

SUCCESS STORY: SIGNIFICANT BACTERIA REDUCTION FROM REDUCTION FROM BMP IMPLEMENTATION



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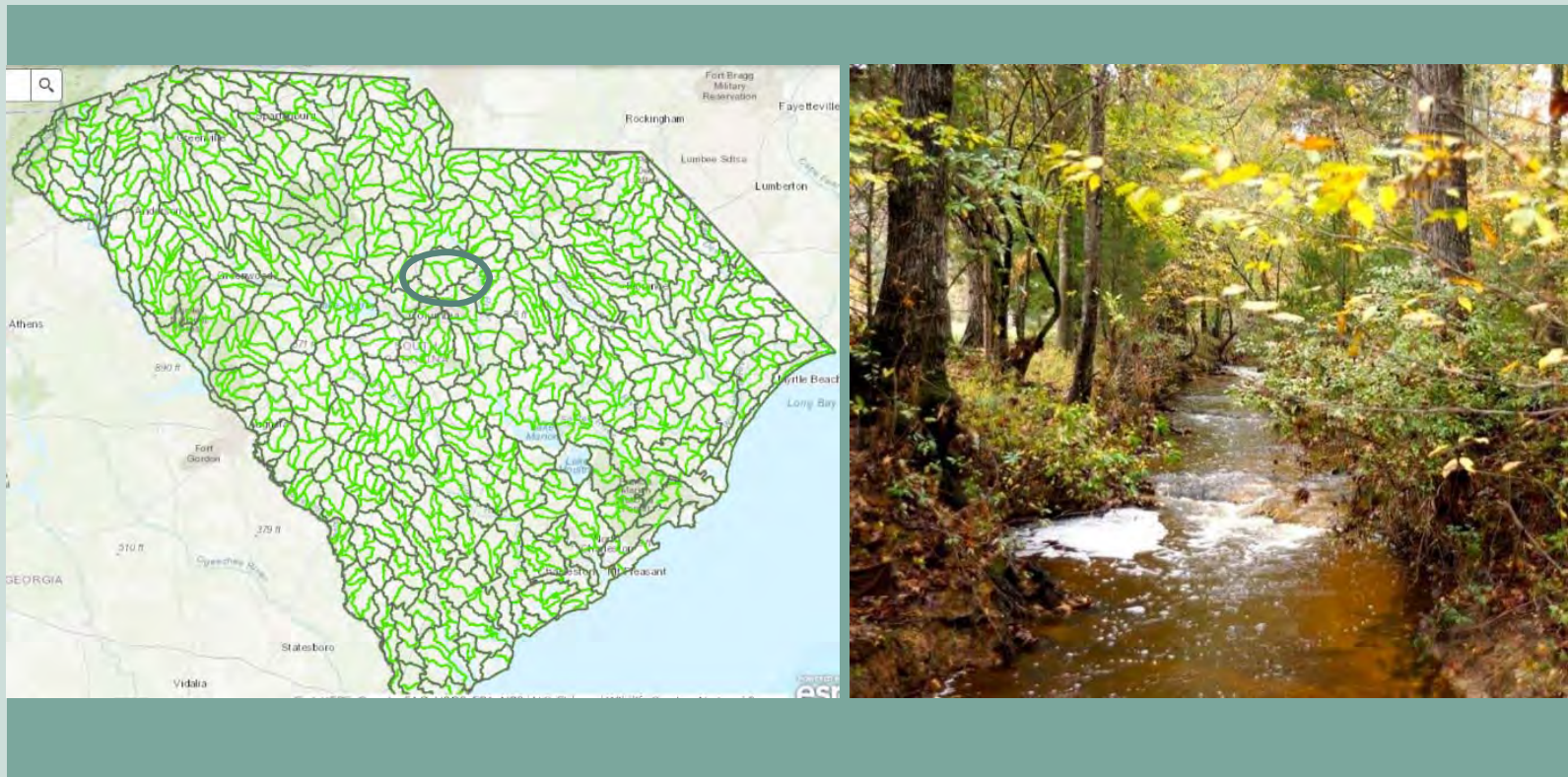
Education Coordinator

