

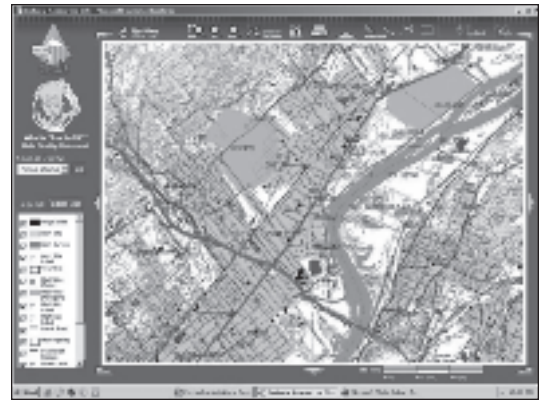
PRESERVING Pennsylvania's Past

Web Tool Locates History near Transportation Project Sites

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For transportation planners, considering the impact a project may have on culturally sensitive sites is critical not only for the success of a project but for preserving historic and cultural resources. The Pennsylvania Department of Transportation (PennDOT), the Pennsylvania Historical and Museum Commission (PHMC), and GeoDecisions—a consulting firm specializing in geospatial solutions—therefore created a web-based application, the Cultural Resources Geographic Information System (CRGIS). With this innovative technology, PennDOT officials working from their desktop computers can explore quickly



CRGIS map of the Forty Fort vicinity with all historic resources shown on a U.S. Geological Survey topographic base (*above*). Map views can be manipulated to zoom, scan, measure distances and areas, and turn on and off individual layers such as road networks, Pennsylvania DOT projects, waterways, and municipal boundaries.

The 1806 Meeting House at Forty Fort, Pennsylvania, a Georgian-style building inventoried by the Pennsylvania Historical and Museum Commission and recorded in CRGIS under key number 086545.

and efficiently the effects of future road projects on historic properties.

CRGIS is a web-based application that contains detailed information on tens of thousands of archaeological sites, historic districts, old bridges, historic farmsteads, and other historic properties in the museum commission files. Through CRGIS, PennDOT officials have saved time, money, and historic resources.

The system evolved from the need to share information among state transportation and historic preservation agencies. PHMC and PennDOT partnered to develop a framework for the CRGIS system. In the initial development stages, maps, tables, and other data were converted from paper records to an electronic format. Rudimentary databases and spreadsheets also were converted to more sophisticated and modern databases.

CRGIS also receives financial support from the Federal Highway Administration, the Baltimore District of the U.S. Army Corp of Engineers, and PHMC. From conception to implementation, the entire project has cost \$3.5 million.

Locating History

When initiating a project, PennDOT project managers, personnel, and contractors are required first to research the geographic surroundings of the proposed site to address and diagnose issues related to cultural resources. In accordance with the National Historic Preservation Act and the State History Code, PennDOT policy requires consideration of the impact a project may have on historically significant properties. CRGIS not only assists in compliance with the laws and regulations but also serves as a tool to avoid delays, budget overruns, or spirited public resistance to a project.

PennDOT project managers must consider the following questions:

- ◆ What historic resources or properties are in the project area?
- ◆ If a specific historic resource is already known,

is it located near the project area?

- ◆ If a resource is located in the project area, is it significant? Can it be compared with others like it?

To answer these questions in the days before CRGIS, all interested parties had to compete for appointments with PHMC's Bureau for Historic Preservation (BHP) in Harrisburg. BHP houses a paper filing system storing cultural resource information for an estimated 20,000 archaeological sites, 2,500 historic districts, and more than 120,000 historic properties.

A search for a single project typically could require at least a half-day, including travel time. Sometimes a researcher could end up empty-handed—for example, with no resources found in a project area.

The physical files often were the only copy available, and many files had become damaged by frequent handling and transfers. Moreover, with only one copy of some records, a file could be in use by someone else, could be misfiled, or could have been lost. The realization that the physical information was at risk provided the impetus for moving to CRGIS.

Research Efficiency

In 2000, PennDOT's Environmental Quality Assurance Division took action to reduce the time spent in gathering data and to improve the efficiency of the research. CRGIS eliminated barriers to accessing Pennsylvania's past and brought information on historic farmhouses, archaeological sites, and other documents to a user's desktop within minutes.

