2nd Community Engagement Meeting for the development of a Clean Up Plan (Implementation Plan) for the

Lower Rapidan River Watershed

June 27th, 2024

DEQ Northern Regional Office

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TMDL Nonpoint Source Coordinator

Virginia Department of Environmental Quality

Materials for Todays Discussion

- Discussion handout and project area map
- Resources on DEQ's water quality monitoring process
- E.coli impairment information for this IP project area

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Agenda

- Remind us where we are in the process
- Review Project Background
- Discuss proposed BMPs, costs, timeline and priority areas to reduce bacteria in the watershed
  - Residential septic/pet waste
  - Agriculture
- Next steps in IP development

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Meeting Takeaway

- To understand what the proposed BMPs are for this IP and the costs and timelines associated with them
- To gather input and feedback from today's meeting to input into any remaining adjustments to our data

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Public Participation Process

	Tentative Date
First Public Meeting	**February 21st, 2024** (Public comment period February 21st, 2024 – March 22, 2024)
Community Engagement Meetings	
# 1	**April 12th, 2024**
# 2	**June 26th, 2024**

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Virginia's Water Quality Process

- Water Quality Monitoring & Assessment:
  - Collect and analyze data
- Reporting
  - Identify impaired waters, 303(d) list under CWA
- Cleanup Studies
  - Plans for restoring impaired waters (TMDL)
- **Cleanup Implementation Plans**
  - Plans for actions needed to restore water quality (NPS pollution)
- **Implementing Control Measures**
  - Permits (TMDLs), best management practices, cleanup actions
  - 319 Grant funding available for IP NPS BMPs

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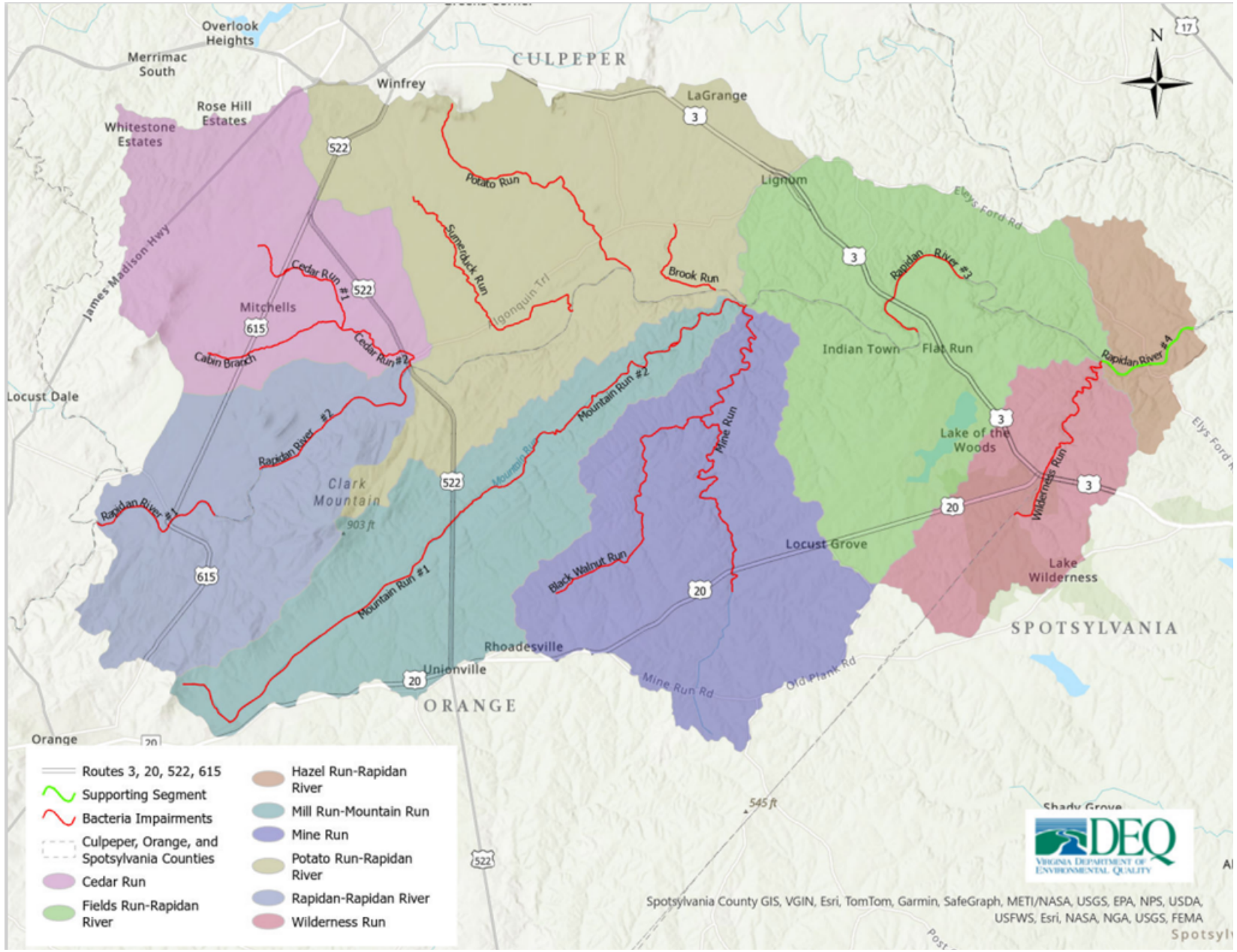
Bacteria Impairments as of 2024 Integrated Report (Draft)

