Upper Rapidan River Watershed Implementation Plan

Public Meeting

August 13, 2015

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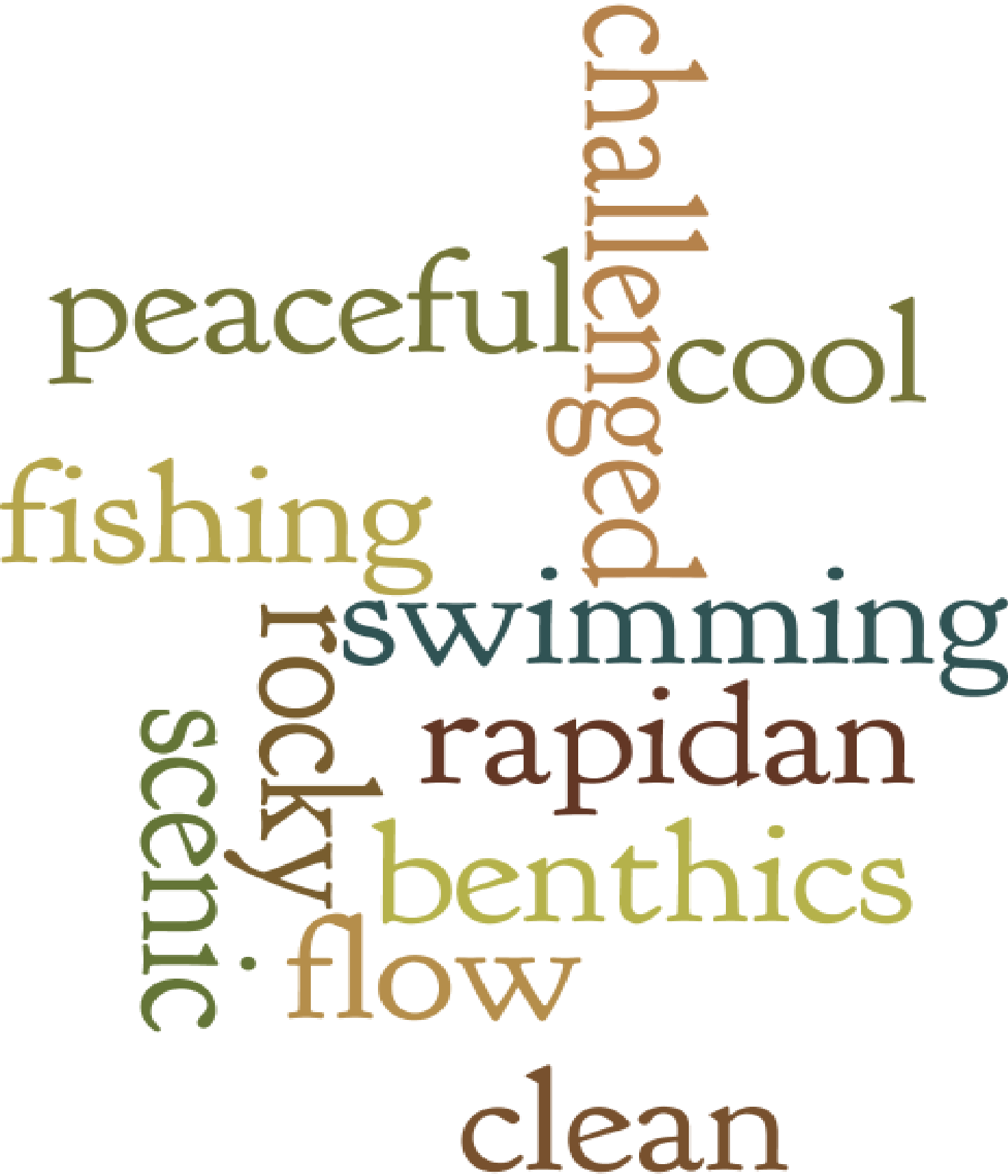
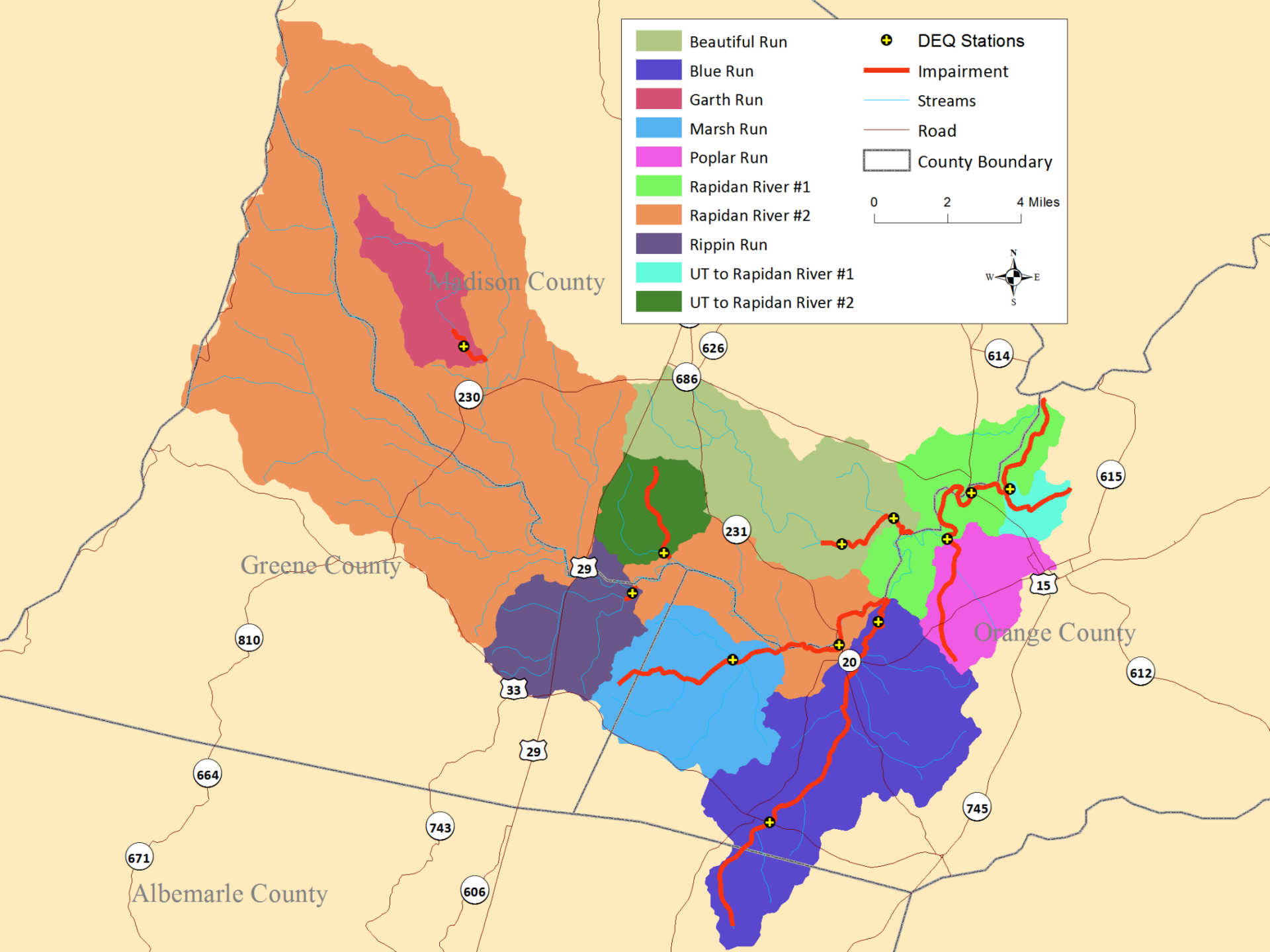
Blue Ridge Environmental Solutions, Inc.

