Creating a Spatial Database for Indiana's Cemetery and Burial Ground Registry

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ABSTRACT

This paper presents the collabrative process among several disciplines to implement the cemeteries registration law in the State of Indiana. The paper explains the collabrative process of three professionals with combined discipline of history, law, surveying, and civil engineering as well as numereous citizens to develop a spatial data base in fullfillment of requirements of the Legislature enacted Indiana Code (IC) Section 14-21-1-13.5, Survey and Register of Indiana Burial Grounds. Funding was not attached to the new law, so only one staff memeber has the responsibiiltiy to complete this project. Volutneers and organizational partners have been recruted to help with the complex project. Indiana has ninety-two (92) counties, and the state of data collection of cemetereis varies from county to county, often times from cemetery to cemetery. The abiality and GPS equipment of the volunteers varies as well. The parameters of the project has made the project a challenge.

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1. BACKGROUND

Few landscapes in Indiana are as permanent or as controversial as our cemeteries. Cemeteries have been a part of our cultural landscape as long as people have lived in Indiana. The size, ornamentation, and documentation of these grounds vary with religious affiliation, cultural group, the wealth of families, and the situation surrounding the person's death. Native American burial practices varied widely depending on the time period, cultural group, and family beliefs (Jeane, 1992). Often times the graves were unmarked, allowing nature to reclaim the area. Early settlers may have buried their dead on a portion of the farm, burying family members with marked or unmarked graves. Still others may have lost a loved one while emigrating to a new part of the country; in this instance, the grave may have been along the trail or canal route. As the population, towns and number of churches grew, people buried their dead in community or in religious specific graveyards within the town limits. As churches developed, religious specific burial grounds, where church members could be laid to rest, were developed. Communities, either counties, cities, or townships also developed cemeteries. Again the marking of graves varied. Professionally carved stone markers were expensive and if no carver lived in the community, then the stone would have to be shipped from larger communities, thereby increasing the cost (Owsley et al, 1997). Both historic cemeteries and prehistoric burial areas can be found in every Indiana County. Many of the burials are visible from the surface. Whether an elaborate marker or a small fieldstone, these marked graves are easily identifiable. Others though have no above ground verification of their existence.

These small graveyards, overtime, have gone through a vast array of changes in care. Early graveyards had little care. People planted periwinkle or other ground covering in the cemetery to help keep down the weeds and grass, thereby preventing the need for mowing, which consisted of handwork or grazing animals. The fate of these cemeteries always rested on the livings' willingness to care for them. If a family farm were sold out of the family, the subsequent owners may not wish to spend the time or money to care for the cemetery and stones. When churches closed or towns became deserted, there was usually no one left to care for these cemeteries. The lack of caring for the site causes damage to the stones, which over the years deteriorates them and eventually causing them to snap. Left to just be, nature begins to reclaim the land. Trees begin to uproot stones. Time and weather deteriorate the stones often times causing the stone to snap from the continuous freezing and thawing of the earth (Owsley et al 1997). This stone, lying on the ground, eventually becomes buried by grass, leaves, or other material, making it impossible to find it. The stone, lying on the ground will eventually be buried, making it nearly impossible to find. The above ground evidence of the site is now gone. Still other cemeteries are subject to vandalism. Stones are removed or destroyed making it impossible to know the precise location of graves. Also, until 1999,

farmers could legally remove the stones and plant over the cemetery. Other times the stones were removed and the cemetery simple built over.

The increase in the population also meant more land was needed for development; cemeteries used land valuable for development. If a planned road expansion, building or other development seen to benefit the entire community went through a cemetery, developers simply moved the markers (but often times not the corpses). Early cemeteries were established before the concept of zoning (Traux 1980); most were established without planning or any thought of the future growth of the city or future use of the land. A farmer burying his wife in 1840 on the family farm had no concept of what future uses his land would hold; he never thought about highways, tract housing, or commercial development. Also, settlement patterns were not smooth flowing events, moving from one area to the next in sequential form. But rather it often occurred haphazardly (Schmid, 1968; Hewes, 1986). This means that homesteads, towns, development and cemeteries were not uniform, consistent, or planned.

