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# Developing a GIS tool to support resource management in the Upper Delaware Scenic & Recreational River corridor

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## About the CLUS

- We are housed within the Department of Geography-Earth Science at Shippensburg University
- Vision: To become a nationally recognized interdisciplinary center that that leverages the expertise of SU faculty, staff, and students to promote sustainable land use, economic development, and communities at local, regional, and global scales.



## Areas of Expertise

- Geographic Information Systems
- Global Navigation Satellite Systems
- Physical and environmental sciences
- Land use planning, economics, and transportation
- Applied history and archaeology
- Sustainable business
- Community sustainability
- Grant writing and project management



## What is GIS?

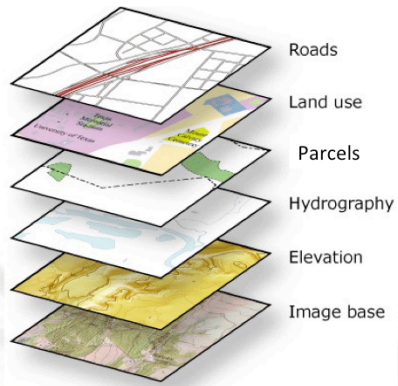
- A geographic information system (or GIS) is a system designed to capture, store, manipulate, analyze, manage, and present spatial or geographical data.





## GIS and land use planning

- Customize the data that you need
- Visualize the data, *all in one place*
- Spatial overlays



## UPDE – CLUS partnership

- **Our objective:** To complete and launch an effective and efficient, on-line spatial decision support tool for substantial conformance and project review.
- **Our target audience:** The GIS tool will be used by the Upper Delaware Partners – local municipalities, counties, states, UDC, and NPS.



**Our objective:** To complete and launch an effective and efficient, on-line spatial decision support tool for substantial conformance and project review. This tool does not change the process of project review or substantial conformance review, it will just make the process easier and more accurate. The accuracy and reliability of all of the data that goes into the tool depends on the original data source – if that original data source is not “survey quality,” the data as shown in the tool will also not be “survey quality.” We will be able to provide information about proper usage of individual data sets as part of the tool.

**Our target audience:** The GIS tool will be used by the Upper Delaware Partners – local municipalities, counties, states, UDC, and NPS. This tool will be built and designed for novice users. You will not need to be an expert in GIS to use this tool. Initially, only groups and individuals directly involved in project review and substantial conformance will have access. The tool is not being designed for the general public.

## Substantial conformance & project review

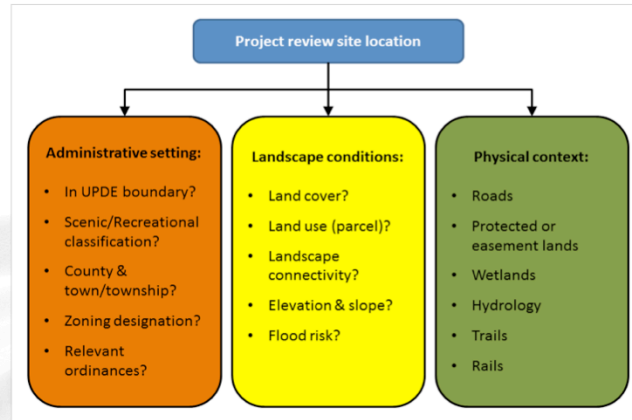
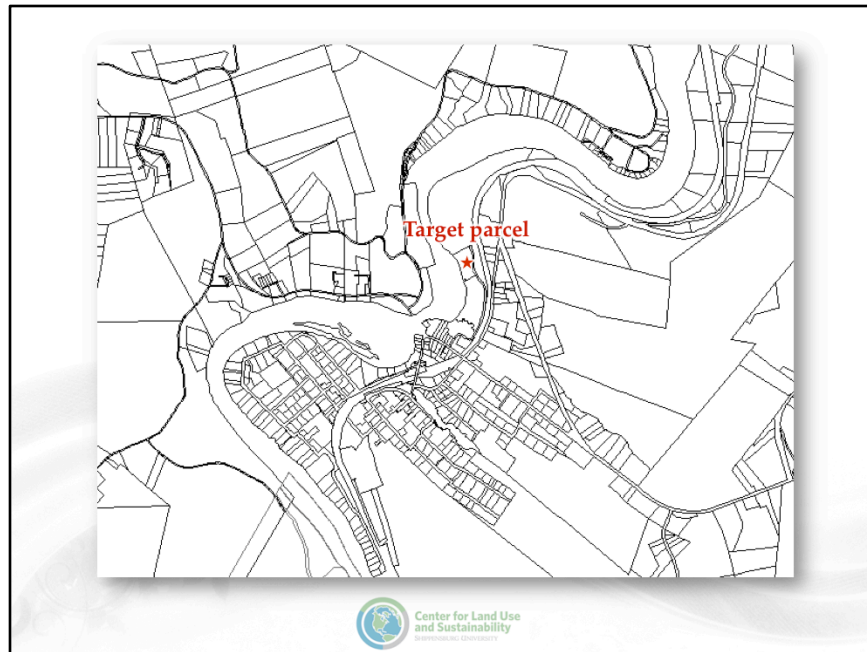


