Wild Pig Management Workshop and
Richland-Chambers Watershed Stakeholder Meeting
June 27, 2019
Dawson High School Cafeteria

Pre-registration: Required

Optional Lunch Cost: $10 pre-registration ($20 at the door)

3 Hours CEU's for Commercial, Non-Commercial & Private Applicators

(2 hours General and 1 hour IPM)

8:15 a.m.	Registration
8:30 a.m.	Wild Pig Biology, Impacts and Control Techniques – Josh Helcel, Texas A&M Natural Resources Institute
9:30 a.m.	Richland-Chambers Watershed Protection Plan Updates – Tina Hendon, Tarrant Regional Water District
10:30 a.m.	(Break, Discussion Questions)
11:00 a.m.	Wild Pig Safety and Disease Concerns & Transportation Regulations – Ryan Brockenbush, Texas Animal Health Commission
12:00 p.m.	Catered BBQ Lunch
1:00 p.m.	Demonstration: Wild Pig Control Techniques – Adam Henry, Texas Wildlife Services
2:00 p.m.	Evaluations & Adjourn

This event is provided through a Clean Water Act Section 319(h) nonpoint source grant from the Texas State Soil and Water Conservation Board and the U.S. Environmental Protection Agency.

watershed protection
trwd
Tarrant Regional Water District

TEXAS A&M AGRILIFE EXTENSION

TEXAS A&M NRI
NATURAL RESOURCES INSTITUTE

TEXAS STATE Soil & Water CONSERVATION BOARD

Richland-Chambers Watershed Partnership

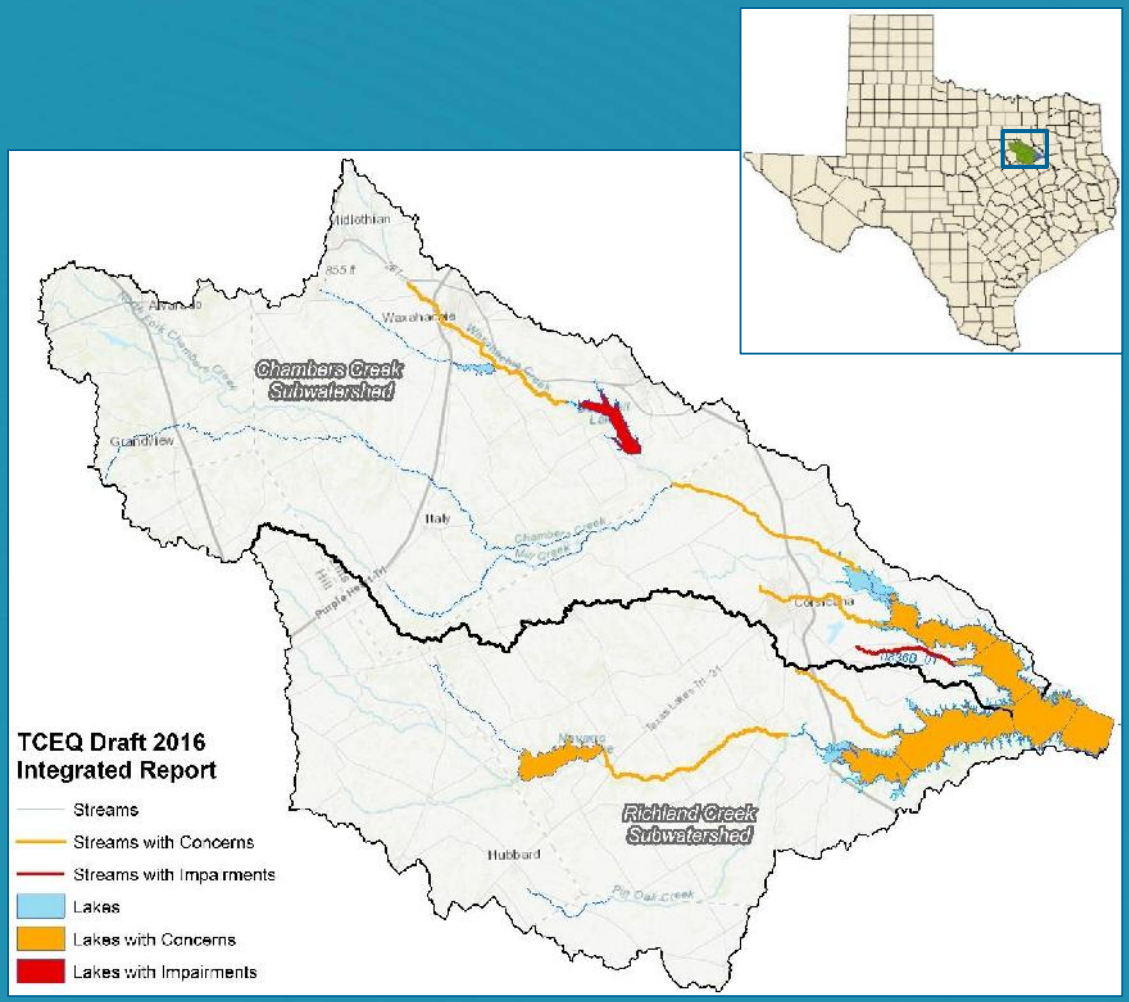
Stakeholder Meeting and Wild Pig Workshop
June 27, 2019

Introduction to WPPs

Why We're Here

TCEQ identified issues in streams & lakes

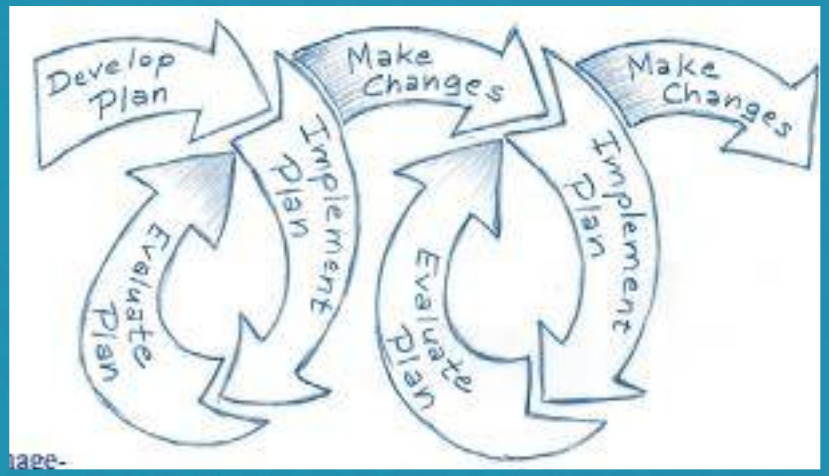
- Nitrogen,
- Phosphorus,
- Dissolved Oxygen
- Algae/Chlorophyl-α
- Bacteria (E. coli)
- Sulfate



Watershed Protection Plans

Steps to Effective Watershed Management

1. Build partnerships
2. Characterize your watershed
3. Establish goals & identify solutions
4. Develop an implementation program
5. Implement your plan
6. Measure progress & make adjustments

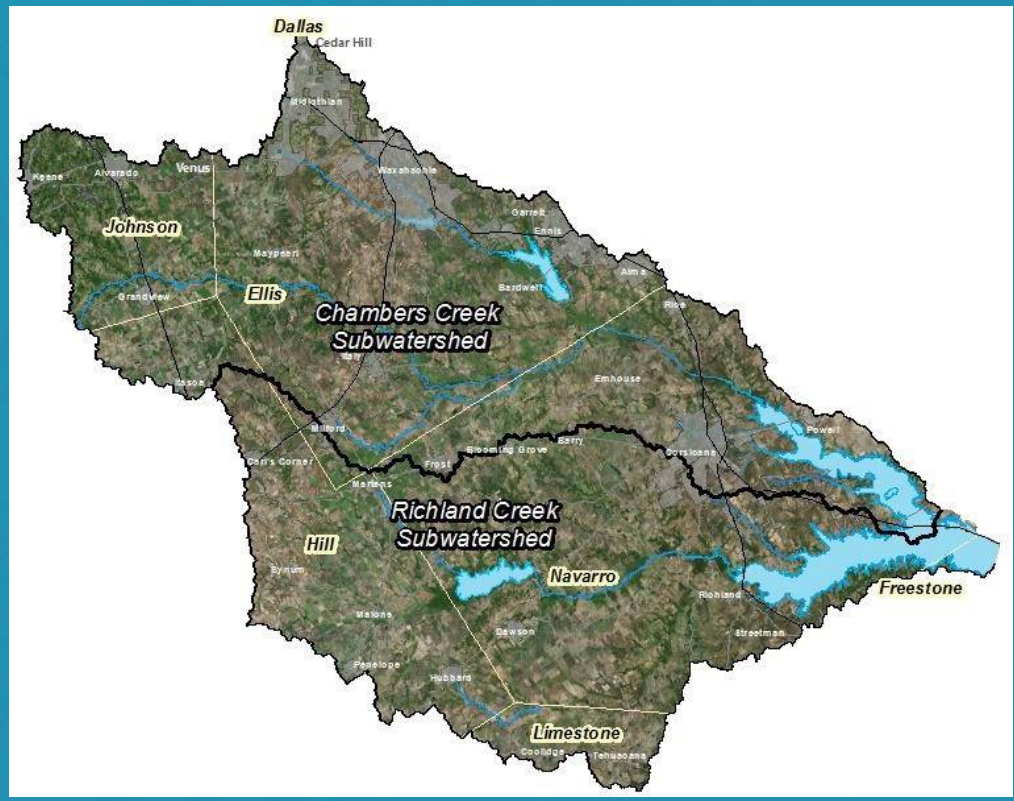


The outcomes of this process are documented or referenced in a watershed plan.

