

The background of the slide is a photograph of a river with a rocky and debris-filled bank. A person is visible on the left side of the bank, looking towards the water. The text is overlaid on this image.

Clinch River and Tributaries

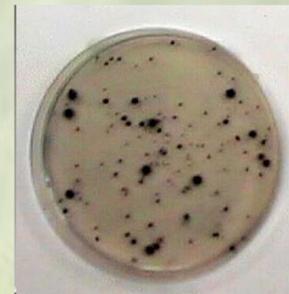
TMDL Implementation Plan

First Public Meeting

March 10th, 2016

Why are we here today?

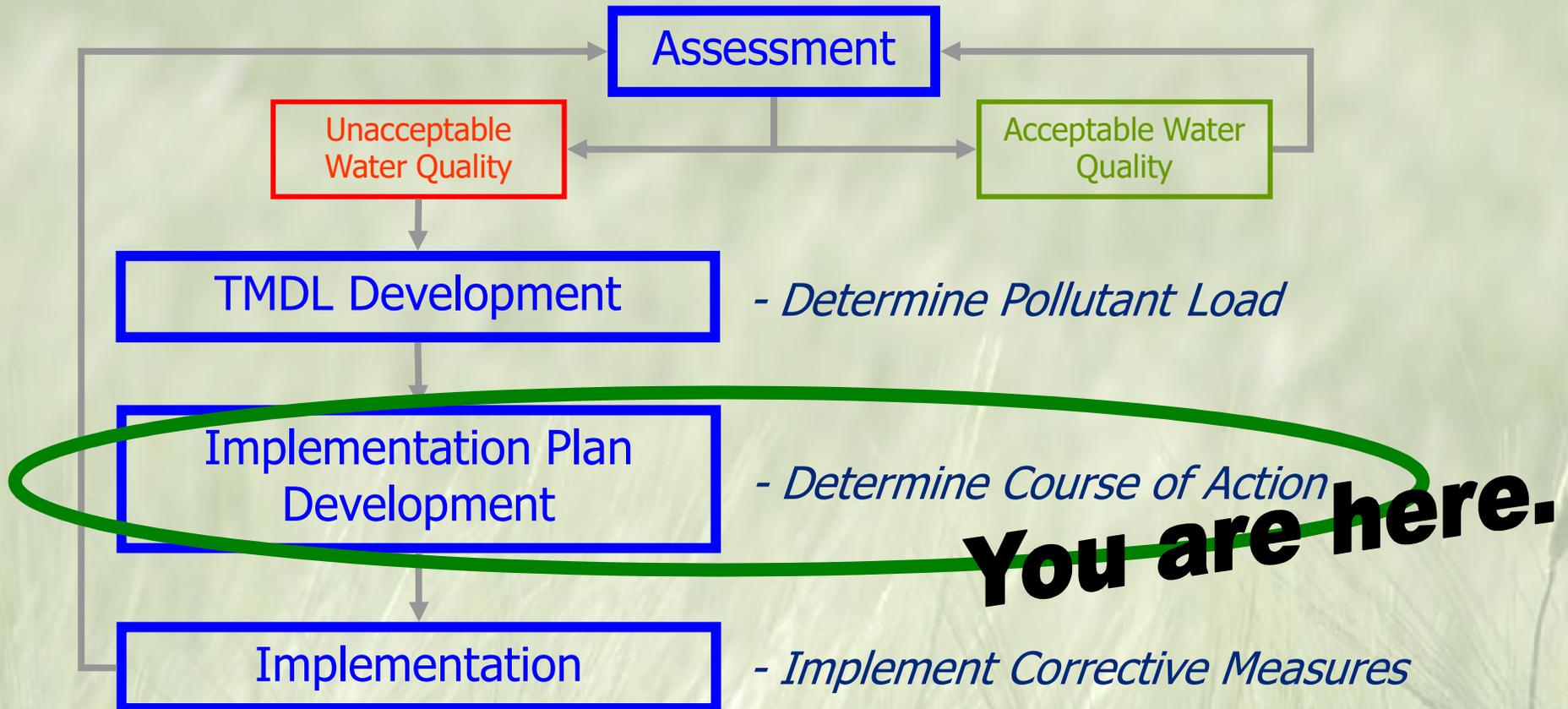
- Fecal Bacteria in the Clinch River and Tributaries
 - What's Fecal Bacteria?
 - Bacteria associated with feces from humans and warm blooded animals
 - (fecal coliform, *E. coli*)
 - Why should stakeholders care?
 - Pathogens (including some strains of *E. coli*)
 - Parasites
 - Water Quality Standard
 - Primary contact recreation - swimming
 - Single Sample Max: 235 cfu/100 ml *E. coli* (10% violations allowed)
 - Monthly Geometric Mean: 126 cfu/100 ml *E. coli*



What is a TMDL?