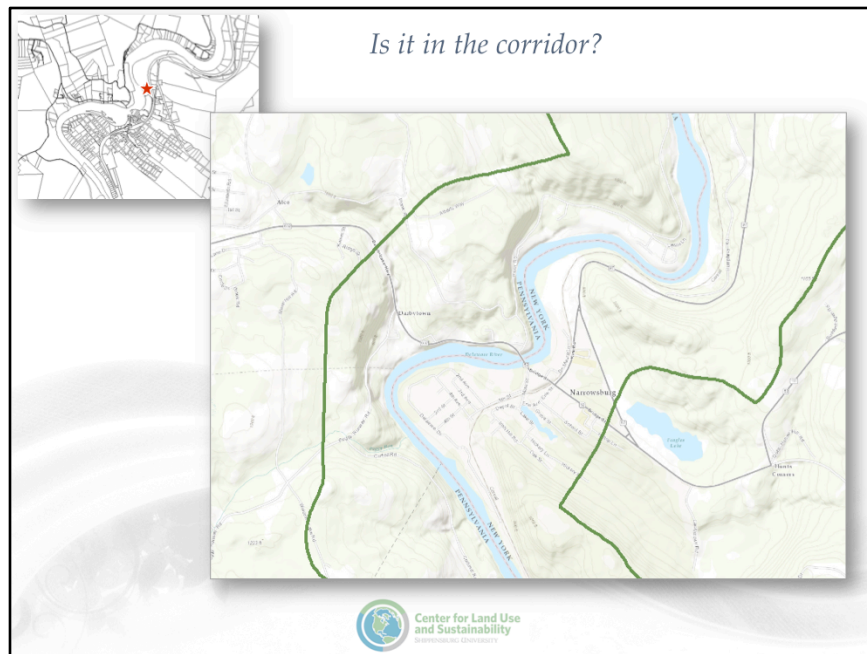
Image source: S.L. Thol 2016



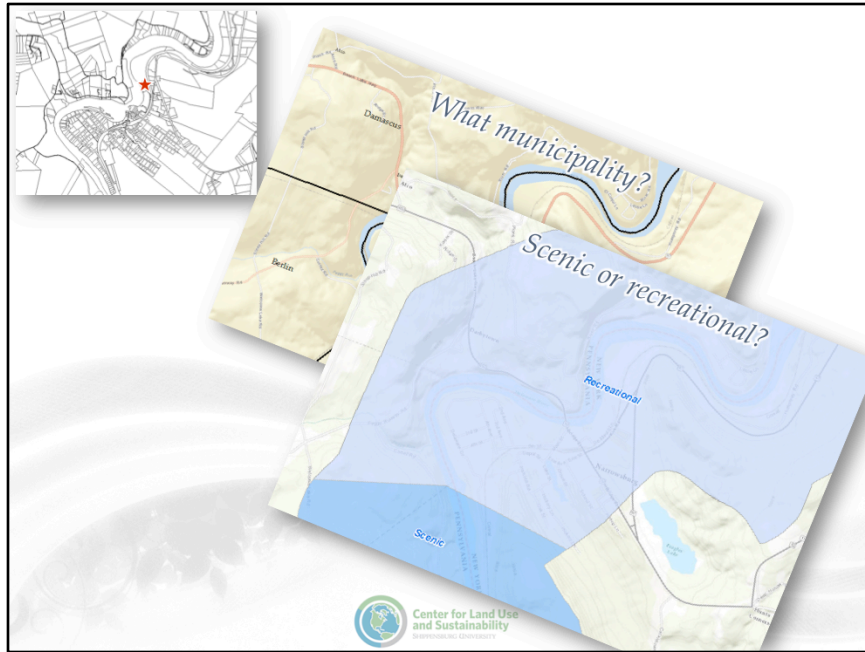
The tool described in this presentation is intended to provide support for the project review and substantial conformance procedures. For example, for project review, users need to be able to locate the property to see if it is in the UPDE boundary and gather other locational information; they need to assess the landscape conditions and physical context. Traditionally, this process required performing mental overlays using multiple paper maps at a variety of scales and extent – as shown in the following example.