Watershed Protection Plans

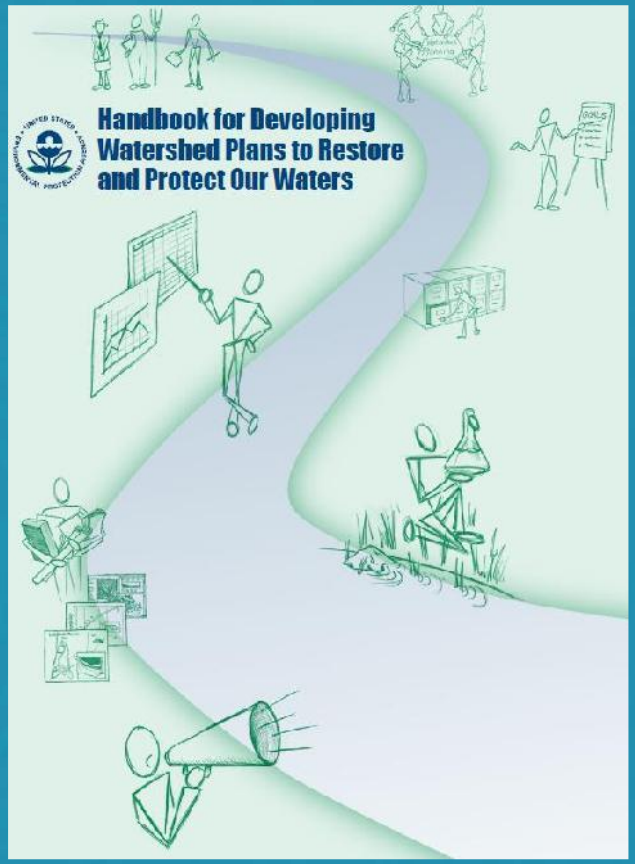
A strategy that provides assessment and management information for a defined watershed.

- EPA Framework
- Clean Water Act §319
- Stakeholder involvement
- Actions supported by sound science
- Technical expertise from diverse sources
- Diverse skills & knowledge
- Focus on water quality goals



Watershed Protection Plans

A. Identify problem & sources
B. Reductions needed to reach goals
C. Identify measures needed to achieve reductions
D. Assistance needed
E. Education & outreach plan
F. Schedule
G. Milestones
H. Criteria for measuring progress
I. Monitoring Plan



"Successful development and implementation of the Richland-Chambers Watershed Protection Plan will depend on the involvement of the community."

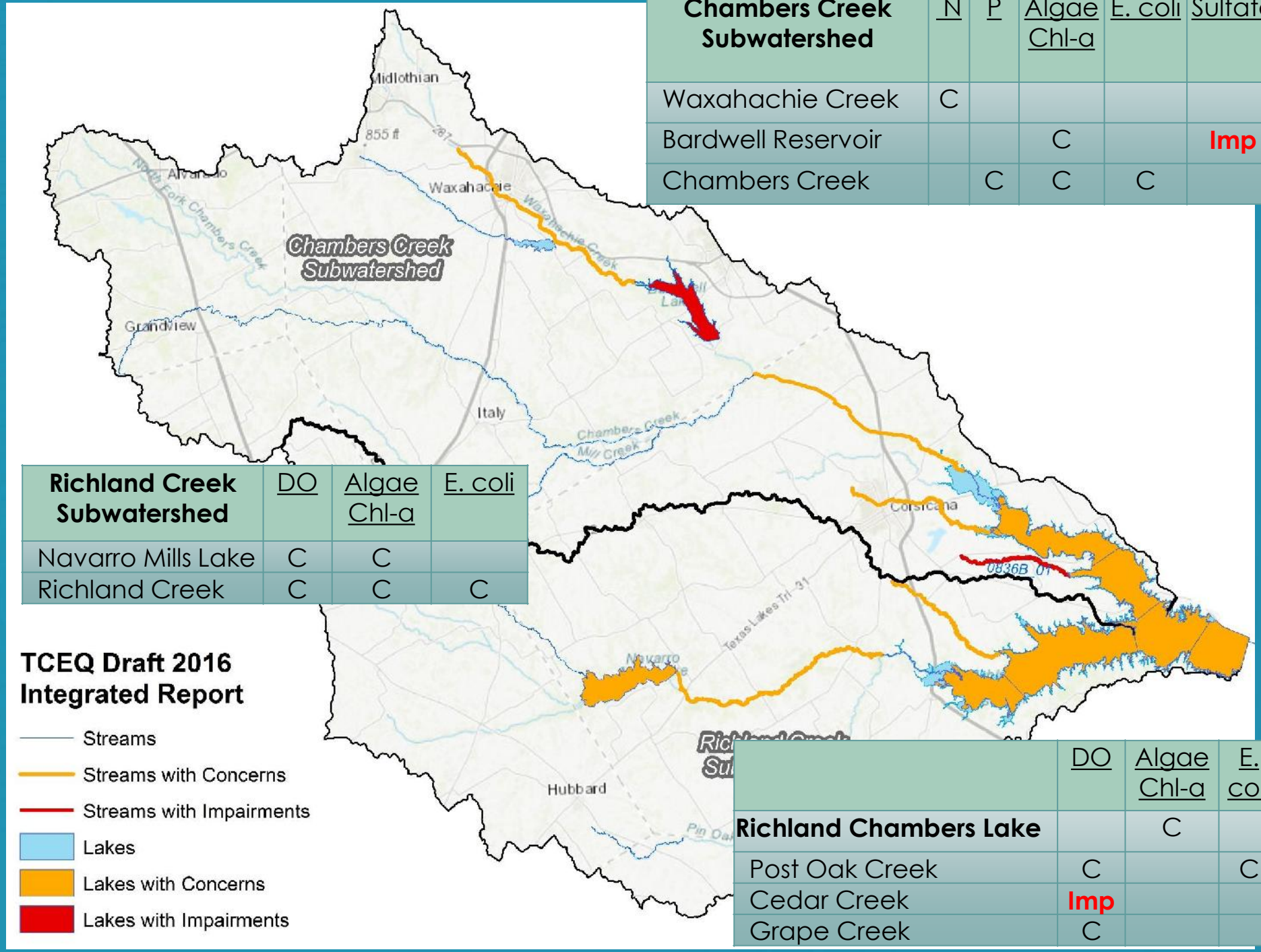
Elements of the Richland-Chambers WPP

Richland-Chambers WPP

Element A: Watershed Characterization and Pollutant Sources

What are the Issues?

- Degraded water quality in lakes and streams
- Storage capacity for drinking water



Chambers Creek Subwatershed	N	P	Algae Chl-a	E. coli	Sulfate
Waxahachie Creek	C				
Bardwell Reservoir			C		Imp
Chambers Creek		C	C	C	

Richland Creek Subwatershed	DO	Algae Chl-a	E. coli
Navarro Mills Lake	C	C	
Richland Creek	C	C	C

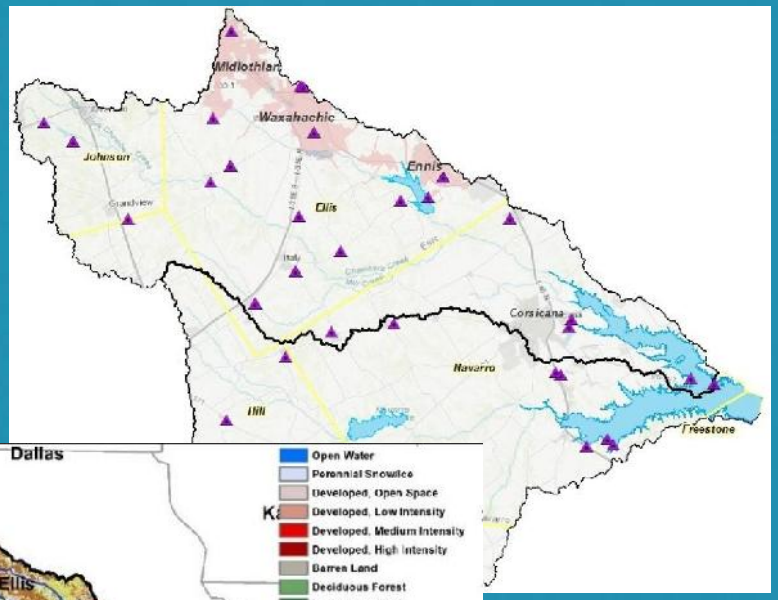
	DO	Algae Chl-a	E. coli
Richland Chambers Lake		C	
Post Oak Creek	C		C
Cedar Creek	Imp		
Grape Creek	C		

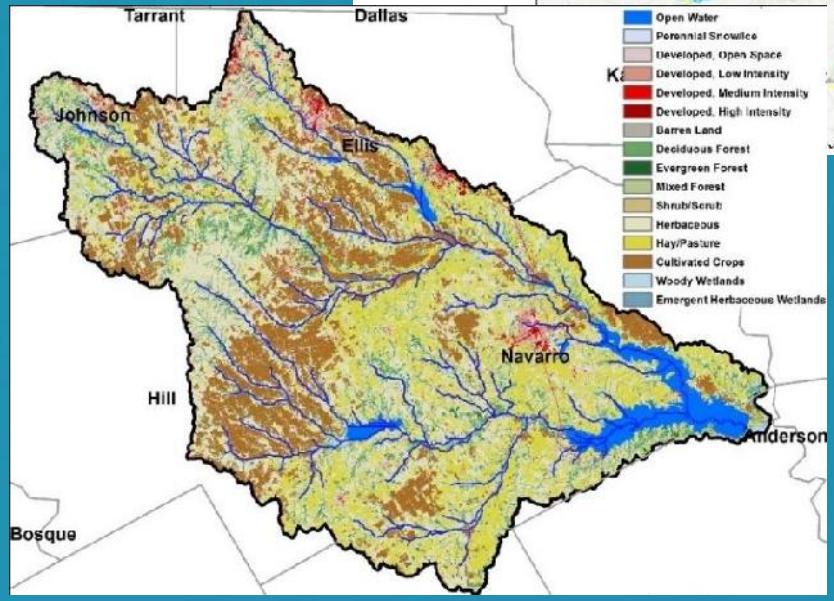
Richland-Chambers WPP

Element A: Watershed Characterization and Pollutant Sources

What are the Causes?