Knowing the size of the entire cemetery, or the number of people buried within its boundaries is often times not accurate. Until 1930, no laws mandated accurate record keeping. The number of burials in some cemeteries, whether stones are visible or not, is uncertain, making the exact size of the cemetery difficult to ascertain. Adding on top of this the removal of stones, stones being buried, or no stone ever marking the grave makes determining the size of the cemetery almost impossible. This means any construction near a site has the possibility of unearthing human remains.

In recent years the public has become more concerned with the deteriorated condition of historic cemeteries and the number of vanishing cemeteries or cemeteries that are in eminent danger of being lost. For these reasons, in July 2000 the Indiana General Assembly passed IC 14-21-1-13.5, which authorized the Indiana Department of Natural Resources – Division of Historic Preservation and Archaeology (DHPA) to locate and survey every cemetery and burial ground in the state. The Indiana Legislature provided the incentive and the basis for a registry of all Indiana burial grounds with enabling legislation in 2000 and again in 2001. No funds were earmarked for the project, so it was assigned to existing personnel within the Indiana Department of Natural Resources (DNR) Division of Historic Preservation and Archaeology (DHPA). Co-author Jeannie Regan-Dinius, a historian with a Bachelor's Degree in Public History and graduate work in history and urban planning, was appointed Cemetery Registry Coordinator, in addition to her additional responsibilities with the Underground Railraod Initiative project. She was joined by volunteers R. Stephen Hansell, a lawyer and patent attorney who is a registered Professional Engineer and Land Surveyor and is interested in history and genealogy as well as cartography and Geographic Information Systems (GIS), Dr. Hadi Yamin of the Purdue University School of Civil Engineering Technology at Indiana University-Purdue University at Indianapolis (IUPUI) and the Indiana Department of Transportation Division of Engineering Design to help witht he GIS development, as well as hundreds of interested volunteers.

The Legislature enacted Indiana Code (IC) Section 14-21-1-13.5, Survey and Register of Indiana Burial Grounds, as an entirely new section in the DNR Title of the Code, to identify,

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locate, and create a database for and registry of all burial grounds in the State by County. The initial legislation became effective 1 July 2000.

With the raw data from the surveys, the DHPA has begun to create a registry of all cemeteries and burial grounds in the state. Because the number of cemeteries is estimated to be around 125,000, this project will not read every tombstone to document individual burials, tombstone inscriptions, or stone types. Various groups have done these readings in the past or are currently working on projects.

The statewide Cemetery Registry project started in February 2001 when one staff member was hired to begin the daunting task authorized by the Indiana General Assembly. Realizing that one person could not survey every site, and that many local groups had already been working to document cemeteries and burial grounds in their area, the DHPA began recruiting allies for the project. Local partners include historical societies and museums, county historians, genealogical organizations, and preservationists. The formats these organizations have followed when collecting data vary in completeness, but have extraordinary value for accurate research. Staff has also started recruiting volunteers to help with the surveying of individual sites.

DHPA staff created a form; one document will be completed for every cemetery and burial ground. On the survey form general information will be recorded about the people buried in the cemetery, information about the condition of the site, and necessary preservation needed. Fields for information include a variety of topics. For example sections include religious affiliation of the cemetery, ethnicity of people buried at the site, condition of stones, buildings on property, and other bibliographic information regarding the cemetery. How complete the form is will vary from cemetery to cemetery. For some sites, the only completed data field will be location. For others there will be a complete record of the history of the site. Eventually, researchers, genealogists, and preservationists interested in Indiana's cemeteries will be able to use the information gathered.

The most important section of the survey form surrounds the location of the cemetery. Without individual, unique and static location information the database will be useless in future years. Because the proejct works soley with volutneers, a variety of locators will be accepted. This information includes Section/Township/Range, UTM, GPS, or addresses with directions. The later of these will be converted into another format as quickly as possible, but the project did not want to discourage a volunteer from participating just becasue they knew nothing about global positioning systems. With accurate driving instructions from volunteers, DHPA staff can locate the cemetery on county maps or using online mapping systems like USGS or Topozone.com. Once located on a USGS topographic quadrangle map, atleast one point within the cemtery can be marked using UTM or longitude/latitude. Volutneers not having a GPS unit are requested to give conventional lenght/width measurments.

