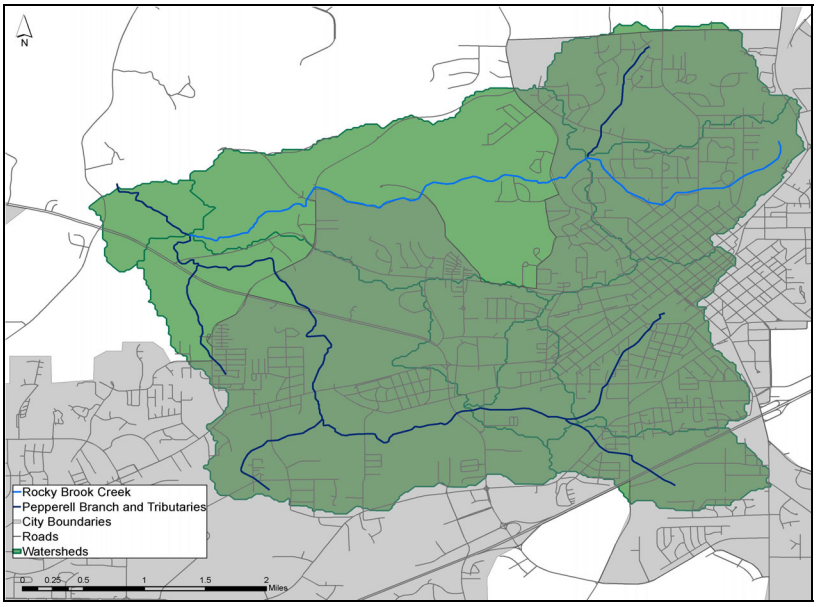
5. WATERSHED CHARACTERIZATION

Watershed Characterization

CSES and the City of Opelika have been working on gathering all of the necessary data and information to identify causes and sources of water quality impairments in the watershed. CSES gathered existing *E. coli*, flow and other relevant water quality data for the watershed from ADEM, AWW, City of Opelika, Lee County, USGS, and other sources as appropriate. Also gathered was information to determine human and animal numbers, number of homes, and number of septic systems within the watershed. This includes gathering the following data GIS layers to create maps (Figure 30):

a. 2011 NLCD land use land cover data.
b. Soils data
c. Streets and Highways
d. Towns and Cities
e. Census Data
f. Household Layers
g. Watershed Flows
h. Locations of onsite septic systems

Figure 32: Watershed Map Showing City Limits, Streams, and Major Roads.



In this phase, CSES helped stakeholders understand and prioritize the impairments and sources based on their knowledge of the local watershed, stakeholder concerns, and watershed scientific data. CSES presented assessment results to the Steering Committee for review and comment. Based on watershed characterization and continued stakeholder input, the preliminary goals were reviewed and refined. To begin the stakeholders reviewed land use for the watershed.

LAND USE CLASSIFICATION

The small watershed is highly developed as it is located inside the city limits of Opelika with about 54% of it in urban/developed landuse classifications. There is no cropland, only a small amount – 6% is pasture/grassland, and over 38% of it in forest land use classifications. A little over 1% is open water or wetlands (figure 33, Table 13)

Figure 33: Land Use Classification for Pepperell Branch using the 2011 National Land Use Classification Dataset.

