Communicating the Cutting Edge: Innovations in Watershed Education

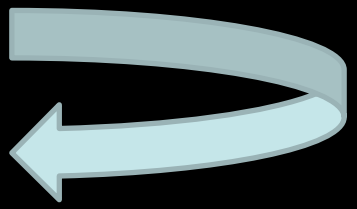
Susan E. Gill, Ph.D.

Director of Education

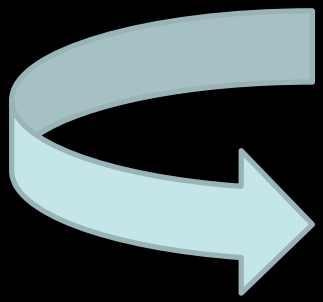
STROUD WATER RESEARCH CENTER

Education

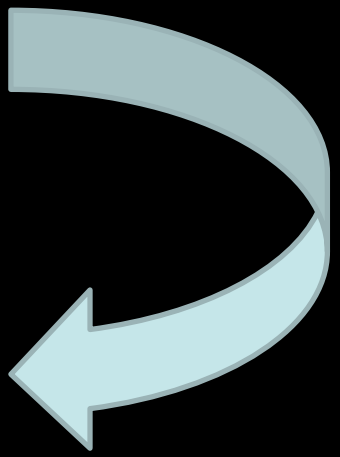
Access to information



Knowledge



Empowerment



Stewardship

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The WikiWatershed™ Concept

- User-driven
- Collaborative
- Virtual knowledge-community
- Organized around ***watersheds***

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The Partners

Stroud Water Research Center

Cartographic Modeling Lab, UPenn

Azavea, Inc.

Millersville University of Pennsylvania

Meliora Environmental Design

Applied Physics Laboratory, University of Washington

CUAHSI Hydrologic Information System

WikiWatershed™ Modules

- Model My Watershed
  - Model
  - Define/Show My Watershed
  - Work in My Watershed
- Monitor My Watershed -
  - Monitor
  - Discover My Watershed
  - Share My Watershed
- Manage My Watershed

