

VILLAGE OF ROANOKE HYDROLOGY

Frank Sanders

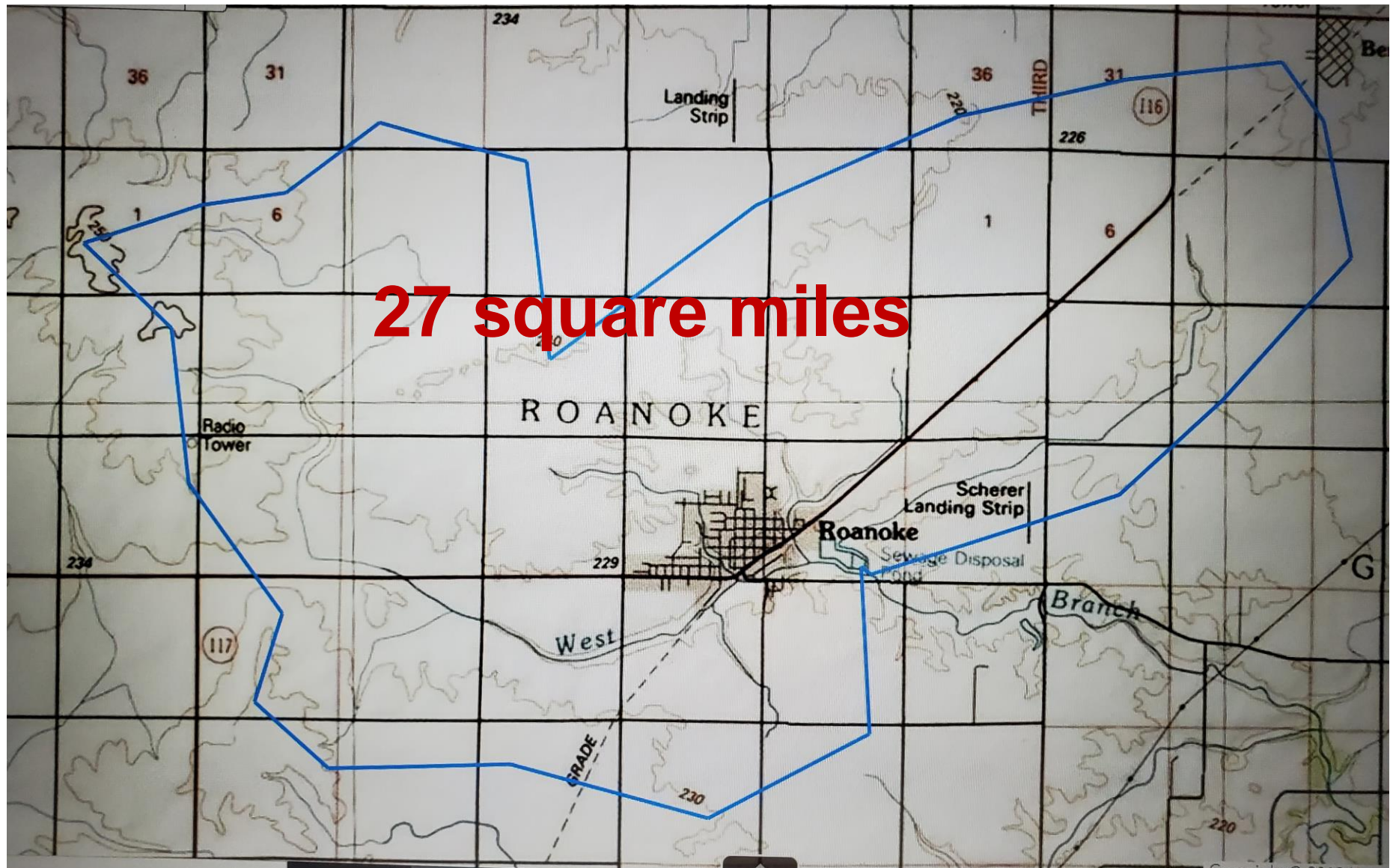
HYDROLOGY (STORM FLOW)

- What Determines Storm Flow?
- Characteristics of West Branch of Panther Creek
- Coping with Floods
- What's the Future?