- Point Sources
  WWTPs, sewer overflows
- Nonpoint Sources
  Erosion and rainfall runoff from rural lands, agricultural operations, urban runoff, channel erosion





Richland-Chambers WPP

Element B: Goals and Pollutant Reductions

- **Goal Statement** (Restoration)

  … streams and lakes in the Richland-Chambers watershed meet appropriate water quality standards.

- **Goal Statement** (Protection)

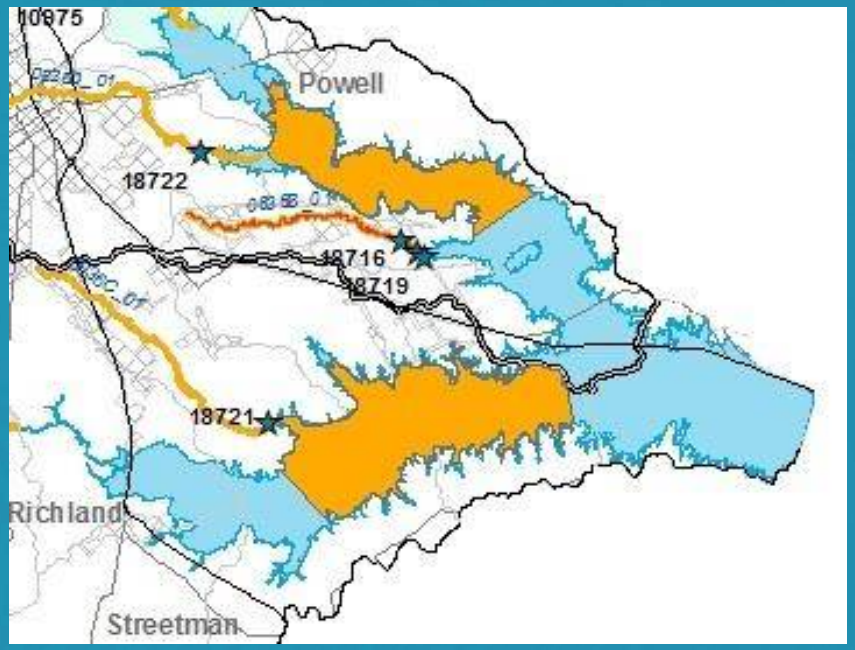
  … capacity of water supply reservoirs be protected by reducing erosion in the Richland-Chambers watershed.

Richland-Chambers WPP

Element B: Goals and Pollutant Reductions

Water Quality Target

Total Phosphorus (TP) drives
- high algae & chlorophyl-a
- low dissolved oxygen



TP reductions to meet goals:

- **10%** Chambers Creek Subwatershed
- **40%** Richland Creek Subwatershed

	10%	20%	30%	40%	50%
Chambers	24	22	19	16	12
Richland	34	32	27	24	21

Richland-Chambers WPP

Element C: Management Measures

- Urban & Developed Areas
  - Nutrient management
  - Sediment trapping using green and conventional BMPs
- Agricultural & Rural Areas
  - State and Federal Conservation Plans and priority practices for farms and ranches
- Stream Channel Erosion
  - Stabilization and restoration projects in priority areas.
- Targeted in priority areas

Richland-Chambers WPP

Element C: Management Measures

Priority Ag & Rural Management Measures

- Filter Strips
- Terraces, contour farming
- Residue management
- Crop rotation
- Prescribed grazing
- Brush management
- Nutrient Management
- Cover crops
- Critical area planting
- Herbaceous weed control
- Range planting
- Riparian forest buffer
- Upland wildlife habitat management

Richland-Chambers WPP

Element D: Assistance Needed

Technical assistance from agencies, extension agents, private sector, landowners, and others for

- Planning, engineering, design, and education.

Financial assistance from agencies, nonprofit organizations, and corporations and industries to support planning and implementation of projects for

- conservation planning & implementation
- wastewater/infrastructure design, construction
- riparian and channel management
- education and outreach

Richland-Chambers WPP

Element E: Education & Outreach

- Stakeholder involvement and participation in plan
- Educational component associated with each management measure
- General natural resource & watershed/water quality awareness for the public

TOOLS

Demonstration projects

Meetings and workshops

Onsite technical assistance

Citizen monitoring programs

Training and certification programs

Social media

Richland-Chambers WPP

Element F: Schedule

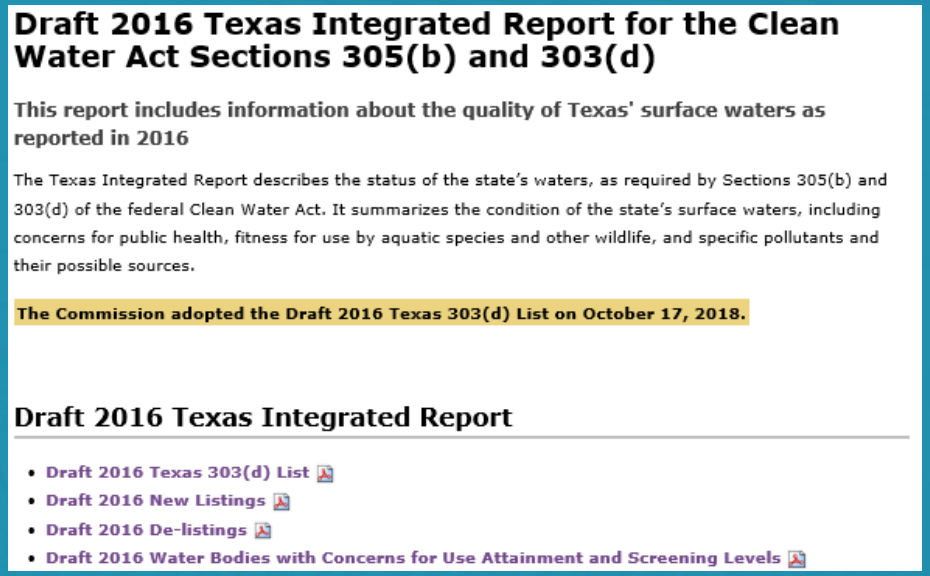
Element G: Interim Milestones

- Implementation over15 year timeframe
- Annual update on implementation of management measures and other activities
- Milestones planned & tracked in 3 year increments
- Review of WPP document every 5 years

Richland-Chambers WPP

Element H: Criteria for Load Reductions

- Assess progress toward water quality goals using TCEQ's biennial Integrated Report
- Concerns *and* Impairments



Draft 2016 Texas Integrated Report for the Clean Water Act Sections 305(b) and 303(d)

This report includes information about the quality of Texas' surface waters as reported in 2016

The Texas Integrated Report describes the status of the state's waters, as required by Sections 305(b) and 303(d) of the federal Clean Water Act. It summarizes the condition of the state's surface waters, including concerns for public health, fitness for use by aquatic species and other wildlife, and specific pollutants and their possible sources.

The Commission adopted the Draft 2016 Texas 303(d) List on October 17, 2018.

Draft 2016 Texas Integrated Report

- Draft 2016 Texas 303(d) List
- Draft 2016 New Listings
- Draft 2016 De-listings
- Draft 2016 Water Bodies with Concerns for Use Attainment and Screening Levels

TCEQ Integrated Report Cycles

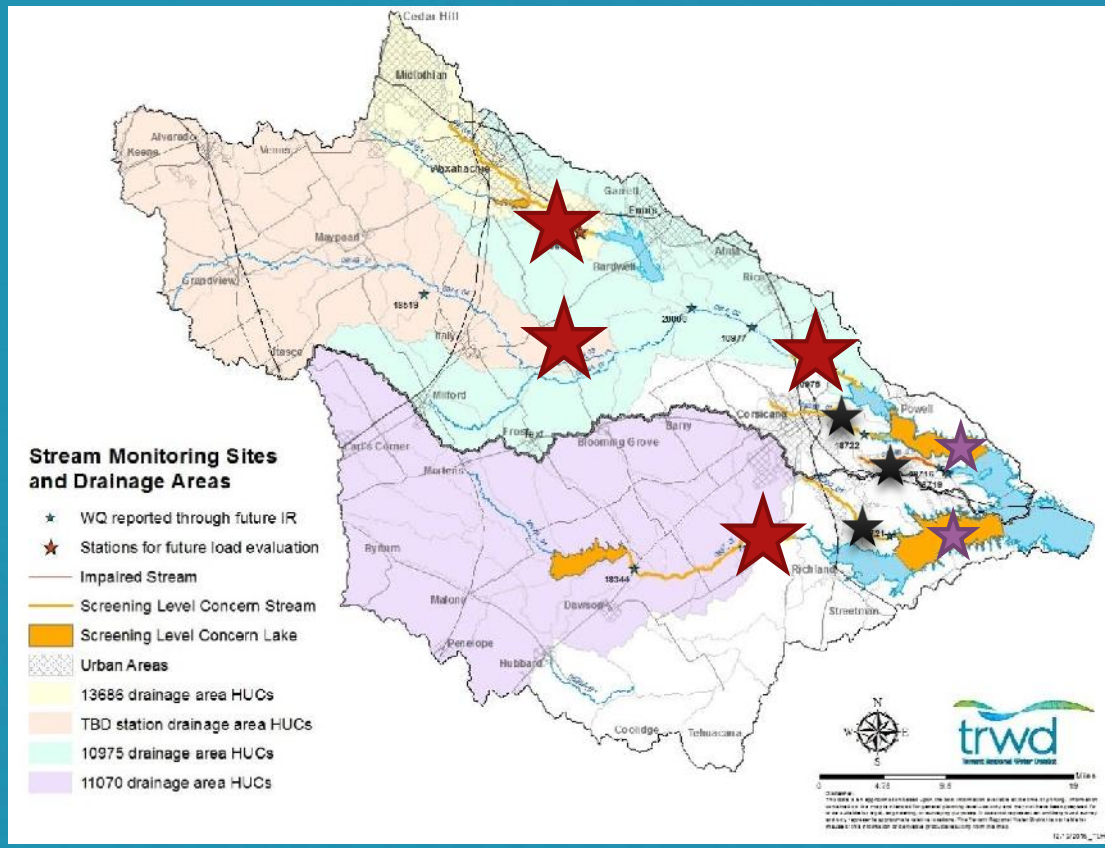
Report	2005	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18
2014	Dec	>>	>>	>>	>>	>>	>>	Nov		*				
2016			Dec	>>	>>	>>	>>	>>	>>	Nov		*		
2018					Dec	>>	>>	>>	>>	>>	>>	Nov		*

