

City of Eureka Springs GIS

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IMPACTS Project, Fall 2022

GEOS 2943, Introduction to GIS, Paul Lowrey, Instructor
Northwest Arkansas Community, Bentonville, AR 72712

Introduction

The city of Eureka Springs is a small municipality located in Carroll County, Arkansas. Although the city's resident population is just over 2,000, its unique topography and density of historic resources creates challenges for city management. A lack of a centralized mapping platform compounds the challenges associated with long-range planning for utilities, infrastructure, and emergency management. This project delivers the first phase of a centralized GIS platform for the city.

Project Overview

This project created a centralized GIS mapping platform which includes:

- **Property Information**
 - Zoning map (digitized for the first time)
 - Historic preservation districts and property-level information
 - Conservation easements
 - City-owned properties
- **Emergency Management**
 - FEMA Flood Map
 - Downtown fire district
- **Public Works**
 - Sign assets (Survey123 application)
 - Snow removal policy map

Community

This project serves the residents of Eureka Springs, specifically city staff who make long-range planning and infrastructure decisions. This mapping platform will assist in the assessment of property threats, visualize development patterns, and plan infrastructure improvements. City staff will access the map through the organization page on ArcGIS Online and a public-facing version will be embedded into the city's website.

For this project, key community contacts were:

- Kyle Palmer, Director of Planning & Community Development, City of Eureka Springs
- Simon Wiley, Deputy Director of Public Works, City of Eureka Springs
- Robert "Butch" Berry, Mayor, City of Eureka Springs
- Joseph Jilek (University of Arkansas), GIS Intern, City of Eureka Springs

Curriculum

- Import, store, and manage geographical data from a variety of sources.
- Organize layers, including such tasks as layer activation, hierarchy, and manipulation of layer display properties to optimize visual effect.
- Find and query spatial data by location and non-spatial data by attribute.
- Create and analyze new data by creating spatial relationships between multiple datasets.
- Display results in a variety of formats, including map, report, and graph.
- Utilize skills to create a GIS product for analysis of local problems, as a final group project (EMPACTS component).

