this vicinity of Whitefield Square.

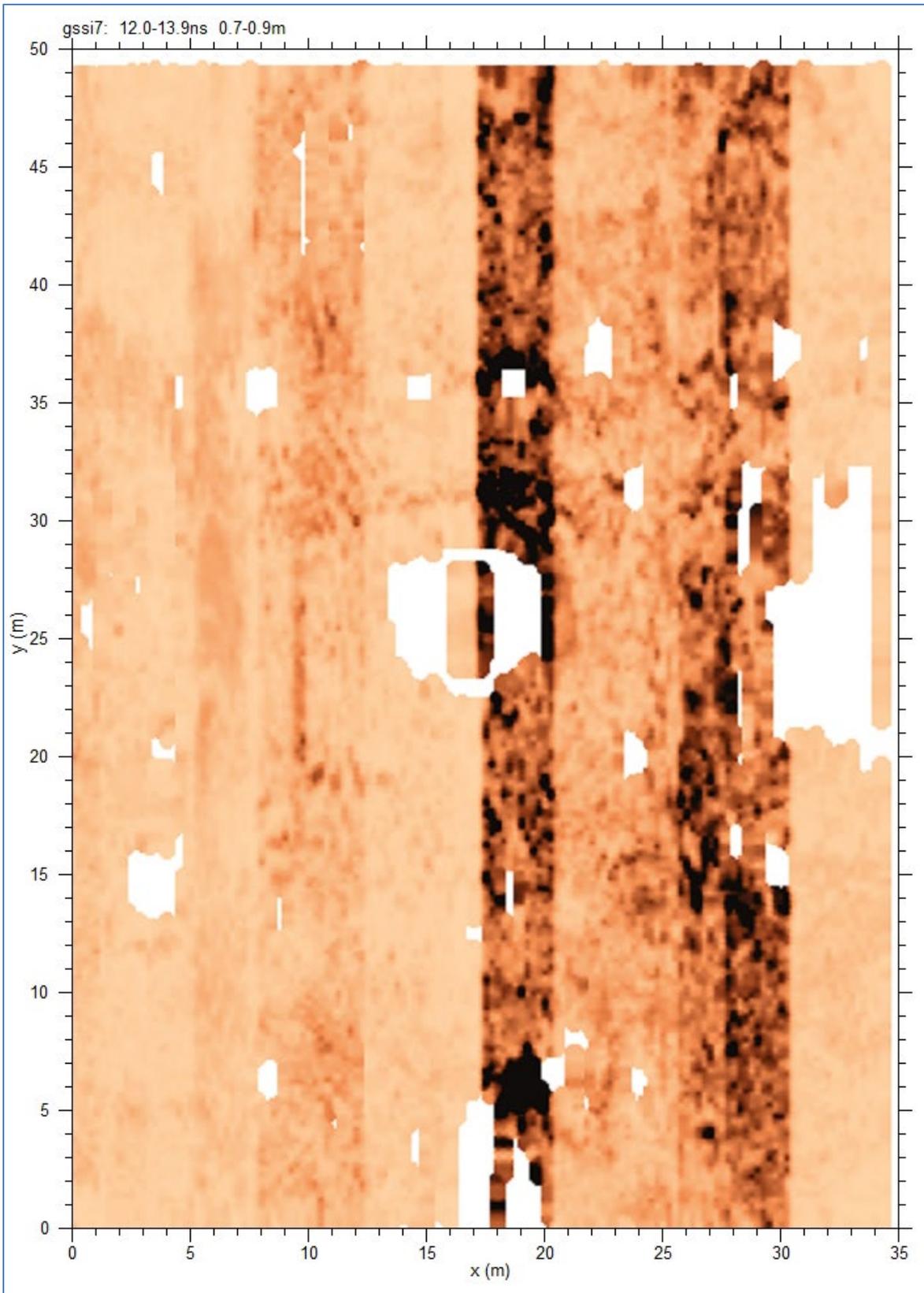
Radargrams 301, 302, 305, and 306 are located in the northeastern section of Whitefield Square (Figures 61-64). These radargrams all contain strong hyperbolic anomalies at depth, which may represent another cluster of human burials, designated Cluster B. Its full extent remains to be assessed.

Radargram 301, which is located 26.5 m East on the Block A grid. It displays several anomalies originating at depths of 40-50 cm below ground. Two examples are marked by red arrows in Figure 61.

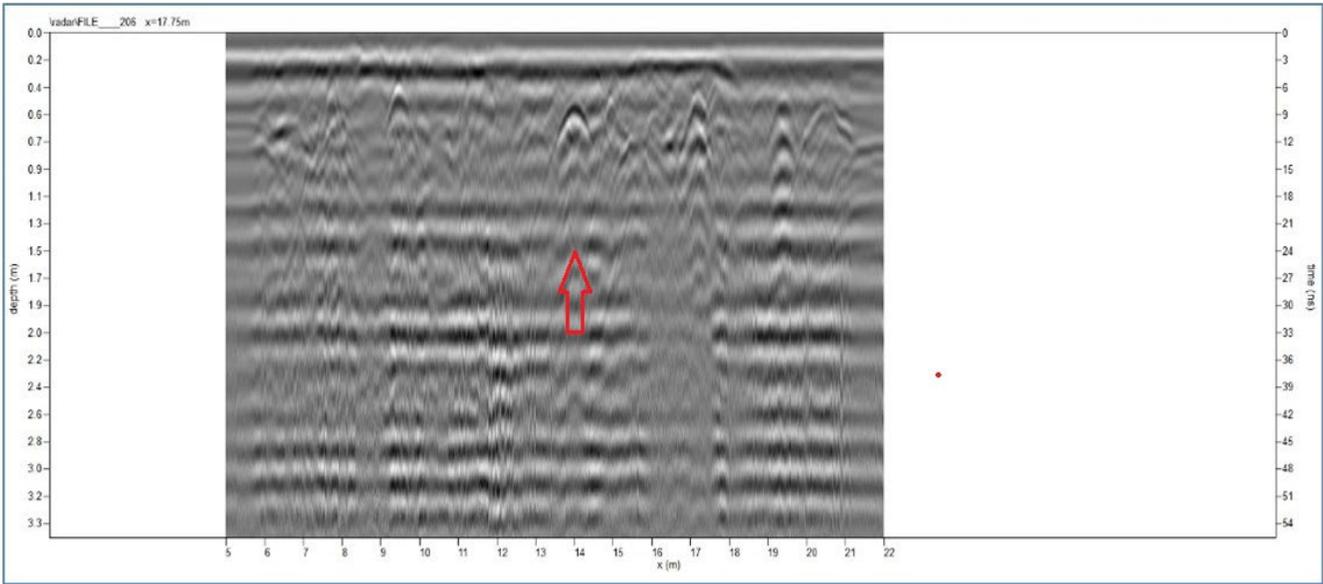
Figure 62 is Radargram 302, which is located at 26.75 m East on the Block A grid. It displays several anomalies originating at depths of 40-50 cm below ground. Two examples are marked by red arrows.