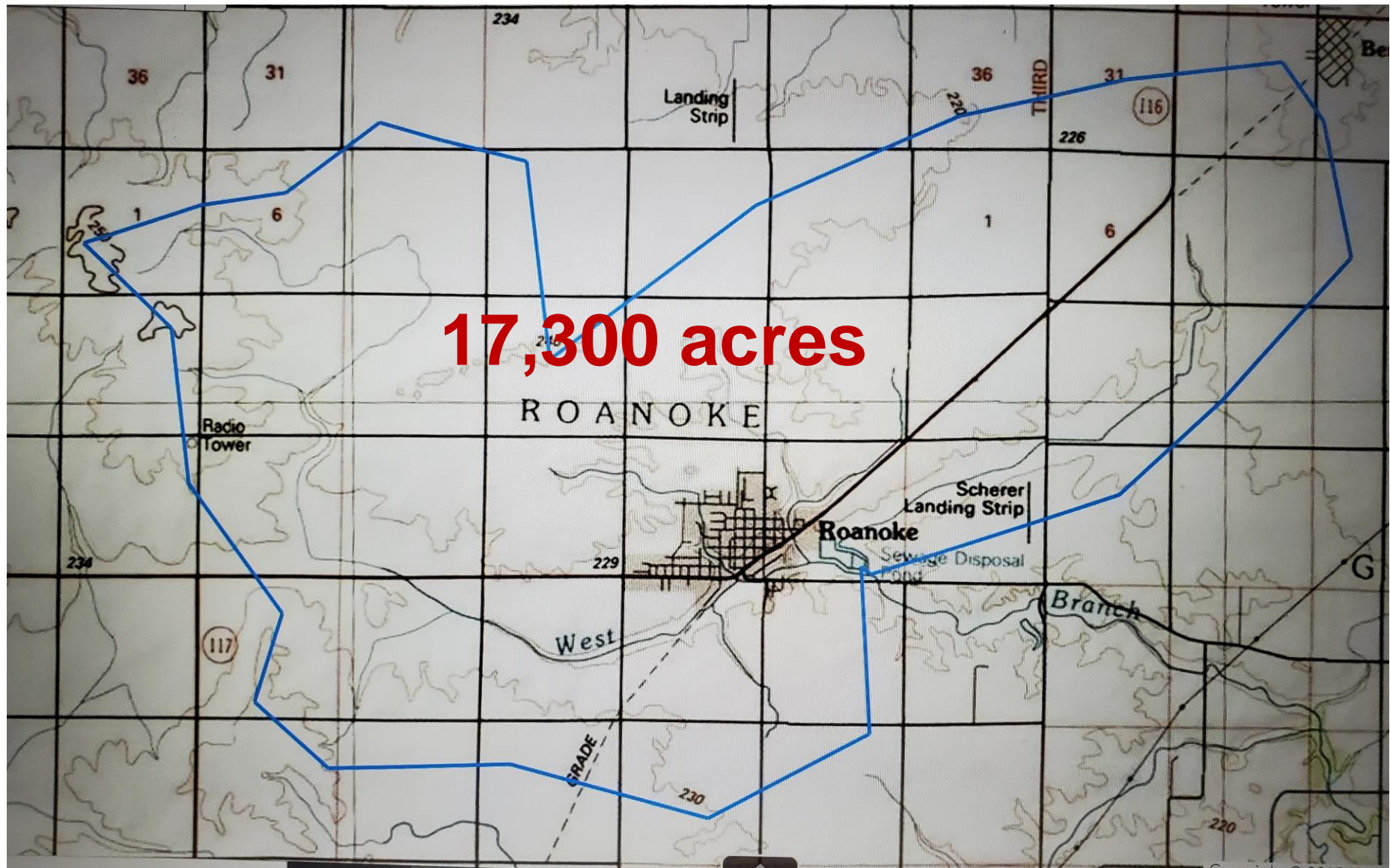
WHAT DETERMINES STREAM FLOW?