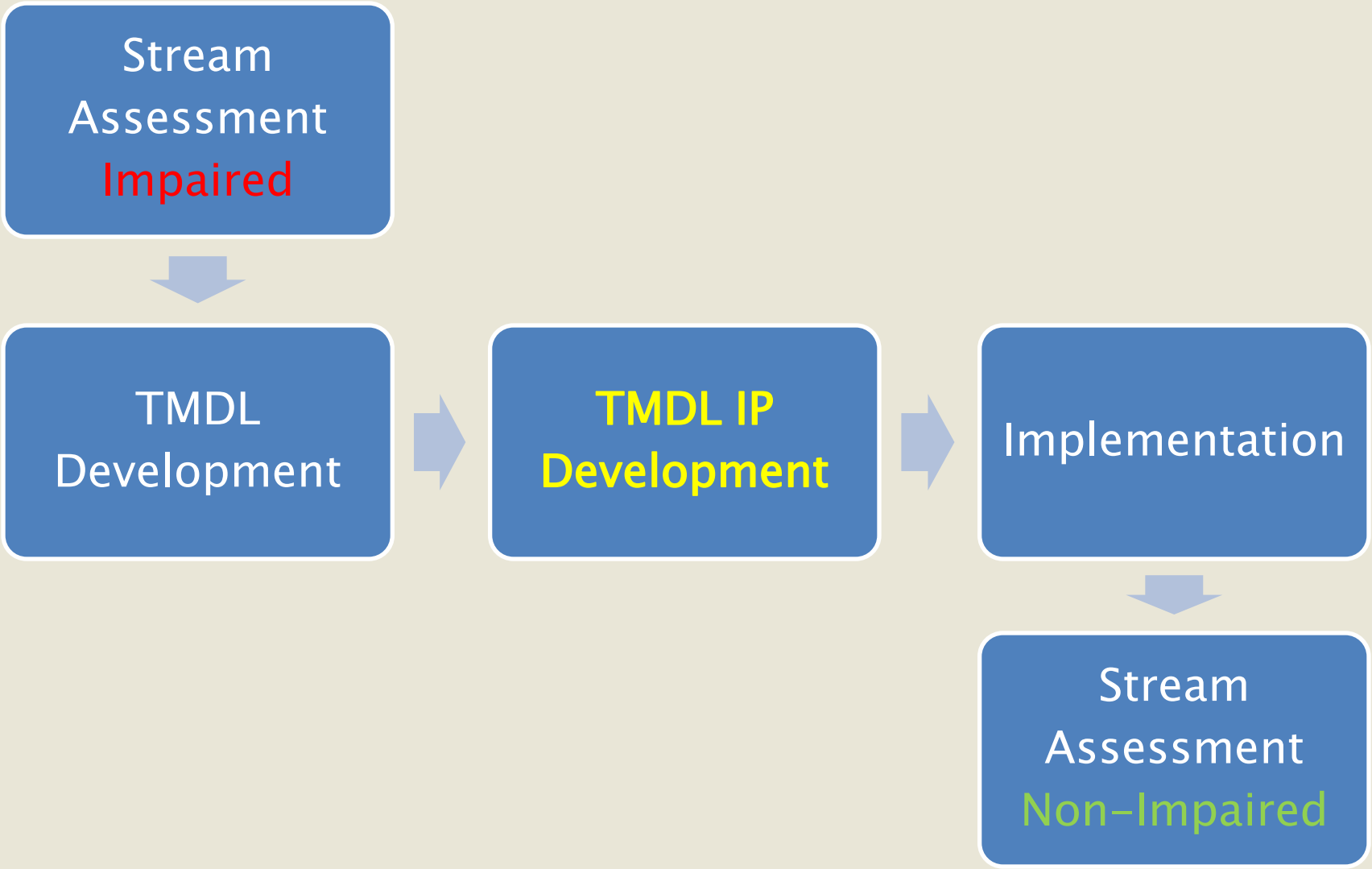

challenged
peaceful
cool
fishing
swimming
rocky
rapidan
scenic
benthics
flow
clean

Why are we here?

- Virginia Department of Environmental Quality has measured excessive fecal bacteria levels in:
  - Garth Run
  - Rippin Run
  - Blue Run
  - Marsh Run
  - Beautiful Run
  - Poplar Run
  - Unnamed Tributaries to Rapidan River
  - Rapidan River


Beautiful Run
Blue Run
Garth Run
Marsh Run
Poplar Run
Rapidan River #1
Rapidan River #2
Rippin Run
UT to Rapidan River #1
UT to Rapidan River #2
DEQ Stations
Impairment
Streams
Road
County Boundary
0
2
4 Miles
N
W
E
S
Madison County
Greene County
Orange County
Albemarle County
626
686
614
230
615
231
29
15
810
20
612
33
29
664
745
743
671
606