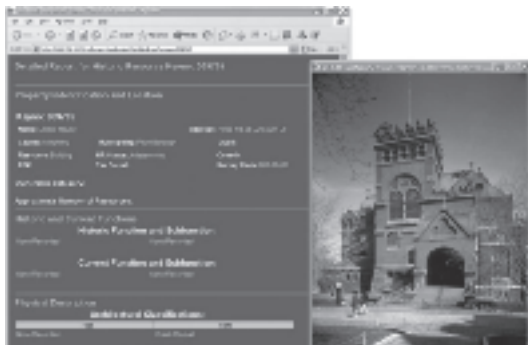
The application stores data about buildings, roads, and objects in the layered format of geographic information systems (GIS). The technology allows CRGIS to map the location of a single, significant historic building and to update the information as needed.

Altogether, CRGIS provides analytical, mapping, and reporting tools for users to locate cultural resources within a planned project area. The package provides

- ◆ Customized reporting and printing,
- ◆ Easy-to-use query tools for locating sites,
- ◆ A mapping interface for viewing data,
- ◆ Spatial analysis tools to determine the presence of cultural resources,
- ◆ Links to photos of historic structures, and
- ◆ Abstracts describing archaeological sites.

For example, PennDOT used CRGIS to identify a prehistoric quartz quarry near a proposed project area in Bucks County. According to the information

Intuitive web portal interface shows CRGIS data for Dreble House in Plum Borough, including photo image.





CRGIS search for historic properties in Allegheny that were used for commerce and trade between 1795 and 1805 and with materials that contain ceramic tile yields a photograph of sample archaeological finds.

in the system, the quartz distribution of this site was not significantly different from that of other sites in the state; therefore, additional archaeological testing would not be necessary. The data helped in balancing the scope of the project with cultural preservation, ensuring that nothing of historical significance would be harmed.

The CRGIS tool also saved time for a development in Franklin County. From the information in CRGIS, PennDOT officials determined that the cultural resources identified did not warrant additional BHP review of the project. With a desktop computer, the project manager was able to evaluate the site and to move forward quickly with the plans.

Officials rely on CRGIS in this capacity daily. PennDOT estimates that the website saves the state hundreds of thousands of dollars a year in travel costs and in BHP resource time for research in the state's archives.

Streamlining Work

CRGIS provides users with a more efficient and visual method of researching cultural resource information and improves accessibility to these resources. The package saves time and money in the early stages of project development, especially in consulting fees, by identifying the cultural resources in the vicinity before a road improvement or bridge replacement project begins.

CRGIS also helps reduce redundant work. The availability of information—such as archaeological reports from previous surveys—eliminates the need to reproduce the same survey for a future project. A survey layer indicates that an area already has been evaluated for archaeological sites.

Moving from paper files to CRGIS has improved information sharing among the organizations and agencies in Pennsylvania that work with cultural

resources. Instead of traveling to a single location, researchers can obtain accurate information about Pennsylvania's cultural resources online. The system's GIS mapping capabilities have helped detect errors in the paper files, such as in the location of a stream. The technology solution also protects and preserves the original paper files.

Adding Functions

CRGIS continues to grow with new features and functions. In 2005, PHMC and PennDOT worked with GeoDecisions to provide deployment on the Internet, allowing the public and business partners access to information about above-ground resources in their community and about general archaeological data without specific locations.

Through the Internet, state historic preservation officers, cultural resource professionals, local municipalities, tourism officials, cultural tourists, and department of education personnel have access to the valuable historical information and can contribute to the process of preserving, maintaining, and fostering awareness of archaeological and historical resources. Sensitive information about archaeological sites, however, remains password-protected for qualified professionals—such as PennDOT consultants and cultural resource managers—to prevent looting or vandalism.

Any user, however, can provide feedback or can report errors directly to PHMC through CRGIS' electronic feedback form. Through feedback and other enhancements, the application continues to evolve with relevant and up-to-date information about Pennsylvania's valuable cultural resources. The current version of CRGIS can be viewed at <http://crgis.state.pa.us>.



Bob Winters, Pennsylvania Historical and Museum Commission, guides a school group through a reconstructed Indian village on the City Island archaeological site in Harrisburg. Via the Internet, CRGIS offers the public information about local historic resources.