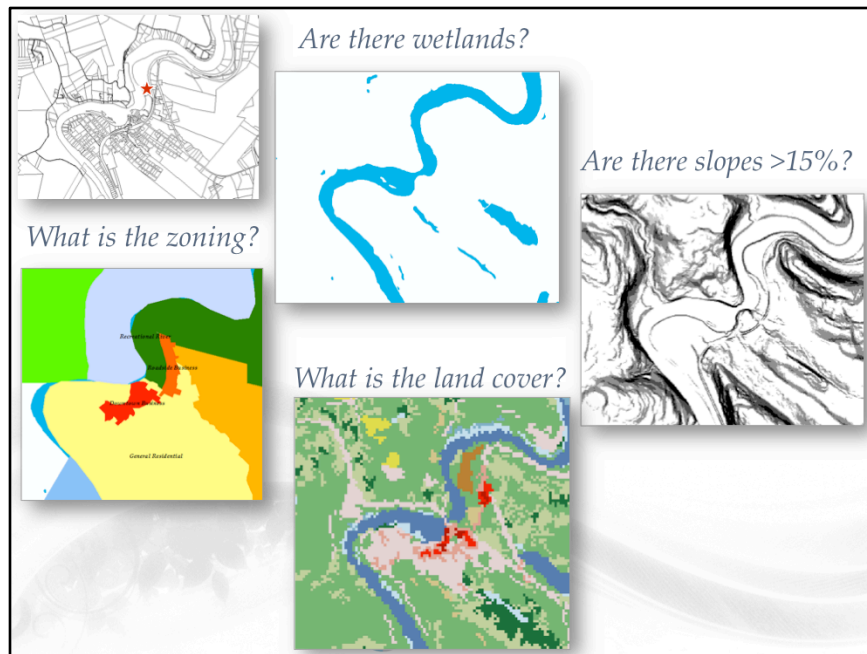
This is a parcel for hypothetical project review that we are using for example purposes. Using the current process, users have to locate the parcel on a paper map...



...then do a series of mental overlays to compare the parcel map with other maps, like a map of the river corridor...

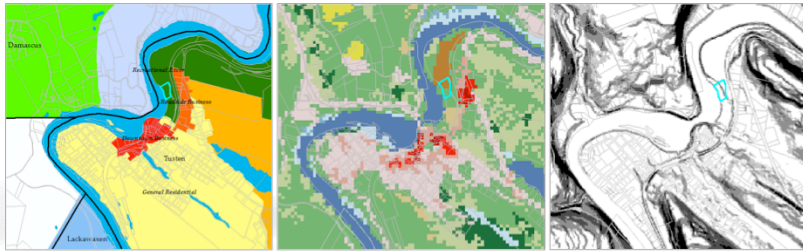


...maps of the municipalities, whether it is in the scenic or recreational section...



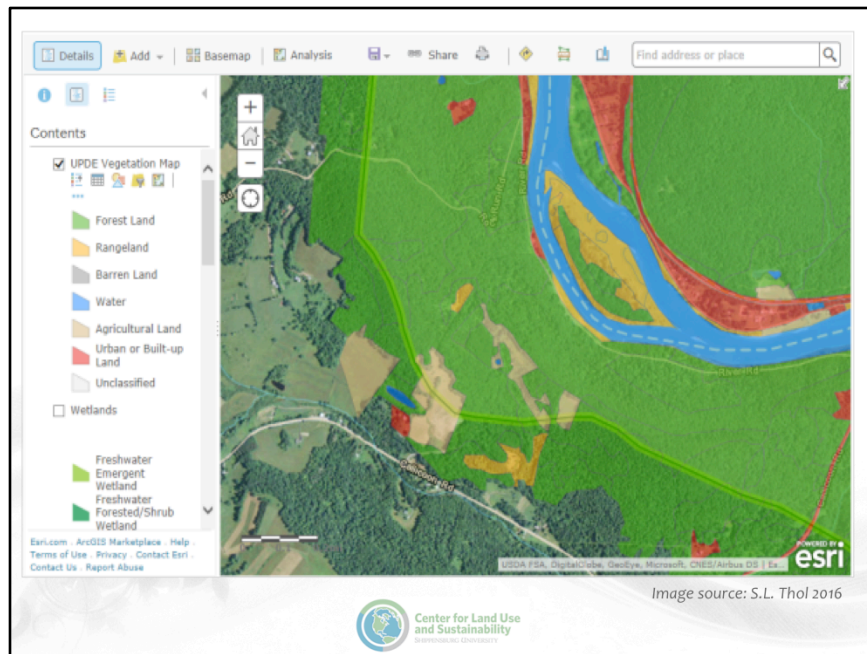
...what the zoning is, whether there are wetlands, steep slopes, what the land cover is, etc.

