The author was first introduced to the Rocky Hill project by Gordon Edwards of the Heritage Alliance on the second of August in 2019. "Rocky Hill" is the nickname for the Old Jonesborough Cemetery located to the direct northeast of downtown Jonesborough, TN. Mr. Edwards and the author discussed potential non-invasive techniques to obtain greater information about the "mass burial" resulting from an 1873 Cholera outbreak in East Tennessee (specifically the epidemic in Jonesborough, TN). There are no clear representations of the statistics for the cholera epidemic in Jonesborough, but it can be surmised that between fifteen and thirty people could be buried in mass at the Old Jonesborough Cemetery.[1]

The plan was to use a combination of Ground Penetrating Radar and UAV mapping at the site. Through the fall of 2019, several days were spent onsite conducting surveys and obtaining data at the cemetery. Additional data was collected in March of 2022 and April/May of 2023 to highlight several areas of interest in greater detail.

The use of GPR[2] sends radar pulses and reads the reflected signals from subsurface structures/anomalies. While GPR is not ideal for the location of organic remains, it can be a useful tool in identifying heavily disturbed soil, solid objects, metals, and voids within the ground. When conducting a GPR survey, the user attempts to spot areas where permittivity of the ground is much higher and represented by a series of hyperbolae and planar scarring in the reflections.

The surveys from 2019 presented the author with one possible location for a mass burial located at approximately 36.29631, -82.46912. GPR surveys yielded several areas where debris could be detected within the reflections, but nothing substantial indicating the area was used for a mass burial ground. Additional time was spent collecting data to show the location of gravesites no longer identified by tombstones (roughly exhibited in figure 1 below).

[1] For more information, see Charlotte Crutcher, *Asiatic Cholera in Jonesboro, 1873* (Tennessee Historic Quarterly, Vol. 31, Issue 1, pp. 74-79, 1972.

[2] See Lawrence B. Conyers, *Interpreting Ground-Penetrating Radar for Archaeology* (Abingdon-On-Thames: Routledge, 2014).

Figure 1 (Author's UAV map edited by author)

In March of 2022, Mr. Edwards brought an additional theory about an alternate location near a "bend" in the cemetery (approximately 36.29624, -82.46932). With the additional information, the author conducted a very promising survey illustrated by the reflections in Figures 2 and 3.