Impairment Name	Watershed (HUC12)
Mine Run	Mine Run
Black Walnut Run	Mine Run
Potato Run	Potato Run – Rapidan River
Sumerduck Run	Potato Run – Rapidan River
Brook Run	Potato Run – Rapidan River
Cedar Run #1	Cedar Run
Cedar Run #2	Cedar Run
Cabin Branch	Cedar Run
Mountain Run #1	Mill Run – Mountain Run
Mountain Run #2	Mill Run – Mountain Run
Rapidan River #1	Rapidan – Rapidan River
Rapidan River #2	Rapidan – Rapidan River
Rapidan River #3	Fields Run – Rapidan River
Rapidan River #4	Hazel Run – Rapidan River
Wilderness Run	Wilderness Run



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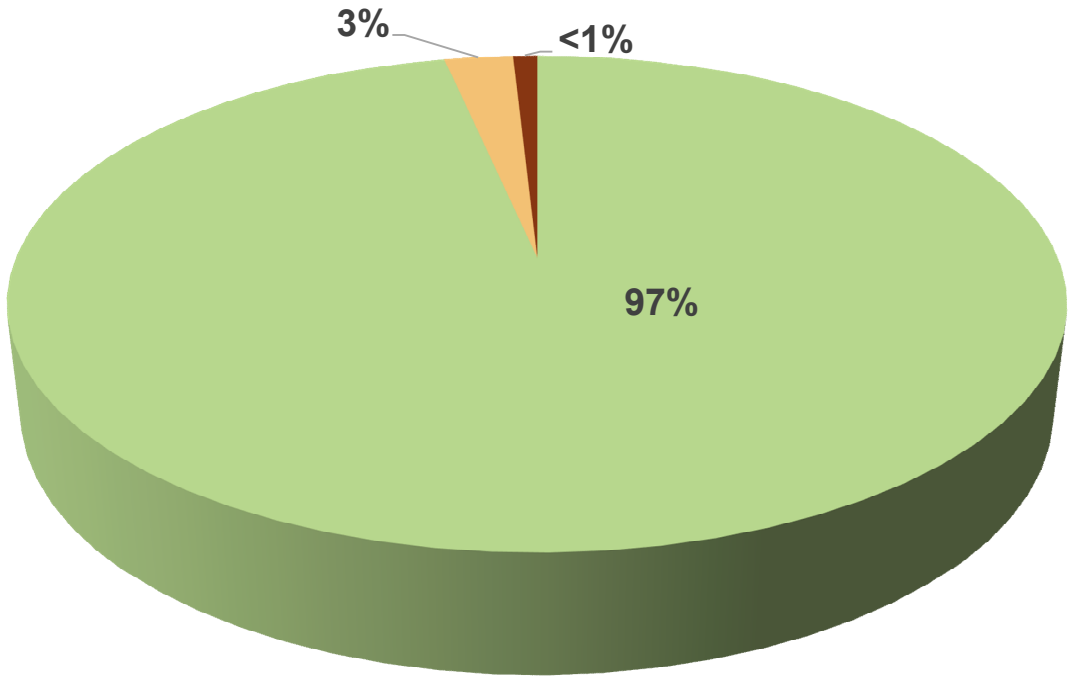
From the TMDL study: Bacteria Source Assessment