The GIS tool will allow for quick, easy, and accurate visual assessment



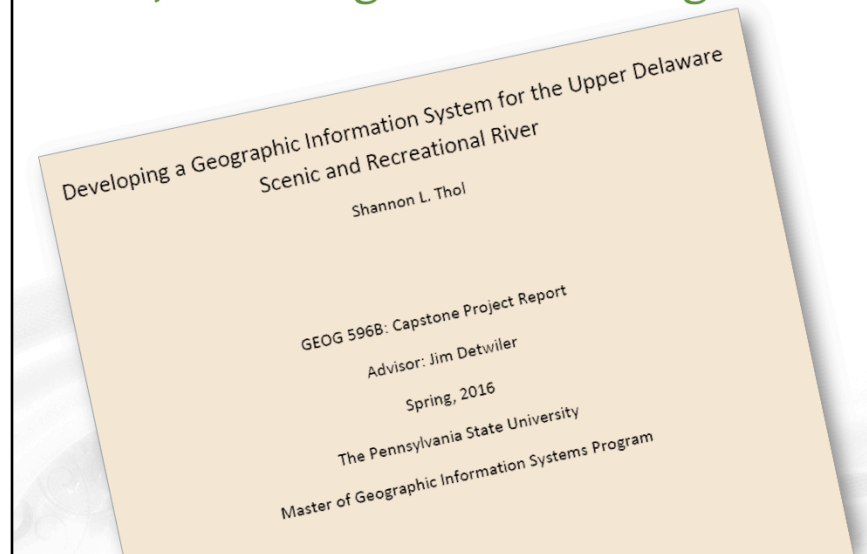
The GIS tool will allow all of those layers to be “stacked” on top of each other so that the parcel in question can easily be assessed relative to all the other spatial data. The tool will allow users to search for a parcel by address, by parcel ID, or by manually searching.





This is a screen capture of a prototype of the tool that was developed by Dr. Shannon Thol.

## Project background and origins



Dr. Thol developed the prototype as part of the requirements for her Masters of GIS. Her capstone report is available on our website at <http://centerforlanduse.org/projects/upde/>

## Moving forward: Project objectives

1. Collect, process, and create web services for data identified as essential components of UPDE's project review GIS.



We will pick up where Dr. Thol left off and will first be reviewing existing data, and updating and acquiring new data as needed.

Information of interest	Required data	Data source
Street address? (for precisely locating sites)	911 point shapefiles	Upper Delaware counties and towns/townships
In UPDE boundary?	UPDE boundary shapefile	National Park Service
Scenic/recreational classification?	Scenic and recreational segments shapefile	National Park Service
County & town/township?	County & county subdivisions shapefiles	U.S. Census Bureau
Zoning designation?	Zoning maps/shapefiles	Upper Delaware counties and towns/townships
Relevant ordinances?	Zoning codes and ordinances	Upper Delaware counties and towns/townships
Vegetation land cover?	Vegetation map shapefile	National Park Service
Other land cover?	Discrete land cover rasters	USGS National Land Cover Dataset
Land use (parcel)?	Tax parcel shapefiles	Upper Delaware counties and townships
Elevation and slope?	Slope raster derived from DEM	USGS National Elevation Dataset
Flood risk?	Flood insurance rate maps and shapefiles	FEMA
Proximate roads and rails?	TIGER/Line® road and rail shapefiles	U.S. Census Bureau
Proximate public lands?	Protected Areas Data shapefile	USGS National Gap Analysis Program
Proximate wetlands?	National Wetland Inventory shapefile	US Fish and Wildlife Service
Proximate hydrology?	National Hydrography Dataset shapefiles	USGS
Landscape context?	Satellite images/aerial photos/topographic base maps	Esri

This list represents the data layers that Dr. Thol already collected, but all will be reviewed for currency and relevancy.

## Moving forward: Project objectives

1. Collect, process, and create web services for data identified as essential components of UPDE's project review GIS.
2. Complete development of a webmapping application for UPDE's project review GIS.
3. Roll out and technical support for implementation
4. Maintain UPDE's project review GIS system so that it remains up to date and relevant.



Objectives 1 and 2 will be our focus in the first year of the project. In the 2<sup>nd</sup> year of the project we will be rolling out the tool, which includes workshops and webinars to train users. We will continue to maintain and update the tool throughout the 5-year duration of our agreement.

## Project contacts

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Thank you!