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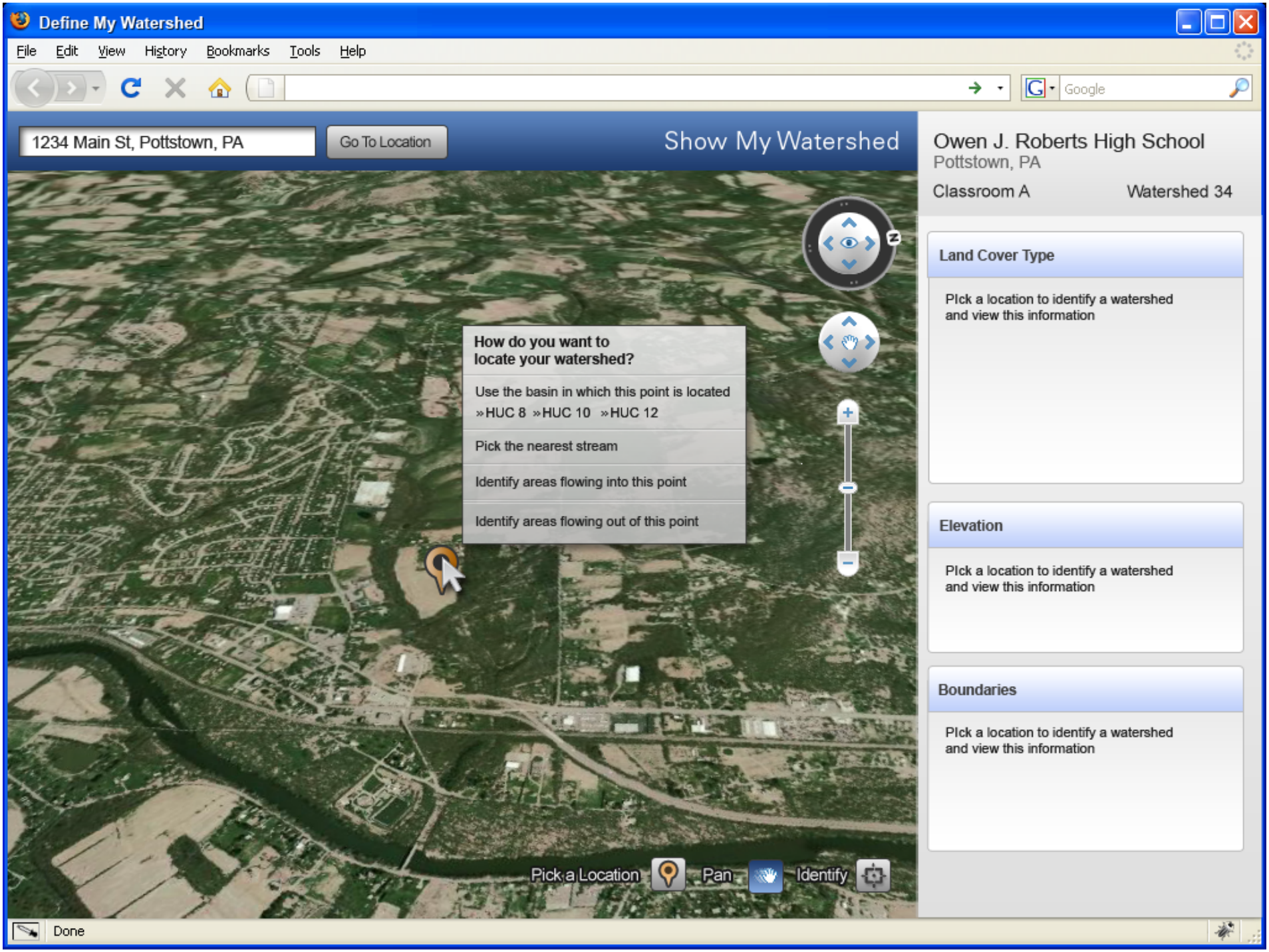
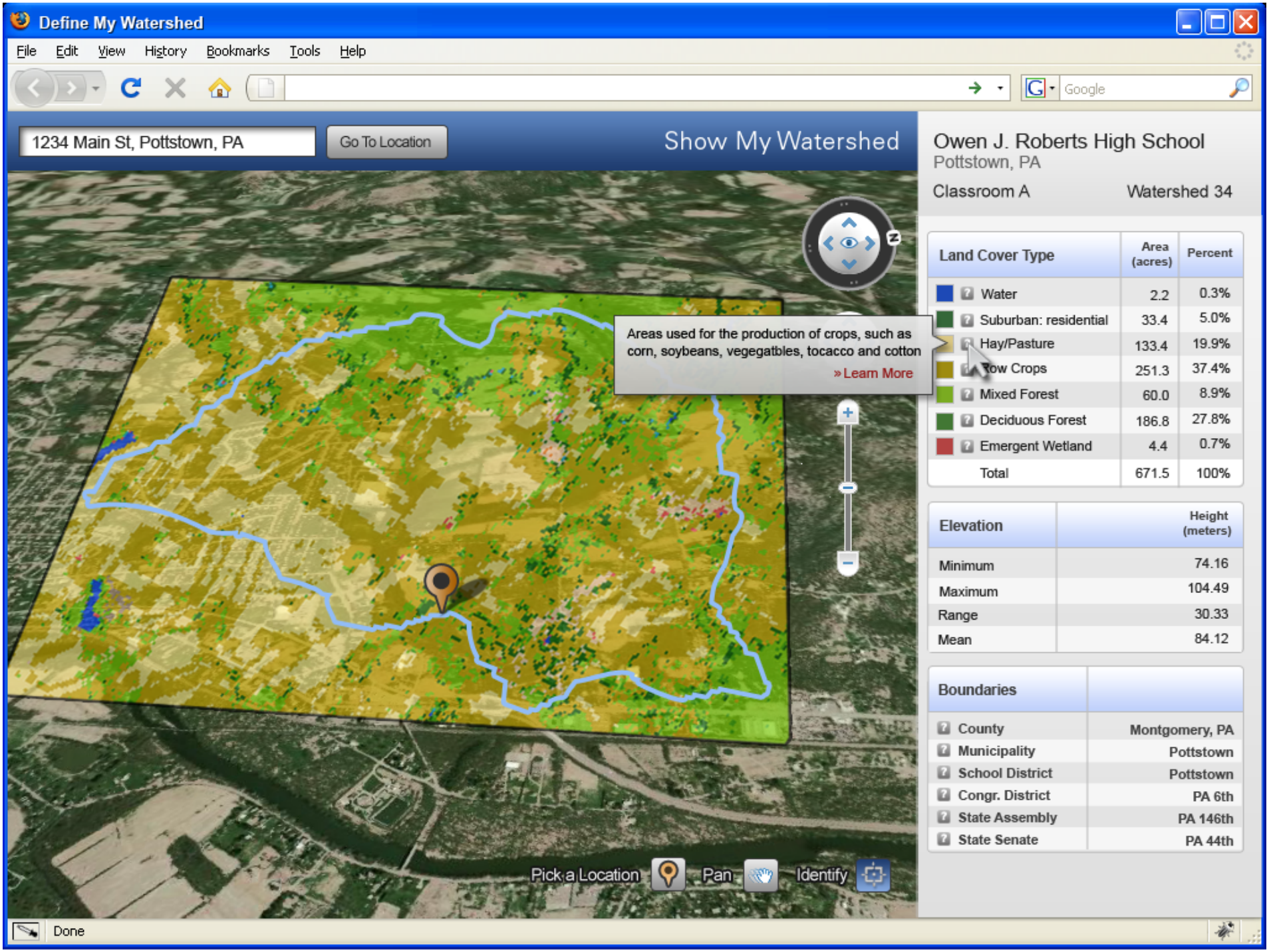
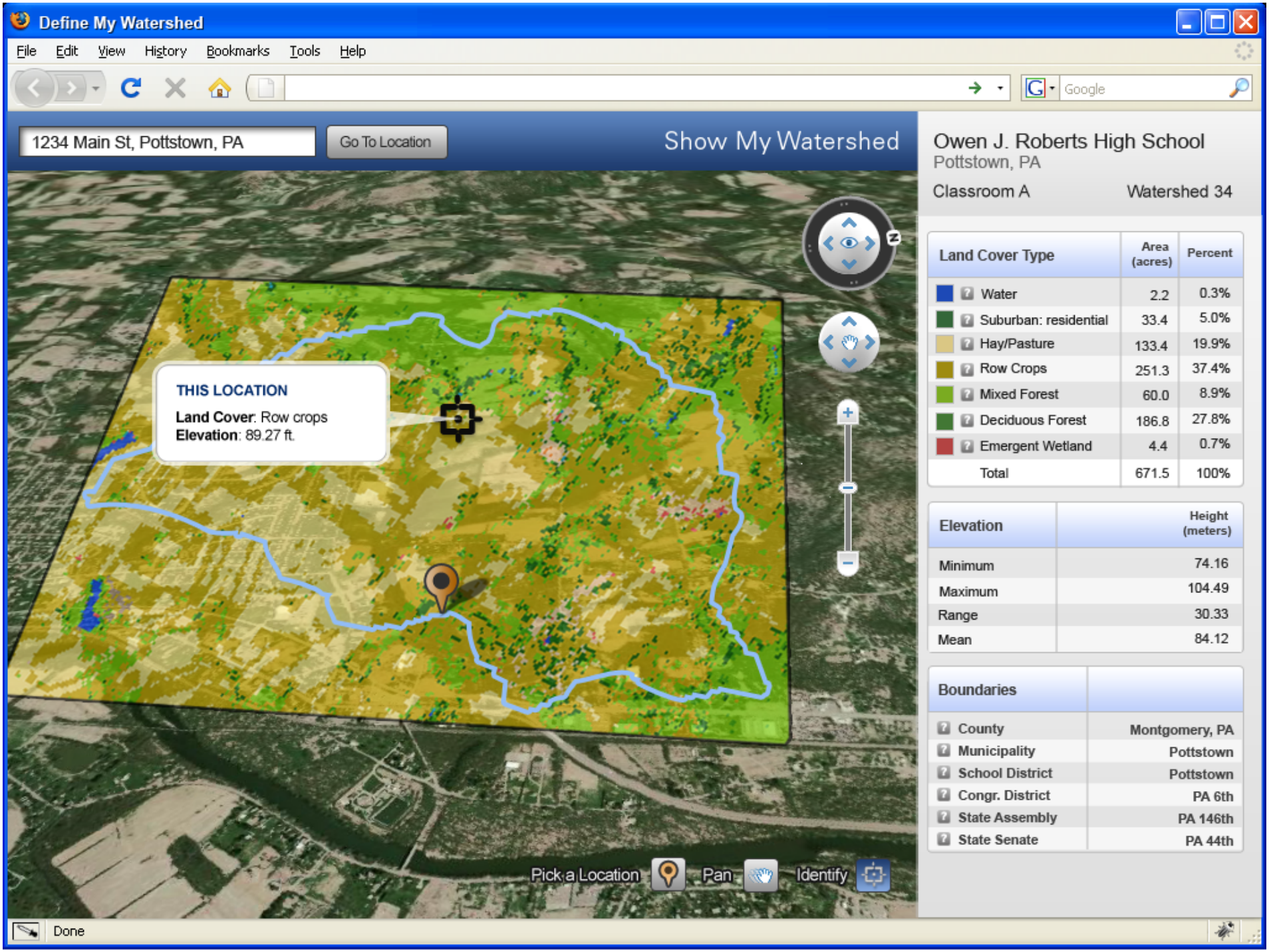
Model My Watershed is a cyberlearning tool that allows students, teachers and citizens to evaluate stormwater runoff in their watersheds and neighborhoods