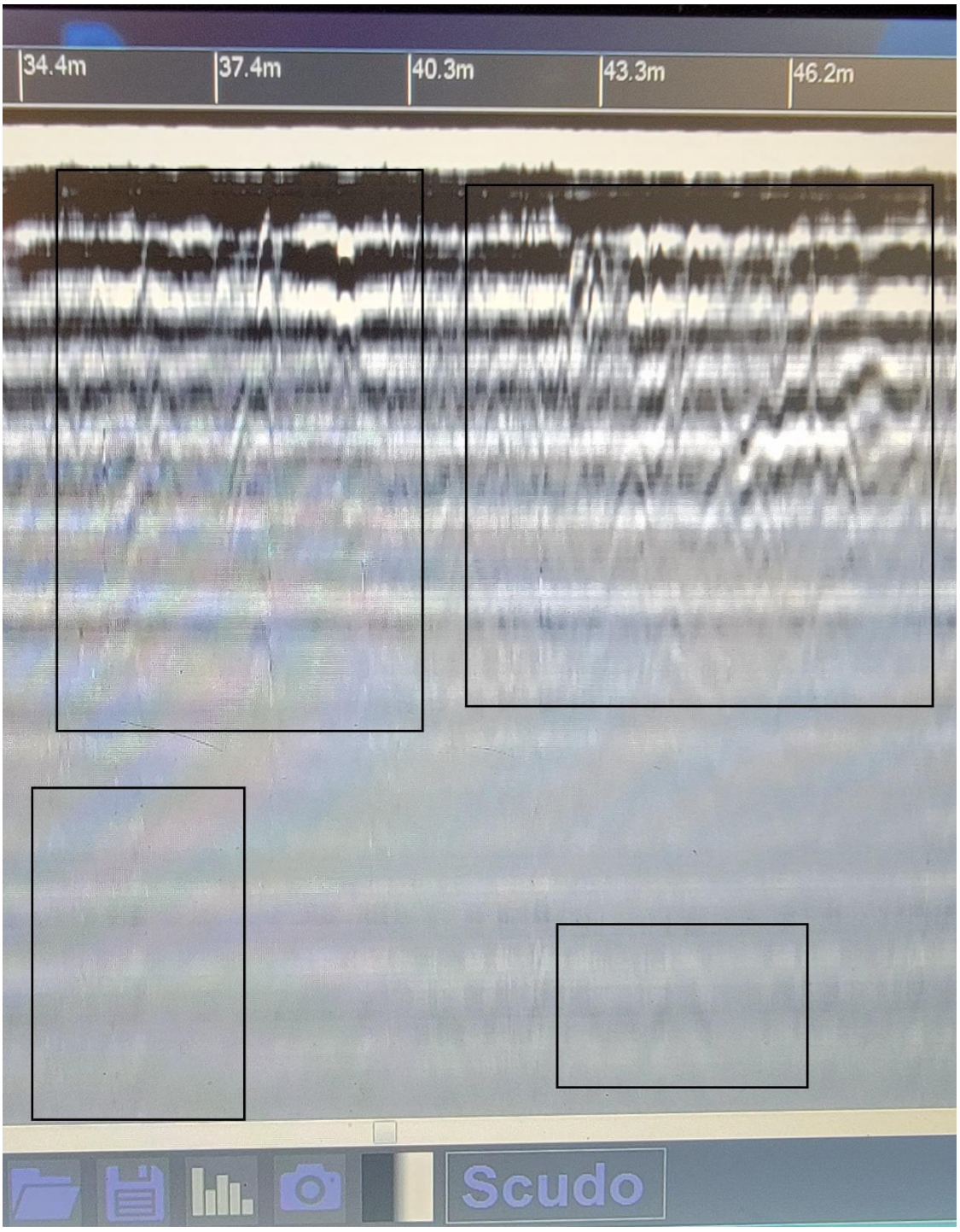

Figure 2 (Author's image)