Richland-Chambers WPP

Element I: Monitoring

Measure progress in water quality improvements

- Waxahachie Creek
- Chambers Creek upper and lower
- Richland Creek
- Richland-Chambers Lake



Confirm status of Post Oak, Grape, & Cedar Creeks

Potential Sources of Bacteria in Streams

Potential Sources of Bacteria

Element A:
Pollutant Sources

- Wastewater Plants
- Septic Systems
- Pets - Dogs
- Livestock
  Cattle, horses,
  goats, sheep
- Wildlife - Deer
- Non-natives - Feral Hogs

Analysis of Potential Sources

SELECT Model

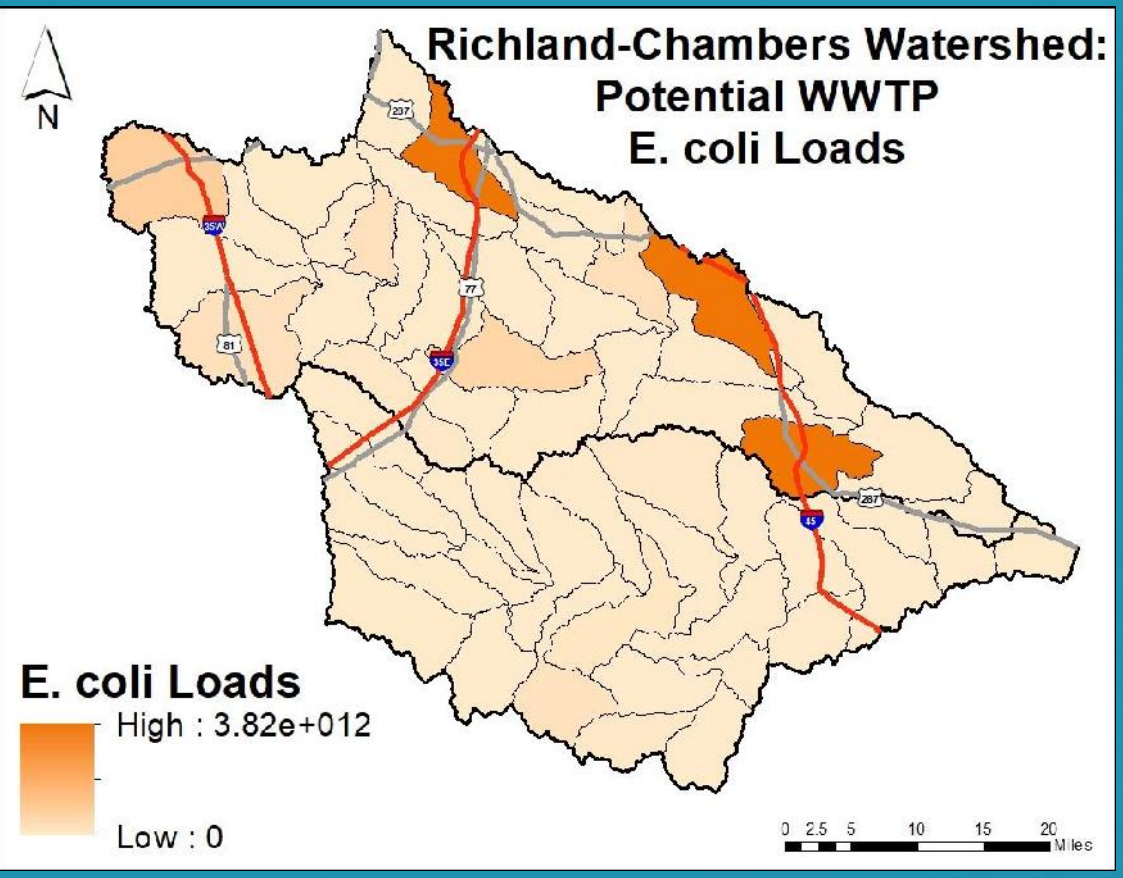
- Combines population, natural resource and land use data into mapping software.
- Estimates total potential loads from identified sources.
- Provides maps of potential bacteria loads across the watershed.
- Used statewide in many watershed plans

Spatially
Explicit
Load
Enrichment
Calculation
Tool

Does not provide exact loadings or locations

Analysis of Potential Sources

Wastewater Treatment Plants



	WWTPs
Chambers	20
Richland	12
Load Calculation:	
$\frac{126\ cfu}{100\ mL} * \frac{10^6\ gal}{MGD} * \frac{3758.2\ mL}{gal}$	

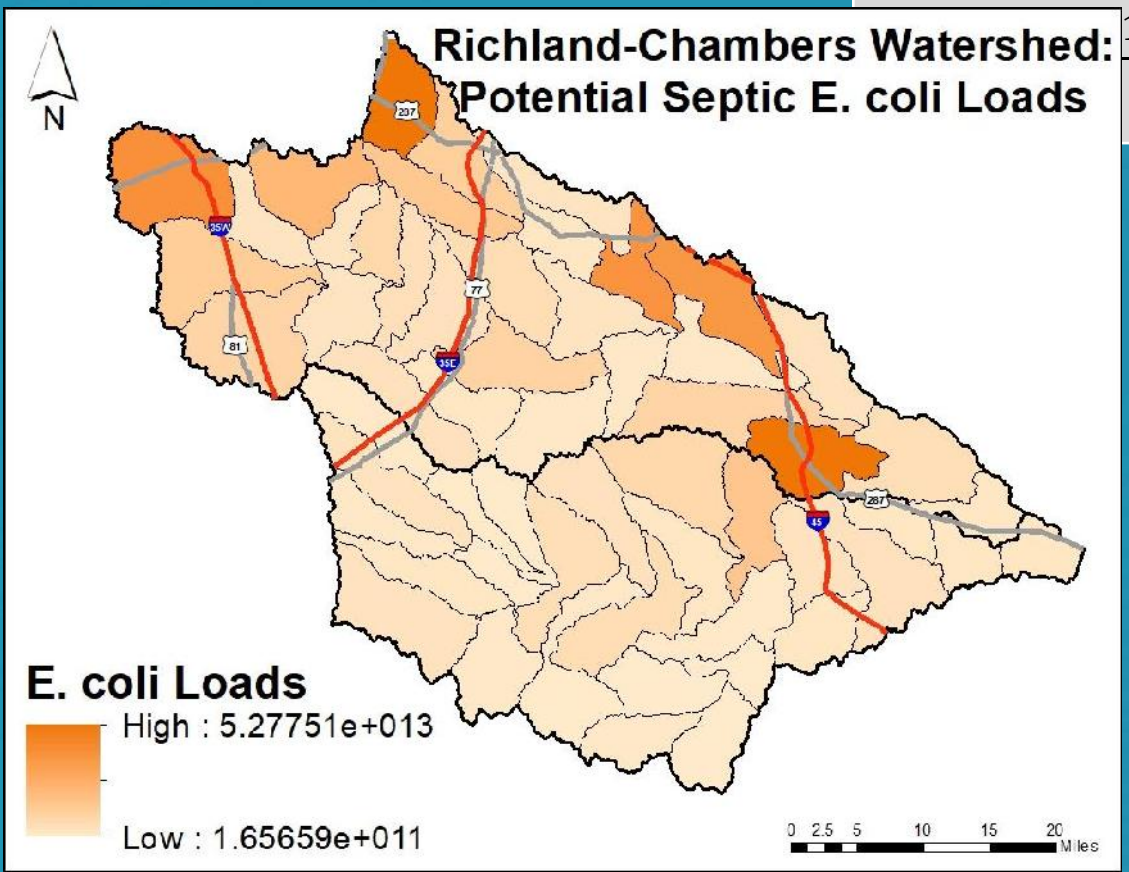
- TCEQ TPDES permit database
- TCEQ WQ Criteria E. coli = 126 cfu/mL

Analysis of Potential Sources

Septic Systems

	OSSFs
Chambers	36,071
Richland	8,670
E. coli cfu/day	10 x 10^6
Load Calculation:	