Define My Watershed
File Edit View History Bookmarks Tools Help
Google
1234 Main St, Pottstown, PA
Go To Location
Show My Watershed
How do you want to locate your watershed?
Use the basin in which this point is located
»HUC 8 »HUC 10 »HUC 12
Pick the nearest stream
Identify areas flowing into this point
Identify areas flowing out of this point
Pick a Location
Pan
Identify
Done
Owen J. Roberts High School
Pottstown, PA
Classroom A
Watershed 34
Land Cover Type
Pick a location to identify a watershed and view this information
Elevation
Pick a location to identify a watershed and view this information
Boundaries
Pick a location to identify a watershed and view this information


Define My Watershed
File Edit View History Bookmarks Tools Help
Google
1234 Main St, Pottstown, PA
Go To Location
Show My Watershed
Owen J. Roberts High School
Pottstown, PA
Classroom A
Watershed 34
Land Cover Type
Area (acres)
Percent
Water 2.2 0.3%
Suburban: residential 33.4 5.0%
Hay/Pasture 133.4 19.9%
Row Crops 251.3 37.4%
Mixed Forest 60.0 8.9%
Deciduous Forest 186.8 27.8%
Emergent Wetland 4.4 0.7%
Total 671.5 100%
Areas used for the production of crops, such as corn, soybeans, vegegatbles, tocacco and cotton
» Learn More
Elevation
Height (meters)
Minimum 74.16
Maximum 104.49
Range 30.33
Mean 84.12
Boundaries
County Montgomery, PA
Municipality Pottstown
School District Pottstown
Congr. District PA 6th
State Assembly PA 146th
State Senate PA 44th
Pick a Location
Pan
Identify
Done