- TMDL – Total Maximum Daily Load
- A pollutant “budget” study to determine the maximum amount of a pollutant a water body can receive and still meet water quality standards
- A TMDL Includes:
 - Source Assessment
 - Modeling
 - Hydrology
 - Water Quality
 - Load Allocation

TMDL Process



TMDL Implementation Plan

A Document that details actions or strategies that must be undertaken to achieve load reductions as defined by the TMDL.



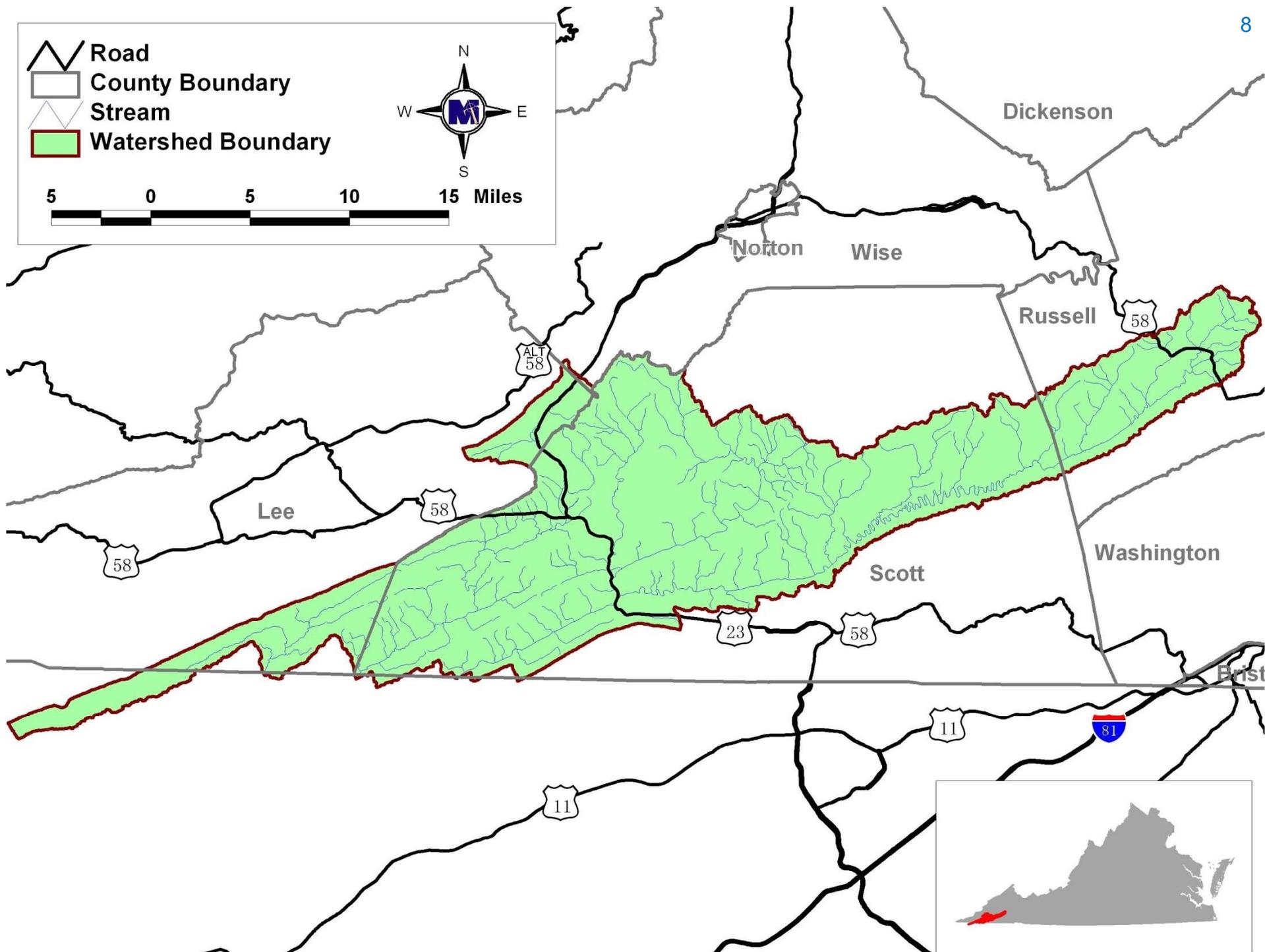
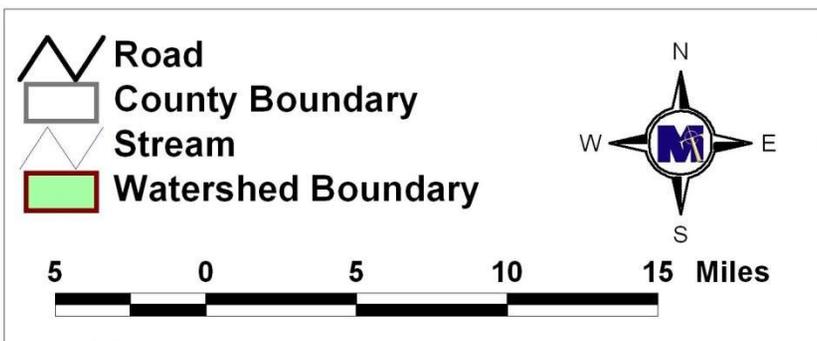
Components of an Implementation Plan