- Agriculture (pasture/hay, livestock access, cropland): 97%
- Humans (straight pipes and failing septic systems) & Pets: 3%
- Wildlife: <1%

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Residential Septic: BMPs

1. Number of straight pipes - increased in Potato Run-Rapidan River watershed
2. Number of sewered houses – decreased in Cedar Run watershed

Watershed	Houses on Public Sewer or General Permit	Total Septic Systems	Houses with Failing Septic Systems	Houses with Straight Pipes
Rapidan-Rapidan River	232	335	131	9
Cedar Run	50	425	129	6
Potato Run-Rapidan River	27	584	181	20
Mill Run-Mountain Run	0	474	169	6
Mine Run	1	612	196	6
Fields Run-Rapidan River	1,760	661	167	9
Wilderness Run	858	805	170	0

Is this more realistic?

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Residential Septic: BMPs

3. More replacements (70%) than repairs (30%)
4. More Conventional (60%) than Alternative (40%) systems needed
5. EXCEPT Potato Run-Rapidan River and upper Mill-Mountain Run
   More Alternative (90%) than Conventional (10%) systems needed
6. Third of households would do septic pumpout

BMP (Cost-share codes in parentheses)	Units	Extent
Connection to public sewer (RB-2)	Connection	2
Connection to public sewer w/ pump (RB-2P)	Connection	1
Onsite sewage system repair w/ permit (RB-3)	Repair	161
Full inspection and non-permitted onsite sewage system repair (RB-3M)	Repair	161
Onsite sewage system installation/replacement (RB-4)	System	209
Onsite sewage system installation/replacement w/ pump (RB-4P)	System	209
Alternative sewage system (RB-5)	System	448
Septic tank pump-out (RB-1)	Pump-out	1,277

Is this reasonable?

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Residential Septic: Costs

7. Overall implementation costs:

Reasonable?

Practice	Cost-share code	Units	Unit cost	Number of Units	Total
Septic tank pump-out	RB-1	system	$450	1,277	$574,650
Connection to public sewer	RB-2	connection	$12,500	2	$25,000
Connection to public sewer w/ pump	RB-2P	connection	$20,500	1	$20,500
Septic tank system repair	RB-3	repair	$7,500	161	$1,207,500
Septic system inspection and non-permitted repairs	RB-3M	repair	$4,875*	161	$784,875
Septic tank system installation or replacement	RB-4	system	$12,500	209	$2,612,500
Septic tank system installation/replacement w/ pump	RB-4P	system	$16,500	209	$3,448,500
Alternative waste treatment system	RB-5	system	$31,500	448	$14,112,000
TOTAL ESTIMATED COST					$22,785,525

* Estimated cost/unit varies between $3,250 - $6,000 depending on lifespan

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Residential Septic: Timeline