Richland Soil & Water Conservation District

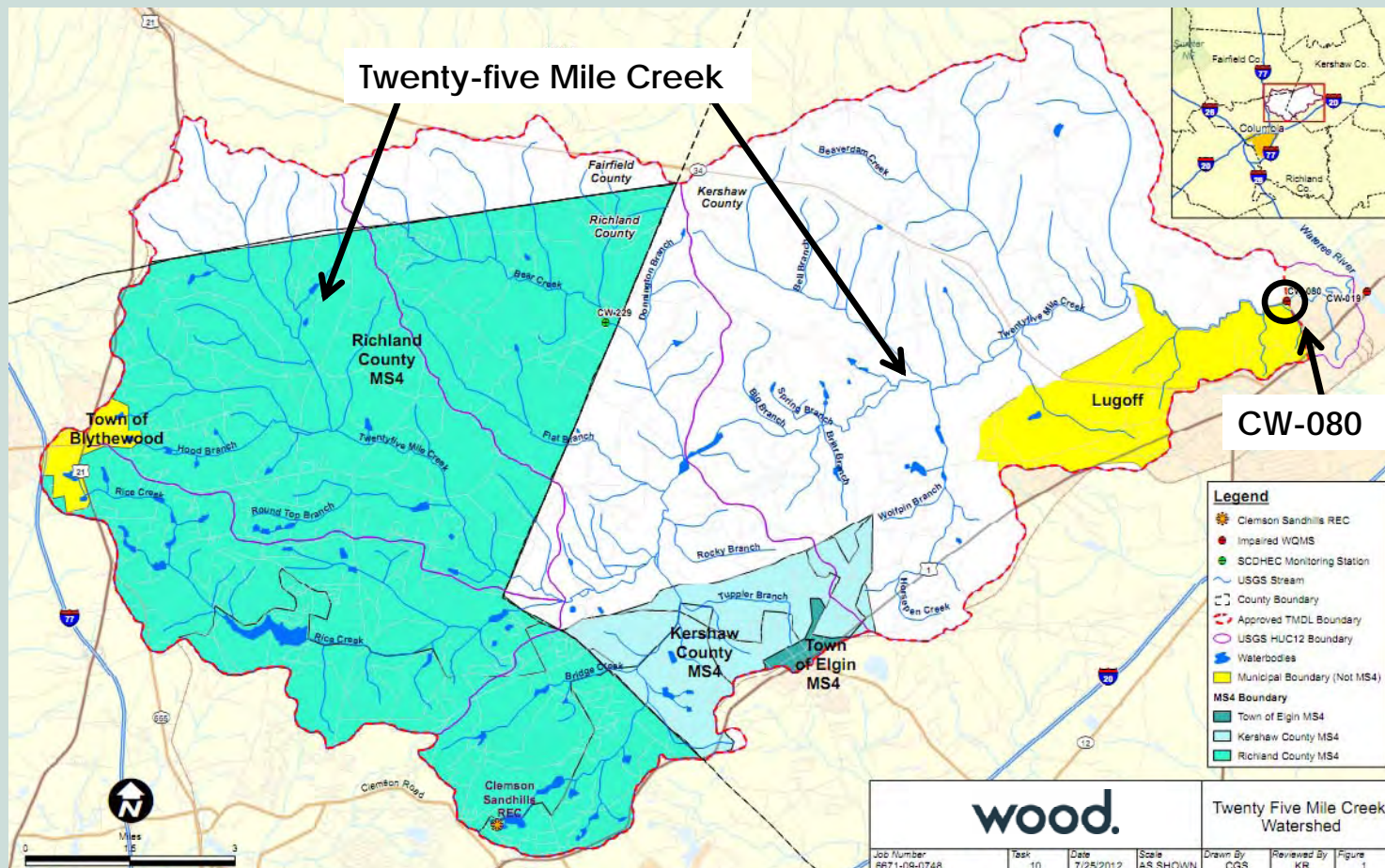
■ **SESWA CONFERENCE OCTOBER 9, 2020**

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Overview: Twenty-five Mile Creek Watershed



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Water Quality Concerns at CW-080

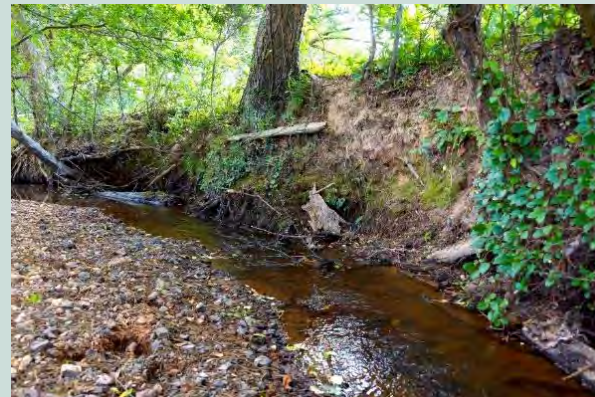
Fecal Coliform:

- 303(d) in 1998
- TMDL in 2004
- 2004 TMDL: 71% reduction



Macroinvertebrate Community:

- 303(d) in 2000
- No TMDL yet
- Affected by sediment, nutrients, toxins, changes in flow regime



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Causes of Impairments

Agriculture:

- Livestock in streams
- Runoff from pastures (5.5% of watershed)
- Runoff from crop fields (2% of watershed)

Human Waste:

- Septic Tanks
- Sanitary Sewer Overflows

Urban Runoff:

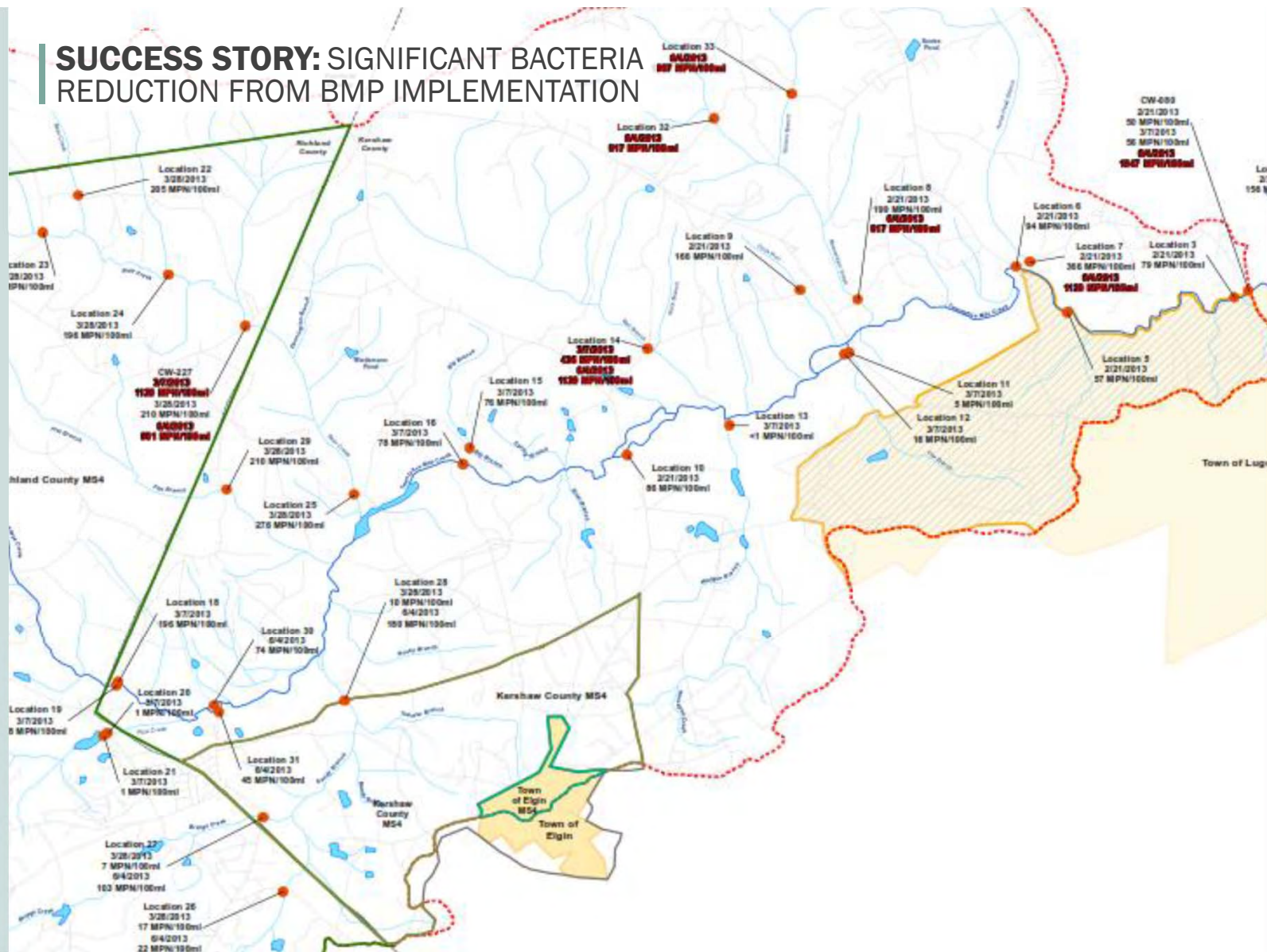
- Pet Waste
- Sediment

Wildlife:

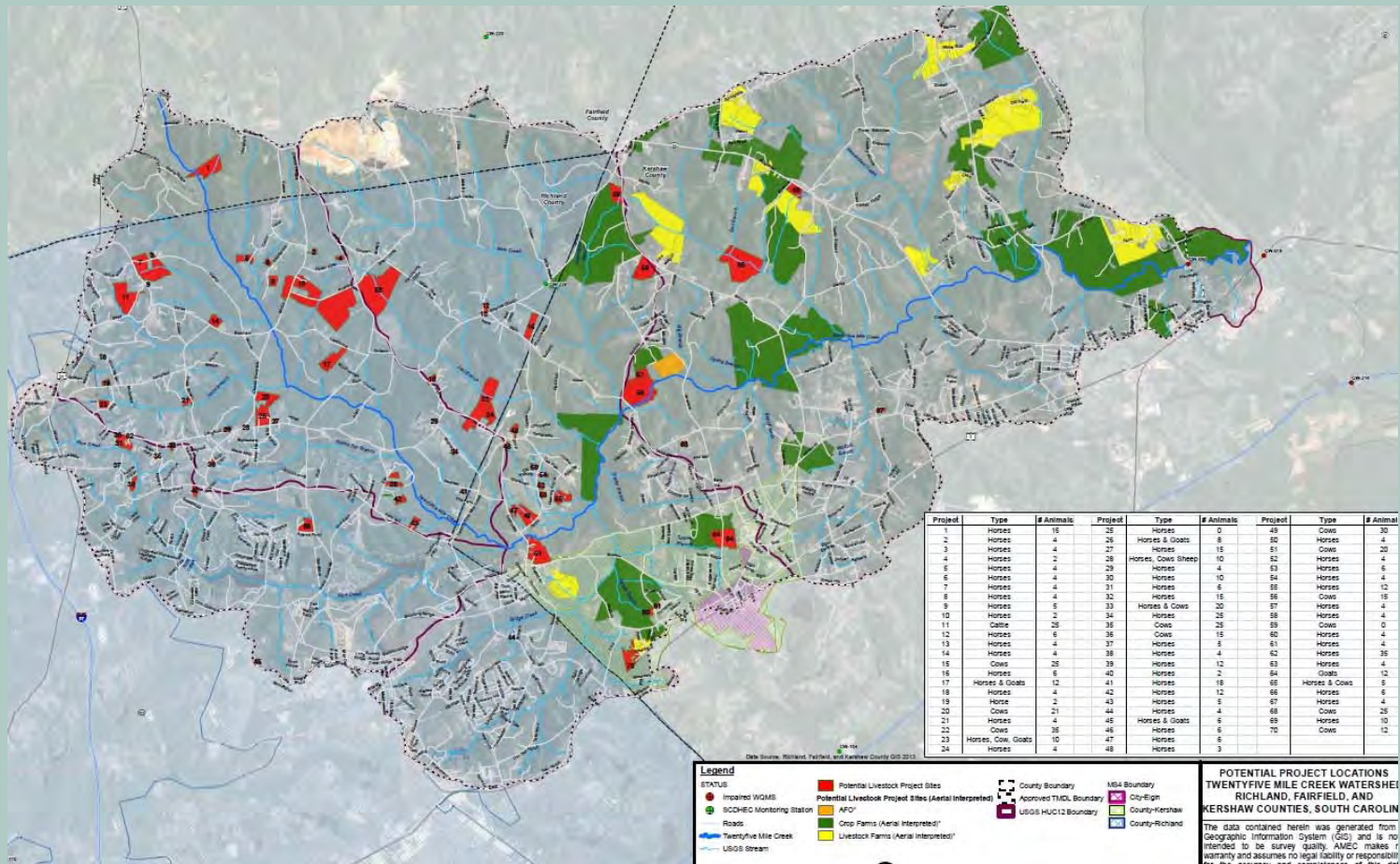
- Improper disposal of carcasses



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Bacteria Load Estimations

Load Source	% of Existing Load
Urban	2%
Sanitary Sewer	4%
Septic	5%
Agricultural – Cattle & Poultry	80%
Agricultural – Croplands	5%
Wildlife	4%

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Watershed Based Plans -2013

Addressing agricultural sources – highest priority!