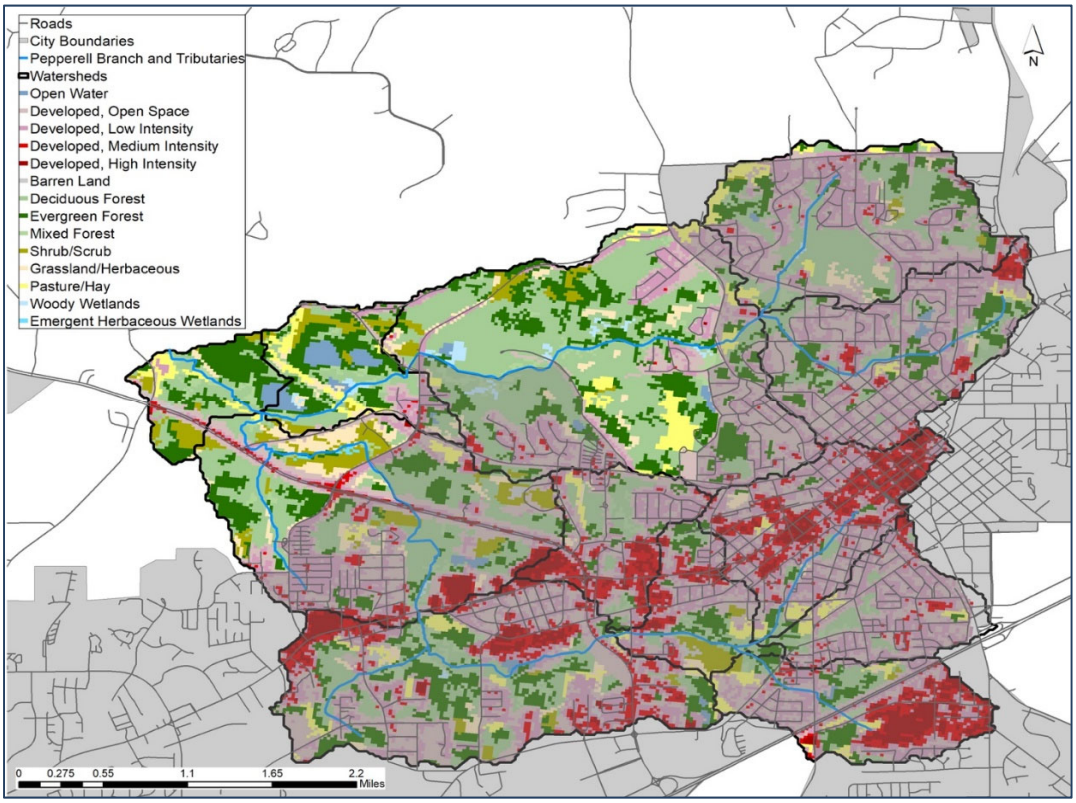


Table 12: Land Use Categories by area and Percentage of the Watershed.

Land Use Value	Land Use Category	Pepperell Area (ac)	Pepperell Percentage
11	Open Water	89.6	0.99
21	Developed, Open Space	1732.5	19.22
22	Developed, Low Intensity	2179.7	24.19
23	Developed, Medium Intensity	627.6	6.96
24	Developed, High Intensity	318.2	3.53
31	Barren Land	14.5	0.16
41	Deciduous Forest	1823.6	20.24
42	Evergreen Forest	1187.6	13.18
43	Mixed Forest	191.9	2.13
52	Shrub/Scrub	266.4	2.96
71	Grassland/Herbaceous	224.0	2.49
81	Pasture/Hay	318.2	3.53
82	Cultivated Crops	0.0	0.00
90	Woody Wetlands	34.0	0.38
95	Emergent Herbaceous Wetlands	4.0	0.04
	Total	**9011.9**	**100**

DETERMINING SOURCES OF POLLUTION

PEPPERELL SEPTIC INVESTIGATION

CSES has partnered with the City of Opelika to assess OSDS numbers and locations using available information and will estimate OSDS densities in other areas of the watershed. City of Opelika Engineering first worked on assessing OSDS at trailer parks within the watershed. All of these trailer park areas of concern have been assessed and determined that they are on city sewer or are currently in construction to put them on sewer. The report and associated maps for the large trailer parks of concern are included.

Opelika Engineering On-site Septic Disposal Systems (OSDS) Assessment of Trailer Parks in Opelika

Opelika has had concerns about what trailer parks were on the city sewer system and which parks, sections, or trailer parks may have on-site sewage disposal or septic tanks. As Opelika Engineering and Stormwater moved forward to evaluate and begin investigations of the mobile home parks, two tools were identified to confirm the sewer connection question. The City of Opelika has a well-developed GIS data set that unitizes ArcGIS/Arc Map. (Many photos used in this section have been taken from this data information set.) The Lee County Health Department was utilized for any records cache that may have been archived. After several day of meetings and paper file research, the Lee County environmental officer shared and confirmed that all existing trailer parks were connected to city sewer lines. Figures 34-38 demonstrate those efforts conducted by Opelika Engineering and Stormwater.

To further verify, random addresses were used to search both sewer and water billing utilities. All services were confirmed through actual payable accounts. A third and final cross-verification was used by Stormwater. Since 2015 a "complaints log" was used to track any water quality or stormwater complaints. One small trailer park, which happens to be within the Pepperell Branch watershed had a past complaint of a sewer odor. When investigated it was noted a clean out was backed up on one trailer lot in Fuller Trailer Park. While no drain or creek had been impacted, this trailer park under new management is extending sewer to all lots within this trailer park. Today this upgrade utility construction is scheduled to be completed by 2019.

Figure 34: GIS ArcMap of Mobile Home Parks in Pepperell Watershed.