8. Staged implementation goals: **How long is each stage?**

Description	BMP code	Units	33.3% Stage 1	33.3% Stage 2	33.3% Stage 3
Connection to public sewer	RB-2	connection	1	1	0
Connection to public sewer w/ pump	RB-2P		1	0	0
Onsite sewage system repair w/ permit	RB-3	repair	54	54	53
Full inspection and non-permitted onsite sewage system repair	RB-3M		54	54	53
Onsite sewage system installation/replacement	RB-4	system	70	70	69
Onsite sewage system installation/replacement w/ pump	RB-4P		70	70	69
Alternative sewage system	RB-5		150	149	149
Septic tank pump-out	RB-1	pump-out	426	426	425

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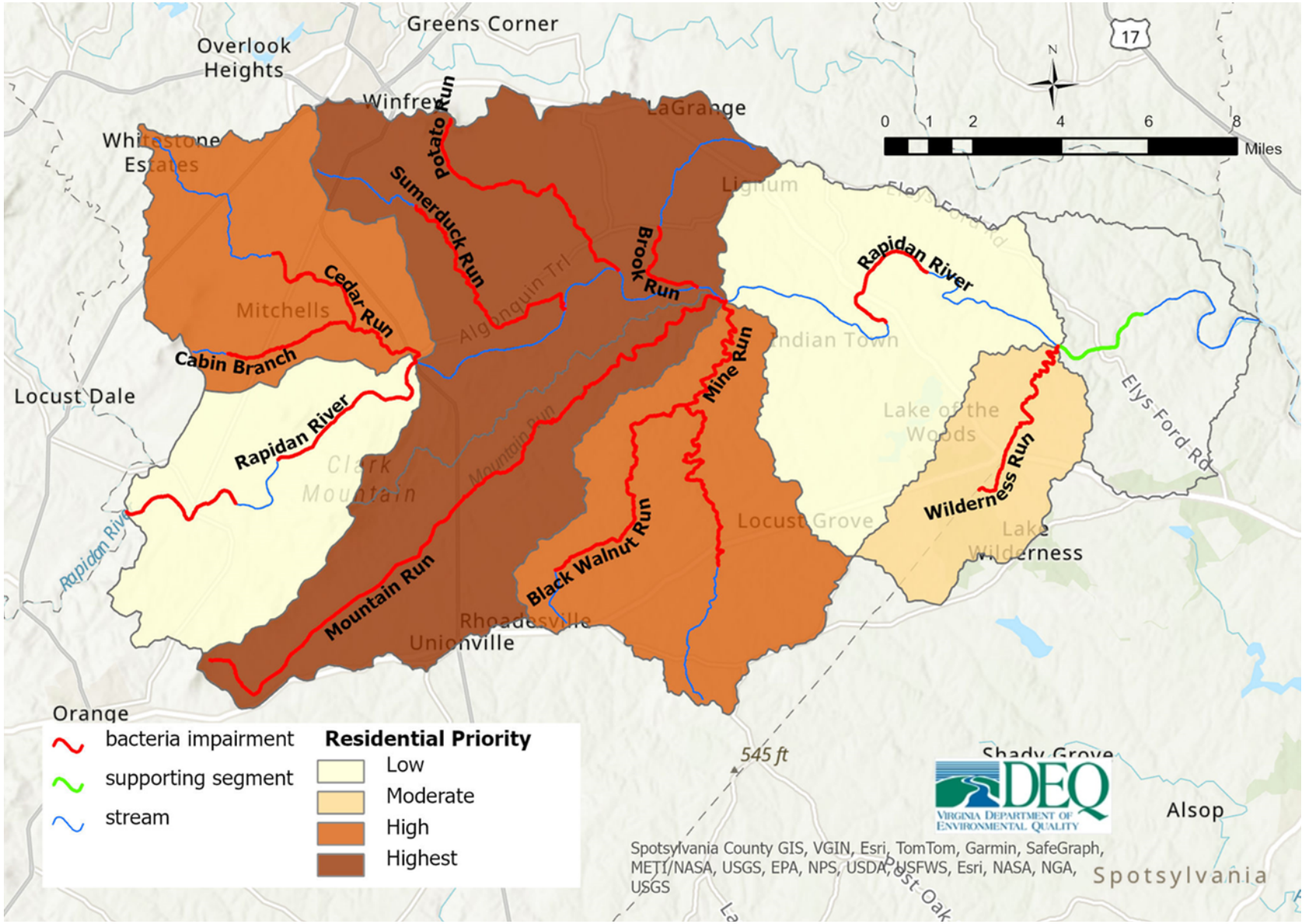
Residential Septic: Priority Areas