Poor pasture/paddock management
results in water quality impacts



Livestock accessing streams results in
streambank damage, erosion, soil
compaction, and manure

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Addressing the Problems

Two consecutive 319 grants

Grant #1:

- 2014-2018
- Priority: Agricultural BMPs
- Lead Agency: Richland County

Grant #2:

- 2017-2020
- Priority: Septic Repairs
- Lead Agency: Kershaw County



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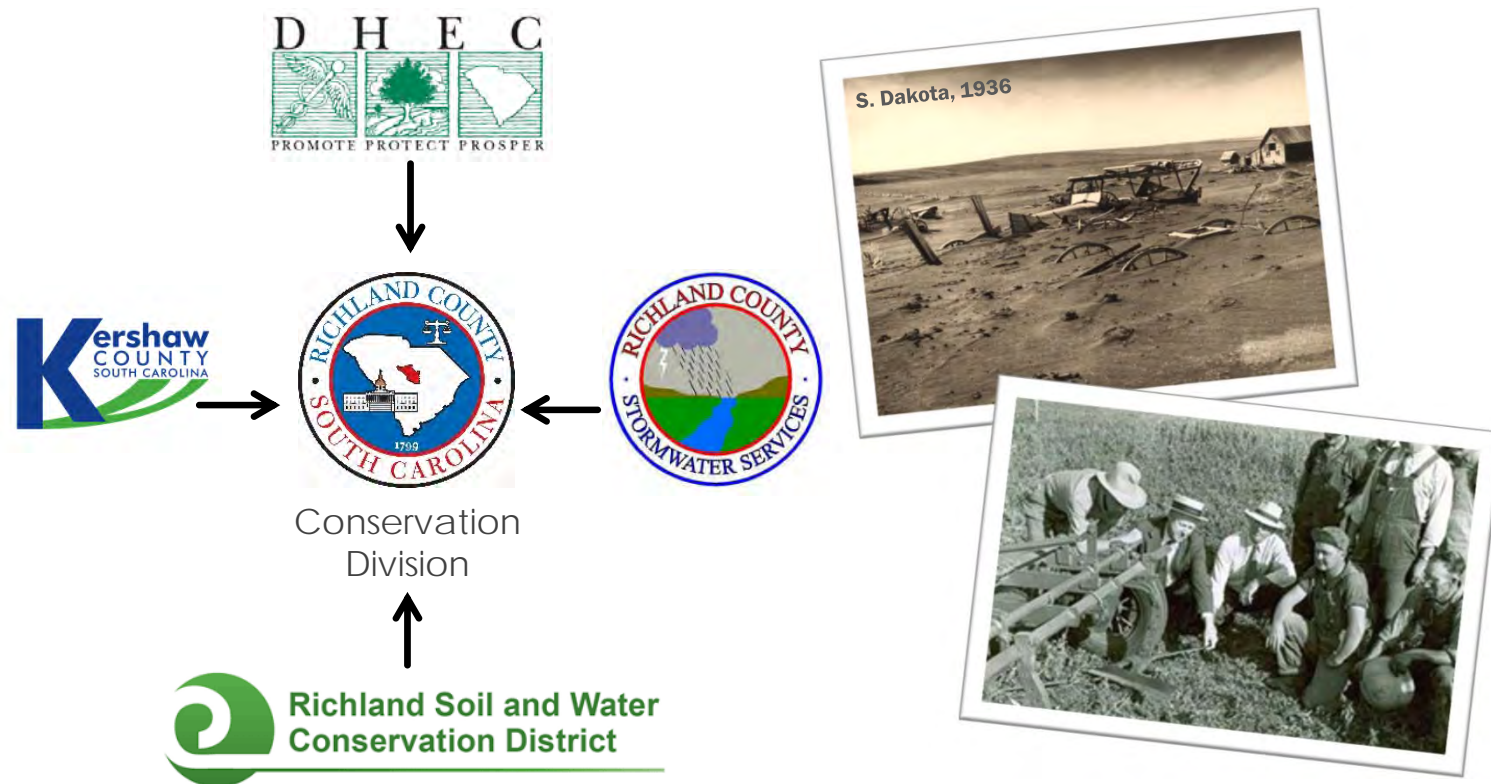
Richland County's Agricultural 319 Grant

- Federal Funds: \$311,500
- Non-federal match: \$221,300
 - Richland County: \$40,000
 - Kershaw County: \$27,000
 - Landowners + Staff Time : \$154,300
- Total: \$532,800
- BMPs at 7 farms
- 5 septic repairs



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Richland Soil & Water Conservation District