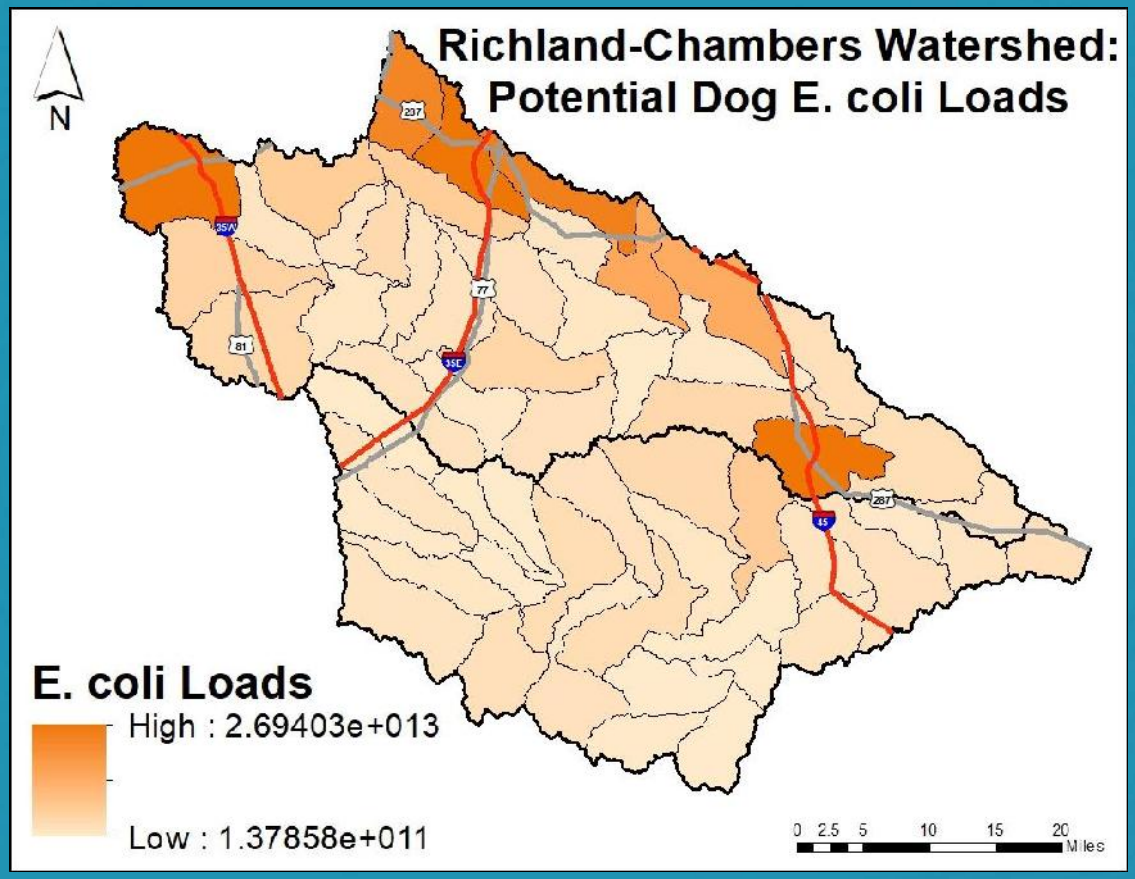
$$\frac{10 * 10^6 cfu}{100\ mL} * \frac{60\ gal}{\frac{person}{day}} * \frac{Avg\ \#}{Household} * \frac{3758.2\ mL}{gal}$$



- 2010 Census: # people/home
- Homes outside CCN excluded
- Discharge: 60 gal/day/home
- NRCS 2004: Failure rate by soil type

Analysis of Potential Sources

Pets - Dogs

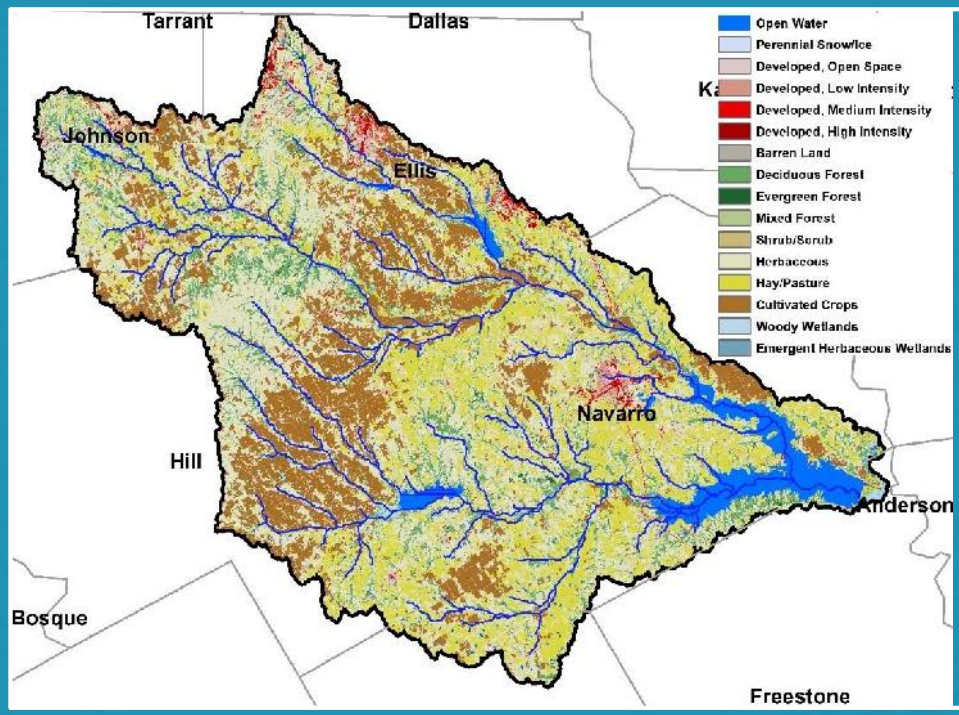


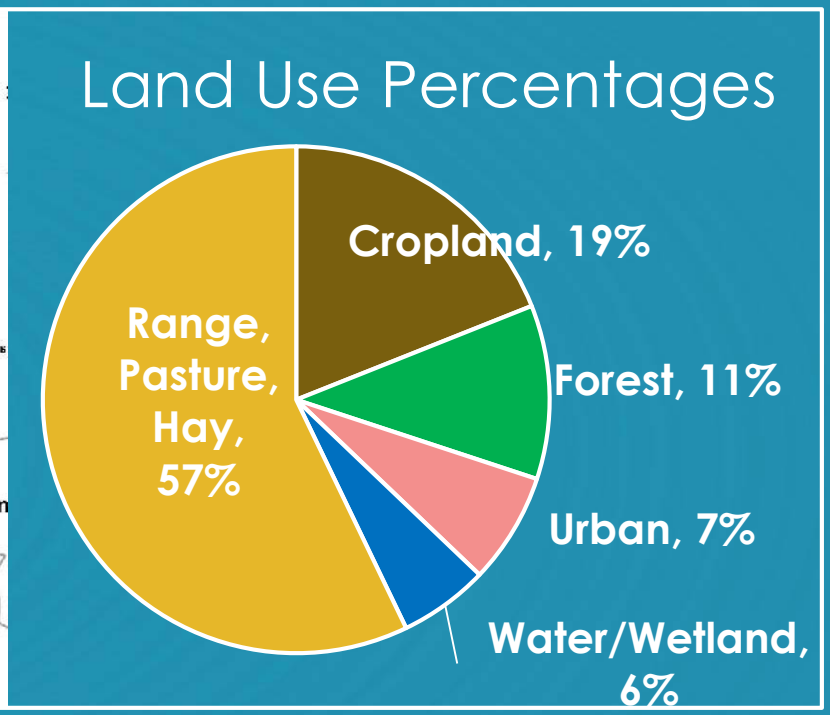
	Dogs
Chambers	49,494
Richland	9,380
E. coli cfu/day	5×10^9
Load Calculation:	
$\frac{1\ dog}{Household} * 5 * 10^9 \frac{cfu}{day}$	