- Size of Watershed
- Land Use
- Intensity of Rainfall
- Duration of the Storm

SIZE OF THE WATERSHED



SIZE OF THE WATERSHED



Land Use

<u>Types of Land Use</u>	<u>Runoff Percentages</u>
Center of Town	70-95%
Residential Area	50-70%
Farmland w/ Crops	20-50%
Farmland w/o Crops	30-60%
Lawns	13-17%
Parks	10-25%

Rainfall Intensity

(Central Illinois)

<u>Duration</u>	<u>Rainfall (Inches per Hour)</u>			
	<u>10-yr</u>	<u>25-yr</u>	<u>50-yr</u>	<u>100-yr</u>
30 minutes	3.3	3.9	4.5	5.1
2 hours	1.3	1.6	1.8	2.0
24 hours	0.19	0.22	0.25	0.28
48 hours	0.10	0.12	0.14	0.16
72 hours	0.07	0.09	0.10	0.11

Rainfall Intensity

(Central Illinois)

<u>Duration</u>	<u>Rainfall (Inches)</u>			
	<u>10-yr</u>	<u>25-yr</u>	<u>50-yr</u>	<u>100-yr</u>
30 minutes	1.6	2.0	2.3	2.6
2 hours	2.6	3.1	3.6	4.1
24 hours	4.5	5.3	6.1	7.5
48 hours	4.9	5.8	6.6	7.5
72 hours	5.3	6.2	7.3	8.2

Rainfall Intensity

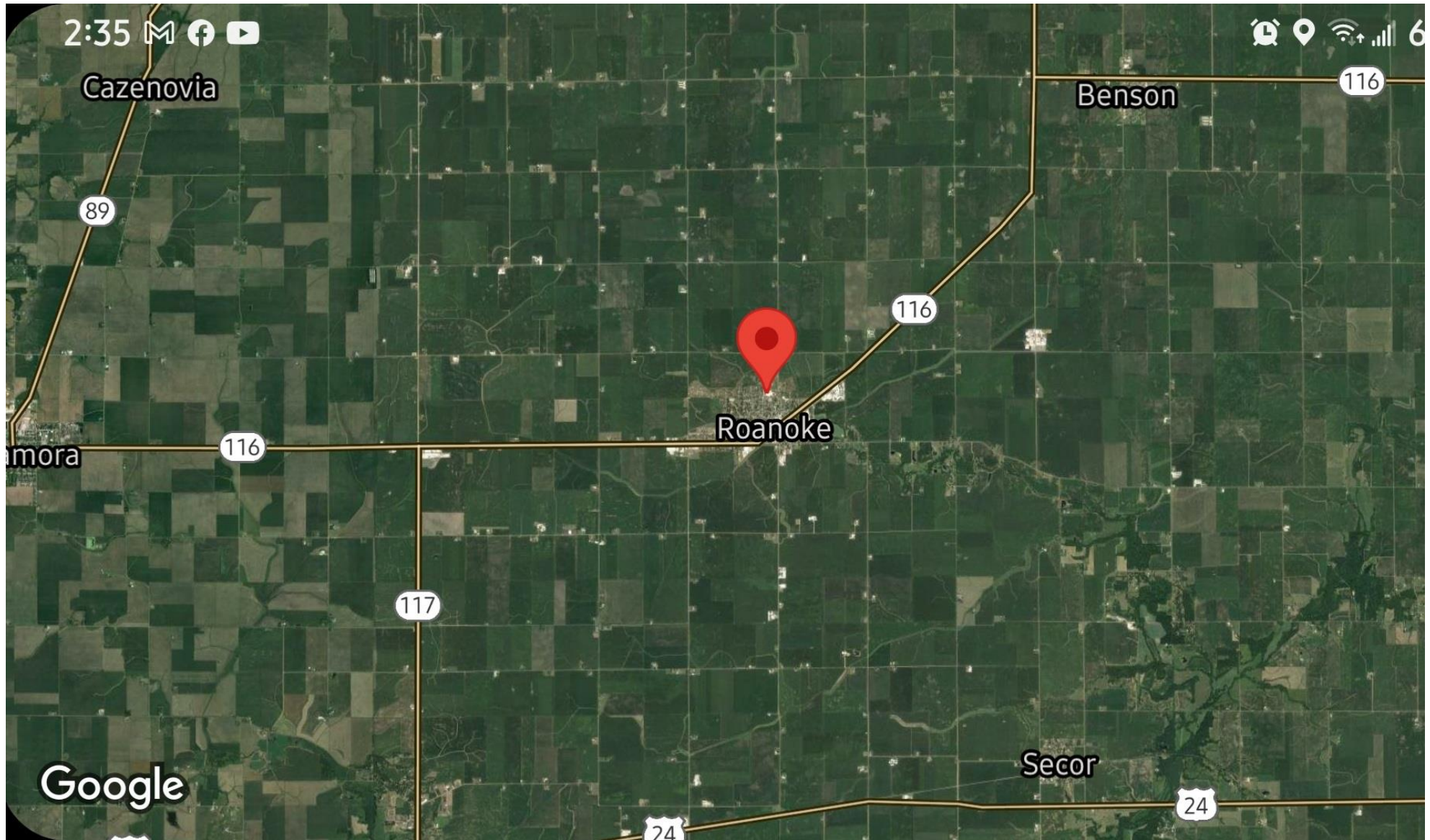
(Central Illinois)