9. Priority areas based on ‘need’:

Where there is the greatest need for alternative septic systems and where there are the most failing septic systems



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Pet Waste: BMPs

10. Total BMPs, with focus on Lake of the Woods area:

BMP (Cost-share codes in parentheses)	Units	Extent
Pet waste disposal station (PW-1)	Station	1
Wastewater treatment system for confined canine facilities (PW-3)	System	1
Pet waste education program	Program	1

Is this reasonable?

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Pet Waste: Costs

11. Overall implementation costs:

Reasonable?

Practice	Cost-share code	Units	Unit cost	Number of Units	Total
Pet waste disposal station	PW-1	station	$2,000	1	$2,000
Large scale pet waste treatment system	PW-3	system	$10,000	1	$10,000
Pet waste education program	N/A	program	$4,000	1	$4,000
TOTAL ESTIMATED COST					$16,000

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Pet Waste: Timeline

12. Staged implementation goals: **How long is each stage?**

Description	BMP code	Units	100%		
			Stage 1	Stage 2	Stage 3
Pet waste disposal station	PW-1	station	1	0	0
Large scale pet waste treatment system	PW-3	system	1	0	0
Pet waste education program	N/A	program	1	0	0

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Agriculture: BMPs

13. Distribute practices evenly for each Stage
14. Fencing needs (includes what's been done since TMDL done in 2005):

Sub-watershed	Estimated total length of streambank in pasture/hay (feet)	Approximate fencing installed to date (feet)	Fencing still needed		
			Stage 1 (feet)	Stage 2 (feet)	Stage 3 (feet)
Rapidan-Rapidan River	207,007	106,087	32,598	32,893	30,838
Cedar Run	191,924	54,275	45,525	46,062	42,223
Potato Run-Rapidan River	262,932	69,294	63,414	64,710	62,282
Mill Run-Mountain Run	175,278	75,863	32,809	33,303	31,550
Mine Run	104,343	48,236	18,543	18,782	17,738
Fields Run-Rapidan River	66,290	28,610	11,827	11,932	11,270
Wilderness Run	40,552	0	13,382	13,382	13,382
Total	1,048,325	382,365 (36%)	218,098 (21%)	221,064 (21%)	209,283 (20%)

Is this reasonable?

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Agriculture: BMPs & Timeline

15. Estimated 90% of fencing using wide buffers; 10% narrow buffers
16. Exclusion fencing needed to reduce bacteria from direct deposition:

Sub-watershed	Fencing needed	SL-6N or WP-2N (10 – 25 ft buffer): 10%		SL-6W, SL-6F, WP-2W or CRSL-6 (35 – 50 ft buffer): 90%	
	feet	feet	systems	feet	systems
Rapidan-Rapidan River	96,328	9,633	4	86,696	29
Cedar Run	133,810	13,381	5	120,429	41
Potato Run-Rapidan River	190,406	19,041	7	171,365	58
Mill Run-Mountain Run	97,662	9,766	4	87,896	30
Mine Run	55,063	5,506	2	49,557	17
Fields Run-Rapidan River	35,028	3,503	2	31,526	11
Wilderness Run	40,147	4,015	2	36,132	13
Total	648,445	64,845	26	583,601	199

Are these estimates reasonable?

How long is each stage?