- AMVA 2002: Average 1 dog/home

Analysis of Potential Sources

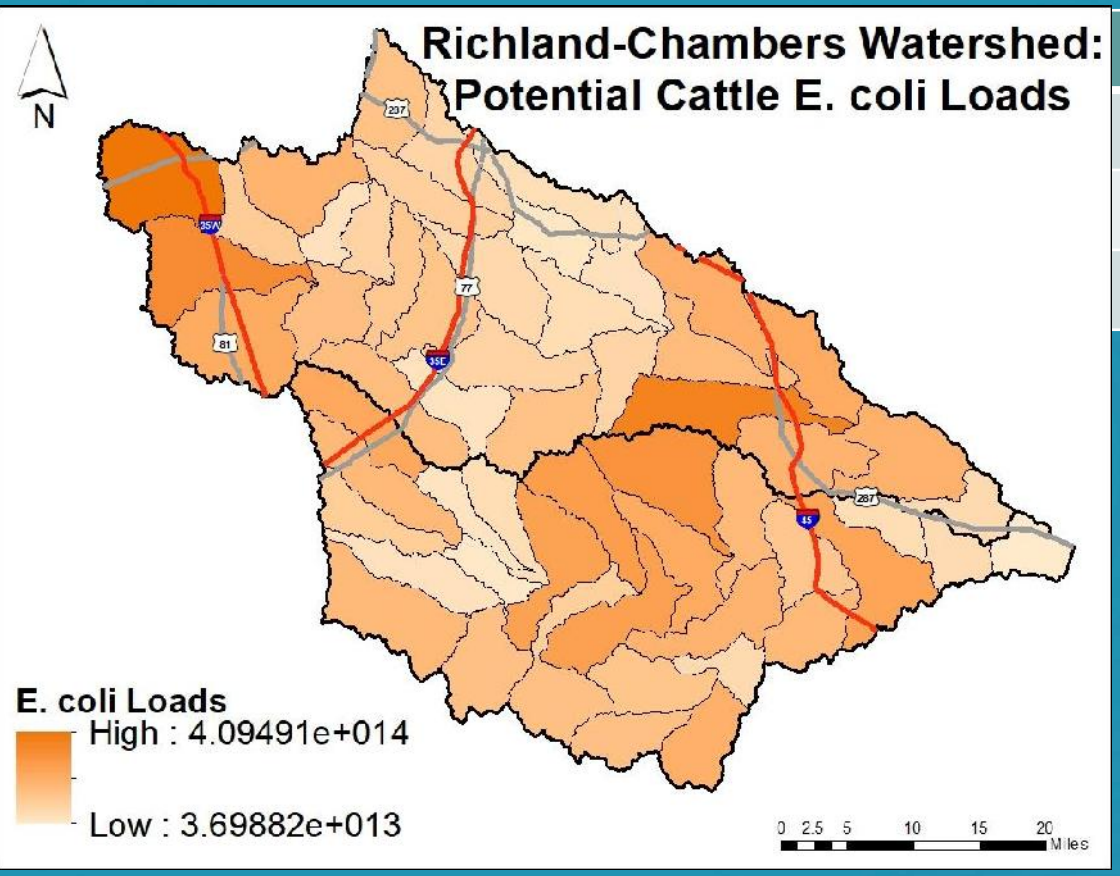
Land Uses and Coverage





Analysis of Potential Sources

Livestock - Cattle

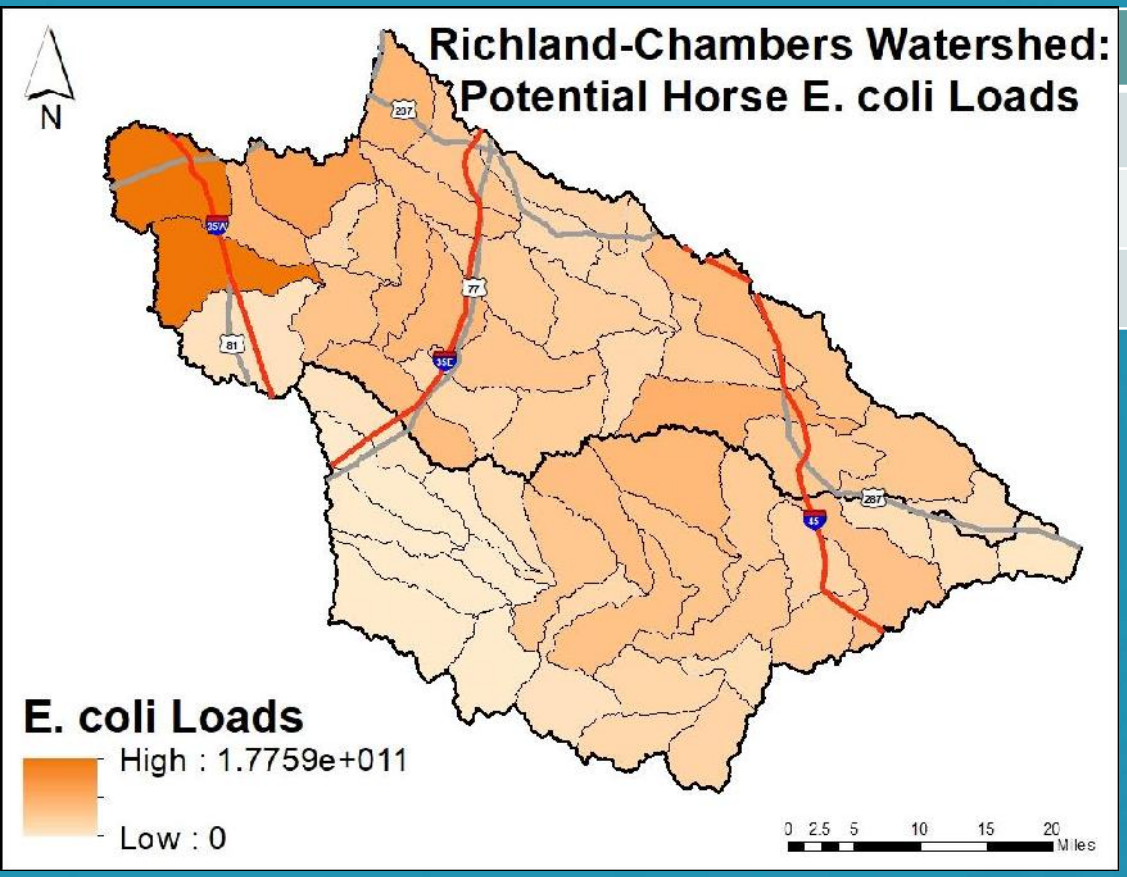


	Cattle
Chambers	70,892
Richland	67,377
E. coli cfu/day	$10*10^{10}$ cfu/day

- USDA-NASS: Number of cattle
- USEPA 2001: daily E. coli production
- Applied to range, pasture, hay, brush, and forest land covers.

Analysis of Potential Sources

Livestock - Horses

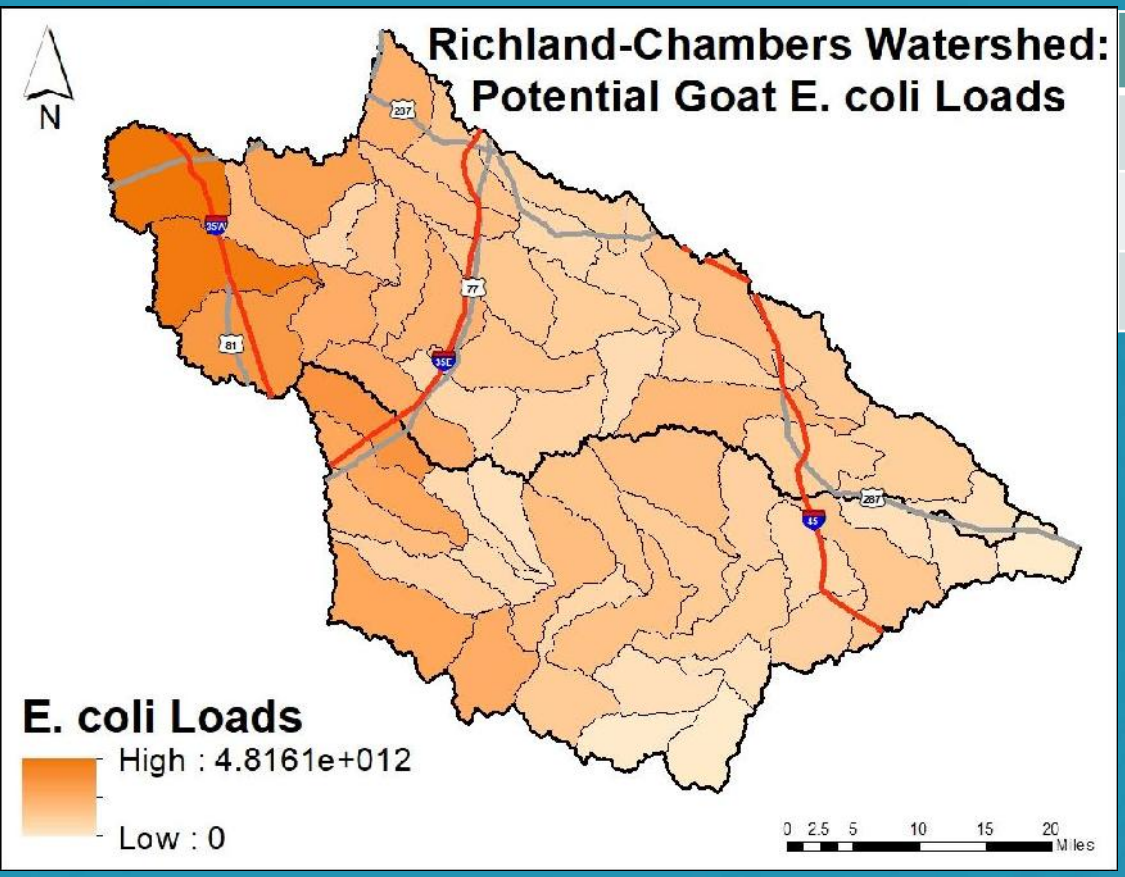


	Horses
Chambers	4,819
Richland	1,928
E. coli cfu/day	$4.2*10^8$ cfu/day

- USDA-NASS: Number of horses
- USEPA 2001: daily E. coli production
- Applied to range, pasture, hay, brush, and forest land covers.

Analysis of Potential Sources

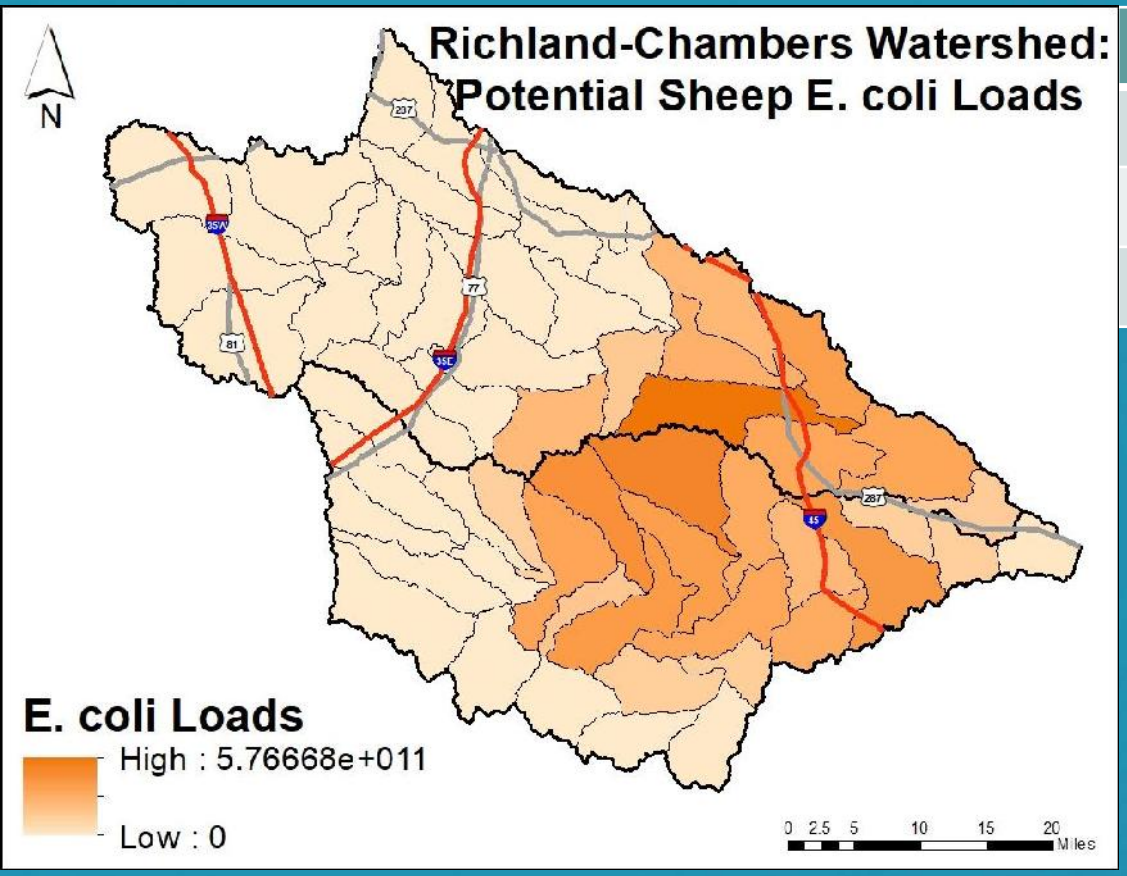
Livestock - Goats



	Goats
Chambers	5,434
Richland	3,276
E. coli cfu/day	$1.2*10^{10}$ cfu/day

- USDA-NASS: Number of goats
- USEPA 2001: daily E. coli production
- Applied to range, pasture, hay, brush, and forest land covers.