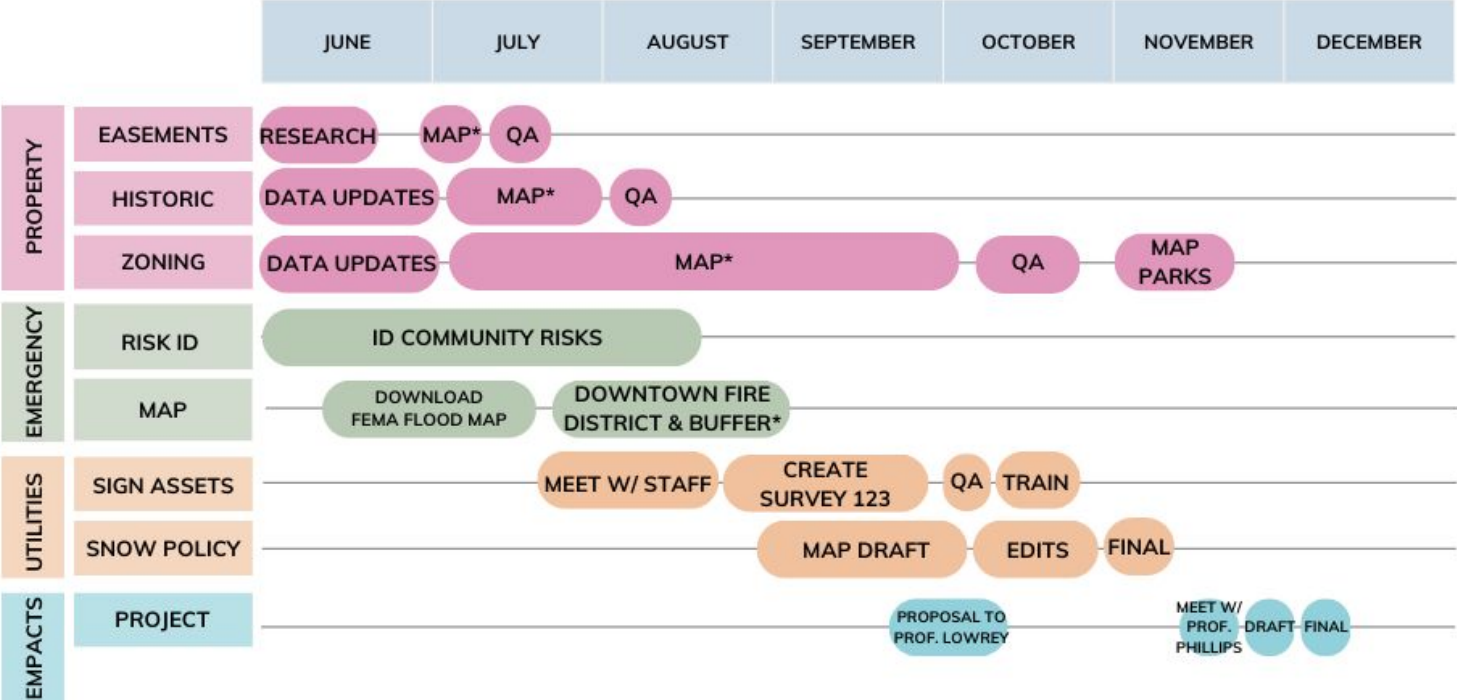
Methodology

This project actually started before my enrollment in this course, but I soon realized that additional skills were needed. During my time as the Director of Planning & Community Development for the city, I hired a GIS intern who facilitated the digitization of the city zoning map, which was previously only available as an imprecise, and often incorrect, PDF. After skill building throughout this course, I used ArcGIS Pro to compile a variety of data sets that were siloed in different city departments or not available digitally. I verified and edited property-level information and projected city resources into layers. This was uploaded to the city's ArcGIS organization page for use by staff. Several sample maps are provided as well.

Then after speaking with the Public Works department created a Survey123 application that would allow them to track their sign assets and assess condition and locations for future improvements. Staff can select the MUTCD (sign type), and input information on: materials, location, direction, condition. Photos and notes can also be added. I used this to collect field data as a test and to illustrate the capabilities of the software.

I also created a map in ArcGIS Pro for the new Snow Removal Policy developed by Deputy Director Simon Wiley. Using the street centerline data set from the AR GIS Office, I selected streets by name (attribute) and mapped them according to priority. I also used the parcel data to select the city lots included in the policy and mapped them by priority.

EUREKA SPRINGS GIS PROJECT TIMELINE



*INDICATES WORK DONE BY EUREKA SPRINGS GIS INTERN JOSEPH JILEK (UNIVERSITY OF ARKANSAS)

Outside Data Collection

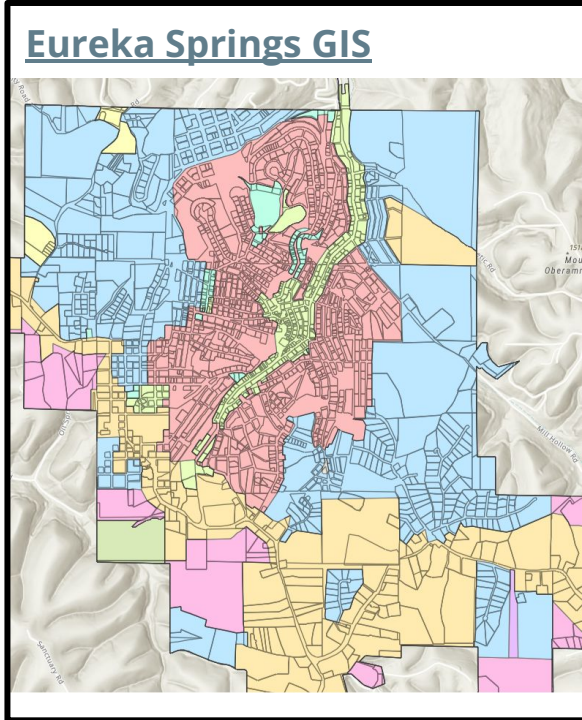
- Eureka Springs 2016 Zoning Districts Map (Digitized by Joseph Jilek)
- Parcel Map ([AR GIS Office](#))
- Street Centerlines Data ([AR GIS Office](#))
- Historic properties information ([Arkansas Historic Preservation Program](#))
- Conservation Easements ([Arkansas Historic Preservation Program](#); Digitized by Joseph Jilek)
- FEMA Flood Map ([AR GIS Office](#))
- Downtown Fire District ([Eureka Springs Municipal Code](#); Digitized by Joseph Jilek)

Personal Data Collection

Data updates and quality assurance was completed using city municipal code and ordinances, a 2005 Arkansas Historic Preservation Program survey of the Eureka Springs Historic District, and city property files.