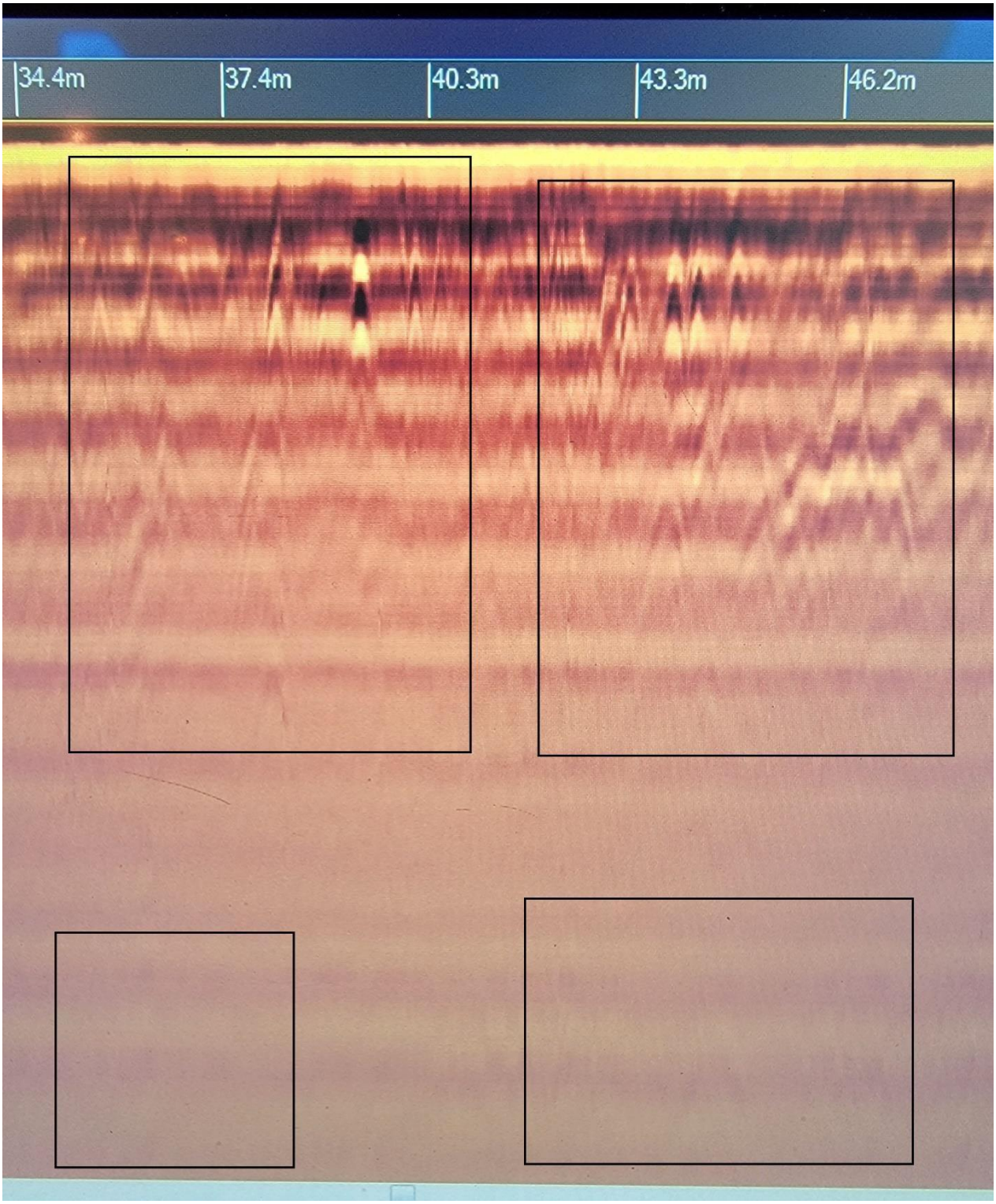

Figure 3 (Author's image)

The reflections indicate a cluster of disturbances between the depths of one and five meters. The area in question spans roughly 10 meters (west to east) and five meters (south to north). The area in question begins roughly seven meters from the wooded area in the "bend" of the cemetery

where there is a 20 to 25 percent downward grade into the woods moving north. The area in question then extends southward an additional five meters towards the “new” cemetery where additional disturbances were noted on several passes (as seen in Figure 4 below).