Figure 63 is Radargram 305, which is located at 27.5 m East on the Block A grid. It displays several anomalies originating at depths of 40-65 cm below ground. Two examples are marked by red arrows.

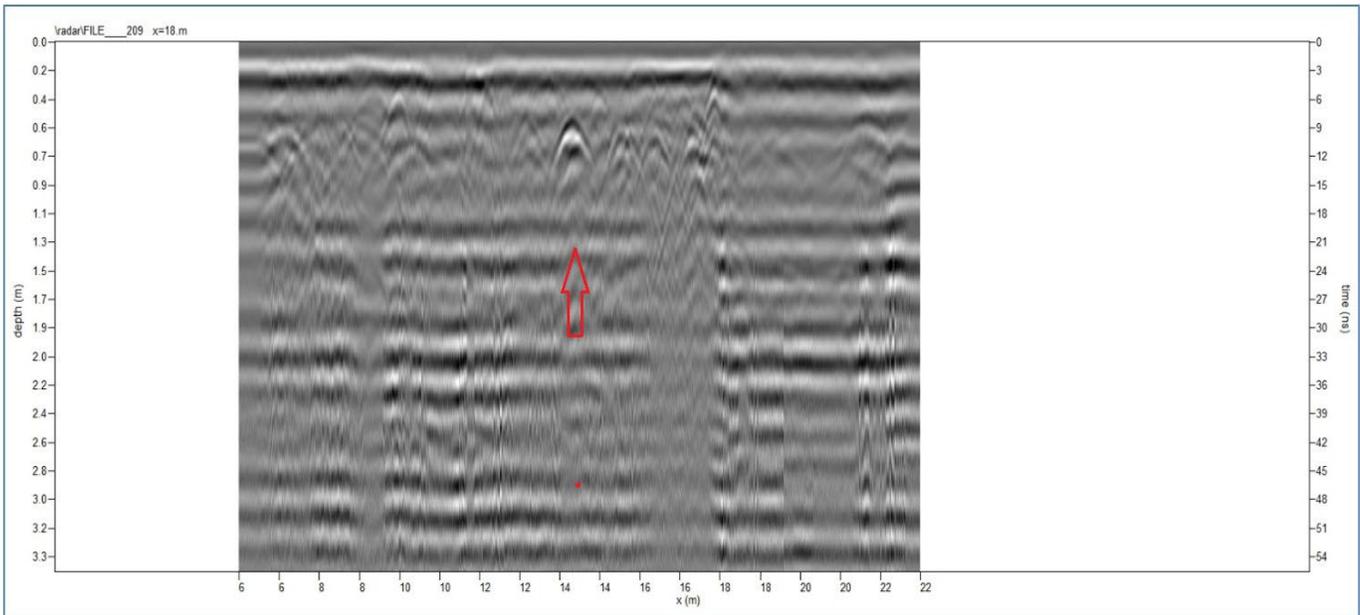
Figure 64 is Radargram 306, which is located at 27.75 m East on the Block A grid. It displays numerous hyperbolas originating at depths of 45-80 cm below ground. Three examples are marked by red arrows.



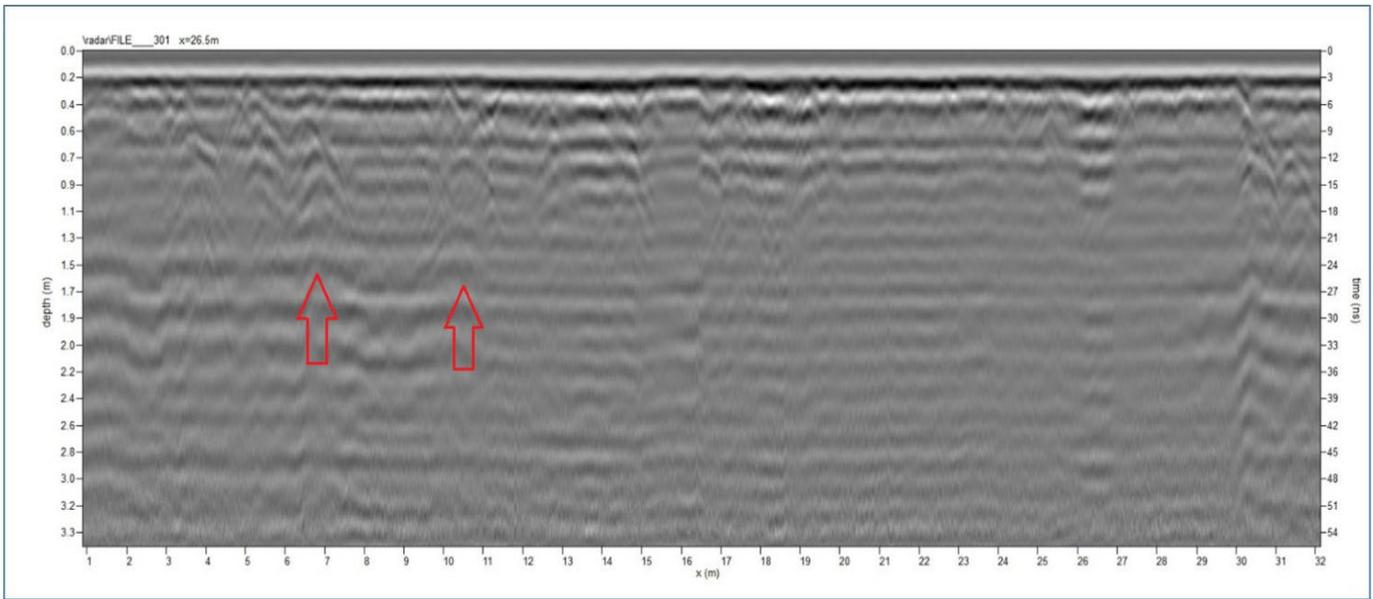
**Figure 58. GSSI GPR Block A, Plan of Timeslice 7, Whitefield Square.**