I used Survey123 to create the Sign Assets Survey, and used an iPhone with the Survey123 app to run the test. Mapping for the test was completed using ArcGIS Online.

Project Results



Survey123 - Sign Assets

Eureka Springs Sign Assets

This survey catalogs information about Public Works signage in the City of Eureka Springs.

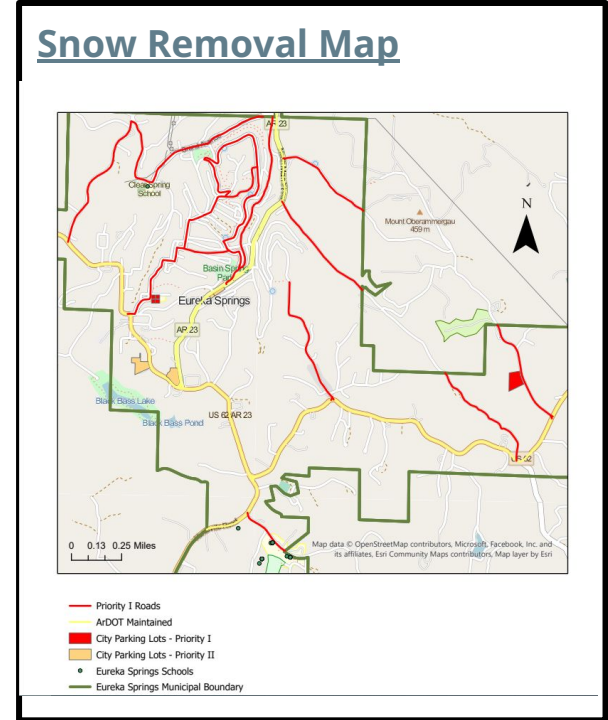
Date

Install Date
Enter the actual or estimated date of sign installation.

Sign ID #

Location*

Tip: This question will try to use your location. Press to continue.



Note: Link is not available for public use.

Eureka Springs GIS

Get directions Zoom to 2 of 3

CR0679

Historic_N	CRESCENT HOTEL
Alternate	
District_N	EUREKA SPRINGS HISTORIC DISTRICT
House_Numb	75.000000
Dir	
Street_Nam	PROSPECT
Suffix	
Town	EUREKA SPRINGS
County	Carroll
NR_Eligibi	3-Listed
Date_Recor	1/3/2002, 6:00 PM
NR_List_Da	1/25/2016, 6:00 PM
Architect	
NAD83X	433889.000000
NAD83Y	4029488.000000
Primary_St	99-Other
Secondary	08-Romanesque Revival

Esri, NASA, NGA, USGS, FEMA | Esri Community Maps Contributors, Arkansas GIS Office, Missouri Dept. of Conservation, Missouri DNR, Texas Parks & Wildlife, Esri, HERE, Garmin, SafeGr... Powered by Esri

Above: Crescent Hotel historic resource data.
Right: Eureka Springs Zoning Map

Esri, NASA, NGA, USGS, FEMA | Arkansas GIS Office, Missouri Dept. of Conservation, Missouri DNR, Texas Parks & Wildlife, Esri, HERE, Garmin, SafeGr... Powered by Esri

Survey123 - Sign Assets

Survey components:

1. Sign Assets Survey example
2. Map & table of assets
3. Feature pop-up example

Eureka Springs Sign Assets

This survey catalogs information about Public Works signage in the City of Eureka Springs.