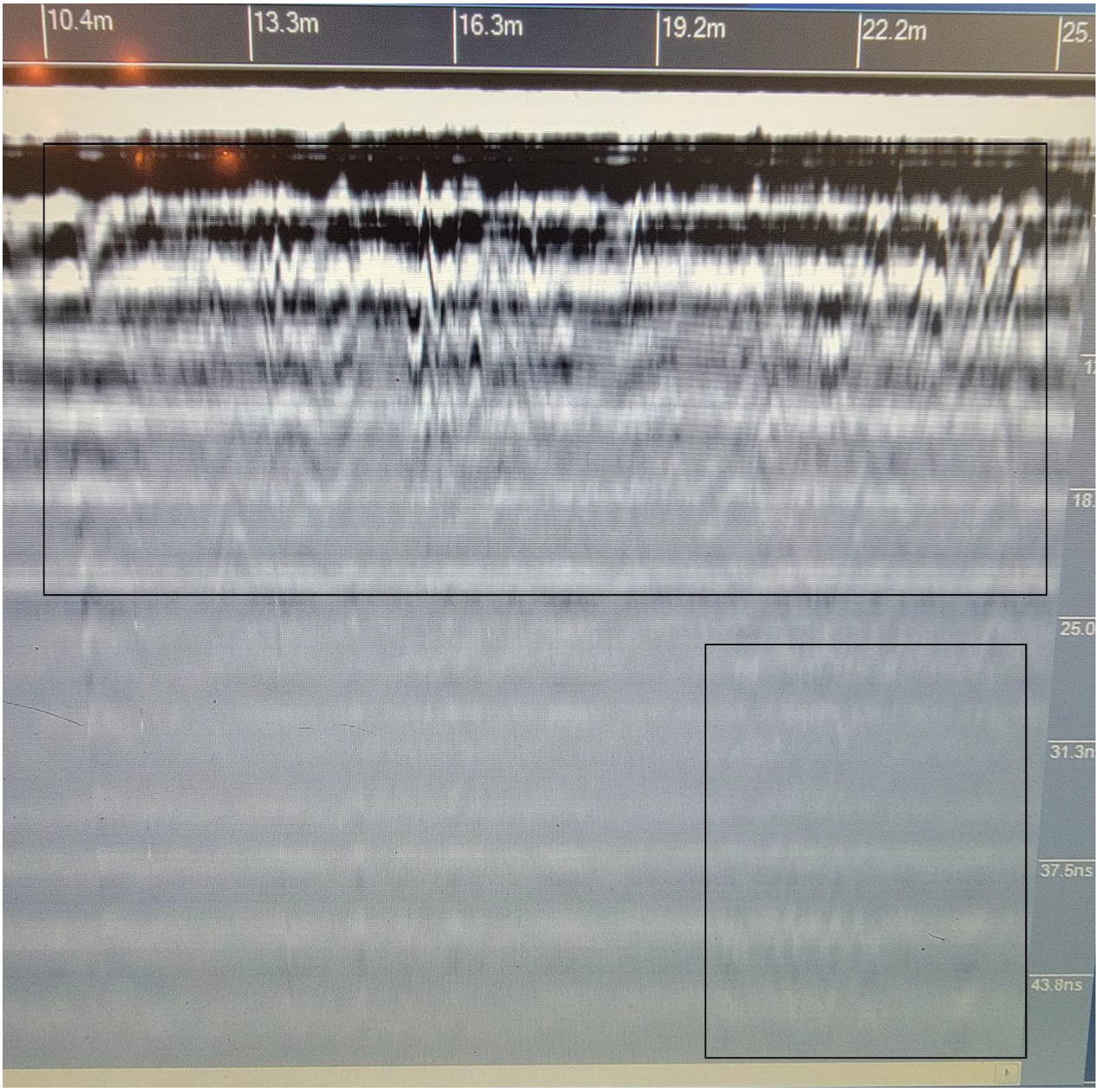

Figure 4 (Author’s image)

The entire position is illustrated by a black dot addition within the previous map (see Figure 5 pictured below).

Figure 5 (Author's UAV map edited by author)

The third set of reflections indicate disturbances in the ground primarily between one and two meters from the surface. However, there is also a small set of outlying hyperbolae at a depth of four to five meters. An early 20th century photograph provided by Mr. Edwards (Figure 6) indicates a large tree was stationed near the field in question approximately 30 years after the Cholera outbreak.

Figure 6 (Image provided by Gordon Edwards)

Although the depth of the photo is difficult to judge, the tree could have been located near the spot in question during the 1873 outbreak. There is a chance that a cavity from a large tree could cause disturbance in the ground similar to what is seen in part of the third reflection image above (Figure 4). However, such a disturbance would likely be relegated to the singular cluster of hyperbolae seen at position 22.2m within the reflection. 22.2m also coincides with a one meter by two-meter location that currently struggles to hydrate and grow healthy grass. This is likely due to a large concentration of subsurface items as seen in the GPR reflection. Whether this is from a large cavity or residual remnants of a tree, or the possibility of ground scarring and a concentration of items is uncertain. There is also a distinct possibility that this area contains several wooden caskets, limited spacing, and shallower graves not representative of those in the western portion of the cemetery.

The additional historical information that a mass grave was dug near a "bend" in the cemetery was critical in understanding the landscape.[4] This information, coupled with the substantial amount of GPR activity not consistent with singular caskets or the remnants of trees, made the position near 36.29624, -82.46932 the most likely at the time. However, during the late stages of 2022, a position slightly to the north (36.29628, -82.46924) was cleared of brush that prevented a proper geophysical survey in March of the same year. With the new area positioned on an actual "bend" in the cemetery (of historical importance based on the information provided by Mr. Edwards), an additional scan was warranted.

In April and May of 2023, the author conducted multiple scans of the new area illustrated by a yellow star in Figure 7 and a black rectangle in Figure 8.