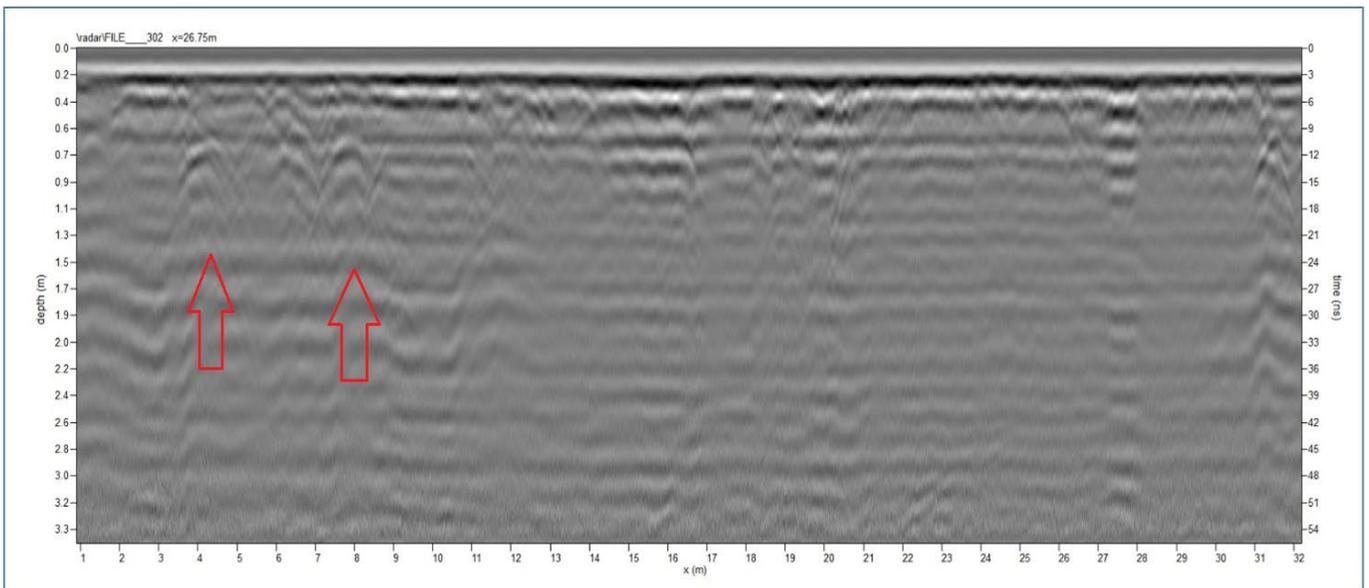
**Figure 59. Radargram 206, GSSI GPR Block A.**



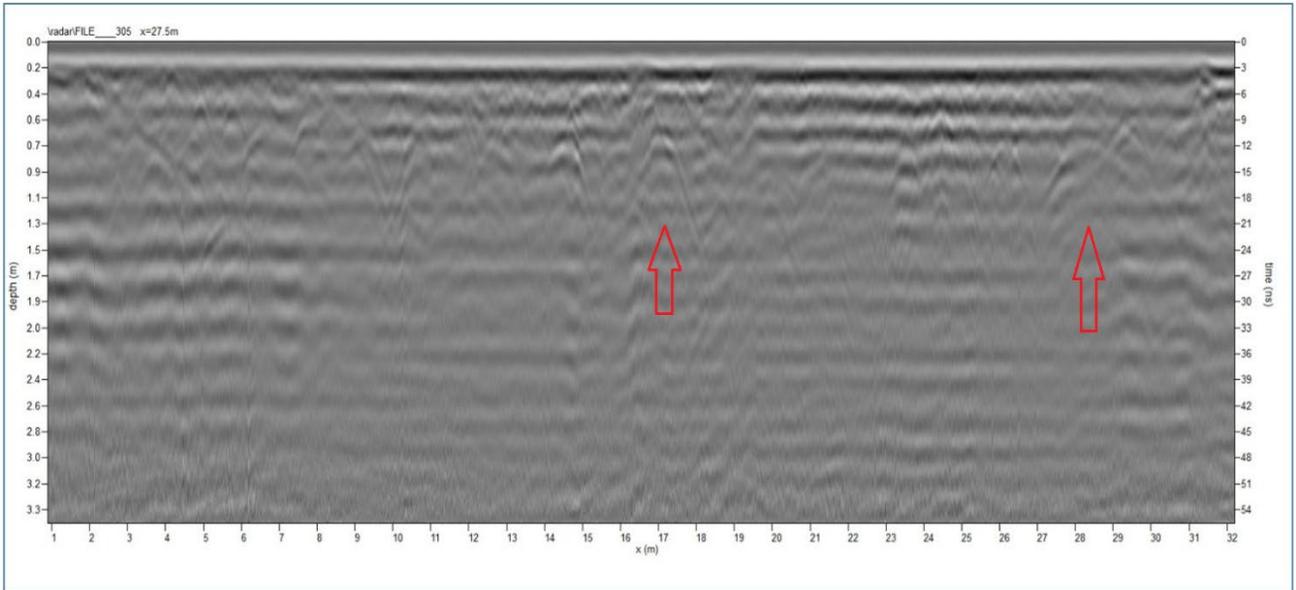
**Figure 60. Radargram 209, GSSI GPR Block A.**



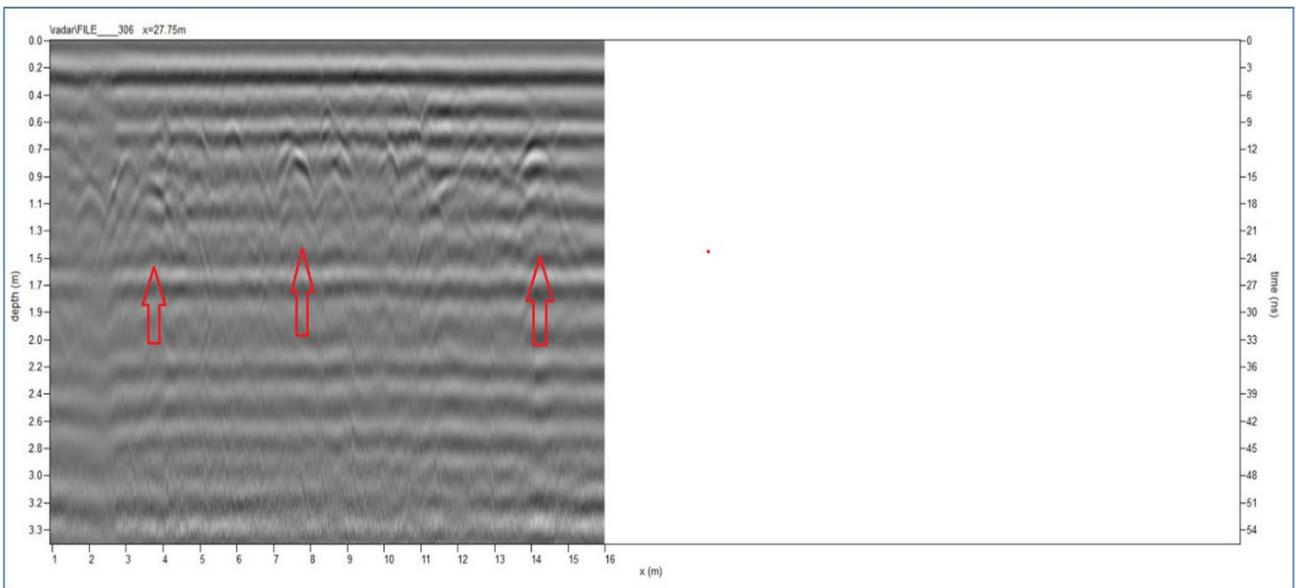
**Figure 61. Radargram 301, GSSI Block A.**



**Figure 62. Radargram 302, GSSI Block A.**



**Figure 63. Radargram 305, GSSI Block A.**



**Figure 64. Radargram 306, GSSI Block A.**

## V. Interpretive Summary

### GPR FINDINGS

Fieldwork for the GPR project began on December 2 and was completed on December 10, 2025. Radar data from the LAMAR Institute's GPR survey of Whitefield Square was post-processed in December 2025 and January 2026. This technical report was submitted to the City of Savannah on January 28, 2026.