Date

12/5/2022

08:59 AM

Install Date

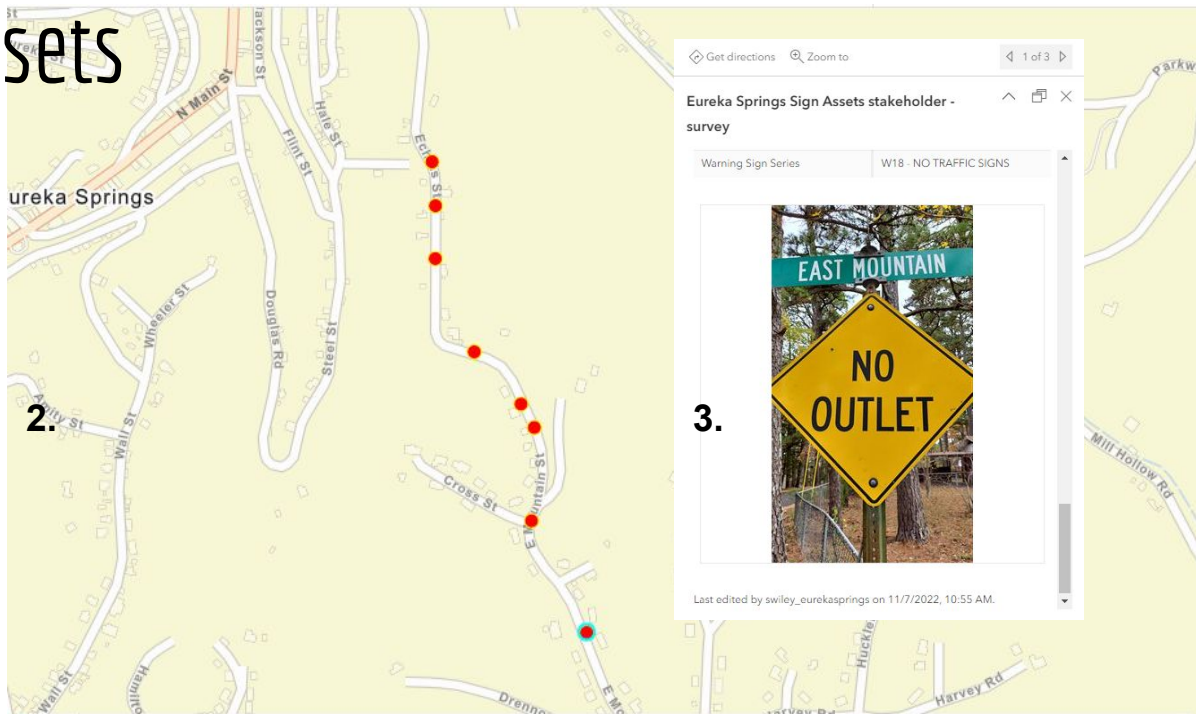
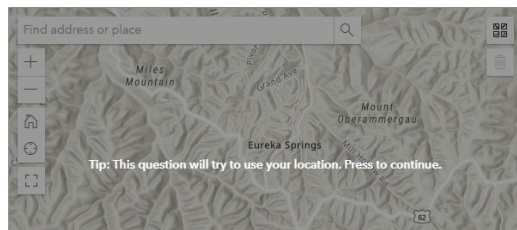
Enter the actual or estimated date of sign installation.