Analysis of Potential Sources
Livestock - Sheep

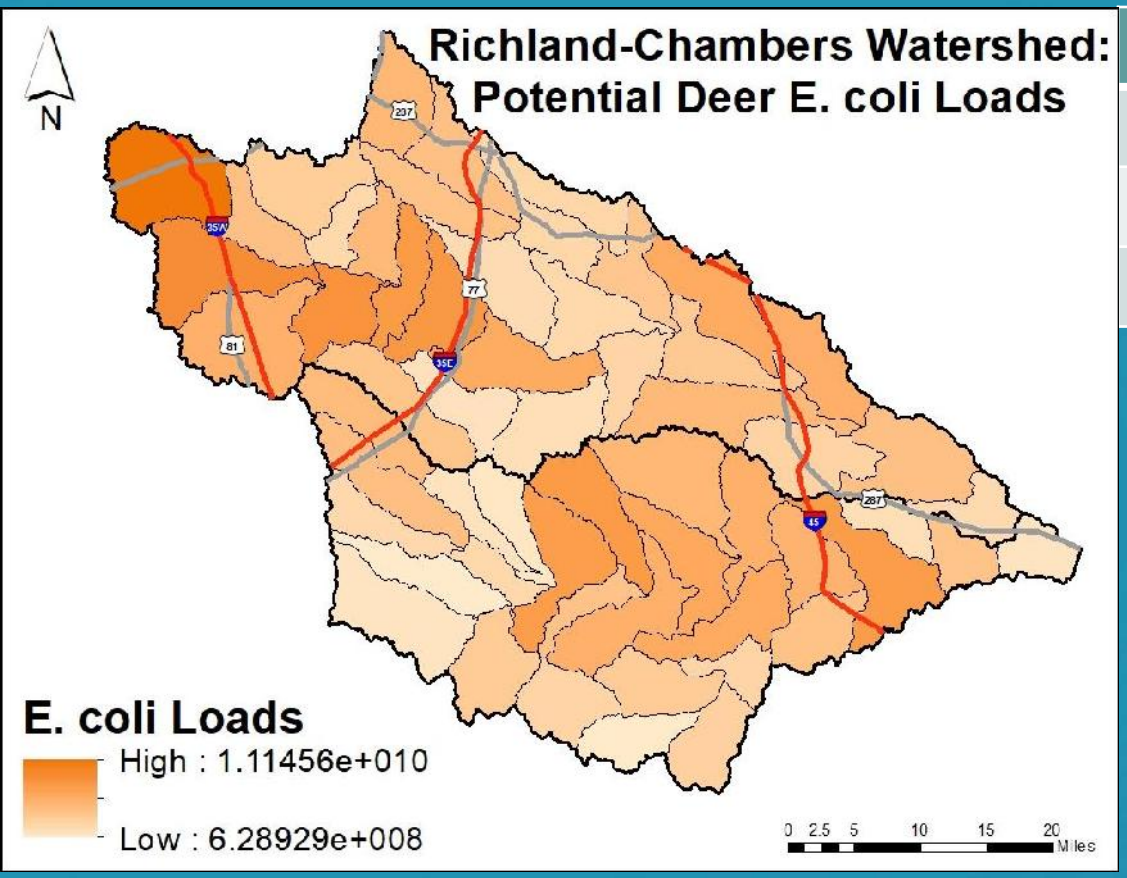


	Sheep
Chambers	355
Richland	587
E. coli cfu/day	$1.2*10^{10}$ cfu/day

- USDA-NASS: Number of sheep
- USEPA 2001: daily E. coli production
- Applied to range, pasture, hay, brush, and forest land covers.

Analysis of Potential Sources

Wildlife - Deer

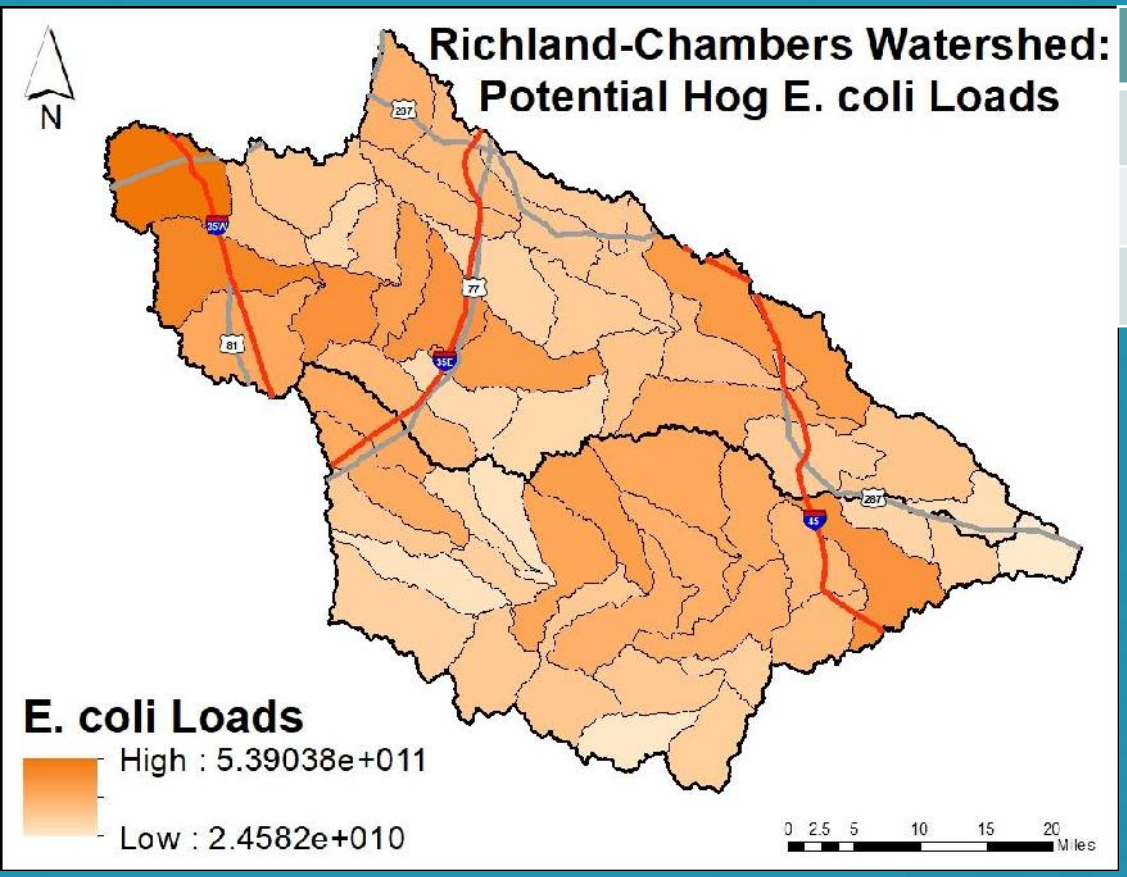


	Deer
Chambers	528
Richland	406
E. coli cfu/day	$3.5*10^8$ cfu/day

- TPWD/Lockwood 2005: Resource Management Unit density of 155 ac/deer
- USEPA 2001: daily E. coli production
- Applied to forested land.