### Potential Human Burials in Whitefield Square

Our preliminary historical burial estimates were based on primary and secondary documents and AI-assisted calculations, which yielded potential grave counts ranging from 1,150 to 1,863 burials within Whitefield Square. The upper count of 1,863 is based on the circa 1763 cemetery dimensions, while the lower count of 1,150 is based on its maximum dimension mandated by city government in 1813.

These estimates were based on two assumptions. First, that Whitefield Square is positioned entirely within the boundaries of the African-American cemetery. As the City's historic map research shows, only two of four Savannah city maps incorporated Whitefield Square within the cemetery boundary (Spracher 2021). And neither of the two maps show the square to be entirely within the boundary. Estimates by Chat GPT5 of spatial distributions of burials assumed a consistent distribution across an increasingly urban landscape.

Secondly, our historically-based burial estimates assume that the cemetery was entirely filled by the time it was abandoned in 1844. The period from 1844-1853 was a time

of transition for African-American burials in Savannah. The human remains that had been interred in the primary burial ground intended for African-Americans in early Savannah began to be erased.

Between 1844-1853 an unknown number of remains were relocated from the Whitefield Square area to the Hospital area cemetery. Unfortunately, historical records are sparse concerning grave relocation processes, particularly for Savannah's African-American community. Graves were relocated from both African-American cemeteries after Laurel Grove Cemetery was activated. Whitefield Square was created in 1851 but Laurel Grove Cemetery did not begin accepting burials until 1853. Four acres of Laurel Grove cemetery were allocated for African-American burials that year (Georgia Historical Society 2000).

The GPR survey findings did not support these high estimates of potential burials for Whitefield Square. Even the lower estimate of 1,150 burials in Whitefield Square is well-above our GPR findings. Our survey did identify, however, numerous radar anomalies that likely represent human burials, which supports the contention that Whitefield Square was situated within the boundary of Savannah's "Negro Burial Ground".

In GPR Block A, 55 strong radar reflections (hyperbolas visible on radargrams in profile view) were GPS-mapped while in the field. Their spatial distribution is shown in Figure 65. These anomalies are concentrated in the northern two-thirds of Whitefield Square. Fifteen of the 55 hyperbolas occur beneath the brick pavement, making their cultural and functional assignment problematic. The remaining 40 hyperbolas are not located beneath any brickwork and are likely not associated with any modern utilities.

Interestingly, the GPR plan maps for Blocks A and B do not contain corresponding potential

grave anomalies for most of these radargram observations (Figures 66 and 67).



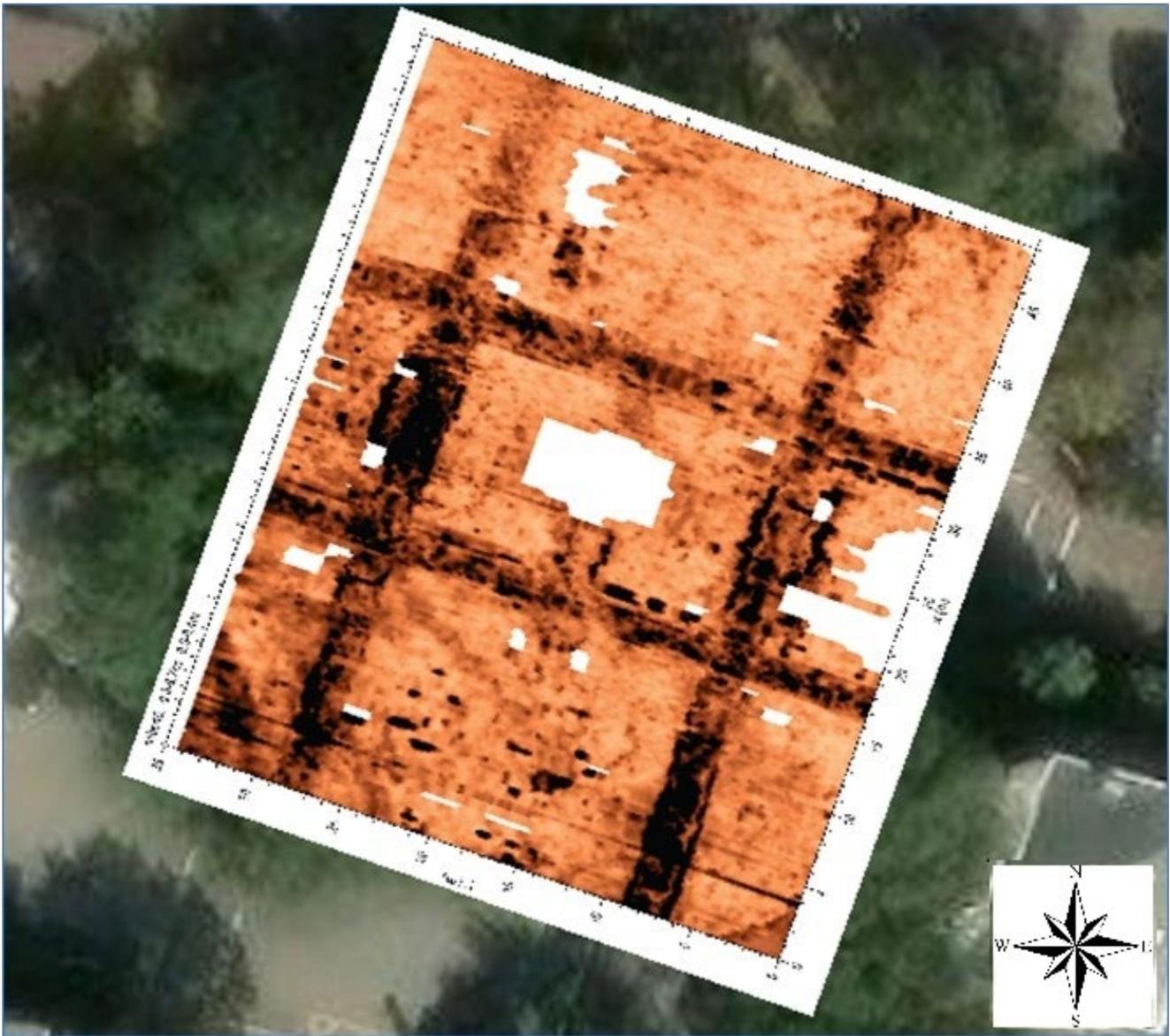
**Figure 65. Distribution of 55 Field-identified Hyperbolas in GPR Block A (shown as black dots).**