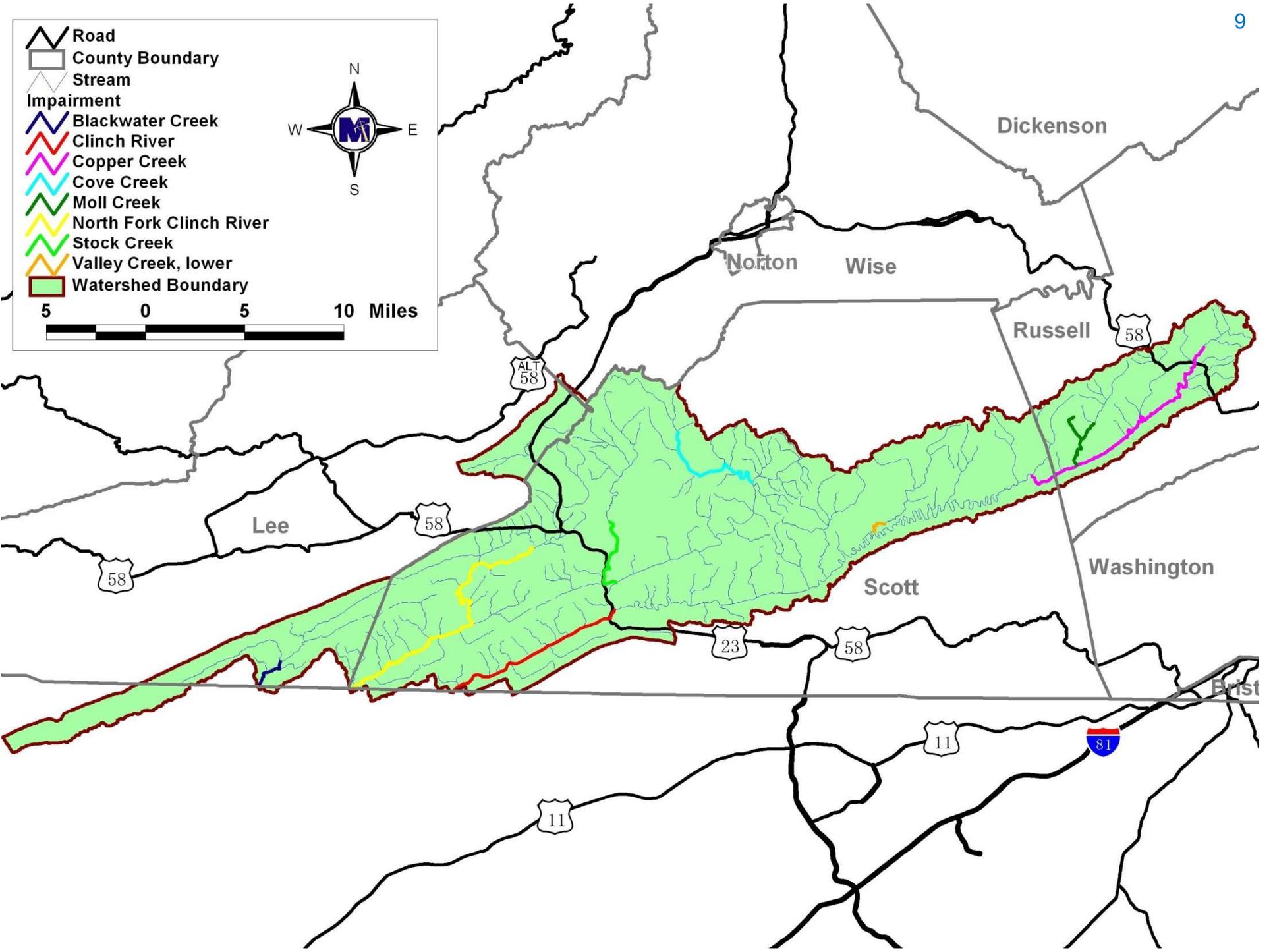
- Review of TMDL
- Corrective Actions
 - Best Management Practices (BMPs), educational programs, regulatory authority, incentives
- Cost/Benefit Analysis
- Measurable Goals
- Timeline to Achieve Water Quality Objectives
 - Includes monitoring plan to assess progress
- Public Participation