Once all information is gathered, volunteers and staff will begin mapping the sites, inputting the information into a database, and placing the information online for researchers to use. Future goals for the project include placing the information on the web in a searchable database format. The data will be linked with a geographic information system (GIS) to help

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create maps showing the location of all cemeteries. The project will also increase the public's understanding of cemeteries, prehistoric burials, and the preservation of these sacred places.

Another objective of the project is to assist with another law passed by the General Assembly in 2000 was IC 14-21-1-26.5. This law requires that any person disturbing the ground within one hundred (100) feet of a burial ground or cemetery for the purpose of erecting, altering, or repairing any structure must submit a development plan to the DHPA. The database will be a tool that developers and those wanting to build in an area can use to see if their work will impact a cemetery or burial site. The law does not prohibit the construction near a cemetery (once the development is approve through the DHPA office) nor does it prohibit the moving of cemeteries if the proper permits are acquired through the State Department of Health. What this law does do is require builders to take into account a cemetery into their development plans.

Cemetery details among Indiana's 92 counties varied widely. As noted above, many family plots have been lost because there simply was no structured means by which to maintain them. Indiana DNR Division of Historic Preservation and Archaeology is using a variety of organizations with members who have vastly different backgrounds and skills. Organizations involved include, the Natural Resources Conservation Service (formerly Soils Conservation Service), the POLIS Center, coal and sand and gravel mining operations, mortuaries, Land Surveyors and engineers, county officials, the Indiana Department of Transportation, Agricultural Services, the Indiana Historical Society, county and local Historical Societies, The Society of Indiana Pioneers, the Daughters of the American Revolution, the United States Geodesic Survey, the Boy Scouts of America, 4-H, the Future Farmers of America, Indiana's Associations of Cities, Towns, and Counties, and school groups.

Data collection is both sporadic and varied; some counties already had undertaken comprehensive cemetery/burial ground identification and registration processes. Most of these groups though were only interested in who was buried in which cemetery. The size of the cemetery and location beyond driving directions were umimportant. In other areas, perhaps a few church or community burial grounds were well indexed and recorded, but others were totally overlooked. As there was no legal mandate or requirement for maintenance applicable to all burial sites, the experience varied widely depending upon the history and nature of the burial grounds. All locations where human remains are interred— regardless of the condition of the remains, the nature or existence of grave markings, or the history of the site—are "cemeteries" or "burial grounds" for purposes of the legislation, and if any vestige of the graveyard or if any written, remembered, or legendary history of a site as a burial ground remains, it is a site to be considered for the cemetery registry.

2. CHALLENGES IN IMPLEMENTATION OF THE CEMETERIES REGISTRATION

The survey form has been created and volunteers and staff have been going performing field surveys (not in the land surveyor sense, but in an archaeological and historical sense) of the cemeteries. Volunteers receive training on how to complete the form, techniques to determine the size of the cemetery, and how to locate graves.

Because of the scope of the project and that only one staff member has the responsibility of the project, there has been a heavy reliance on volunteer efforts and on past efforts completed by local historical societies and genealogical groups. This means that until the information can be confirmed or disproved, then the information about the cemetery's location or size has to be taken as accurate. This has caused many problems when relying on volunteers. Few volunteers have the background training to read topographic maps accurately. Their placement of sites on the maps is often times very inaccurate. Many of the readings done in the 1940s by the DAR or later in the 1970s by groups in preparation for the nation's Bicentenniel do not give accurate locations. With previous readings of sites, small groups of volunteers who had no knowledge let alone experience with topographic maps did the work. Their directions exist of "the cemetery is on the Johnson farm, behind the red barn, two hundred feet from the oak tree." The farm has changed hands, the barn no longer exists, and the tree was cut down. Now, a precise location for that cemetery is not available and researchers must start from scratch when locating it.