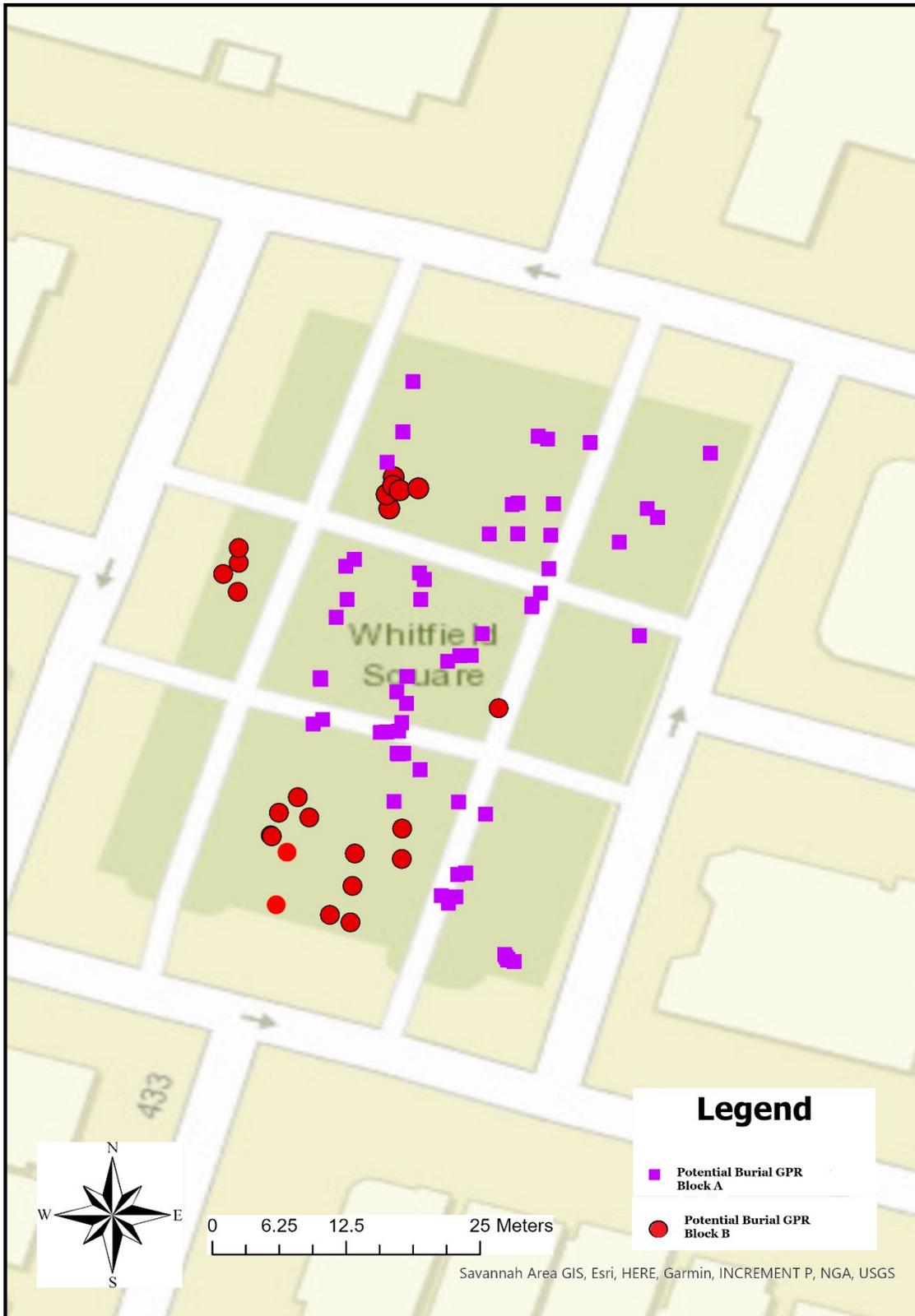
**Figure 66. GPR Block A Overlay plan map of Timeslices 2 through 9 plotted on modern aerial image.**

In GPR Block B, overlay plan view maps reveal about 23 radar reflections (oval to rectangular anomalies of approximate human grave dimensions), which may represent

human burials. These are displayed as red circles in Figure 68. These anomalies are concentrated in the south-central portion of Whitefield Square, but also include a cluster in the northwestern part of the square.



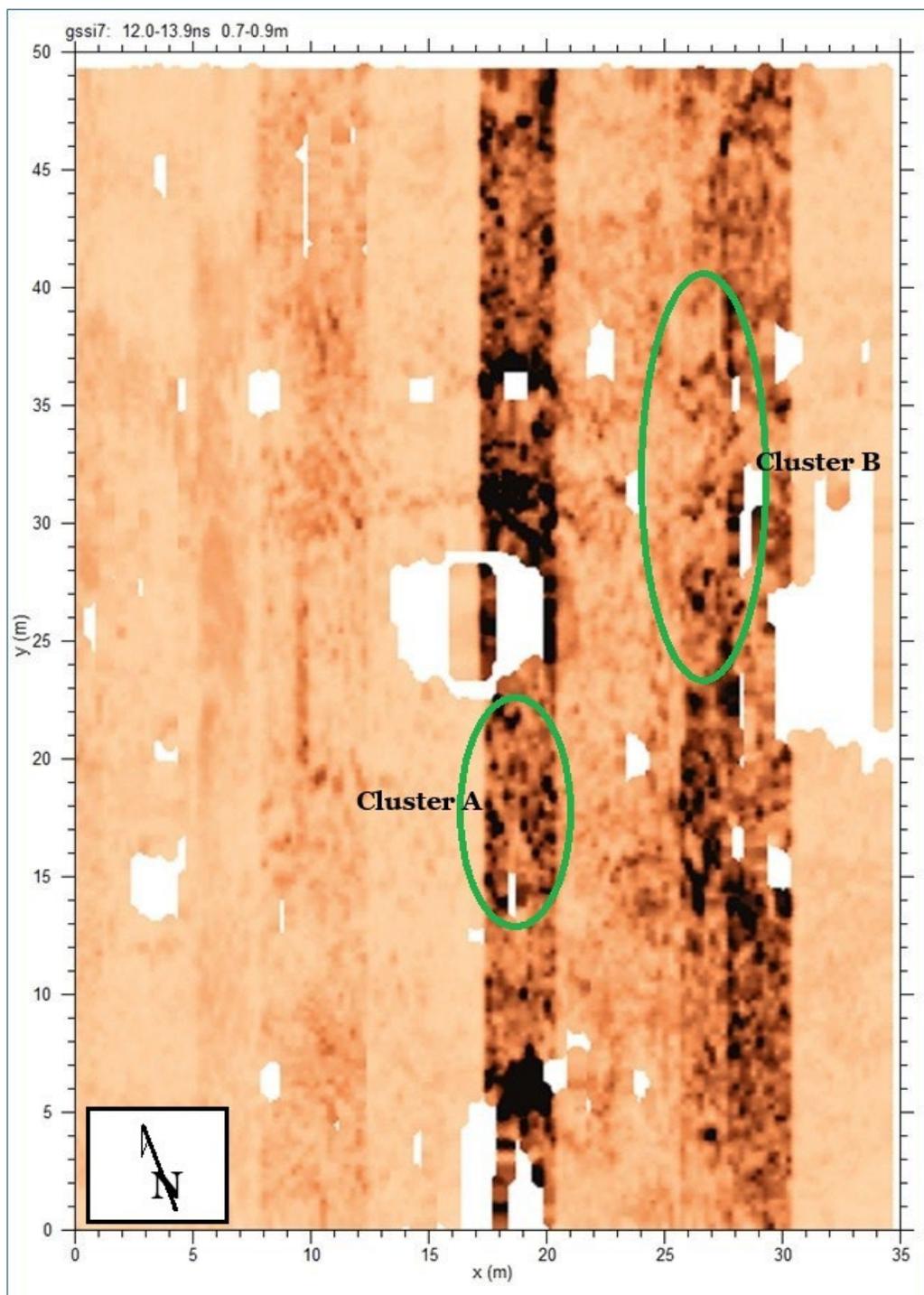
**Figure 67. GPR Block B Hilbert Transform Overlay plan map of Timeslices 1 to 5 plotted on modern aerial image.**



**Figure 68. Potential Burial Locations, GPR Blocks A and B, Whitefield Square, Savannah.**

Radar data gathered in GSSI GPR Block A also includes good evidence of potential burials from examination of its many radargrams. Most of these radargrams were uninformative, but at least two clusters of

potential graves were noted in Whitefield Square. These are delineated as Clusters A and B by green ovals in Figure 69.