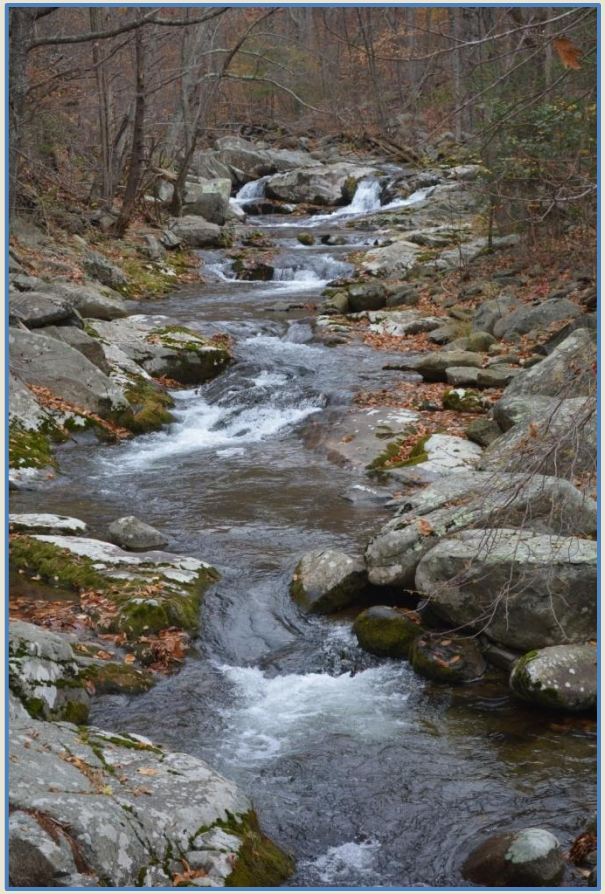
What is the TMDL process?



What is included in the TMDL Implementation Plan?

What is needed to reduce bacteria?

- Review of TMDL Study
- Implementation Actions Quantified
- Cost & Benefits



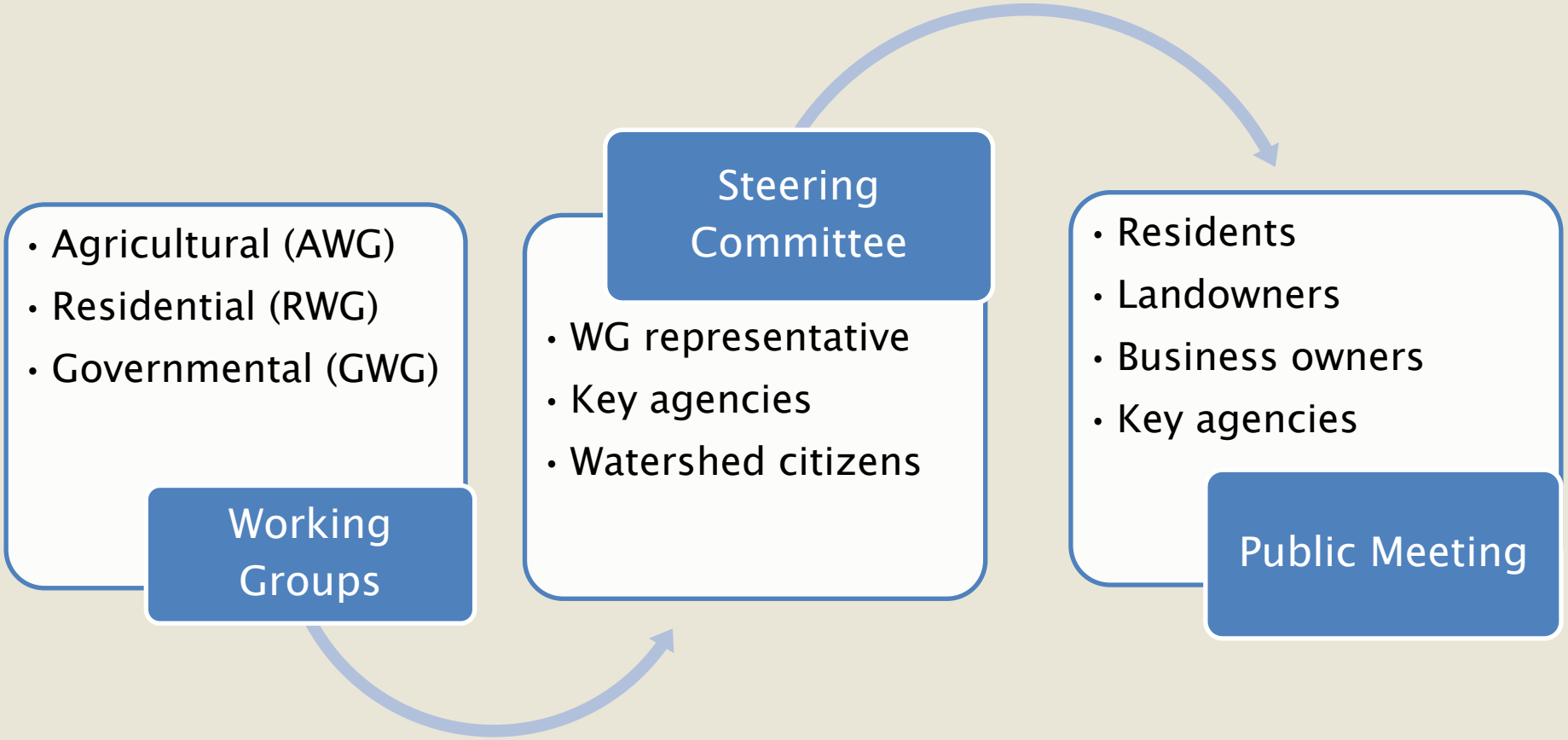
How is TMDL IP implemented?