For these reasons, DHPA staff decided to use longitude/latitude, Universal Transverse Mercator, and Section/Township/Range for locators for the new database. Every site would have a unique location that is consistent over time. The only requirement to mark these cemeteries is a Global Positioning System (GPS) unit, but there were no funds, other tahn authorization to accept donations, attached to the law and a state budget crunch has limited expenditures. The office has one Garmin GPS unit, which has recently been discovered to be incorrect by 1-9 seconds in its readings, making it less reliable and less precise than desired. Volunteers are using the same types of hand-held units because they are inexpensive, starting at $100 from local sporting goods stores. Even if the office had an elaborate, sophisticated unit it would be impossible to provide one to every volunteer. So, the office and the registry must rely on GPS units that are not 100% accurate.

3. SPATIAL DATABASE

Although the data collection and recordation effort for cemeteries was novel for Indiana, the authors believed that there would be some benefit in initial benchmarking to determine what, if anything, other states have done to identify and protect historic and burial sites. The Cemetery Registry Coordinator contacted other states doing similar suverys. The vast majority of these compliations are being completed by not-for-profits or other volunteer-run groups. The other surveys study are using a variety of locator formats. Because of the popularity of the Garmin GPS unit, this seems to be the most popular system used. Again, because of inaccuarcies of these inexpensive, easily obtained units, the locations are not 100% accurate. Most are not locating the corners of the cemetery, but rather a single point in the cemetery. The State wanted GPS readings on all corners of the cemetery so that an exact size of the cemetery would alwyas be know; this would also let future developers know what the 100 foot buffer zone was in reference to IC 14-21-1-26.5.

Another significant aspect of the study was to establish the type(s) of databases appropriate to the project. At the time of the paper's writing, a database has been developed in Access 2000. Access was used because of the limited budget; Access is on the MicroSoft Office Suite and

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also the Cemetery Registry Coordinator had expeience and a working knowledge of the database. Before the database tables can be populated, the surveys must take place in the field. At the time of writing the paper, there were lists of cemeteries from 56 of the 92 counties; these lists were compilations of the former surveys completed. Only one county had surveys completed and varified by the Cemetery Registry Coordinator. This information is currently being inputted into the database and wils be used for all testing of the GIS system.

A flexible database design would provide both the structure for the initial standardized registry database and the structure for future elaboration and additional layers of detai A spatial data base is being designed to combine the attribute information gathered by the volunteer work force with the Indiana Spatial data stored in the "Mass Storage Unit" of Indiana University to form the needed information for implementation of the Indiana cemeteries registration law.

The survey and subsequent database and GIS project have been in process for only one year, but much has been accomplished in the end goal of protecting the cemeteries from future construction. Because of the work of countless volutneers using their vast array of skills, the Indiana cemetery database will be one of the first in the nation to be completed, using GPS locators and GIS to help map these important historical sites.

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BIOGRAPHICAL NOTES

Jeannie R. Regan-Dinius has a Bachelors in Public History from Ball State University, where she studied also anthropology and American Studies. She has completed additional graduate course work in public history from Indiana University-Purdue University at Indianapolis. She is currently working on her Masters in Urban Planning from Indiana University-Purdue University at Indianapolis.

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Currently she is the Cemetery Registry Coordinator for the Department of Natural Resources-Division of Historic Preservation and Archaeology where her responsibilities include establishing and maintaining a computerized registry of Indiana cemeteries, burial grounds, and archaeological and historical information; archiving and maintaining property and deed information with information on burial grounds or cemeteries; maintaining all records and information acquired or received related to burial grounds and cemeteries; and work with professionals, researchers, and members of the public to partner with the project.

R. Stephen Hansell is a lawyer and Patenet Attorny who is a registered Professional Engineer and Land Surveyor with a stong interest in hsitory and genealogy as well as cartography and Geographic Information Systems. He has volutneered to work the Cemtery Registry Project to help collect information about cemeteries around the State inorder to further their preservation.

Dr. H. Mike Yamin works for the Idniana Departmetn of Transportation as a Highway Engineer. His interests include Geographic Information Systems and how they can be used to better inform the public about information and history. Dr. Yamin is workin witht he porject to assure that the transfer from the database to the GIS makes the data and maps avaialbe for State projects and to the general public.

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