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Agriculture: BMPs & Timeline

18. Land based BMPs needed to reduce bacteria from pasture and cropland:

BMP (Cost-share codes in parentheses)	Stage 1	Stage 2	Stage 3
	Acres		
Extension of watering system (SL-7)	286	286	285
Improved pasture management (SL-10)	9,233	9,232	9,232
Afforestation of crop, hay and pasture land (FR-1)	1,933	3,866	11,597
Permanent vegetative cover on critical areas (SL-11)	20	39	117
Cover crop (SL-8B, SL-8H)	34	35	69
Animal waste control facility (WP-4, WP-4B, WP-4FP, WP-4LL, WP-4SF)	12	13	50
Roof runoff management (WQ-12)	9	8	8
Water control structure (WP-1) – acres treated	0	689	1,377

Are these estimates reasonable?

How long is each stage?

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Agriculture: Costs

19. Overall implementation costs:

Reasonable?

Practice	Cost-share code	Units	Unit cost	Number of Units	Total
Stream exclusion with narrow width buffer and grazing land management	SL-6N	system	$60,000	25	$1,500,000
Stream exclusion with wide width buffer and grazing land management	SL-6W, SL-6F CRSL-6	system	$95,000	191	$18,145,000
Stream protection fencing with narrow width buffer	WP-2N	system	$10,000	1	$10,000
Stream protection fencing with wide width buffer	WP-2W	system	$20,000	8	$160,000
Exclusion fence maintenance (10 yrs)	N/A	feet	$5.50	6,484	$35,662
Extension of watering system	SL-7	acres	$325	857	$278,525
Improved pasture management	SL-10	acres	$150	27,697	$4,154,550
Critical area stabilization	SL-11	acres	$1,000	176	$176,000
Afforestation of crop, hay and pasture land	FR-1	acres	$3,000	17,396	$52,188,000
Cover crop	SL-8B, SL-8H	acres	$100	138	$13,800
Animal waste control facility	WP-4, WP-4B, WP-4FP, WP-4LL, WP-4SF	system	$100,000	75	$7,500,000
Roof runoff management	WQ-12	system	$2,300	25	$57,500
Water control structure	WP-1	acres-treated	$1,200	2,066	$2,479,200
TOTAL ESTIMATED COST					$86,698,237

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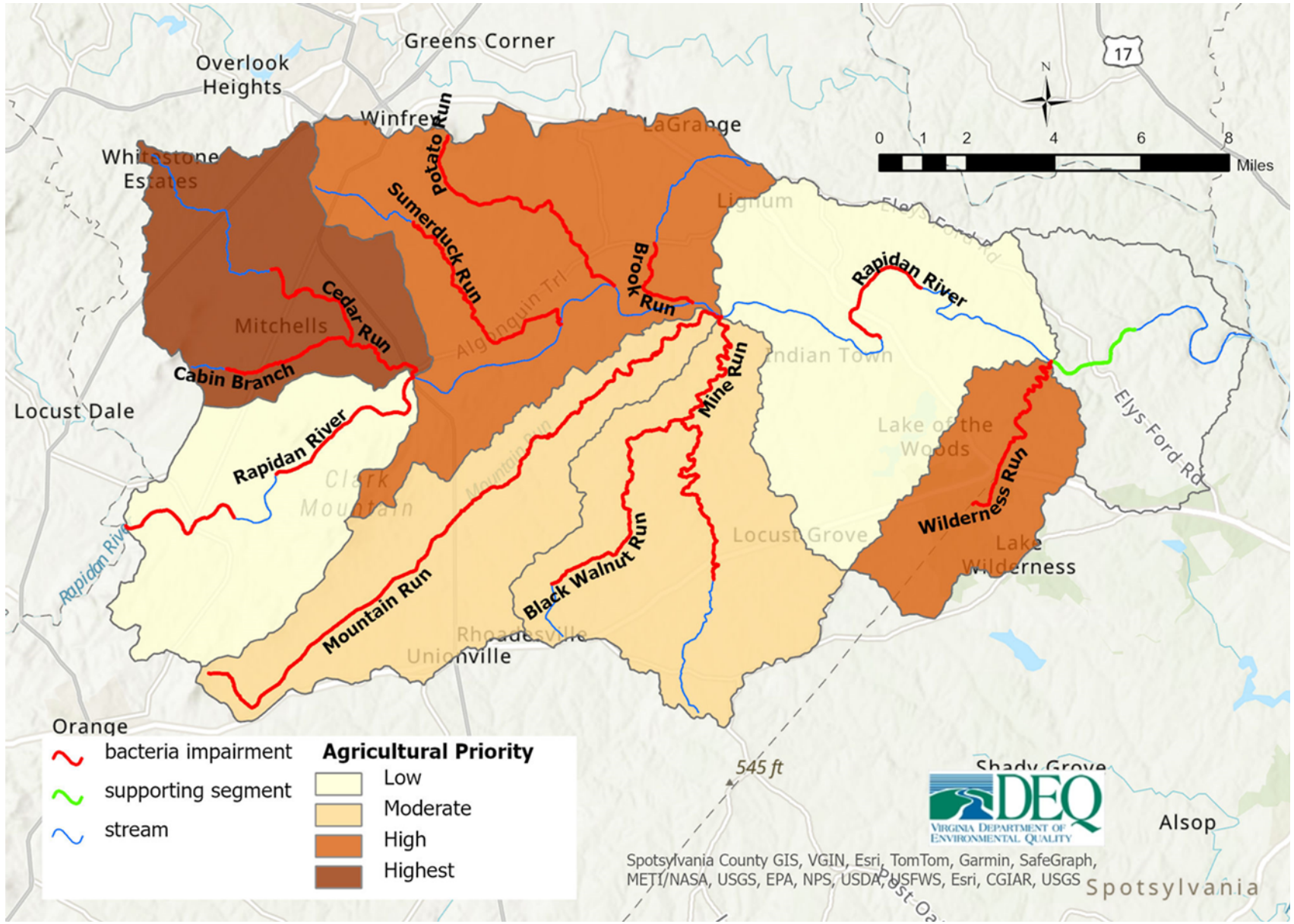
Agriculture: Priority Areas