- Measurable Goals and Milestones
- Stakeholders' Roles
- Potential Funding Sources

Who determines inputs and outcomes?

- Public Participation

Public Participation



Public Meetings

Date	Meeting Type	Location
January 28	Public Meeting	Town of Orange Public Works
January 28	Agricultural & Residential Working Group	Town of Orange Public Works
January 29	Public Meeting	PVCC Eugene Giuseppe Center
January 29	Agricultural & Residential Working Group	PVCC Eugene Giuseppe Center
March 31	Governmental Working Group	Madison County Extension
April 16	Agricultural & Residential Working Group	PVCC Eugene Giuseppe Center
July 10	Steering Committee	Madison County Extension
August 13	Public Meeting	James Madison's Montpelier

Acknowledgements:

- Watershed landowners and citizens
- Culpeper & Thomas Jefferson SWCDs
- Madison & Greene County Governments
- Orange County Farm Service Agency
- Ecosystem Service, LLC
- Center for Natural Capital
- Piedmont Environmental Council
- Old Rag Master Naturalists
- Friends of the Rappahannock
- Orange County Public Service Authority
- Shenandoah National Park
- Albemarle, Greene, Madison & Orange County Health Depts.
- Virginia Department of Environmental Quality
- Virginia Department of Health
- Virginia Department of Forestry
- Natural Resources Conservation Service
- Virginia Department of Conservation and Recreation
- Rappahannock-Rapidan River Commission

How Citizens Have Helped During This Process

- ✓ Identified potential implementation impediments and opportunities
- ✓ Identified local funding sources/partnerships
- ✓ Committed to assist with implementation projects, especially education programs (i.e., pet waste) and water quality monitoring
- ✓ Provided comments during plan development and technical reviews of draft watershed plan
- ✓ Reviewed presentation materials for final public meeting
- ✓ THANK YOU!

TMDL Implementation Strategy

- Exclude livestock from stream corridor
- Improve pasture & cropland management
- Remove straight pipes
- Repair / replace failing septic systems
- Better manage pet waste and stormwater runoff

Straight Pipe

Livestock Stream Access

Failed Septic System

TMDL Implementation Strategy

- **15-year timeline**
  - **Stage I** ⇒ first 12 years
    Goal: removal from impaired waters list
    (bacteria standard exceedance rate < 10.5%)
  - **Stage II** ⇒ last three years
    Goal: achieve TMDL reductions

Residential Runoff

Pastured Livestock

Manure Application

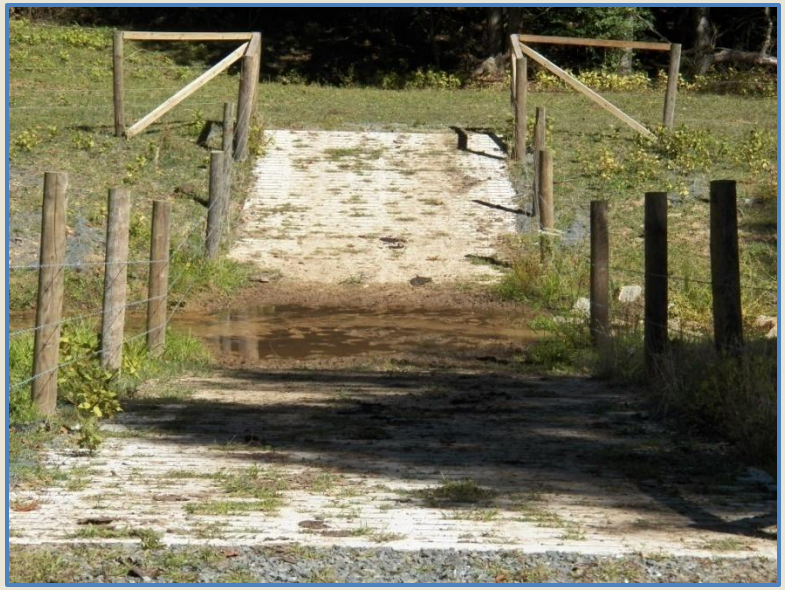
Implementation Actions

Livestock Stream Exclusion

- Overlaid stream network onto aerial photography to classify stream segments as:
  - No fencing needed
  - One-sided fencing needed
  - Two-sided fencing needed
  - Existing fencing
- Translate fencing needed to livestock exclusion systems
- Federal and state cost-share programs available to provide multiple options for producers

