ARCHAEOLOGICAL STANDARDS

Technical Guidance for Archaeologists in the State of Michigan

MICHIGAN SHPO STATE HISTORIC PRESERVATION OFFICE

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Geophysical Standards Brief Fact Sheet

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As of 2023, only a handful of projects using geophysical methods are logged into the Michigan State Archaeological Site File. Of the projects that employed geophysics in Michigan, 70% are related to academic research or student theses and 30% are related to Federal compliance projects. These projects include investigating cemeteries for unmarked graves, examining possible Pre-contact mound or earthwork features, identifying subsurface structural features at historic sites, and detecting sites underwater. The Michigan SHPO encourages more widespread use of geophysical techniques in Michigan, particularly as these methods are less invasive and in many cases faster and more economical than traditional survey methods.

Geophysical methods are complex and currently there are no international or national level standards for archaeological geophysics. Because of this, SHPO strongly recommends that researchers and consultants using geophysical methods work closely with our office to develop approaches that fit the specific goals of their project and environmental contexts of their project area. This guidance document provides the baseline expectations for archaeological geophysics in Michigan.

Demonstrated Expertise

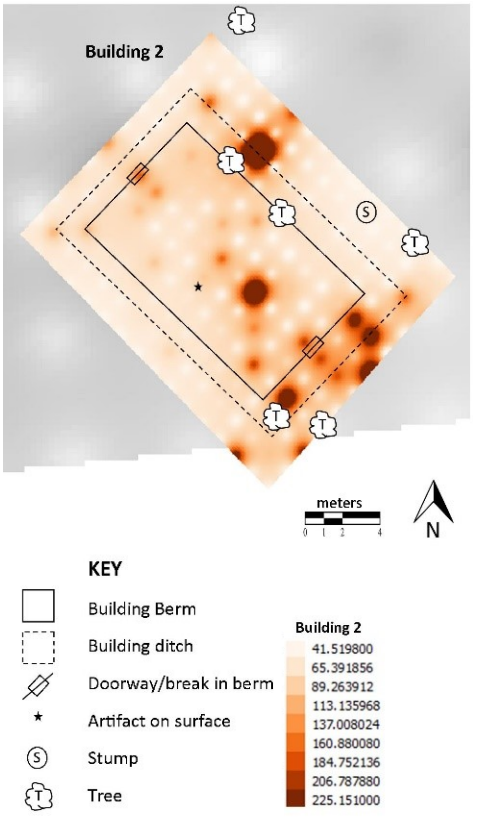
- Consultants and researchers planning to conduct geophysical surveys must include documentation of their training and experience in their research plan.
- Principal Investigators and/or Project Managers overseeing primarily geophysical projects must demonstrate previous experience overseeing geophysical investigations to completion.
- In projects where the scale and geological contexts are complex, a Professional Geoscientist or P.G. (a geologist, geophysicist, or soil scientist), is recommended to oversee geophysical investigations.
- Qualified professional with proven experience in archaeological geophysics must conduct interpretation of geophysical data and classification of geophysical anomalies.
- Copies of CVs for all key personnel must accompany geophysical prospection proposals and reports.

Research Design:

- A clear statement of how geophysical methods are capable of identifying the targeted cultural resources, as well as the limitations of the methodology in the specific contexts where it will be deployed must be included in the research design.
- The research design must demonstrate that there is an understanding of 1) the local geological and environmental conditions in the project area, 2) how the geophysical equipment will perform in these conditions, and 3) the cultural and historical background of the area with clear expectations of the types of features that could be detected (as well as those that cannot be detected) via the selected geophysical method(s).
- The goals of a geophysical project should be clearly stated. Geophysical research can be categorized into three general goals: prospection to **identify** areas of archaeological potential and individual strong anomalies; **delineation** to map archaeological sites and features; and **characterization** to analyze in detail the shape of individual anomalies.
- The research design should specify the transect spacing and sampling interval, or spatial resolution of the data. The effective spatial resolution of data collection should be discussed in relationship to the types and size of cultural features expected in the project area.
- Justification that geophysical technology selected is appropriate for detecting the types of features expected. We recommend that a multi-methodology strategy be employed where appropriate, utilizing several different geophysical techniques.
- The research design should detail how data will be collected in the field and the methods for processing data. Provide an outline of proposed steps for how data will be processed and analyzed for anomalies.
- Geophysical anomalies must be ground-truthed to be verified. At minimum, this should include solid soil coring.

Reporting:

- Geophysical reports are expected to follow the same SHPO and best practices reporting standards for all other archaeological reports.
- Geophysical reports of completed fieldwork and analysis must be detailed enough that it is possible for an independent researcher to reproduce and remeasure the results of any geophysical survey.
- Provide a detailed description of data collection methods and field conditions. Include the steps and strategies for data processing and analysis.
- Researchers must maintain a copy of the unprocessed raw data for quality control and to allow for future analysis or reprocessing.
- Include sketch maps of the grid locations including cultural and natural features within and nearby the geophysical grid(s).
- All anomalies must be evaluated for archaeological potential. Clearly highlight anomalies in figures and discuss possible cultural and/or natural interpretations of the anomalies.
- Environmental conditions of the project area must be discussed in detail vis-à-vis detected geophysical anomalies. For example, in some cases soil conditions and natural inclusions preclude the successful use of geophysical methods.
- Geophysical figures must include a scale bar, a scale indicating the range and magnitude of the data on display, and a north arrow. Both radargrams and interpolated maps should be included for ground penetrating radar data.



Additional References & Resources:

- Ohio History Connection, Archaeology Guidelines Supplement: Geophysical Survey
- EAC Guidelines for the use of Geophysics in Archaeology
- Archaeological Geophysics for DoD Field Use: a Guide for New and Novice Users

The activity that is the subject of this project has been financed in part with Federal funds from the National Park Service, U.S. Department of the Interior, through the Michigan Strategic Fund, State Historic Preservation Office. However, the contents and opinions herein do not necessarily reflect the views or policies of the Department of the Interior nor does the mention of trade names or commercial products herein constitute endorsement or recommendation by the Department of the Interior or the Michigan Strategic Fund, State Historic Preservation Office. This program receives Federal financial assistance for identification and protection of historic properties. Under Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, and the Age Discrimination Act of 1975, as amended, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, age, sex, marital status, or disability. If you believe you have been discriminated against in any program, activity, or facility as described above, or if you desire further information, please write to: Chief, Office of Equal Opportunity Programs, U.S. Department of the Interior, National Park Service, 1849 C Street, NW, MS-2740, Washington, D.C. 20240.