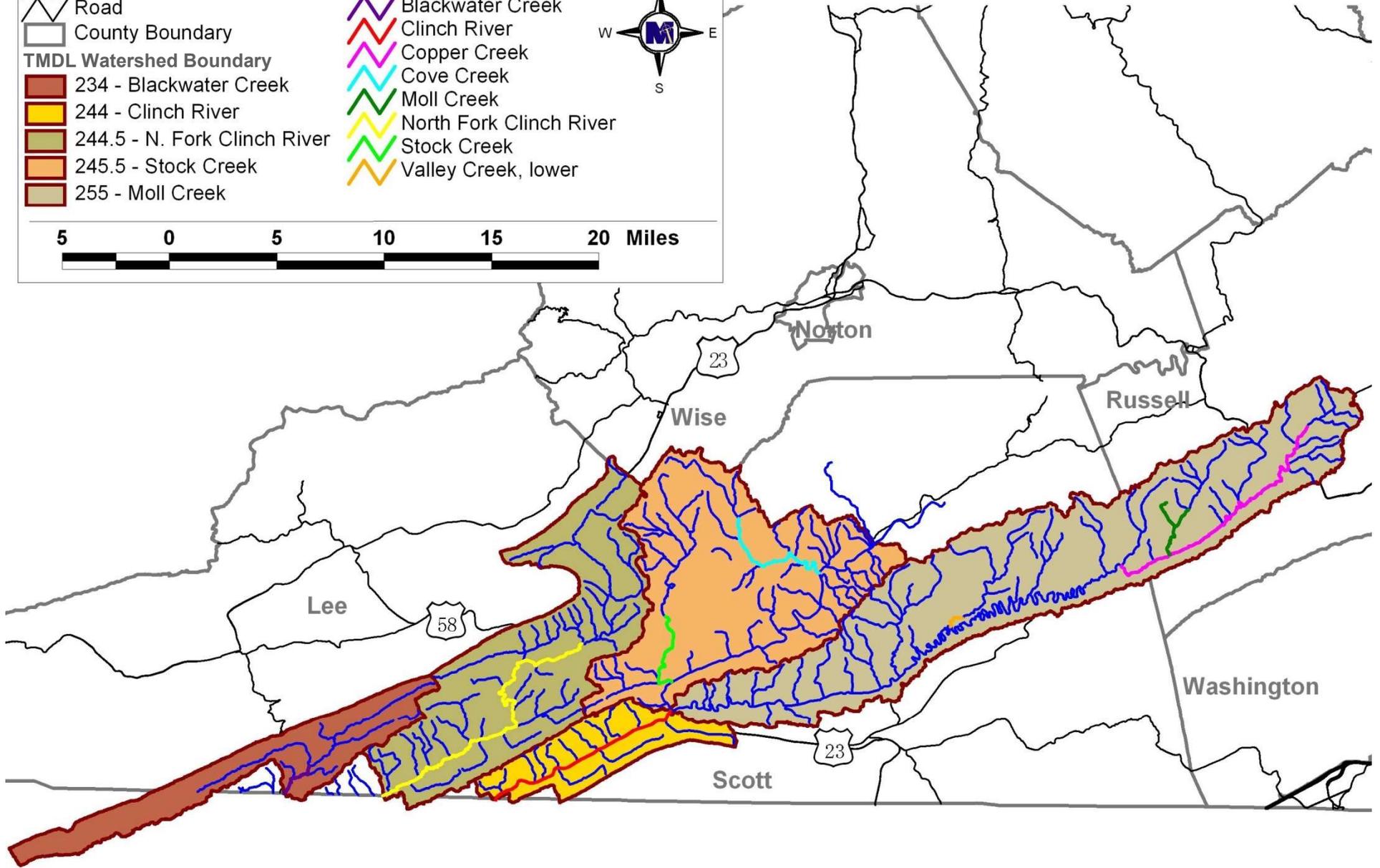