Exclusion Fencing & Riparian Buffer

Watering Trough



Hardened Crossing

Implementation Actions

Pasture

- Account for bacteria reduction provided by livestock exclusion systems
- Reduce bacteria through improved pasture management for livestock and equine

Cropland

- Reduce bacteria from conversion to hayland or forest
- Install cover crops
- Incorporate manure into soil
- Install waste storage facilities

Rotational Grazing

Dairy Liquid Manure Tank

Beef Waste Storage Facility

Poultry Litter Shed

Permanent Vegetative Cover

Reforestation

Agricultural Implementation Actions

Control Measure	Unit	Estimated Units Needed (#)	Average Unit Cost ($)
Livestock Exclusion and Pasture			
Livestock Exclusion System with 35’ buffer	System	248	23,000
Livestock Exclusion System with 10’ setback	System	50	12,000
Small Acreage Grazing System with 35’ buffer	System	6	9,000
Stream Protection with 35’ buffer	System	25	2,500
Improved Pasture Management	Acres Treated	49,361	165
Sediment Retention / Water Quality Structure	Acres Treated	11,464	870
Cropland			
Permanent Vegetative Cover on Cropland	Acres Installed	43	350
Reforestation of Erodible Crop & Pastureland	Acres Installed	43	450
Cover Crops	Acres Installed	3,266	50
Manure Incorporation into Soil	Acres Treated	892	25
Waste Storage Facility	System	6	54,000

Implementation Actions

On-site Sewage Disposal Systems

- Septic Tank Pump-outs
- Connection to Public Sewer
- Septic System Repair
- New Conventional Septic System
- New Conventional Septic System with Pump
- New Alternative On-site Sewage Disposal System

Septic System Pump-out

Septic System Replacement

Septic System Repair

Alternative On-site
Sewage Disposal System

Implementation Actions

Pet Waste Management Components

- Educational program
- Pet waste bag/disposal stations
- Enzyme digesting composters
  - Individual units in homeowners' yards
- Confined canine unit waste treatment systems
  - Install at kennels, hunt clubs, veterinarian clinics
  - Septic system style or dry stack composting options

Stormwater Runoff Best Management Practices

- Vegetated buffers, rain gardens, infiltration trenches
  - Reduce bacterial loads in runoff

Pet Waste Composters

CCU Waste Treatment

Vegetated Buffer

Pet Waste Kiosk

Rain Garden

Infiltration Trench

Residential Implementation Actions

Control Measure	Unit	Estimated Units Needed (#)	Average Unit Cost ($)
On-site Sewage Disposal Systems			
Septic Tank Pump-outs	System	1,713	300
Septic System Repair	System	1,068	3,500
Connection to Public Sewer	System	30	12,500
New Conventional Septic System	System	501	6,000
New Conventional Septic System with Pump	System	68	8,000
New Alternative On-site Sewage Disposal System	System	46	25,000
Pet Waste Management			
Pet Waste Education Program	Program	10	2,500
Pet Waste Enzyme Digesting Composters	System	85	50
Pet Waste Disposal Stations	System	16	500
Confined Canine Unit Waste Treatment System	System	5	12,300
Residential Best Management Practices			
Vegetated Buffers	Acres Installed	81	400
Rain Gardens	Acres Treated	24	15,000
Infiltration Trenches	Acres Treated	18	11,300

Implementation Cost

- Control Measure Installation Cost
  - Number of units multiplied by unit cost
- Technical Assistance (TA)
  - Full time equivalents multiplied by unit cost
- Total Cost = Installation Cost + TA Cost