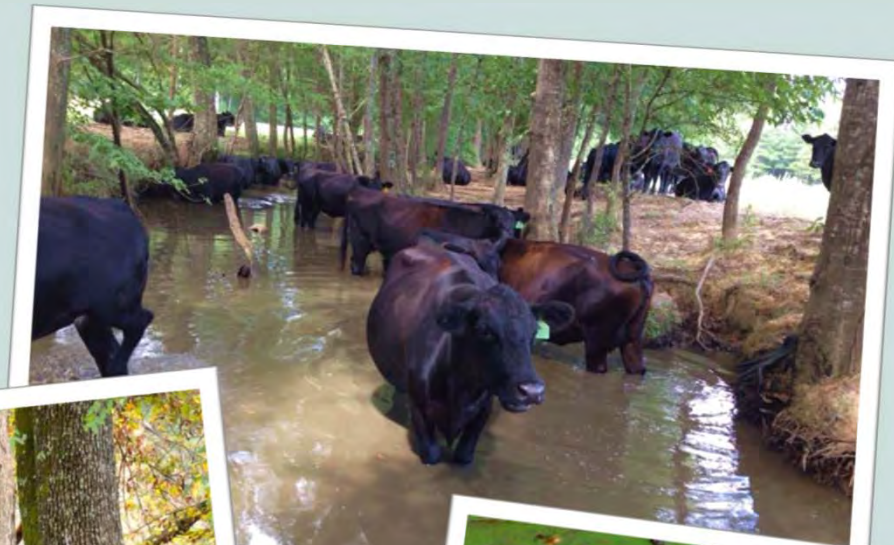
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Financial Assistance to Farmers

- 70% cost share for BMPs
- \$272,000 paid directly to farmers for BMP installation
 - 7 farms
 - 9 conservation plants



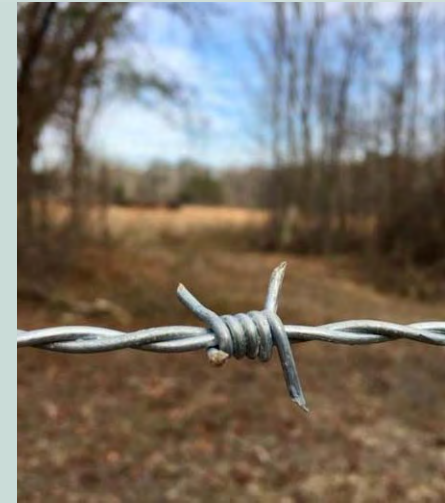
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BMPs:

- 9.8 miles of fencing
- Stream exclusion
- Rotational grazing/pasture management



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BMPs:

- 4 water wells
- 3.4 miles of water pipeline
- 30 water throughs
- 11,200 ft² of heavy use areas



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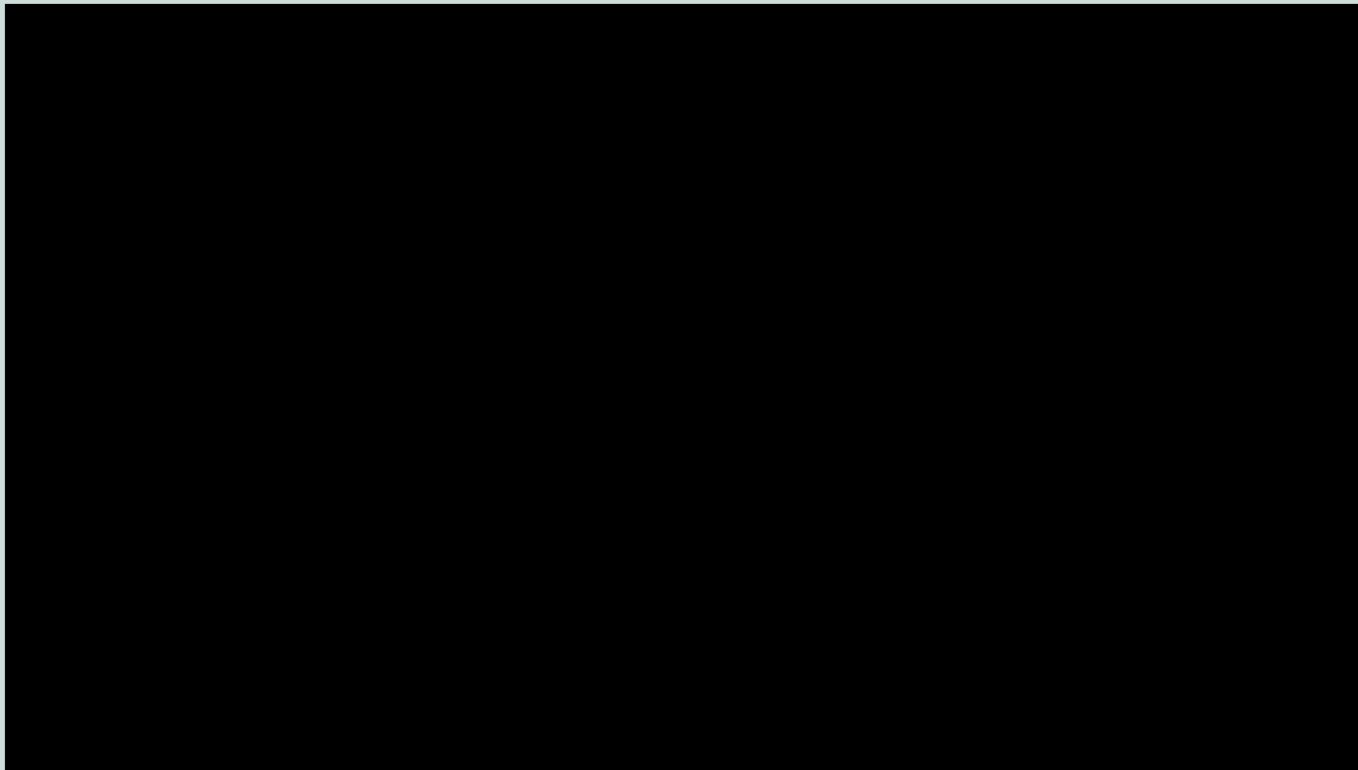
BMPs:

- Rain gutters
- Rock basins



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Equipment



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Educational Events

Pasture Field Day *(9/2015)*

- 64 attendees

Equine Pasture Management Workshop *(9/2016)*

- 67 attendees

Pasture Management Workshop *(1/2018)*

- 63 attendees



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Educational Events

Rain Garden Demonstration and Workshop *(3/2017)*

- Lake Carolina
Elementary School

Rain Barrel Irrigation and Pollinator Garden Demonstration Workshop *(5/2016)*

- Clemson Sandhill REC



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Educational Materials

- Enviroscope
- Groundwater Flow Model
- Rainfall Simulator
- Stream Monitoring Kit



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DO YOU HAVE A SEPTIC ISSUE?

FUNDS MAY BE AVAILABLE TO YOU!

TWENTY-FIVE MILE CREEK WATERSHED



IF YOU ARE HAVING ANY OF
THE FOLLOWING PROBLEMS,
YOUR SEPTIC SYSTEM MAY
NEED TO BE REPAIRED

- ✓ YOUR TOILET IS GURGLING;
- ✓ WATER IS BACKING UP INTO YOUR DRAINS;
- ✓ YOUR SINKS AND TOILETS DRAIN SLOWLY;
- ✓ THERE ARE DAMP SPOTS IN YOUR YARD
DURING DRY WEATHER;
- ✓ AREAS OF YOUR YARD HAVE LUSH GRASS; OR
- ✓ YOU SMELL SEWAGE

You may qualify for funding to assist with the cost of a septic system repair or replacement for your home or business if located within Twenty-five Mile Creek Watershed (see map above) regardless of the county (Kershaw, Richland or Fairfield). For more information and requirements, please visit:

www.kershaw.sc.gov/25milecreek

or call **(803) 425-7230**

This project is funded wholly or in part by the US EPA under Section 319 Grant through the SC Department of Health and Control (SC DHEC) and the United States Environmental Protection Agency (US EPA).

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Financial Assistance for Septic Repair

- 5 residential septic repairs
(60-100% cost share)
- \$8,715 financial assistance
to residents



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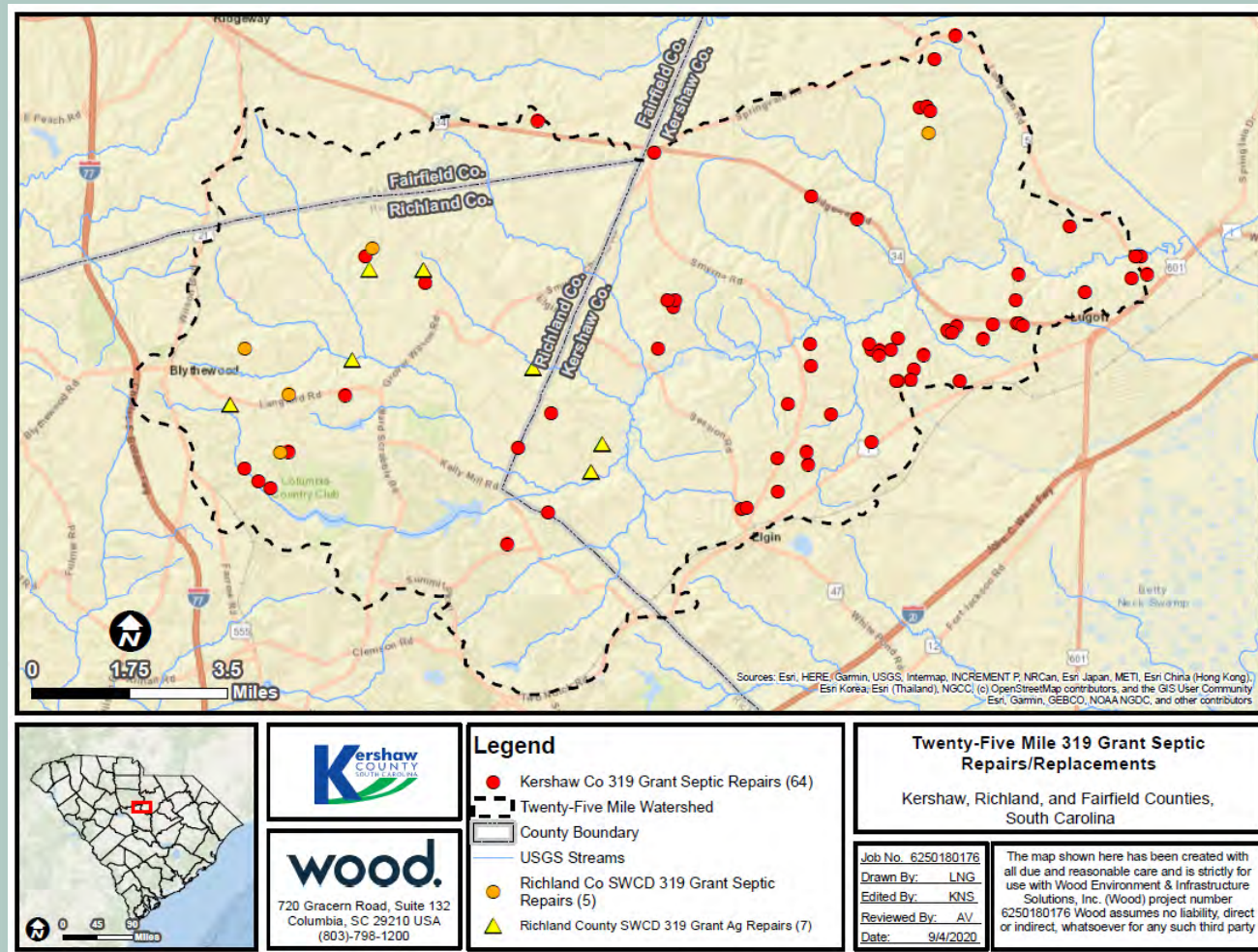
Kershaw County's Septic 319 Grant