<u>Duration</u>	<u>Rainfall (Inches)</u>			
	<u>10-yr</u>	<u>25-yr</u>	<u>50-yr</u>	<u>100-yr</u>
30 minutes	1.6	2.0	2.3	2.6
6 hours				5.2
12 hours				6.0
24 hours	4.5	5.3	6.1	7.5
48 hours	4.9	5.8	6.6	7.5
72 hours	5.3	6.2	7.3	8.2

WEST BRANCH OF PANTHER CREEK CHARACTERISTICS

- Land Use
- Number of Sources
- Structures near or over Stream

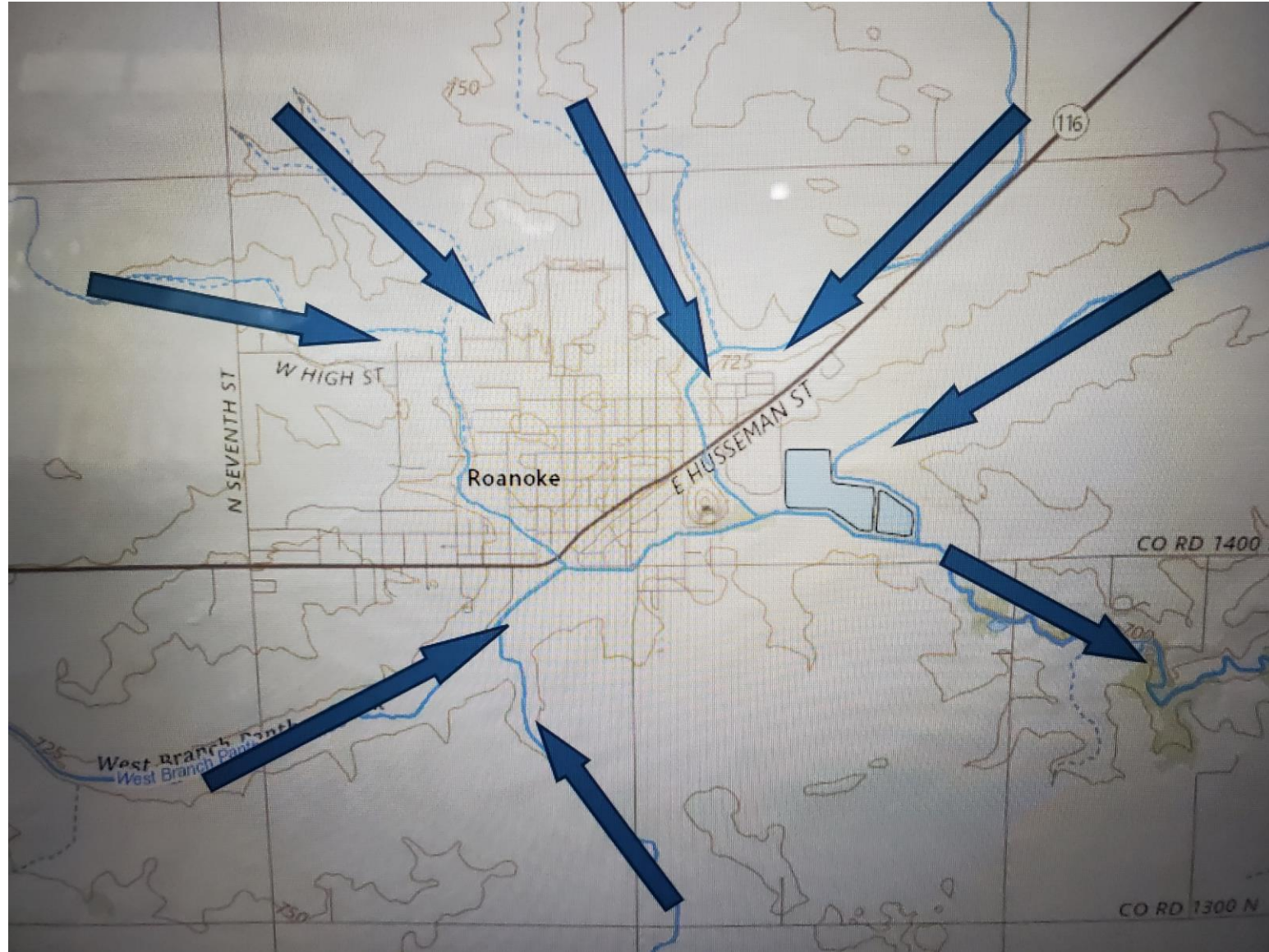
LAND USE IN WATERSHED



Number of Sources



Number of Sources



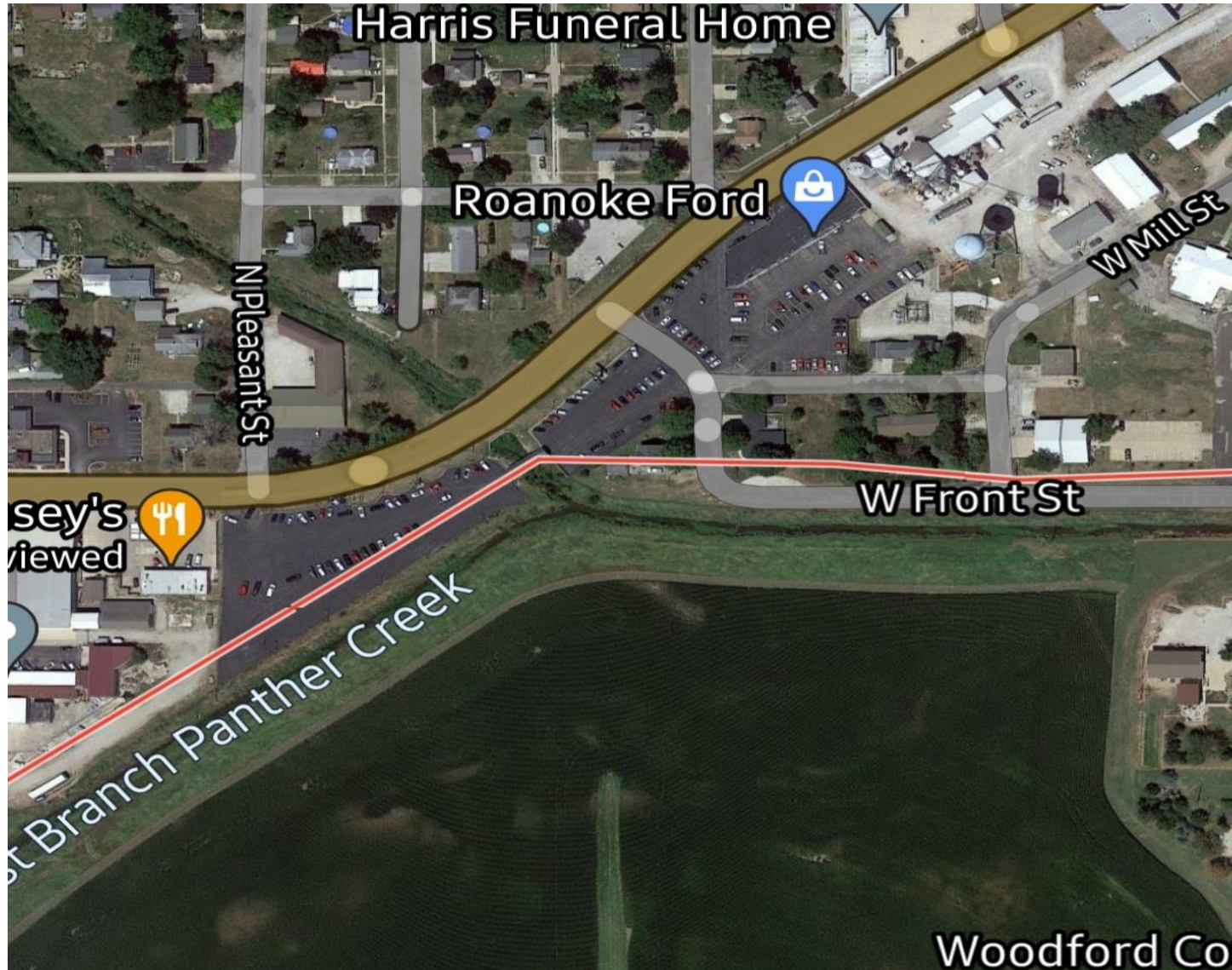
STREAM CROSSINGS



Location of Structures Over the Stream



