Ohio Department of Transportation Research Project Fact Sheet

Geoarchaeological Survey Methods for Enhanced Decision-Making in the Ohio Department of Transportation's Project Development Process

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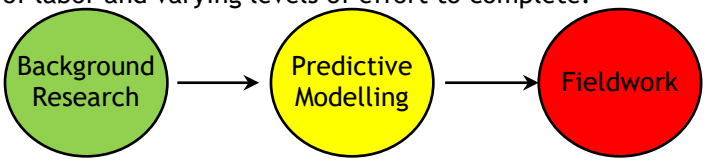
The Problem

The approach to archaeological studies and investigations, especially within a regulatory compliance framework, has remained largely static. Generally, these follow a phased, sequential approach that requires a fair amount of labor and varying levels of effort to complete.

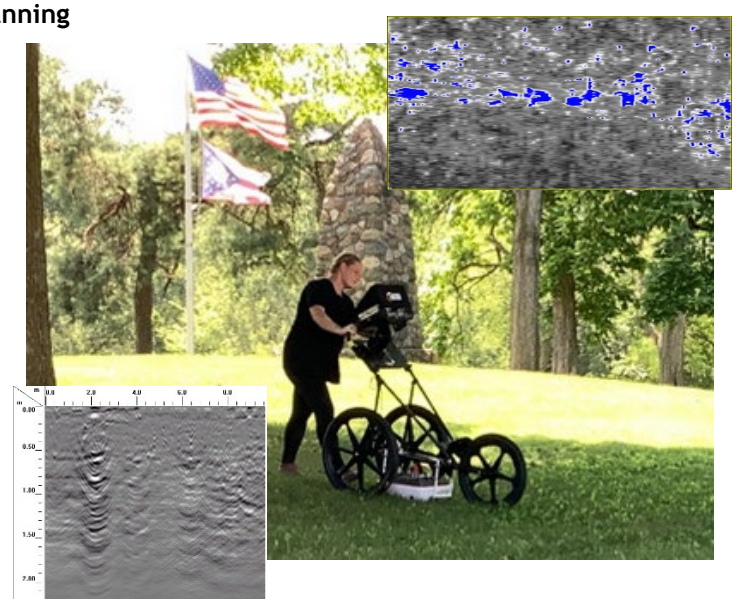


All these approaches are labor intensive, and fieldwork is inherently destructive. This process is imperfect because they all rely on a sampling strategy, which leaves to chance that only a portion of an archaeological site is being investigated and smaller sites or dispersed archaeological features may not be identified at all.

One approach to identify archaeological resources and sites that reduces the level of effort and high labor costs and that is non-intrusive, non-destructive, and often may offer a clearer representation of the nature and extent of an archaeological site and its component features, are geophysical surveys.

Support for Scoping, Risk Management & Project Planning

- Non-Invasive Mapping to Support Alternatives & Routing Analysis
- Conditions Assessment for Resource Sensitivity Modeling
- Locate Earthworks, Structures, Cemetery & Other Buried Features
- Identify magnetic signatures of Prehistoric Features & Historic Battlefields
- Reduce Scopes of Work by Refining Large Areas of Interest to Focus on High Potential Archaeological Zones



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This research was sponsored by the Ohio Department of Transportation and the Federal Highway Administration.

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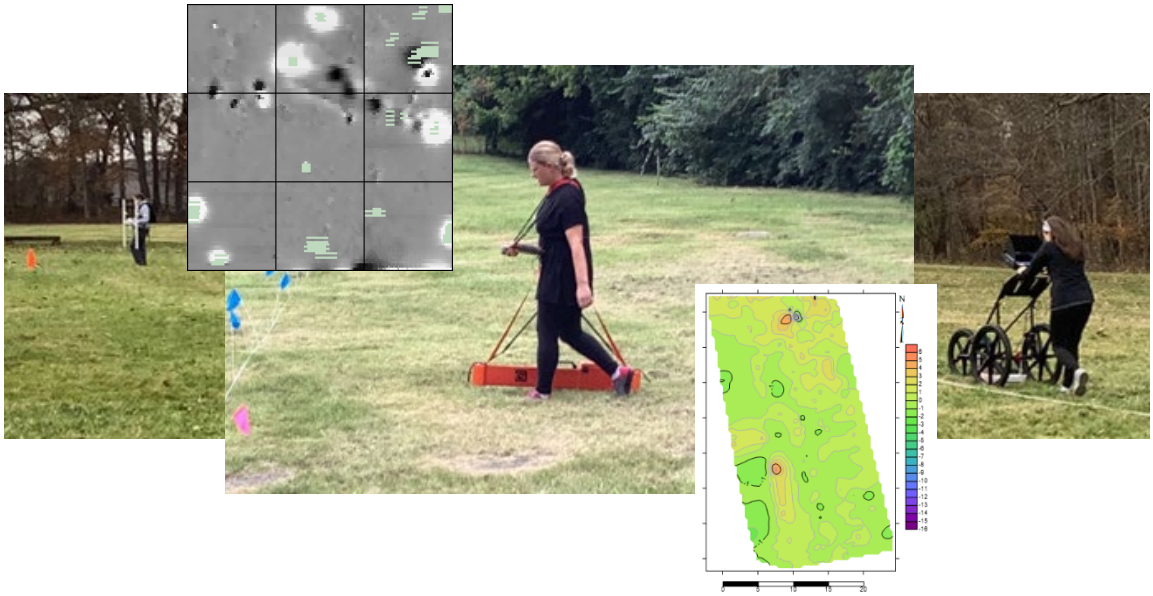
Deliverables

- Geophysical survey datasets that better define a project area
- Strategic & informed advice on scopes of work, budgeting, and staffing
- Geophysical survey imagery: landscapes, profiles, & 3-D Volumes
- Integration of geophysical survey data with other existing datasets (aerial, historic, topographic, & utility)



Research Approach

The objective of this geophysical technical research was to aid the Ohio Department of Transportation's (ODOT) Office of Environmental Services (OES) to provide a baseline understanding of geophysical techniques and their applications to various types of archaeological investigative situations, and to provide recommendations for the implementation of a geophysical survey program. Gray & Pape, INC. provided ODOT and the Ohio State Historic Preservation Office (Ohio SHPO) staff with the opportunity to test and train the recently purchased geophysical equipment: a Bartington Instruments Grad601-2 gradiometer, a GSSI SIR 4000 with a 350 MHz (Mega Hertz) antenna GPR (Ground Penetrating Radar) unit, and a Geonics EM38-MK2 electrical magnetic conductivity meter. This equipment was employed at four locations in and around the Columbus, Ohio headquarters area at Union Village, Fort Ancient, Fort Jefferson and the State of Ohio, State New Insane Cemetery.

Findings

The ODOT staff were taught geophysical survey methods that included how to properly set up a geophysical survey grid, how to use standard geophysical surveying techniques for varying modes of data collection, and how to operate the purchased equipment in the field. The ODOT staff were also taught how to properly process and review the results of the collected datasets.

Recommendations

The ODOT staffers, while incredibly involved and eager to learn geophysical survey methods, were often overwhelmed by the amount of specialized information in the form of equipment and software required to complete geophysical surveys. More time is needed with the equipment in the field and processing lab. The ODOT staff would also benefit from more on-site training, particularly in data processing.

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