Define My Watershed
File Edit View History Bookmarks Tools Help
Google
1234 Main St, Pottstown, PA
Go To Location
Show My Watershed
THIS LOCATION
Land Cover: Row crops
Elevation: 89.27 ft.
Pick a Location
Pan
Identify
Done
Owen J. Roberts High School
Pottstown, PA
Classroom A
Watershed 34
Land Cover Type
Area (acres)
Percent
Water 2.2 0.3%
Suburban: residential 33.4 5.0%
Hay/Pasture 133.4 19.9%
Row Crops 251.3 37.4%
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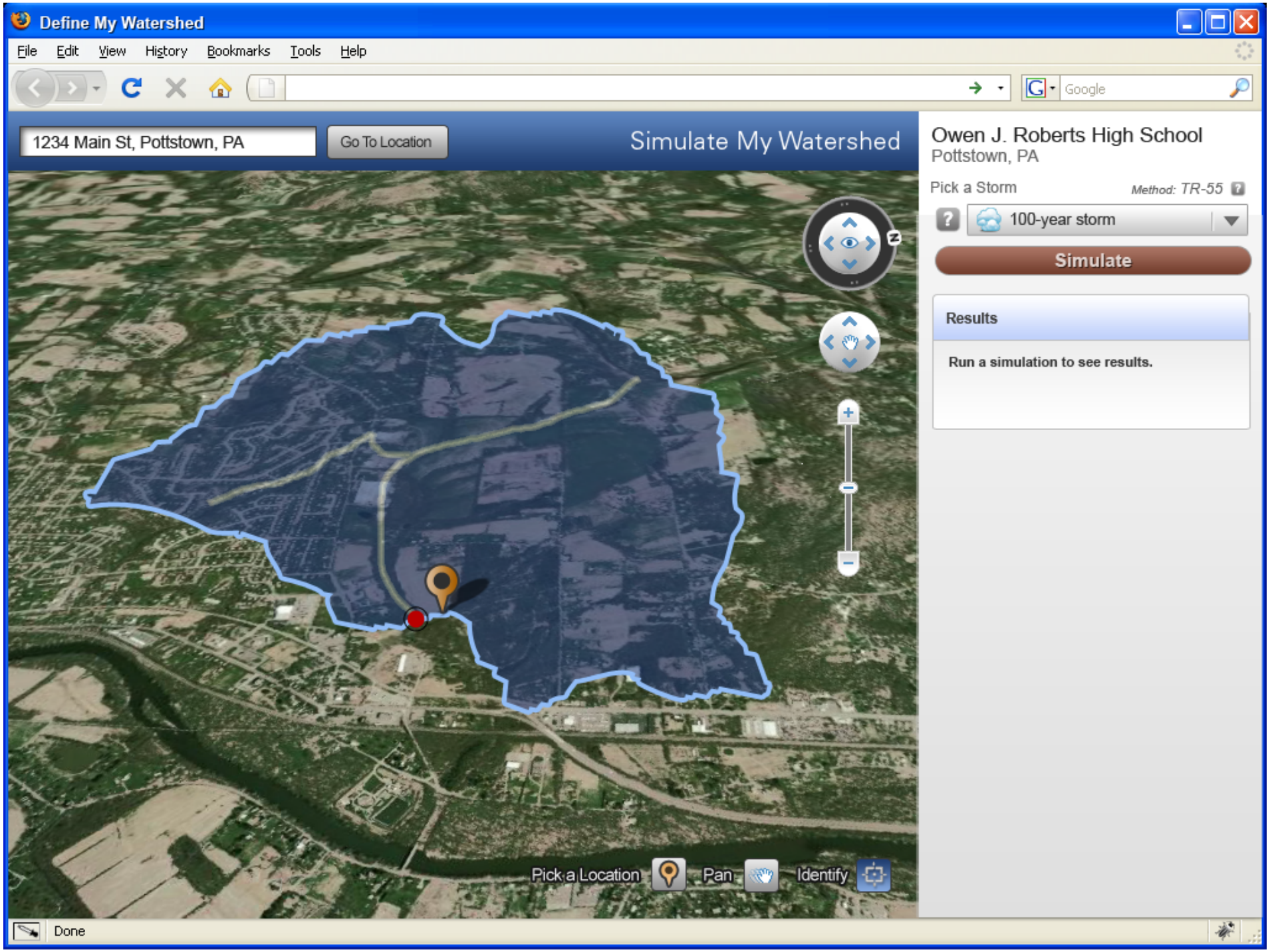
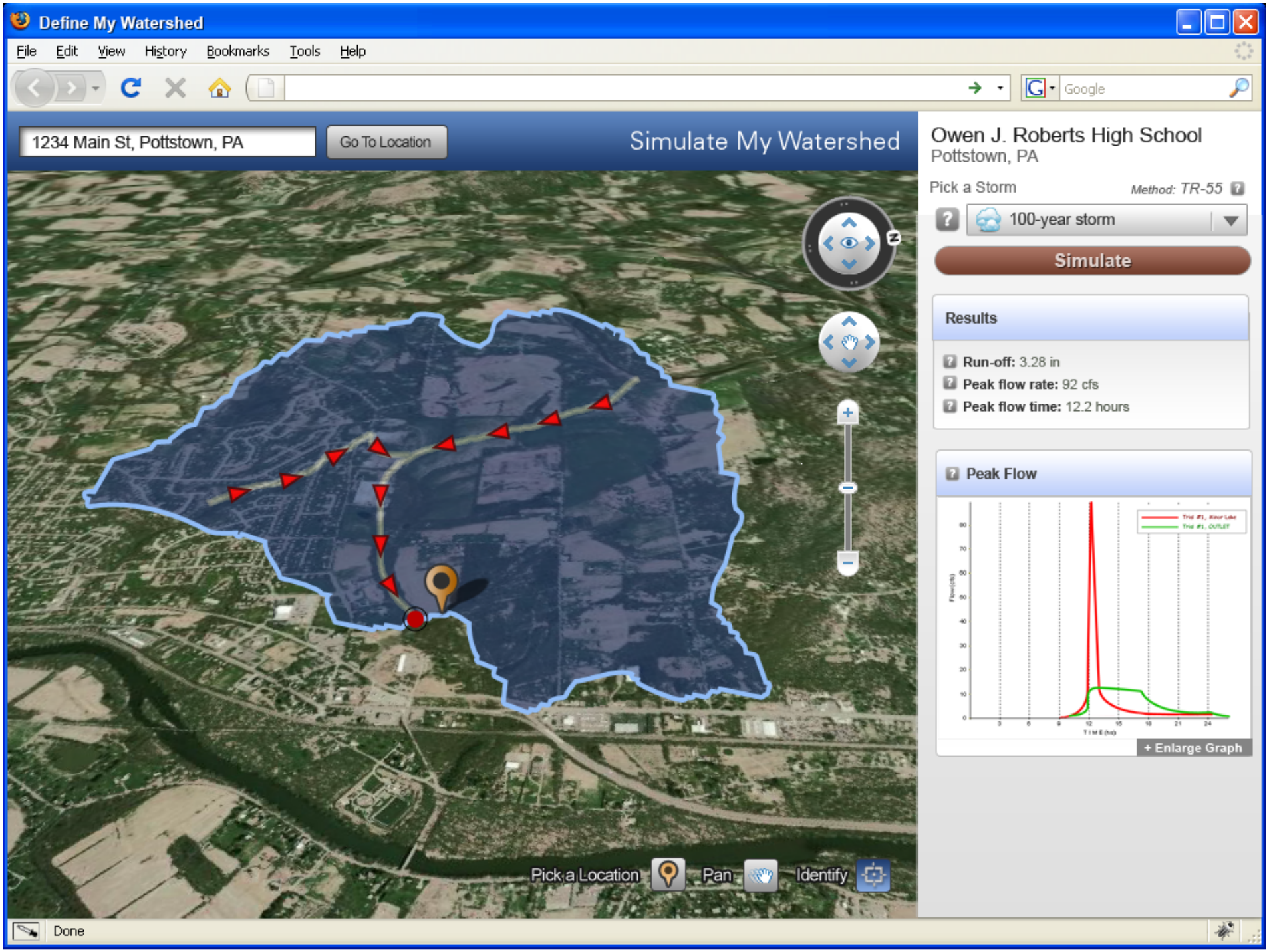
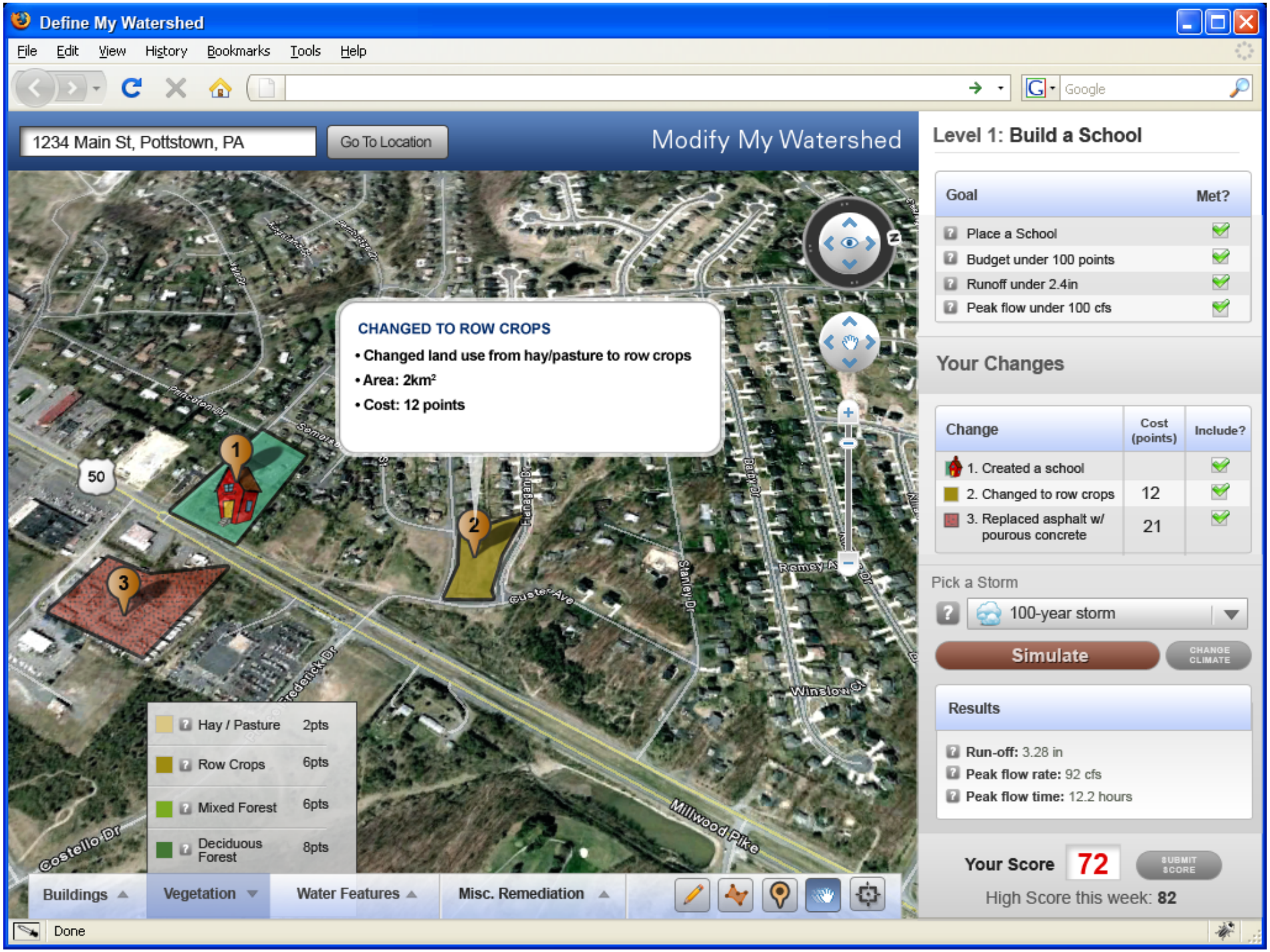
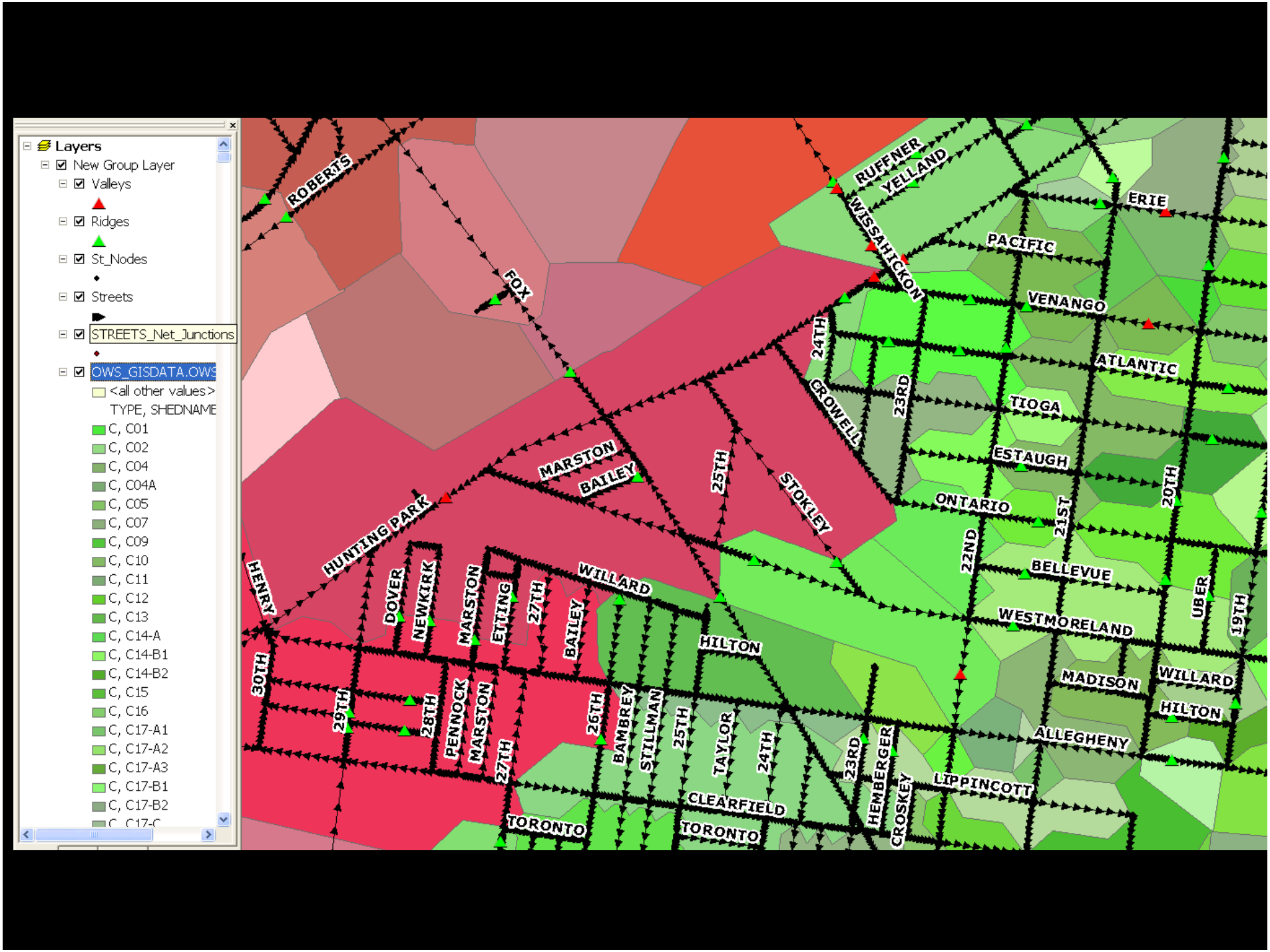

