



# Transportation Planning: Using GIS to Determine the Presence of Known Cultural Resources

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# Agenda

- Resource Types
- Purpose and Need
- Project History and Milestones
- Platform – Hardware/software
- Demonstration of the Cultural Resources GIS Application
- Benefits and Future Directions
- Question/Answer



# Resource Types

- Historic Buildings – 110,000 statewide



# Resource Types

- Historic Districts – 2,500 statewide





# Resource Types

- Archaeological Sites – 19,000 statewide



# Purpose and Need

- PennDOT must consider project impacts on historic resources
  - What historic resources are already known?
  - What surveys have already been done?
  - How to interpret what is found?



# Purpose and Need

- Pennsylvania Historical and Museum Commission
  - State repository for sites inventory
  - Is consulted on issues of eligibility and effect
  - Provides guidance
  - Research
  - Education



# Challenges

- Only one existing copy – files have been lost
- Only one place to do research–Harrisburg
- Hours of access are limited
- Physical files are in active use and frequently moving from desk to desk
- Maps and files are deteriorating





# USGS Base mapping



# Detail





# Inventory Form – circa 1950

Murray Garden

Square 15' (1/4) of 11 1/2' section 1/4"  
Point Number: 3685  
Square 15' (1/4) of 11 1/2' section 1/4"

Form 1 SITE SURVEY RECORD ARCHAEOLOGICAL SURVEY OF PENNSYLVANIA

Site No.: Mr. 2. Date: 3/2/49

Photo No.: Township: Athens  
City: Athens Observer: C. Lucy

County: Bradford

Geographical location: Dr. Elsie Murray's garden along Susquehanna R.  
715 S. Main St., Athens, Pennsylvania

Type of site: Andaste burial site.

Dimensions and Description: Possibly one acre

Altitude toward observation: AME.

Local topography: River flat.

Relation to nearby sites: Sites above and below it (mixed).

Proximity to stream, spring or lake: Susquehanna and Chemung Rivers.

Vegetation: Garden.

Type of soil: River loam.

Erosion: None.

Cultivation: Garden.

Former excavations or disturbance: 29 graves found in 1882-96.

Report published by: Wyoming Hist. & Geo. Soc., and L.W. Murray in AA (1921).

Buildings on or near site: Murray Residence.

Evidence of food supply: River

XXXXXX material collected: 28 Andaste pots, 4 celts, 1 discoidal, marine shell gorget, 2 pestles, 2 turtle-shell rattles, red ochre, antler comb, small shell beads, copper (?) bracelet, triangular points, bits of mica.

Other material reported as collected from site:

(OVER)





# Other Challenges

- Multiple and non-standardized map bases
- 55-year accumulation of site inventory
- No standardization for data collection
- Primitive (mainframe) search capabilities



# Project History and Milestones

1993	Feasibility Study
1996	Database design & Dictionary
1997	Strategic Plan
1997	Pilot Project
2001	Intranet launch
2005	Internet launch





# Project Partners

- PENNDOT
- Pennsylvania Historical and Museum Commission (PHMC)
- US Army Corps of Engineers
- Penn State University
- GeoDecisions



# Partners – Internet Project

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# Data Structure

- Four Tables
  - Archaeological Inventory (PASS)
  - Historic Structures Inventory (PHRS)
  - Archaeological Surveys (ER Database)
  - Historic Structures Survey (virtual)
- Associated mapped layers on USGS base
- Environmental features as overlays



# Platform Technical Aspects

- GeoMedia WebMap
- GeoMedia Professional
- Oracle 9i
- Programming
  - VB
  - ASP



# Client Side Software

- Internet Explorer 5
- Active X Control
- Windows Image Viewer



# Functionality

- What's in my project area?
- Where is this historic resource?
- What other resources are like this one?  
(Ask ReGIS)





# Demonstration

<http://gisdemo/ce>



# Security

- Sensitive data
  - Archaeological site locations
  - Landowner information



# Security

- Solution
  - Password protected
  - Restricted user requirements
  - Registration of restricted users
  - Tracking of use to machine address
  - SSL, Authentix, and object level security



# Benefits

- Data is now worldwide, instead of one place
- Multiple maps have been integrated onto one map base
- Database dictionary promotes consistent data entry
- GIS unearths data gaps and errors from 50 years of entry.



# Benefits

- PennDOT savings of consultant trips on projects
- PennDOT Cultural Resources Experts can scope projects early on
- Powerful research capabilities with Ask ReGIS



# "Accidental" Benefits

- Public (which includes all Planning Organizations) can now access all above-ground data
- System users can report data errors
- Schools could use CRGIS as a teaching tool on Pennsylvania history/prehistory





# Future Directions – Phase II

- Version 2.0 changes underway. Expect completion by March 2006
  - System was built piecemeal – code is being unified
  - Tables will get consistent look and feel
  - Improving image software
  - Integrate system with Videolog and MPMS
  - Special user level for permittees



# Future Directions – Phase III

- Projected revisions for 2006-07
  - Electronic forms and data entry
  - Customized access for individual groups, e.g. counties, Federally recognized tribes, MPO's
    - Fenced boundaries
    - Automated queries and reports
  - Addition of archaeology sensitivity layer for planning, e.g. transportation planning by MPO's, RPO's





# Cultural Resources Geographic Information System

A cooperative venture of the Pennsylvania Historical & Museum Commission and the Pennsylvania Department of Transportation

## Pennsylvania Historical & Museum Commission

in partnership with PennDOT Bureau of Planning & Research  
and Bureau of Design announces the launch of the

# CRGIS



This web based GIS allows you to view information about historic resources listed in the PHMC files based on spatial searches of the maps - OR - You can Ask ReGIS to find categories of resources and build thematic maps based on attributes stored in the database.

***Qualified archaeological professionals:  
Register now for access to archaeological data.  
(Just read the intro pages and follow the links!)***

<http://crgis.state.pa.us>