**Figure 69. Potential burial clusters A and B in GSSI GPR Block A, Whitefield Square.**

As was the case for GPR Block A collected with the MALA equipment, these potential graves are less evident in plan view than when viewed in profile. A total count of potential burials in the GSSI data was not attempted. This additional data would likely contribute several dozen additional potential graves to the overall potential burial count.

Historical records suggest that some human remains were exhumed from this cemetery after it was closed for burials in 1844 (Spracher 2021). These exhumed graves may no longer contain human remains, but the burial shafts (albeit, some enlarged by the exhumation process) remain and these empty grave shafts also can be detected using GPR technology. Our GPR survey made no attempt to distinguish between intact graves and those whose burial contents had been removed circa 1844-1853. The LAMAR Institute's analysis of the GPR data from the three sample blocks suggests that more than 100 burials (or previously exhumed burials) are likely contained within Whitefield Square.

### **POSSIBLE METEORITE STRIKE?**

A prominent feature in the GPR data gathered at Whitefield Square is not related to its potential for containing human burials. This large radar anomaly is located deeper than burials and probably predates the creation of the City of Savannah. This feature appears in plan view as a portion of an extremely large starburst, where the center of the burst is located west of the GPR study area. The eastern edge of major impact zone is visible along the western edge of the GPR maps and the rays from this burst extend completely across all the GPR survey grids.

This starburst was displayed in both GPR Blocks A and B. In Block B, it begins to appear in Timeslice 4, or about 45 cm below ground.

The radar anomaly continues to the basal levels of both GPR grids (Figures 70-72).

Geophysicist Dean Goodman, a noted GPR expert and author of the industry-leading GPR-Slice software, was consulted for his opinion on the starburst radar anomaly. His graphic interpretation is shown in Figure 73 .

This GPR feature is an image never before seen by the LAMAR Institute team, and not previously described in GPR literature. As to what it represents, many questions remain, but we offer two possible explanations for it.

First and more likely, it represents an ancient meteorite impact crater. Meteorites strike Earth on a daily basis. Most are exceedingly small and never reach the ground surface. Larger fireballs in North America have created geological features, such as the Winslow, Arizona crater, and the Wells Creek crater in Tennessee.

Numerous meteorites are recorded in Georgia. These include metallic and stony varieties (Meteorite Society of Georgia 2026). Most recently in June 2025, a large meteorite impacted McDonough in northern Georgia, making national news.

Second, it may represent an impact crater from a large mortar round fired by the British artillery at the besieging Patriot and French forces in September or October 1779. This was during the second Battle of Savannah during the American Revolution.

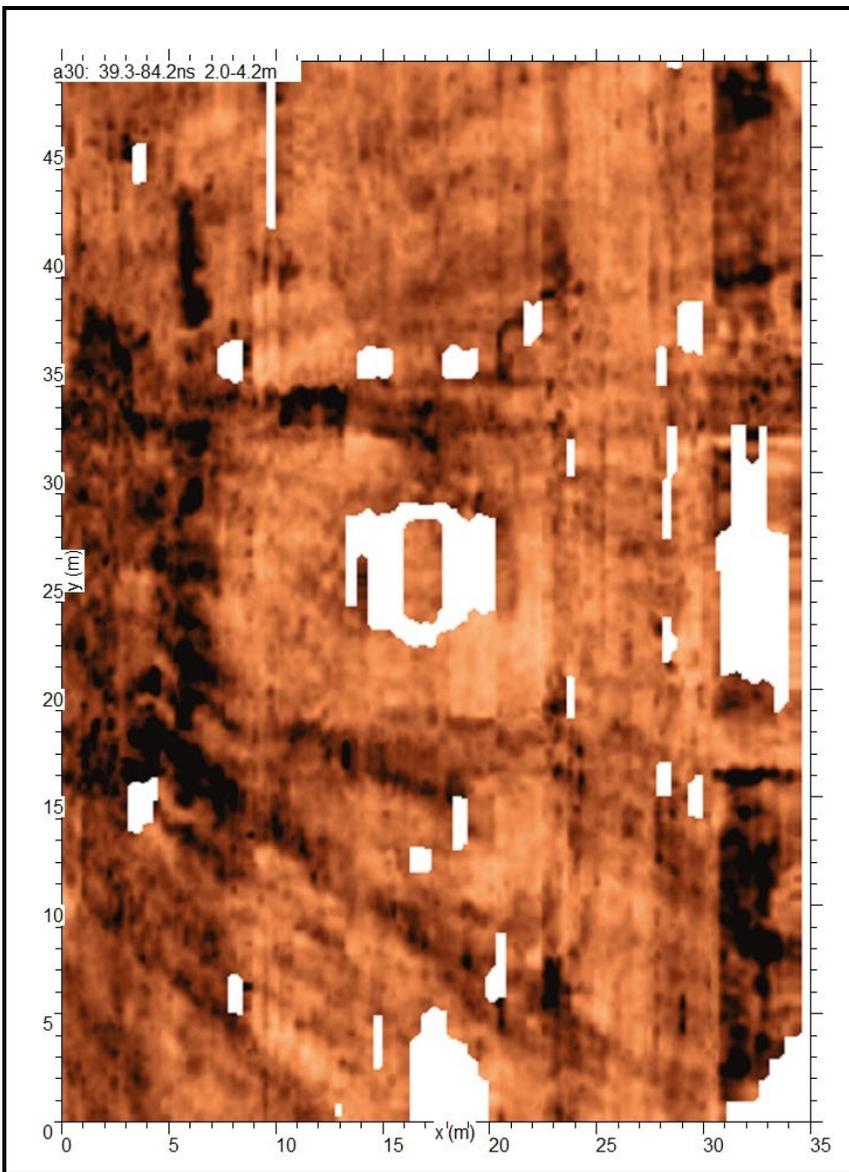
Historical research reveals that the British artillery in Savannah in late 1779 included several large mortars capable of firing explosive mortar balls measuring 9 inches and 12 inches in diameter. These projectiles were likely filled with smaller shot intended for maximum devastation to Patriot ground forces. Mortars were the only explosive heavy ordnance available during the American

Revolution. While the British had cannons with larger bores, these cannonballs were solid shot. It is possible that a solid cannonball could have produce such a large impact crater in soft sandy soil, but unlikely.