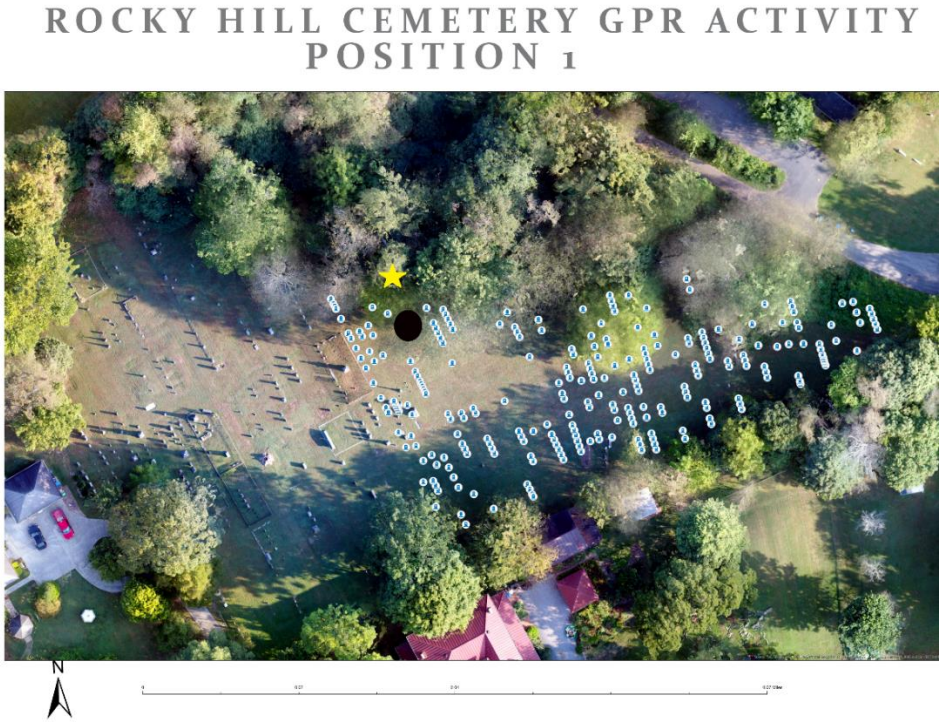

Figure 7 (Author's UAV map edited by author)

[4] Previously, the only description of the mass grave was from an article in the Kingsport Times: See Linda Gregory, Times News Jonesboro Correspondent (Untitled and Undated) (presumably: Kingsport Times News). Gregory mentions a "trench" in association with the Cholera deaths of 1873.

Figure 8 (Author's UAV imagery edited by author)

The new scans produced extremely promising results for a potential mass grave. Location 36.29628, -82.46924 demonstrates GPR activity approximately four meters (west to east) and two and a half meters (south to north). The depth of the large scar (moving upward from left to right just prior to the hyperbola) and hyperbola illustrated by Figure 9 begins more than three meters below the surface (approximately 10ft 8in).

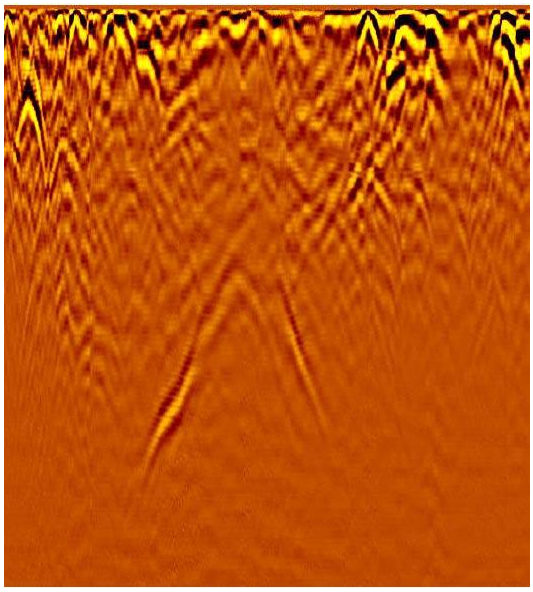

Figure 9 (Author's GPR imagery)

Figure 10 contains two passes at the location. First, moving northeast to southwest. Second, moving southwest to northeast. The Figure demonstrates a large amount of subsurface disturbance before and after the large hyperbolae. The collection of small hyperbolae at 8ft 3in and 49ft 4in result from the tree stationed prior to the bend. The disturbance just prior to 32ft 11in is the result of turning the GPR machine before the second pass.