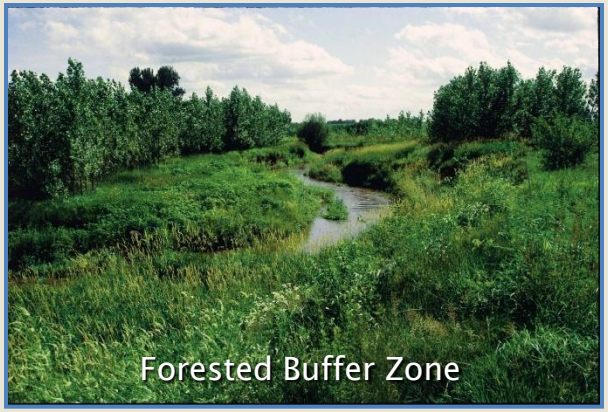
Stage I Implementation Cost

Impairment	Agricultural	Residential	Total
Garth Run	157,000	248,700	405,700
Rippin Run	760,000	786,500	1,546,500
Marsh Run	765,500	814,800	1,580,300
Blue Run	2,863,400	1,442,300	4,305,700
Beautiful Run	1,808,500	887,100	2,695,600
Poplar Run	843,700	708,700	1,552,400
UT to Rapidan River #1	190,000	133,000	323,000
UT to Rapidan River #2	455,000	255,600	710,600
Rapidan River #1	1,295,900	627,500	1,923,400
Rapidan River #2	5,644,400	3,784,100	9,428,500
Installation Total	14,783,400	9,688,300	24,471,700
Technical Assist. Total	1,440,000	1,440,000	2,880,000
TOTAL COST	16,223,400	11,128,300	27,351,700