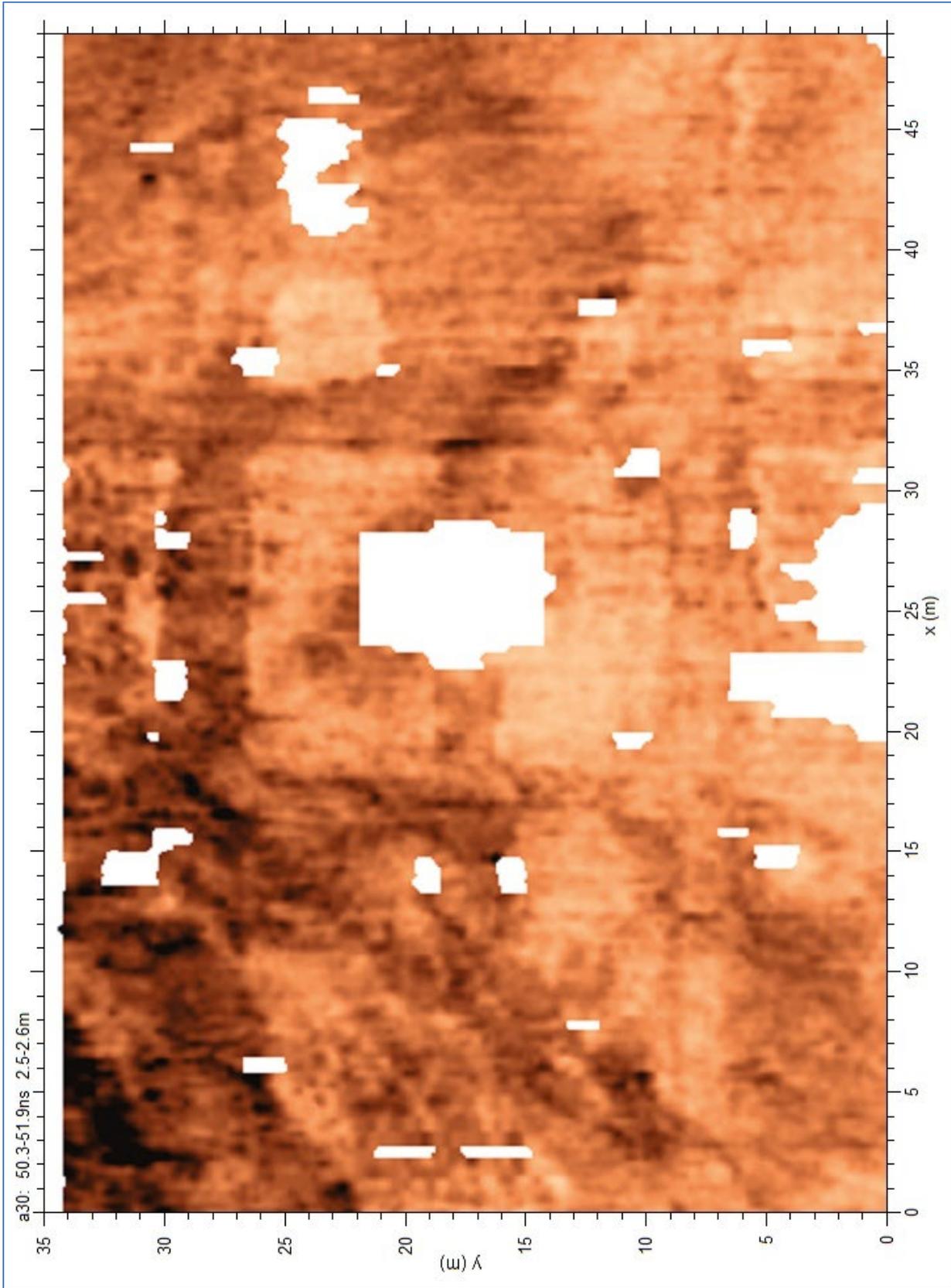
Previous historical archaeological study by the LAMAR Institute survey team of Whitefield and Taylor (formerly Calhoun) Squares considered these two squares to be in the approximate location of the Patriot siege line. GPR survey of both squares during that study failed to locate any clear evidence of the

military ditch work from that engagement (Elliott and Elliott 2011).

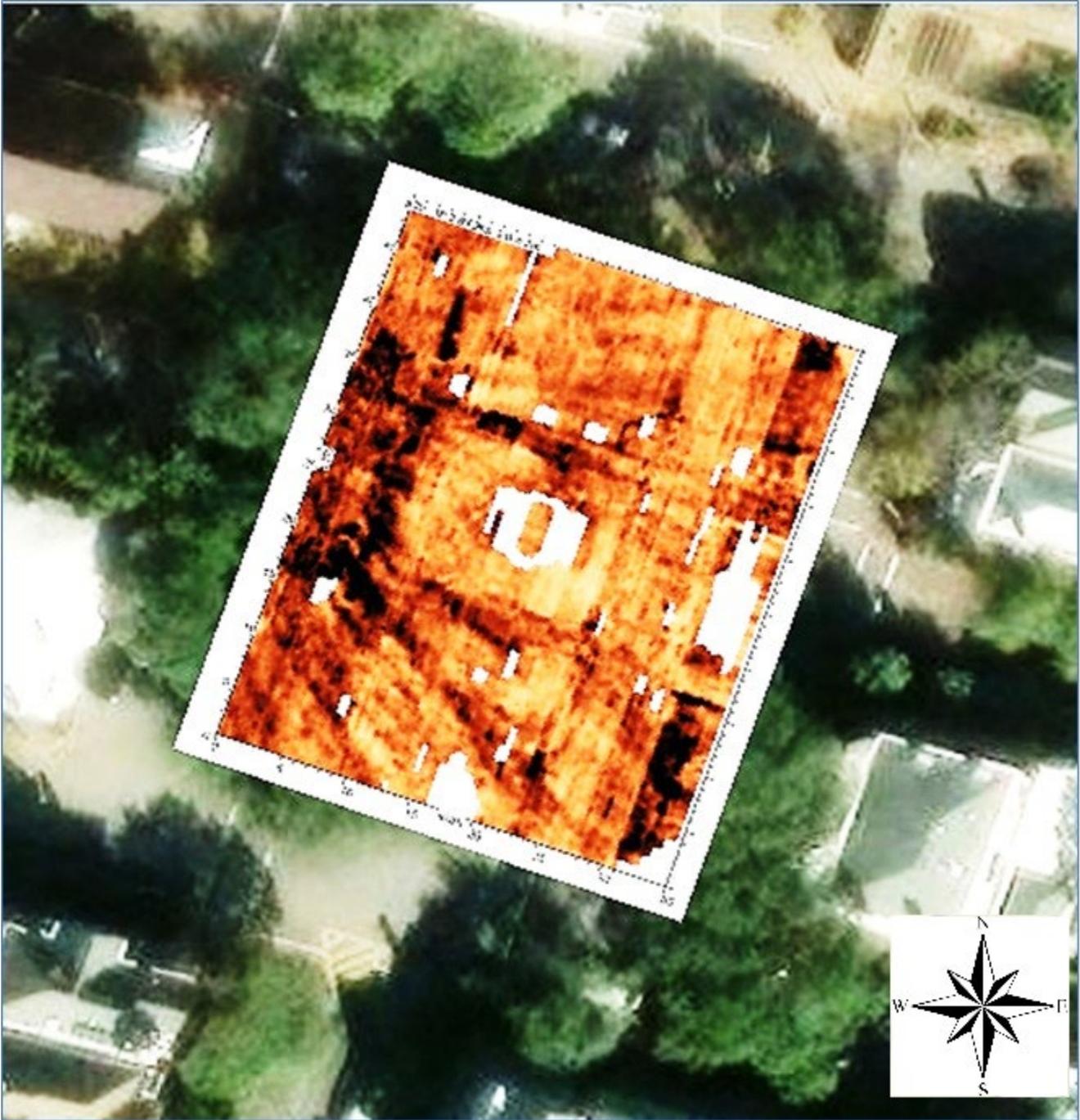
Whatever its origin, the starburst feature attests to a major soil disruption that took place in and around Whitefield Square at some time in the past. Given its depth of origination, we suspect that this predates the use of this property as a cemetery and the creation of the town of Savannah. More study of this phenomenon is suggested, but not necessarily as part of the present research task.