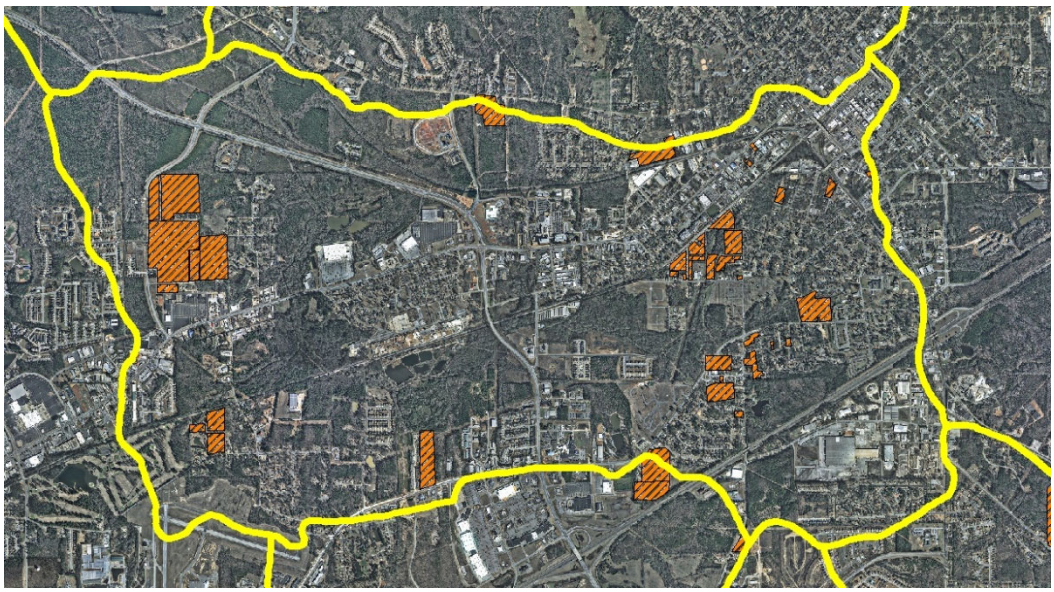


Figure 35: Bennett's Trailer Park.

Figure 36: Williford/Hardaway Trailer Park.

Figure 37: Midway Manor Trailer Park.

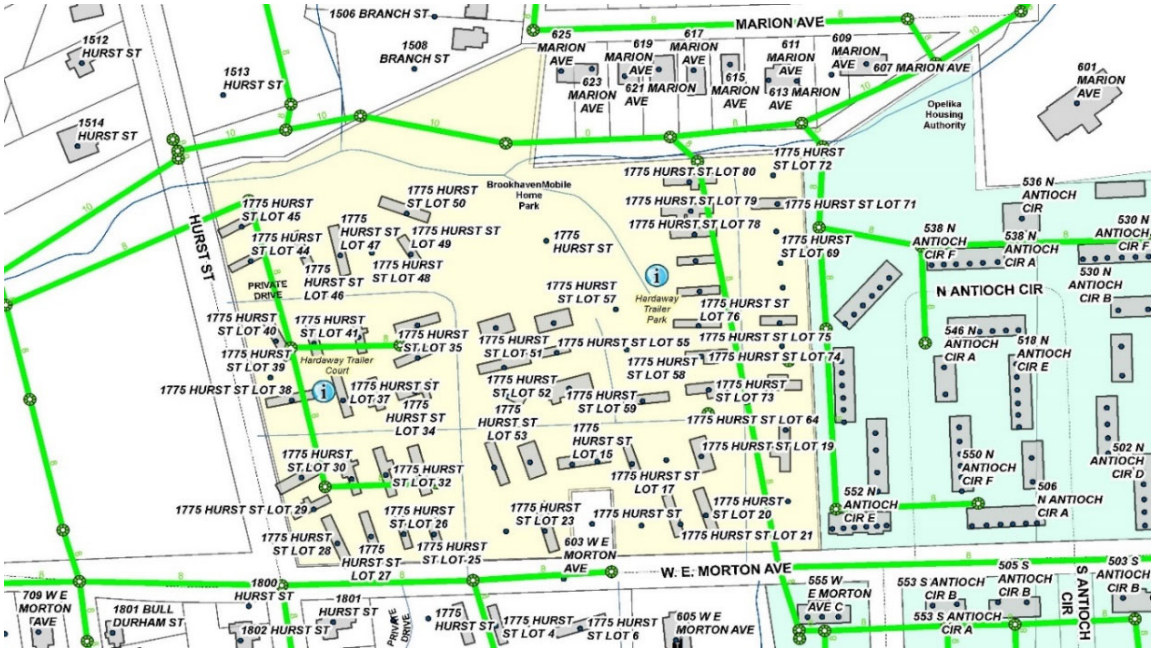


Figure 38: Fuller Trailer Park.

Opelika Engineering On-site Septic Systems in the Watershed

The City of Opelika evaluated other areas that homes might be on septic systems and has also confirmed 14 homes on Sutton Way and 16 homes on Cunningham Court are on septic systems. The City of Opelika also worked to estimate OSDS locations in the Rocky Brook Creek area along Morris Avenue where there are larger acreage homes. Evaluating whether homes are on septic systems is a timely process of which actual suspect addresses and homeowner names must be provided to the Lee County Public Health Department to verify. John Harris, Opelika Engineering has been working closely with the Lee County Public Health Department, Senior Public Health Environmentalist on this issue, but the areas in question are older subdivisions. According to Lee County Public Health they don't have any maps that show septic locations in the county. All septic tanks permitted since about 2003 are in a computer database that could be searched by address by the Lee County Public Health Department. Anything built before 2003, unless it is located in a subdivision would be filed by the owner or applicants last name and the year installed. Nikki met with John Gwin, John Harris, Case O'Dell, and Scott Parker and evaluated all of the GIS layers the city had to try to identify homes in the watershed without sewer service, thus the homes would have septic systems. Additional homes without wastewater were found within the watershed, as shown in Figures 39-40.

John has also been working closely with the water and wastewater billing department on this assessment for the trailers and we are expanding this effort currently to determine exactly where there might be OSDS with the project area. A complication is that an outside company manages the utilities for the city.

Figure 39: Homes Without Sewer Located Within the Watershed Highlighted in Yellow.