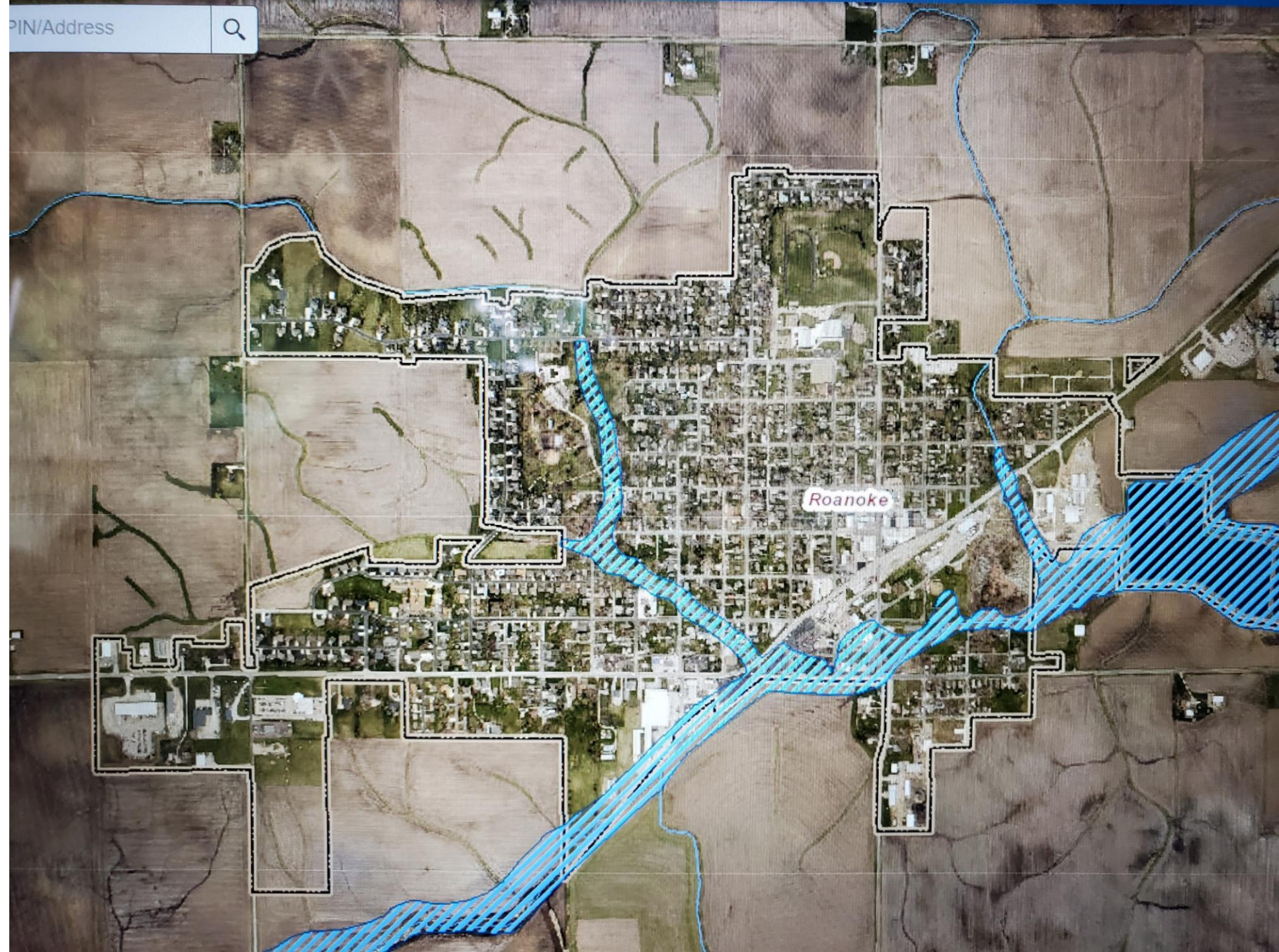
Location of Structures Near Stream



Coping with Floods

- Raise Structures
- Move structures
- “Flood Proof” Structures
- Remove structures
- Set aside fund for repairs
- Buy Flood Insurance

PIN/Address



What's the Future?