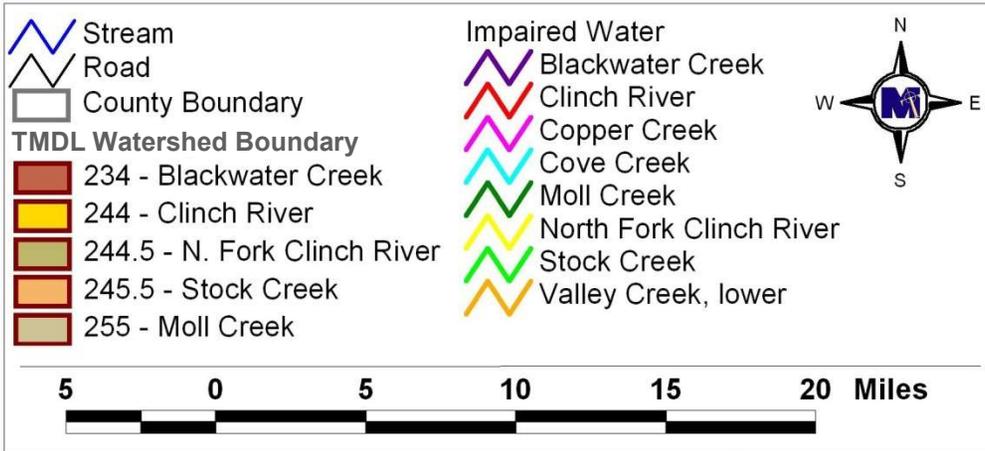
TMDL Review