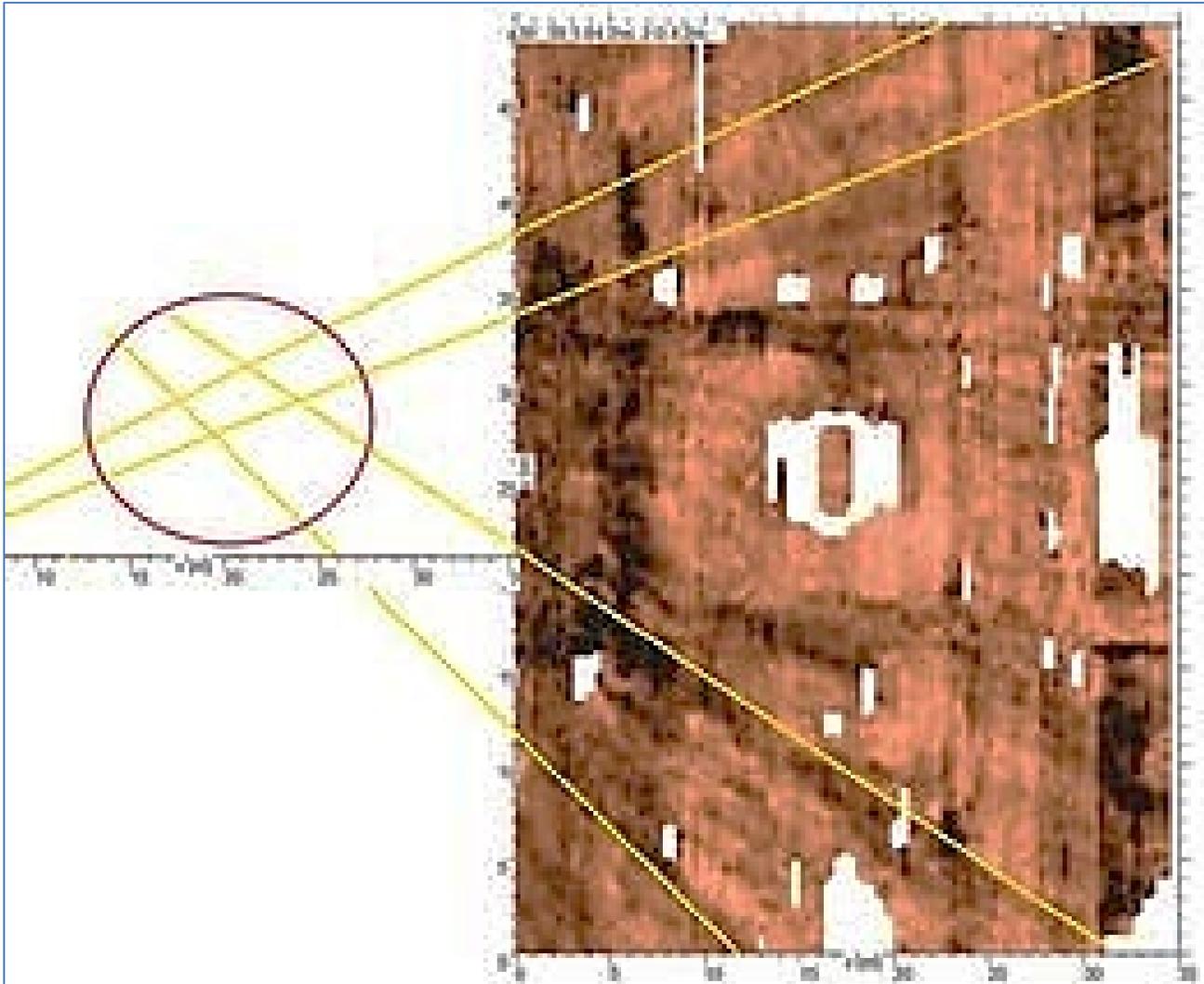
**Figure 70. Composite GPR Plan Map, Block A, Timeslices 15-30.**



**Figure 71. Plan of GPR Block B, Timeslice 30, Whitefield Square.**



**Figure 72. Explosion superimposed on modern aerial image.**



**Figure 73. Dean Goodman's Interpretation of Possible Meteorite Strike Epicenter, Savannah, Georgia (Goodman 2025).**

**SUMMARY**

In December 2025, the LAMAR Institute conducted a GPR survey of Whitefield Square in Savannah, Chatham County, Georgia. This effort was sponsored by the City of Savannah, and was done with guidance and additional support from Luciana Spracher, Head of Municipal Archives with the city, and others. Laboratory analysis in December 2025 and January 2026 resulted in the present report.

The LAMAR Institute team identified more than 80 potential human burials from the GPR dataset (see Figure 68). Of these, 23

were recognized from GPR plan maps of GPR Block B, and 55 were recognized during fieldwork on GPR Block A. Some small percentage of these radar anomalies may not represent human remains, but that determination is only possible through ground-truthing verification of the GPR data with actual archaeological excavation.

An additional two probable burial clusters were identified in GSSI GPR Block A from radargram profiles. Their general locations were plotted on a plan view map (see Figure

69). Due to the nature of these clusters, the individual numbers of potential graves within them could not be determined.

The major portion of all of these Potential Burial Anomalies are likely to represent either intact human burials and/or empty burial shafts where the contents were removed and the remains relocated to the circa 1844-1853

African-American cemetery located near the Hospital or in Laurel Grove (South) cemetery in 1853 or soon thereafter. These potential graves are most likely associated with the historic 'Negro Burial Ground', cited in historical records and plotted on several historical maps of the City of Savannah.

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