Define My Watershed
File Edit View History Bookmarks Tools Help
Google
1234 Main St, Pottstown, PA
Go To Location
Simulate My Watershed
Owen J. Roberts High School
Pottstown, PA
Pick a Storm
Method: TR-55
100-year storm
Simulate
Results
Run a simulation to see results.
Pick a Location
Pan
Identify
Done


Define My Watershed
File Edit View History Bookmarks Tools Help
Google
1234 Main St, Pottstown, PA
Go To Location
Simulate My Watershed
Owen J. Roberts High School
Pottstown, PA
Pick a Storm
Method: TR-55
100-year storm
Simulate
Results
Run-off: 3.28 in
Peak flow rate: 92 cfs
Peak flow time: 12.2 hours
Peak Flow
+ Enlarge Graph
Pick a Location
Pan
Identify
Done


Define My Watershed
File Edit View History Bookmarks Tools Help
Google
1234 Main St, Pottstown, PA
Go To Location
Modify My Watershed
CHANGED TO ROW CROPS
• Changed land use from hay/pasture to row crops
• Area: 2km²
• Cost: 12 points
Hay / Pasture 2pts
Row Crops 6pts
Mixed Forest 6pts
Deciduous Forest 8pts
Buildings
Vegetation
Water Features
Misc. Remediation
Done
Level 1: Build a School
Goal
Met?
Place a School
Budget under 100 points
Runoff under 2.4in
Peak flow under 100 cfs
Your Changes
Change
Cost (points)
Include?
1. Created a school
2. Changed to row crops 12
3. Replaced asphalt w/ pourous concrete 21
Pick a Storm
100-year storm
Simulate
CHANGE CLIMATE
Results
Run-off: 3.28 in
Peak flow rate: 92 cfs
Peak flow time: 12.2 hours
Your Score 72
SUBMIT SCORE
High Score this week: 82


Layers
New Group Layer
Valleys
Ridges
St_Nodes
Streets
STREETS_Net_Junctions
OWS_GISDATA.OWS
<all other values>
TYPE, SHEDNAME
C, C01
C, C02
C, C04
C, C04A
C, C05
C, C07
C, C09
C, C10
C, C11
C, C12
C, C13
C, C14-A
C, C14-B1
C, C14-B2
C, C15
C, C16
C, C17-A1
C, C17-A2
C, C17-A3
C, C17-B1
C, C17-B2
ROBERTS
FOX
RUFFNER
YELLAND
WISSAHICKON
ERIE
PACIFIC
VENANGO
ATLANTIC
TIOGA
ESTAUGH
ONTARIO
BELLEVUE
WESTMORELAND
MADISON
WILLARD
HILTON
ALLEGHENY
LIPPINCOTT
CLEARFIELD
TORONTO
CROSKEY
HEMBERGER
24TH
23RD
CROWELL
25TH
STOKLEY
MARSTON
BAILEY
HUNTING PARK
HENRY
DOVER
NEWKIRK
ETTING
27TH
BAILEY
WILLARD
30TH
29TH
28TH
PENNOCK
MARSTON
27TH
26TH
BAMBREY
STILLMAN
25TH
TAYLOR
24TH
23RD
22ND
21ST
20TH
UBER
19TH

http://wikiwatershed.org/

http://www.nanoos.org/nvs/nvs.php

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Critical Zone Geoscience Education Project

- Project Basics
  - Place-Based Education
  - Geospatial and Geoscience Literacy
  - Data Visualization and Presentation
- Key Audiences
  - Teachers – formal and informal
  - At-risk Students
- Partners
  - Stroud Water Research Center
  - West Chester University of Pennsylvania

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