Impairment	Year Listed*	Reason Listed	Data TMDL Completed
Clinch River VAS-P13R_CLN01A02	2008	Bacteria	September 2013
Blackwater Creek VAS-P16R_BKW01A02	2008	Bacteria	September 2013
Cove Creek VAS-P13R_COV01B08	2008	Bacteria	September 2013
Stock Creek VAS-P13R_STO01A00	2008	Bacteria	September 2013
Copper Creek VAS-P14R_COP02B08	2008	Bacteria	September 2013
Copper Creek VAS-P14R_COP03A02	2008	Bacteria	September 2013
Moll Creek VAS-P14R_MOL01A08	2008	Bacteria	September 2013
Valley Creek VAS-P14R_VAL01A02	2008	Bacteria	September 2013
North Fork Clinch River VAS-P15R_NFC01B00	2008	Bacteria	September 2013
North Fork Clinch River VAS-P15R_NFC01B08	2008	Bacteria	September 2013
North Fork Clinch River VAS-P15R_NFC01C02	2010	Bacteria	September 2013

*Year initially listed on Virginia's Section 303(d) Total Maximum Daily Load Priority List and Report





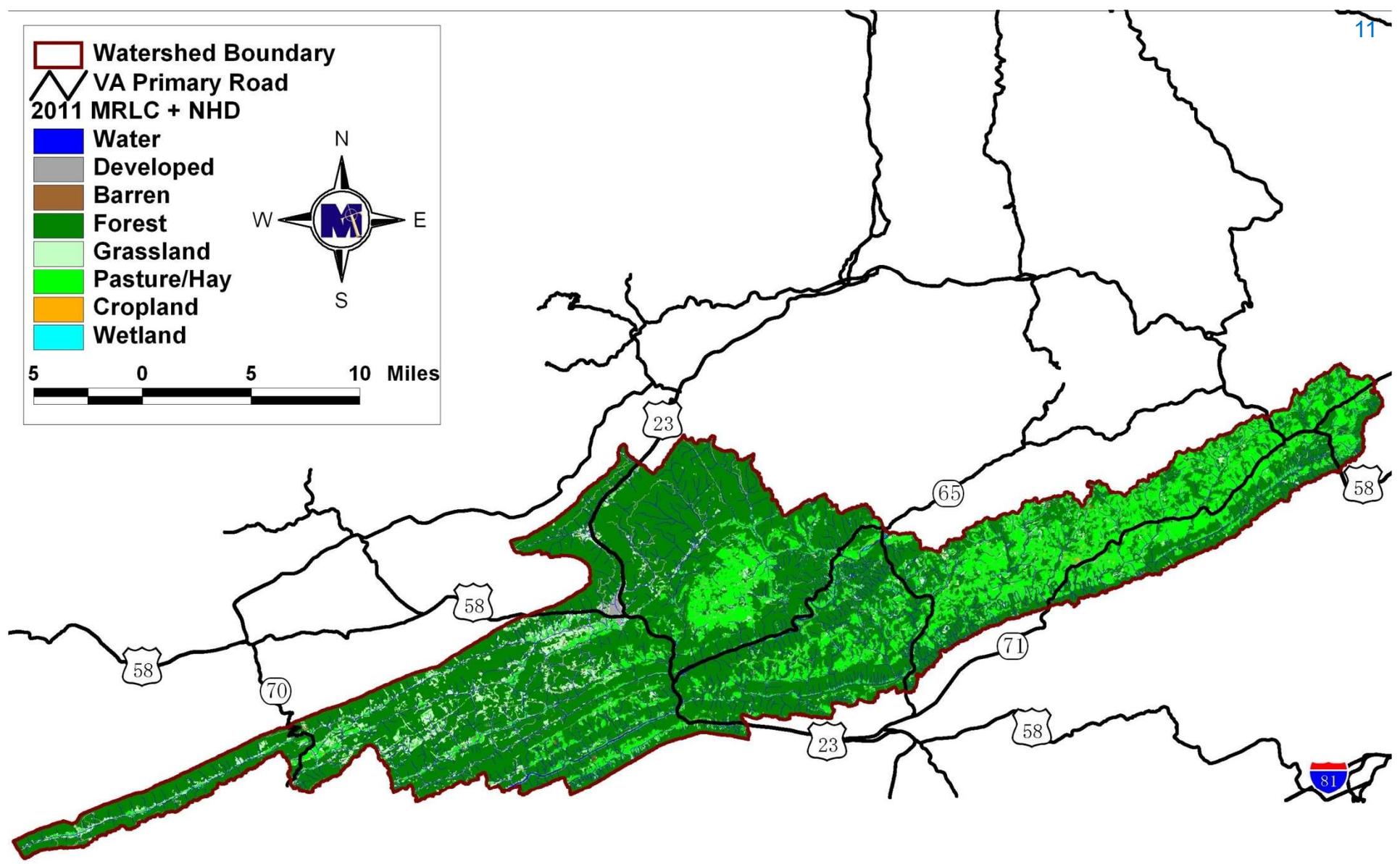


Watershed Boundary
VA Primary Road
2011 MRLC + NHD

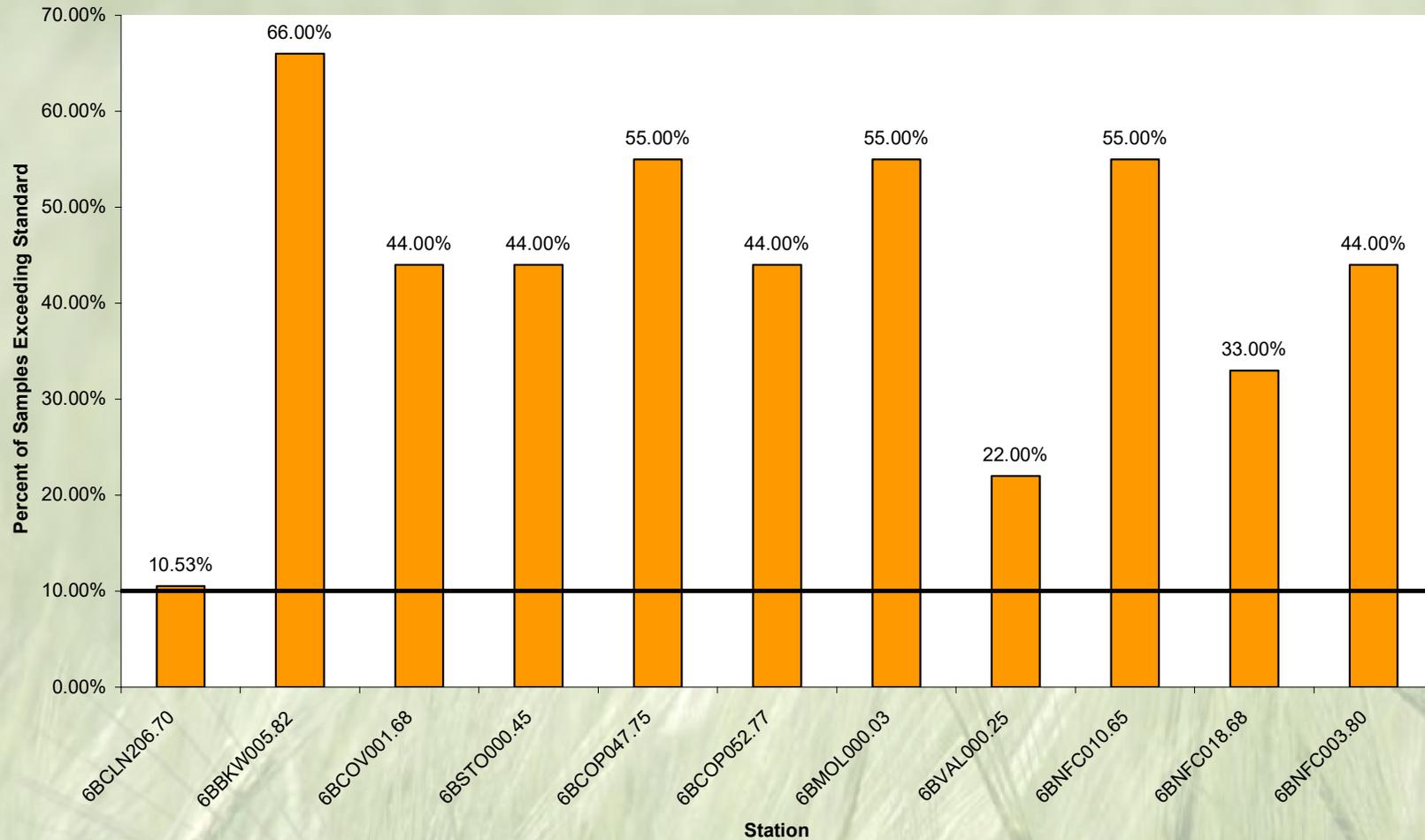
- Water
- Developed
- Barren
- Forest
- Grassland
- Pasture/Hay
- Cropland
- Wetland

N
W M E
S

5 0 5 10 Miles



Monitoring Station Data from the 2012 DEQ Water Quality Assessment Report



Bacteria Reduction Goals for Implementation Plan

Impairment	Livestock Direct	Cropland and Pasture	Straight Pipes	Urban and Residential
Clinch River	99	0	100	63
North Fork Clinch River	99	13	100	100
Stock Creek	17	0	100	0
Blackwater Creek	99	0	100	13
Moll Creek	99	0	100	15

*Bacteria source reductions are for delisting goals.