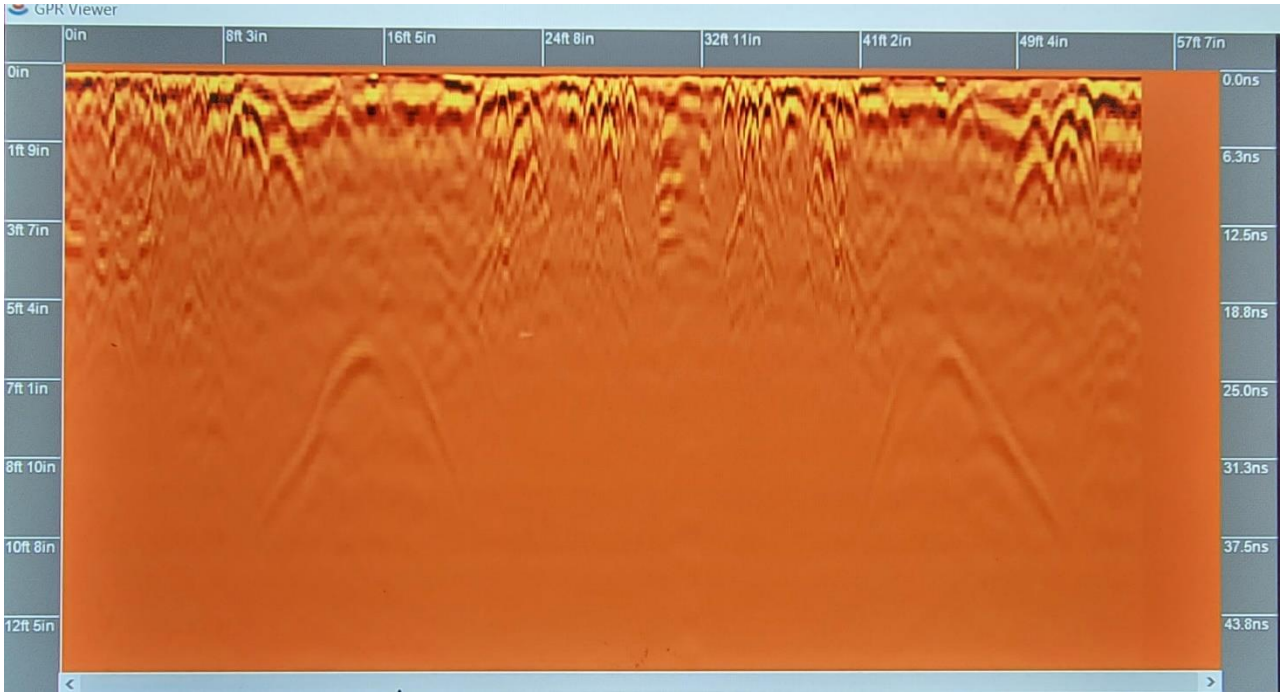

Figure 10 (Author's GPR imagery)

Additional reference points for the "bend" location are represented by Figure's 11, 12, 13, and 14.

Figure 11 (Author's imagery: View north with GPR machine positioned on the easternmost side of the disturbance)

Figure 12 (Author's imagery: View southwest from the "bend" location toward cemetery)

Figure 13 (Author's imagery: View east with GPR machine placed at the easternmost portion of the disturbance)

Figure 14 (Author's imagery: View north with GPR machine positioned on the easternmost side of the disturbance with fence reference in cemetery)

Since 2019, the author has conducted extensive geophysical surveys at the Old Jonesborough Cemetery on Rocky Hill. Over the course of multiple GPR surveys, it is apparent that position 36.29628, -82.46924 is potentially suited for a mass grave. Coupled with the history of a mass grave in the "bend" of the cemetery as well as the presence of promising geophysical activity, this location seems like the most probable within the cemetery for a mass grave. The GPR reflections presented above represent a large subsurface anomaly. Whether this anomaly is a large stone protruding from bedrock, a mass grave, or some other deeply buried objects could only be determined conclusively through an invasive excavation of the site in question. However, the knowledge gained through extensive geophysical, surface, historical, and UAV surveys at location 36.29628, -82.46924 cast it as the most feasible location for a mass grave. At this point in time, the author finds it highly probable that the location of the mass grave resulting from the 1873 Asiatic Cholera epidemic has been located.