Analysis of Potential Sources

Non-native Animals – Feral Hogs

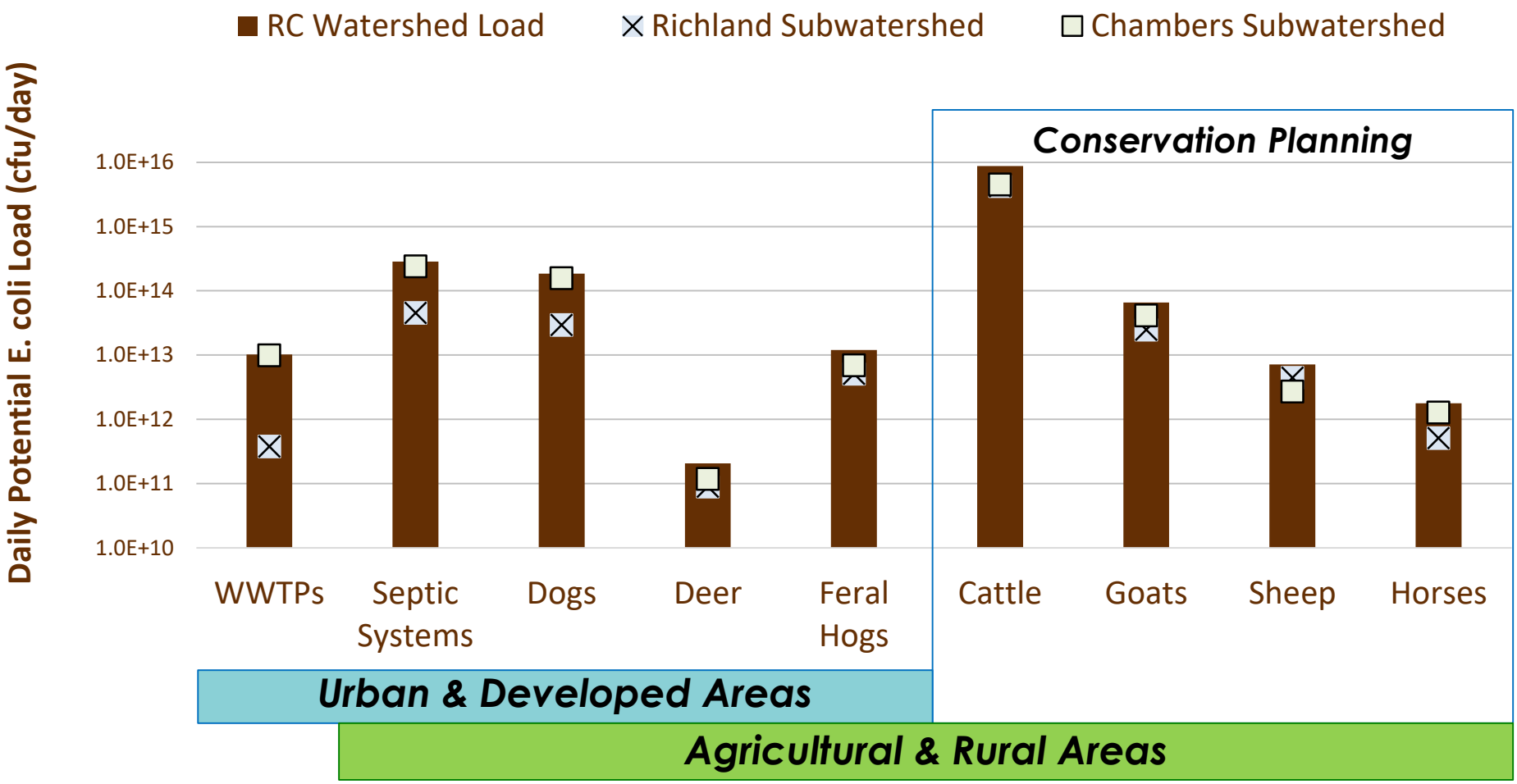


	Feral Hogs
Chambers	9,920
Richland	7,344
E. coli cfu/day	$1.1*10^9$ cfu/day

- Berg et al 2008: Density 20 ac/hog
- USEPA 2001: daily E. coli production
- Applied to forested land and wetlands within 100 m. of streams

Relating Sources to Management

Total Potential Load from Identified Sources by Management Category



Management Measures to Address Bacteria

Measures that Address Bacteria

Urban Wastewater Management

Management Measures

- Good housekeeping
- Repair failing collection system infrastructure
- Sanitary Sewer Overflow Initiatives
- Controlling urban stormwater
- WWTP Improvements

Education & Outreach

- Municipal staff/WWTP operator education
- Public education on NPS, stormwater & "flushables"

Measures that Address Bacteria

Septic Systems

Management Measures

- Repair/replace failing OSSFs
- Permitting and inspections through OSSF delegated agency programs

Education & Outreach

- *Homeowner education - classes, website, printed materials*
- *Inspector education*

Measures that Address Bacteria

Livestock

Management Measures

- NRCS Conservation Plans
- TSSWCB Water Quality Management Plans

Structural & Non-structural practices

Education & Outreach

- Producer education
- Lone Star Healthy Streams Workshops

Measures that Address Bacteria

Wildlife

- Possible management in overpopulated areas
- Work through regulatory agencies

Measures that Address Bacteria

Pets - Dogs

Management Measures

- Pet Waste Stations

Education & Outreach

- Pet owner education

Measures that Address Bacteria

Non-native Animals – Feral Hogs

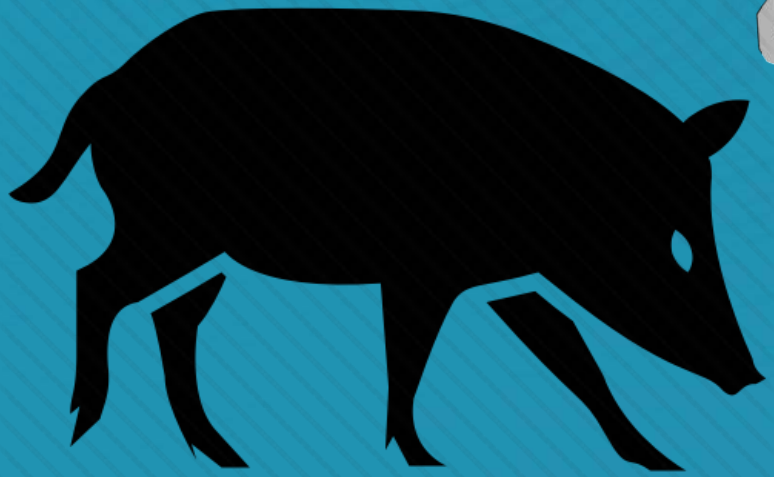
Management Measures

- Animal removal through hunting or trapping
- Bounty programs
- Cooperative programs

Education & Outreach

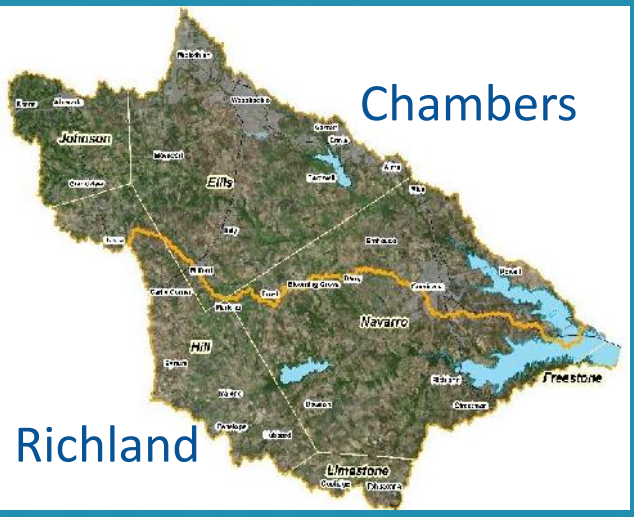
- Feral Hog workshops

Discussion Questions



Is your property located in the Richland-Chambers lake watershed?

Place a star in the box under your answer:



Yes	Yes	No
In the Chambers Creek Subwatershed	In the Richland Creek subwatershed	
2	6	6
★	★	★

Is your property located in or near primary hog habitat?

Place a star in the box under your answer:

Yes	No
14	2
★	★

Have you seen fewer or greater number of hogs than previous years?

Place a star in the box under your answer:

Greater Number	Fewer Number
15	2
★	★

Do you believe reducing hog populations will help water quality and stream erosion?

Place a star in the box under your answer:

Yes	No
16	0
★	★

What is the MOST significant challenge to implementing feral hog control on your property?

Place a star in the box under your answer:
(One answer only)

Lack of			
Time	Money	Information	Other
10	5	1	1
★	★	★	★

Sightings in the last 12 months?

Place a star in the box under your answer:

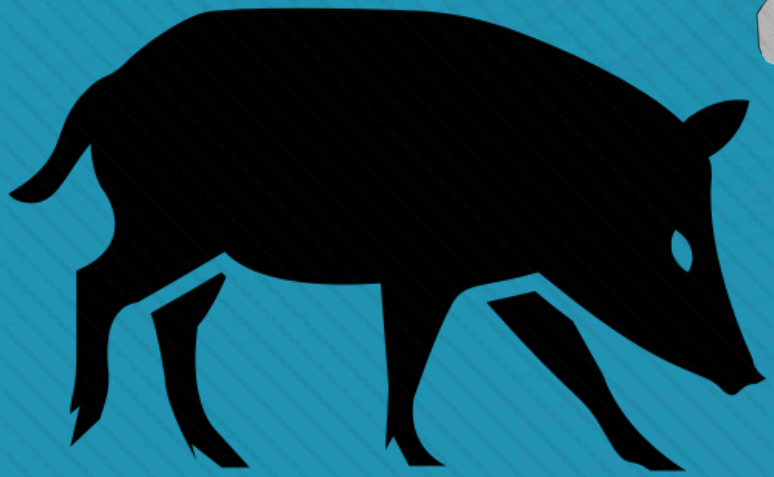
Yes	No
15	3
★	★

Questions?

Richland-Chambers Watershed Partnership

Stakeholder Meeting and Wild Pig Workshop
June 27, 2019

Discussion Questions



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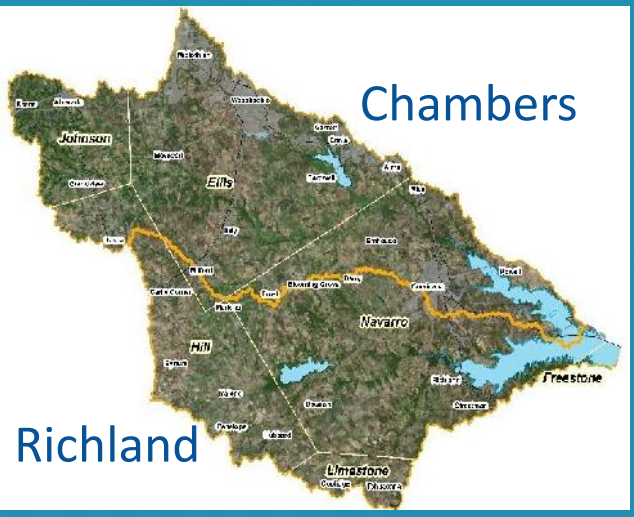

Yes	Yes	No
In the Chambers Creek Subwatershed	In the Richland Creek subwatershed	
2	6	6
★	★	★

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Yes	No
14	2
★	★

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Greater Number	Fewer Number
15	2
★	★

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16	0
★	★

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Place a star in the box under your answer:
(One answer only)

Lack of			
Time	Money	Information	Other
10	5	1	1
★	★	★	★

Have you seen feral hogs on or near your property in the last 12 months?

Place a star in the box under your answer:

Yes	No
15 ★	3 ★