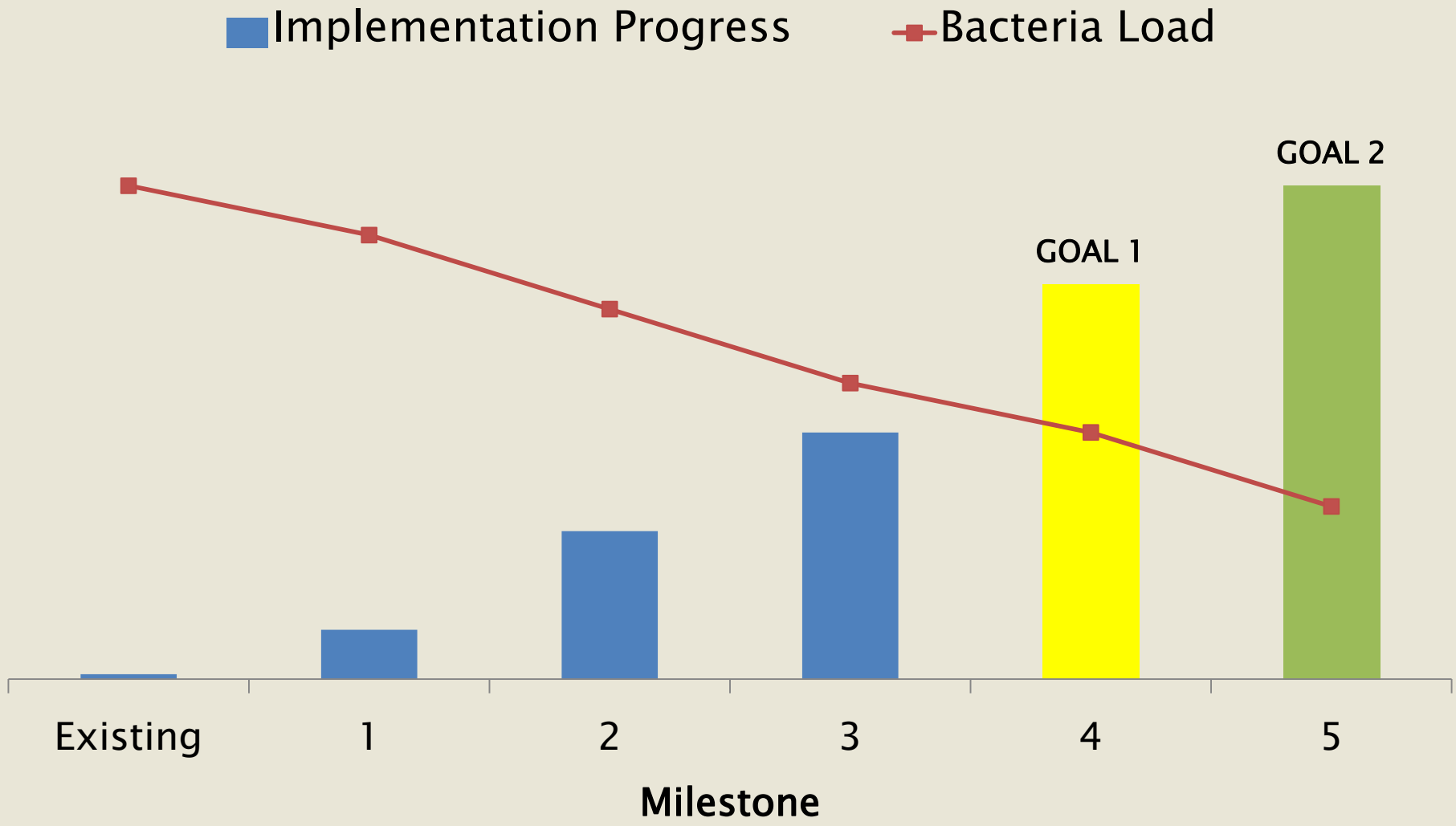
Measurable Goals & Milestones

- **Establish Goals**
  - Stage I: Removal from Impaired Waters List
  - Stage II: Meet TMDL Allocations (meets water quality standards)
- **Create milestones**
  - Implementation (number of practices)
  - Water quality (reduction in bacteria)
- **Evaluate progress**
  - SWCD and VDH track installations
  - VADEQ monitors water quality
  - Steering Committee reviews and suggests changes if milestones not being met

Exclusion Fencing with Buffer


Forested Buffer Zone

Evaluate Progress



Stakeholders

Regional / Local

- Counties & Towns landowners and governments
- Soil and Water Conservation Districts
- Local Watershed Groups & other NGOs
- Rappahannock Rapidan Regional Commission

State

- Department of Conservation and Recreation
- Department of Environmental Quality
- Department of Health
- Department of Agricultural & Consumer Services
- Virginia Cooperative Extension
- Department of Forestry
- Department of Game and Inland Fisheries
- Virginia Outdoors Foundation

Federal

- USDA – Natural Resources Conservation Service
- United States Environmental Protection Agency
- Shenandoah National Park

Integration with Other Watershed Plans / Projects

- County/Town Comprehensive Plans
- Madison County Assessment Management Plan
- Robinson River / Little Dark Run TMDL IP
- Upper Hazel River TMDL IP
- Upper York River TMDL IP
- Moores Creek TMDL IP
- Chesapeake Bay Watershed Implementation Plan
- Piedmont Environmental Council
- Trout Unlimited

Potential Funding Sources

Federal

- Federal Clean Water Act Section 319 Incremental Funds
- USDA Conservation Reserve Enhancement Program (CREP)
- USDA Conservation Reserve Program (CRP)
- USDA Environmental Quality Incentives Program (EQIP)
- USDA Agricultural Conservation Easement Program (ACEP)
- USDA Regional Conservation Partnership Program (RCPP)
- U.S. Fish & Wildlife Service Private Stewardship Program
- U.S. Fish & Wildlife Service Conservation Grants

Potential Funding Sources

State

- VA Agricultural BMP Cost-share & Tax Credit Programs
- VA Conservation Assistance Program
- VA Water Quality Improvement Fund
- VA Forest Stewardship Program
- VA Small Business Environmental Compliance Assistance Fund
- VA Clean Water Revolving Loan Programs
- VA Outdoors Foundation
- VA Trees for Clean Water
- Community Development Block Grant Program

Regional, Local, Private

- Southeast Rural Community Assistance Project
- National Fish and Wildlife Foundation
- Skyline Community Action Partnership
- Trout Unlimited
- Center for Natural Capital

Agricultural Funding Example

Example Scenario

- ✓ Participates in Virginia Conservation Assistance Program
- ✓ Installs a LE-1T Livestock Exclusion System

Cost / Credit	$
Average system cost	35,500
85% Cost-share	-30,175
25% Tax credit	-1,331
Cost to Producer	**3,994**

Residential Funding Example

Example Scenario

- ✓ Replaces failing septic system with new septic system
- ✓ Participates in Virginia Conservation Assistance Program
- ✓ 50% cost-share rate (can qualify for 60%, 70%, or 75%)

Cost / Credit	$
Average system cost	6,000
50% Cost-share rate	-3,000
Cost to Homeowner	**3,000**

Next Steps?

- 30-day comment period ends September 14
  - Provide comments to May Sligh (VADEQ)
- VADEQ approval of implementation plan
- Contact Culpeper & Thomas Jefferson SWCDs for cost-share information

For Information & Comments:

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