Change in Land Use by Percentage of Watershed

2011 MRLC vs TMDL Land Use

Land Use	Blackwater	Clinch	N. Fork Clinch	Stock	Moll
Water	0.00%	0.17%	0.00%	0.03%	0.00%
Developed	0.00%	0.13%	0.62%	0.11%	-0.03%
Barren	0.14%	0.24%	0.06%	0.01%	-0.01%
Forest	-0.21%	-0.83%	-0.53%	-0.22%	-0.29%
Grassland	-0.06%	0.36%	-0.08%	0.12%	0.33%
Pasture/Hay	-0.06%	-0.09%	-0.09%	-0.06%	0.00%
Cropland	0.00%	0.00%	0.00%	0.00%	0.00%
Wetland	0.20%	0.02%	0.01%	0.01%	0.00%

Residential Source Estimates

Impairment	Potential Failing Septic Systems	Potential Straight Pipes	Dogs
Clinch River	10	38	160
North Fork Clinch River	48	155	816
Stock Creek	39	187	631
Blackwater Creek	7	50	111
Moll Creek	87	235	1,362
Total	191	665	3,080

Livestock Estimates

TMDL Watershed	Beef cows	Milk cows	Horse	Sheep	Hog
Clinch River	794	0	105	143	7
North Fork Clinch River	644	0	83	107	5
Stock Creek	3,435	0	455	616	28
Blackwater Creek	918	0	88	46	4
Moll Creek	10,201	550	1,179	1,420	66
Total	15,992	550	1,910	2,332	110

Potential Corrective Actions

- Agricultural
 - Livestock Fencing
 - Pasture Management
 - Loafing Lot Management
 - Manure Management
 - Conservation Tillage
 - Vegetated Stream Buffer

- Residential
 - Septic System Repair/Installation
 - Community Pet-waste Program
 - Residential Pet-waste Composters
 - Bioretention Basins
 - Rain Gardens
 - Vegetated Stream Buffer



Cost/Benefit Analysis

- Assess cost for implementation
- Evaluate environmental benefits through modeling
- Compare cost-effectiveness of various practices
- Identify/Evaluate economic benefits of Implementation
- Identify funding sources

Measurable Goals/Timeline

- Phased approach
 - Targeting
 - Bang for the buck
 - Spatial Analysis/Modeling
- Implementation milestones
 - With input from Stakeholders
- Interim water quality milestones
 - Modeling
- 5 - 15 year timeframe to meet water quality standard

Public Participation

- Public Meetings
 - Informational
 - Solicit public participation
 - Provide a forum for public comment
- Steering Committee
 - Direct the overall process
 - Review output from working groups
 - Review future implementation
- Working Groups
 - Address “community” issues/concerns



Steering Committee

- **Includes:**
 - Agencies: DEQ, SWCD, VDH, NRCS
 - County Representatives
 - Working Group Representatives
- **Responsibilities:**
 - Review contractor's results
 - Assess input from working groups
 - Address community concerns/suggestions
 - Help guide the process:
 - Is there “representative” input?
 - How can the process be improved?

Working Groups

- Agricultural
 - Residential
 - Governmental
-
- Meet 1-2 times



Agricultural Working Group

Responsibilities:

- Identify potential constraints to implementation
- Identify alternative funding sources/partnerships
- Review implementation strategies from an agricultural perspective
- Identify outreach methods for engaging agricultural producers



Residential Working Group

Responsibilities:

- Identify possible constraints to implementation
- Identify methods of outreach to homeowners with sewage problems
- Identify alternative funding sources/partnerships
- Review implementation strategies from a homeowner's perspective



Government Working Group

Responsibilities:

- Identify funding sources
- Identify available technical resources
- Identify appropriate “measurable goals” and timeline for achievement
- Identify regulatory controls currently in place
- Identify parties responsible for agricultural and residential implementation

“Sign-up” Cards

NAME: _____

ADDRESS: _____

PHONE: _____

EMAIL: _____

<u>WORKING GROUPS</u>	<u>ADDITIONAL INFORMATION</u>
<input type="checkbox"/> <i>AGRICULTURAL</i> <input type="checkbox"/> <i>RESIDENTIAL</i> <input type="checkbox"/> <i>GOVERNMENTAL</i>	<input type="checkbox"/> I AM INTERESTED IN PARTICIPATING ON THE <i>STEERING COMMITTEE</i> <input type="checkbox"/> I REPRESENT A <i>GOVERNMENT AGENCY,</i> <i>BUSINESS, OR COMMUNITY ORGANIZATION</i> AFFILIATION: _____ <input type="checkbox"/> I AM INTERESTED IN RECEIVING UPDATES ON THE IMPLEMENTATION PLAN

TMDL Implementation Plan Schedule

1. Working Group meetings: March
2. Steering Committee meetings: March-May
3. Draft Technical Document: April
4. Final Public meeting: May

Contact Information

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