- Storms are unpredictable
- More storms will come
- There's always a bigger one coming

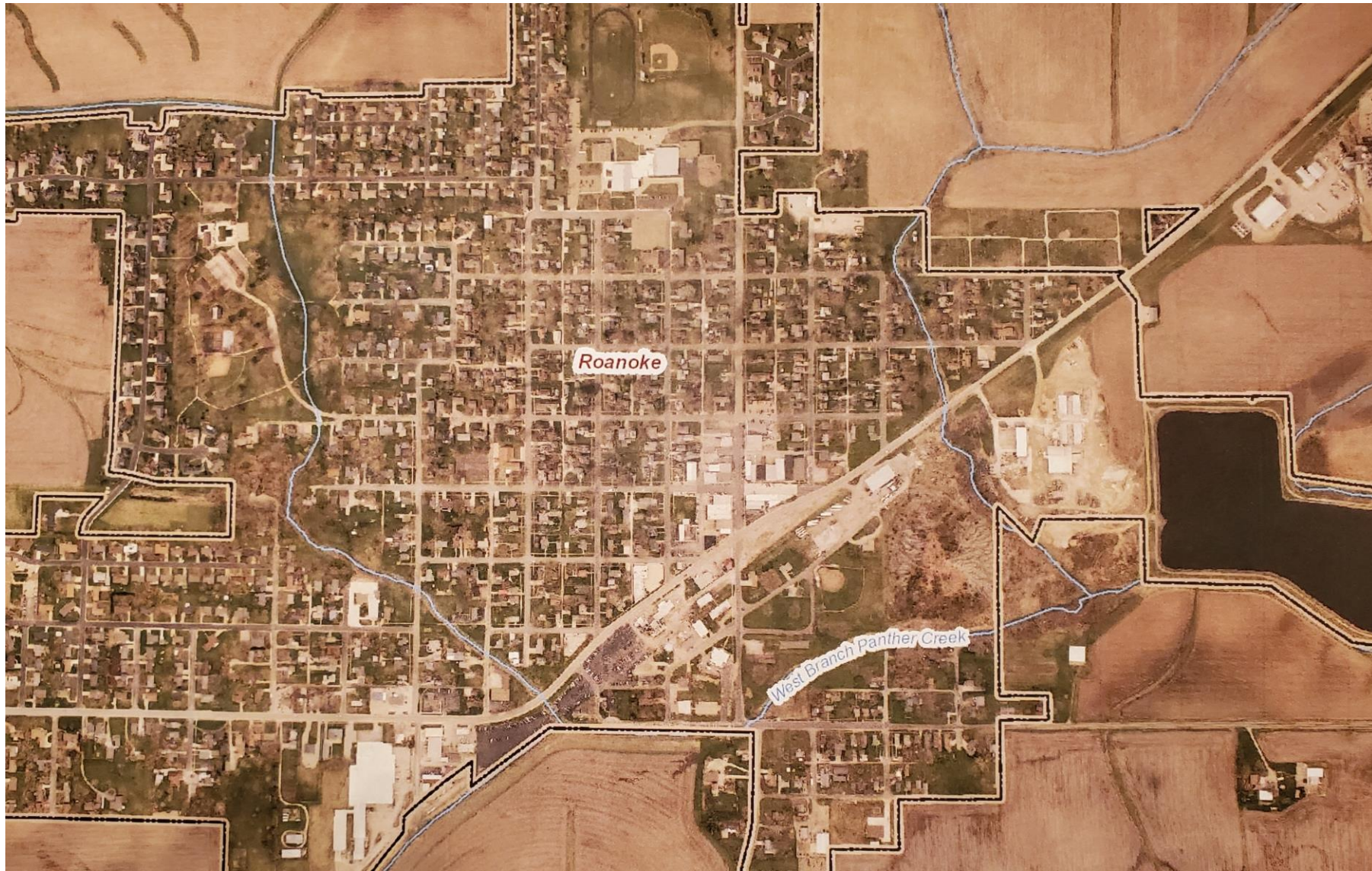
Watershed



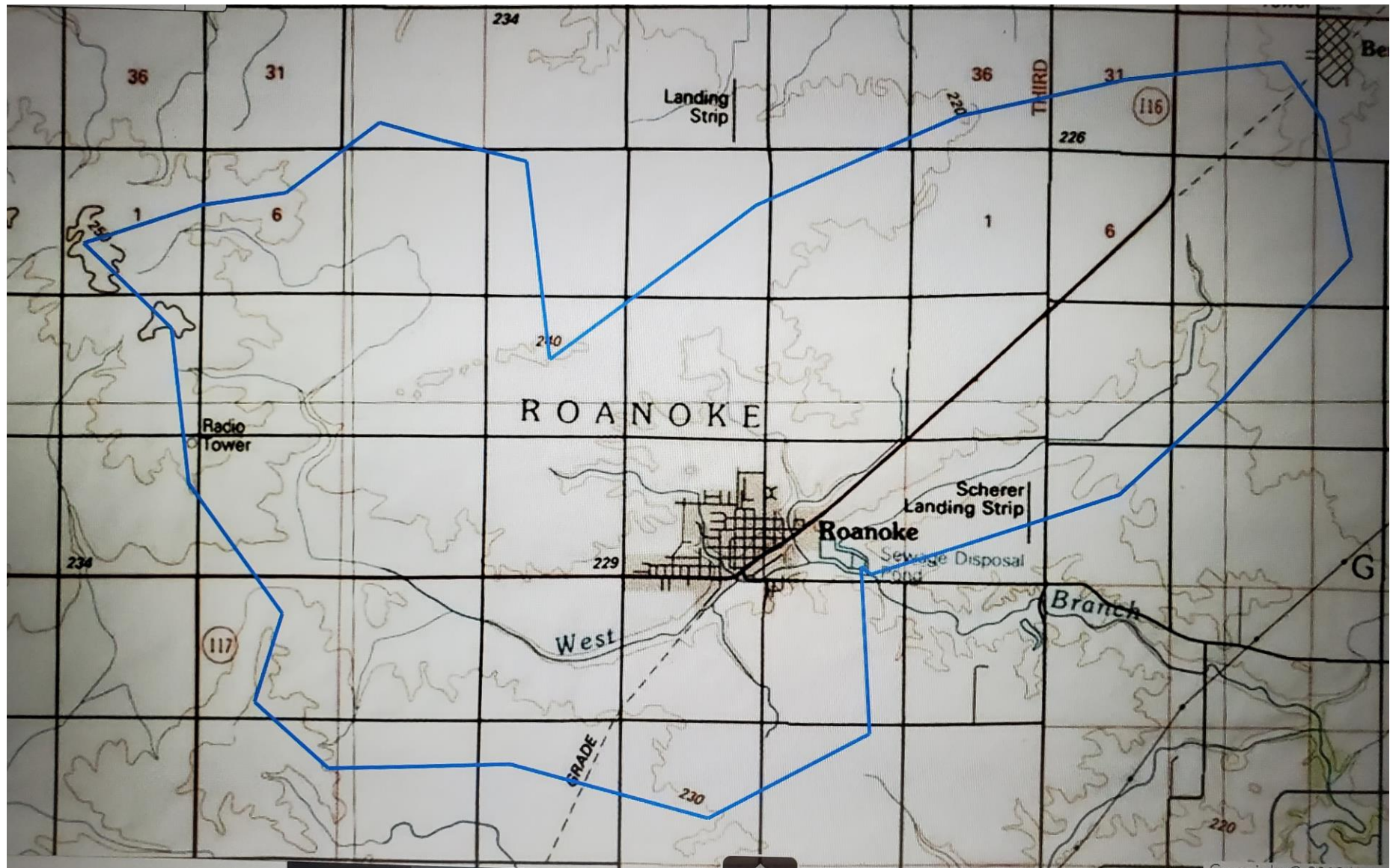
Watershed



Streams Flowing to Roanoke



SIZE OF THE WATERSHED



Structural Alternatives

Realign the Creek

Build a storage facility

Widen the channel

Concrete line the creek

Deepen the creek

Relocate the creek