MM/DD/YYYY

Sign ID

123

Location*



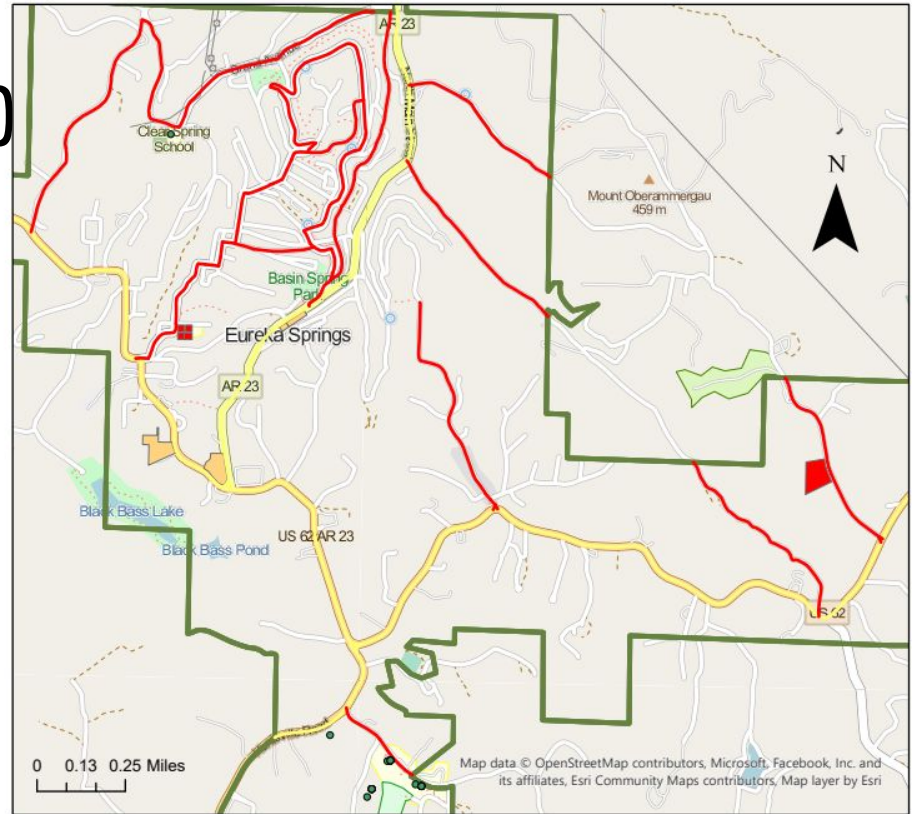
Eureka Springs Sign Assets stakeholder - survey
14 records, 1 selected

...	Sign ID #	MUTCD Type	Regulatory Series ...	Other - Regulatory...
■	1.00	Regulatory	R5 - Selective Exclusion	
■	2.00	Warning Signs & Object M...		
■	3.00	Regulatory	R2 - Speed Regulation	
■	4.00	Warning Signs & Object M...		

Snow Removal Policy Map

This map is a visual tool for public works employees and citizens. It is based on the [Snow Removal Policy](#) (edited 10.10.2020) from the Eureka Springs Public Works Department.

Public Works prioritized streets and lots into two groups, Priority I and Priority II. These are roads that access key circulation patterns and public services, such as the hospital and police department. ArDOT maintained highways are also illustrated which complete the main circulation patterns through town.



- Priority I Roads
- ArDOT Maintained
- City Parking Lots - Priority I
- City Parking Lots - Priority II
- Eureka Springs Schools
- Eureka Springs Municipal Boundary

Skills

- **ArcGIS Pro** - selecting features by attribute, creating layers from selection, symbolizing data, editing features, adding fields to attribute tables, creating map layouts, etc.
- **Survey123** - creating complex surveys including 'if-then' drop-down selections, using Survey123 on an iPhone, mapping Survey123 data on ArcGIS Online, etc.
- **Project Management** - creating a work plan, collaborating with professional colleagues, creating a product for a 'client', etc.

Appendices

Attach links to maps, brochures, images, weblinks, etc. if possible.

- [Eureka Springs GIS](#)
- [Snow Removal Policy](#)
- [Eureka Springs Sign Assets Survey](#)

- **Data Sources**
 - Eureka Springs 2016 Zoning Districts Map (Digitized by Joseph Jilek)
 - Parcel Map ([AR GIS Office](#))
 - Street Centerlines Data ([AR GIS Office](#))
 - Historic properties information ([Arkansas Historic Preservation Program](#))
 - Conservation Easements ([Arkansas Historic Preservation Program](#); Digitized by Joseph Jilek)
 - FEMA Flood Map ([AR GIS Office](#))
 - Downtown Fire District ([Eureka Springs Municipal Code](#) (11.12.06); Digitized by Joseph Jilek)

Acknowledgements

- **Professor Paul Lowrey**, Instructor
- **Professor C. Dianne Phillips**, EMPACTS Facilitator
- **Joseph Jilek** (University of Arkansas), GIS Intern, City of Eureka Springs
- **Simon Wiley**, Deputy Director of Public Works, City of Eureka Springs
- **Kyle Palmer**, Director of Planning & Community Development, City of Eureka Springs
- **Robert “Butch” Berry**, Mayor, City of Eureka Springs

Thank you all for your support for this project.



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