- Federal Funds: \$114,800
- Non-Federal Match: \$76,541
- Total: \$191,341
- Total of 64 septic repairs (\$109k directly to homeowners for septic repairs)
- Majority received 60% cost share
- Sliding scale



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BMPs Installed Both Grants



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South Carolina's current water quality standard (WQS) for primary contact recreational use in freshwater is E. Coli (SCDHEC, 2012):

- Not to exceed a geometric mean of 126/100 ml based on at least four samples collected from a given sampling site over a 30 day period, nor shall a single sample maximum exceed 349/100 ml."
- If there are not an adequate number of monthly samples to calculate a geometric mean, then the available sample results are compared against the single sample maximum of **349/100 ml**.
- If greater than **10%** of the samples exceed this criterion then the station is included on South Carolina's §303(d) list.

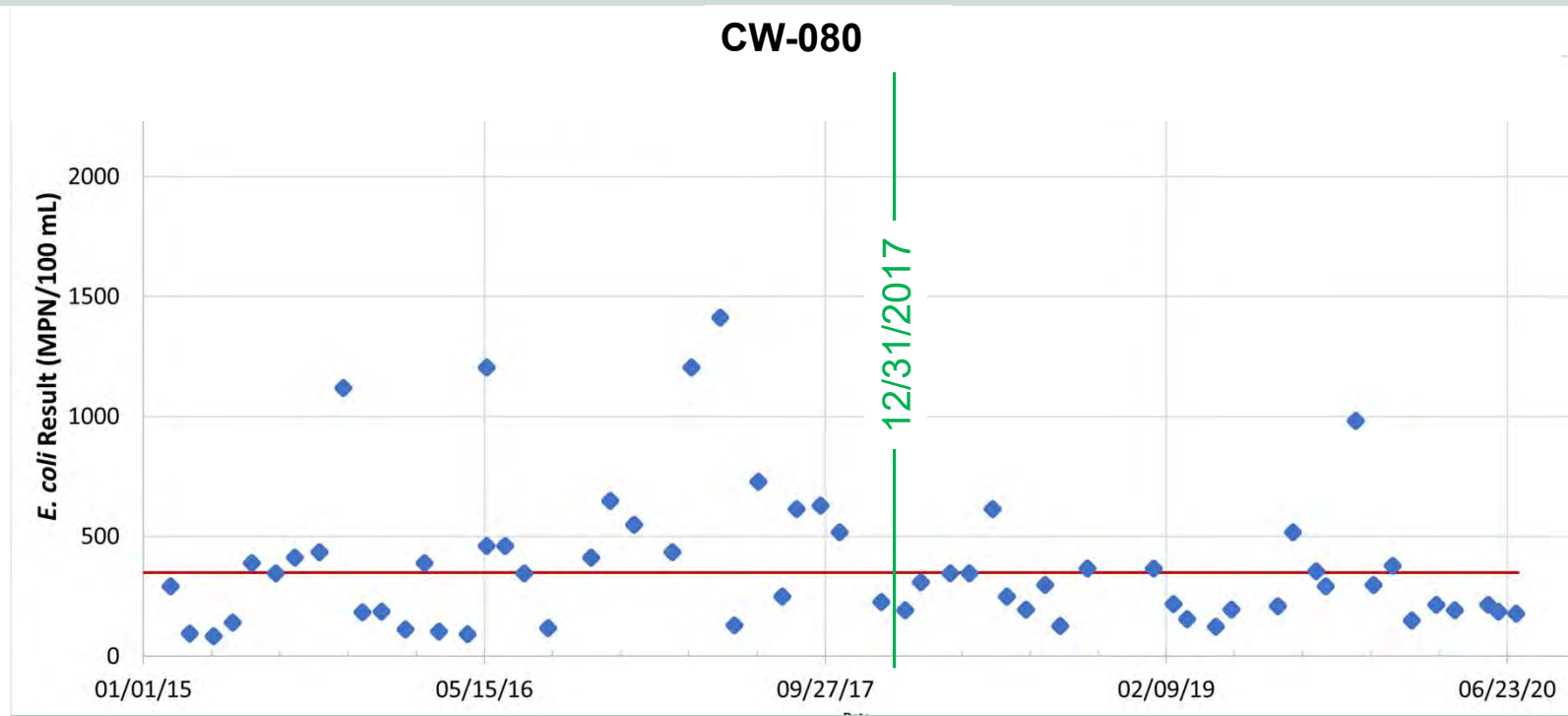
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Twenty-five Mile Creek

- **2004 TMDL**
71% Reduction
in Bacteria
- **Goal**
To meet WQS of
349 MPN/100ml
with less than
10%
exceedances



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Geometric Mean

Before 12/31/17: 410.8 MPN/100ml

After 1/1/18: 331.0 MPN/100ml

19.5% reduction

WQS % Exceedances

Before 12/31/17: 59.5%

After 1/1/18: 22.6%

62.5% reduction

Goal:
<10%

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Water Quality Benefits – Load Reduction