20. Priority areas based on ‘need’:

Where there are high bacteria loads, high agriculture practices and impaired segments



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Technical Assistance

21. One (1) full-time employee (FTE) for each SWCD for Ag BMPs?
22. One (1) full-time employee (FTE) for each SWCD for Residential Septic/Pet Waste BMPs?

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Overall Summary

23. Total BMP implementation costs by stage:

BMP Application	Cost by Stage			Total
	Stage 1 (Years 1–5)	Stage 2 (Years 6–10)	Stage 3 (Years 11–15)	
Agricultural	$15,222,891	$21,895,336	$49,580,011	$86,698,237
Residential	$7,663,950	$7,595,950	$7,541,625	$22,801,525
TOTAL ESTIMATED COST	$22,886,841	$29,491,286	$57,121,636	$109,499,762

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Next Steps

	Tentative Date
First Public Meeting	**February 21st, 2024** (Public comment period February 21st, 2024 – March 22, 2024)
Community Engagement Meetings	
# 1	**April 12th, 2024**
# 2	**June 26th, 2024**
Final Public Meeting	**September 2024** (Public comment period 30 days after Final Public Meeting)
EPA Acceptance	Winter 2024/Spring 2025 Eligible to apply for DEQ 319 funding in 2025, funds will be received to accepted applicants in 2026

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Contact Information

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Questions?