	Agricultural BMPs	Septic Repairs	Total
Nitrogen	2, 775 lb/yr	2,146 lb/yr	4,921 lb/yr
Phosphorous	744 lb/yr	840 lb/yr	1,584 lb/yr
Sediment	535 tons/yr	0 lb/yr	535 tons/yr
Bacteria	8.47E+13 MPN/yr	1.64E+12 MPN/yr	8.63E+13 MPN/yr



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Keys to Success Ag Implementation

- Partnerships, collaboration, and team diversity
- Farmer liaison Kenny Mullis
- Experienced conservation planner
- Farmer education & outreach



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Keys to Success Septic Implementation

- Publicity and Social Media
- Local Government Staff
- Homeowner education



septic tank maintenance



last pump out

next pump out

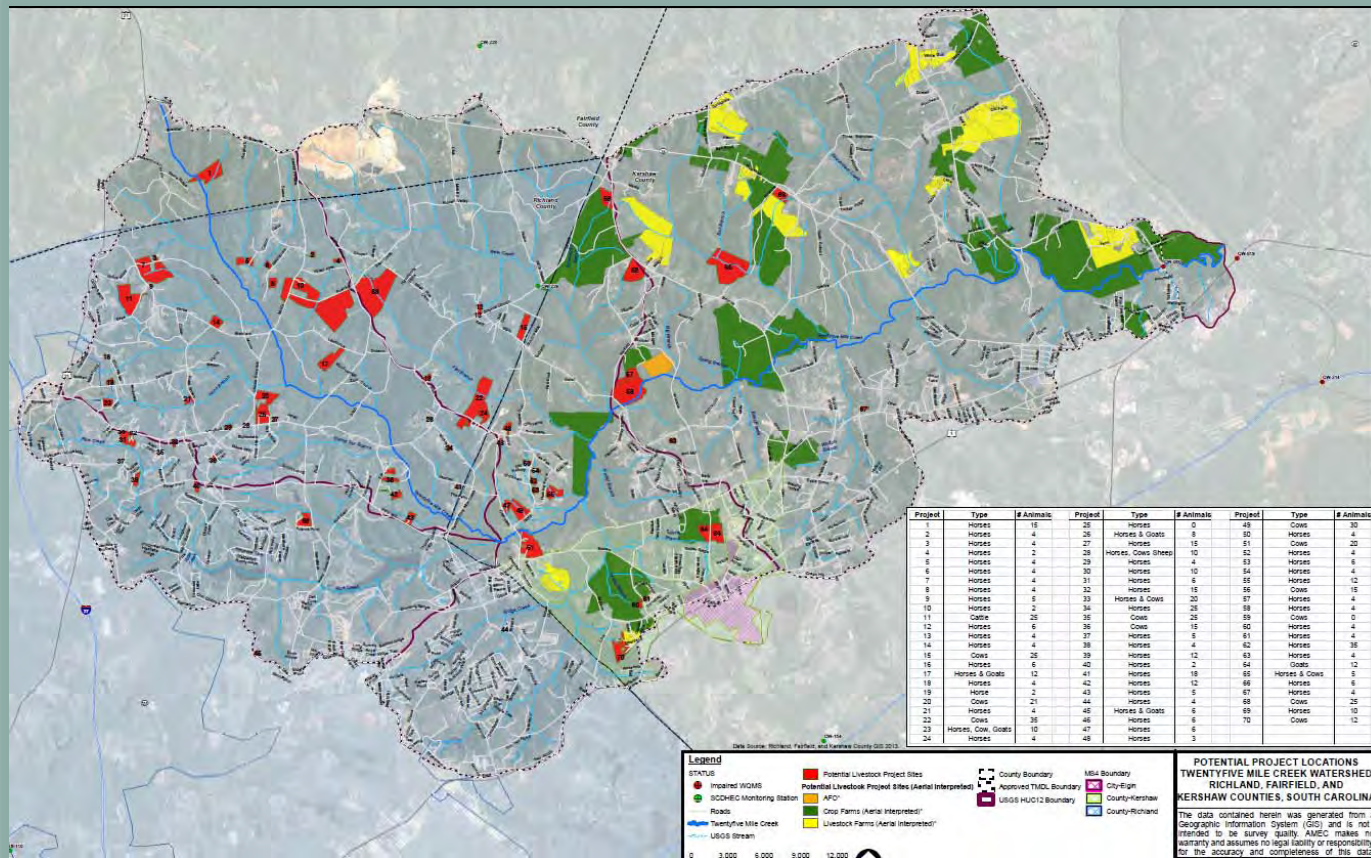
Recommended Septic Cleaning Schedule

Tank Size (gallons)	Number of Residents per Household				
	1	2	4	6	8
Septic Tank Cleaning Frequency in Years					
900	11	5	2	1	<1
1000	12	6	3	2	1
1250	16	8	3	2	1
1500	19	9	4	3	2

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Next Steps



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Next Steps

Encourage additional implementation!

- NRCS Environmental Quality Incentives Program (EQIP) – cost-share for Agricultural BMPs
- Another 319 grant
- Additional education on conservation practices
- Continue education on septic maintenance



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319 Non-Point Source Implementation Grants

Watershed Based Plan – EPA's 9 Elements

- In SC, funding may be available if Source Water Watershed (annual RFP)

SCDHEC Priorities:

- Impaired streams/TMDLs and preventative implementation

No 319 funds for any NPDES permit requirement, including MS4 permit

- Allowed in "MS4 boundaries"

On-the-ground BMPs – minimum of 75% of the federal funds

40% non-federal cash or in-kind match

No monitoring with 319 funds



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Thank you for
supporting
water quality in
Twenty-five
Mile Creek!