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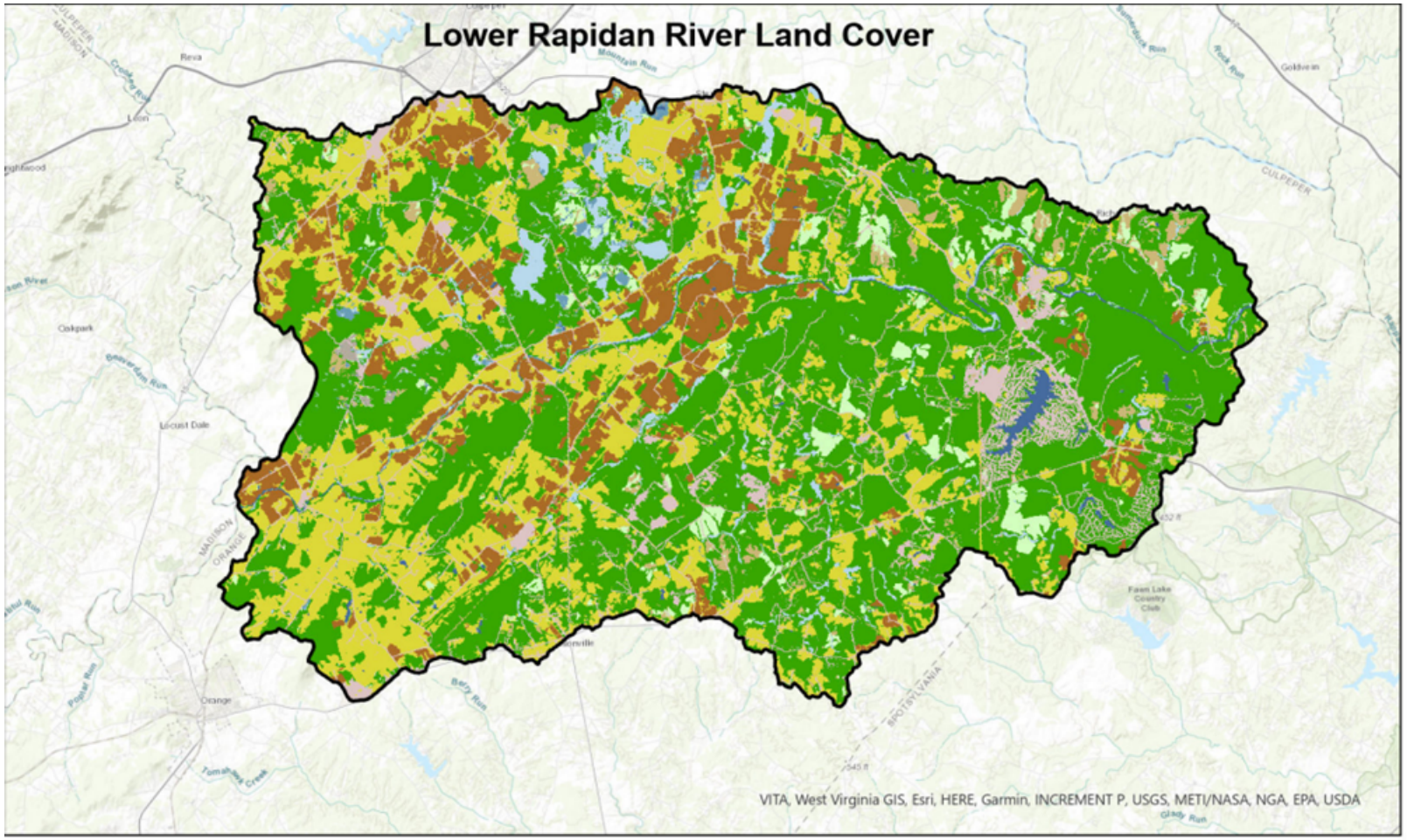
NLCD Land Use 2019



National Land Cover Dataset - 2019

- Open Water
- Developed Land
- Barren Land
- Forest
- Shrub/Scrub
- Herbaceous
- Hay/Pasture
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

DEQ Virginia Department of Environmental Quality

N W E S

0 1.25 2.5 5 Miles

Data Sources: Virginia Department of Environmental Quality, USGS, NLCD 2019
Map Produced: K.Woodall February 1, 2024

Land Use Categories	Percent of Acreage
Open Water	1%
Developed Land	8%
Barren Land	0.2%
Forest	49%
Shrub/Scrub	2%
Herbaceous	3%
Hay/Pasture	23%
Cultivated Crops	10%
Woody Wetlands	3%
Emergent Herbaceous Wetlands	1%

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