

Baseline Assessment – Stream Attributes

Reach S-EF26 (Timber Mat Crossing) Perennial Spread I Pittsylvania County, Virginia

Data	Included
Photos	✓
SWVM Form	✓
FCI Calculator and HGM Form	Perennial stream (not shadeable, slope <4%)
RBP Physical Characteristics Form	✓
Water Quality Data	✓
RBP Habitat Form	✓
RBP Benthic Form	✓
Benthic Identification Sheet	✓
Wolman Pebble Count	✓
RiverMorph Data Sheet	✓
USM Form (Virginia Only)	✓
Longitudinal Profile and Cross Sections	✓

Spread I Stream S-EF26 (Timber Mat Crossing) Pittsylvania County



Photo Type: US RB facing downstream

Location, Orientation, Photographer Initials: Downstream at S-EF26 looking SE upstream, DW

Spread I Stream S-EF26 (Timber Mat Crossing) Pittsylvania County



Photo Type: LB US facing DS
Location, Orientation, Photographer Initials: Downstream at S-EF26 looking SE downstream, DW

Spread I Stream S-EF26 (Timber Mat Crossing) Pittsylvania County



Photo Type: RB CL

Location, Orientation, Photographer Initials: On thalweg at S-EF26 pipe centerline looking E at right streambank,
DW

Spread I Stream S-EF26 (Timber Mat Crossing) Pittsylvania County



Photo Type: LB CL

Location, Orientation, Photographer Initials: On thalweg at S-EF26 pipe centerline looking W at left streambank, DW

Spread I Stream S-EF26 (Timber Mat Crossing) Pittsylvania County



Photo Type: RB facing US
Location, Orientation, Photographer Initials: Downstream at S-EF26 looking N upstream, DW

Spread I Stream S-EF26 (Timber Mat Crossing) Pittsylvania County

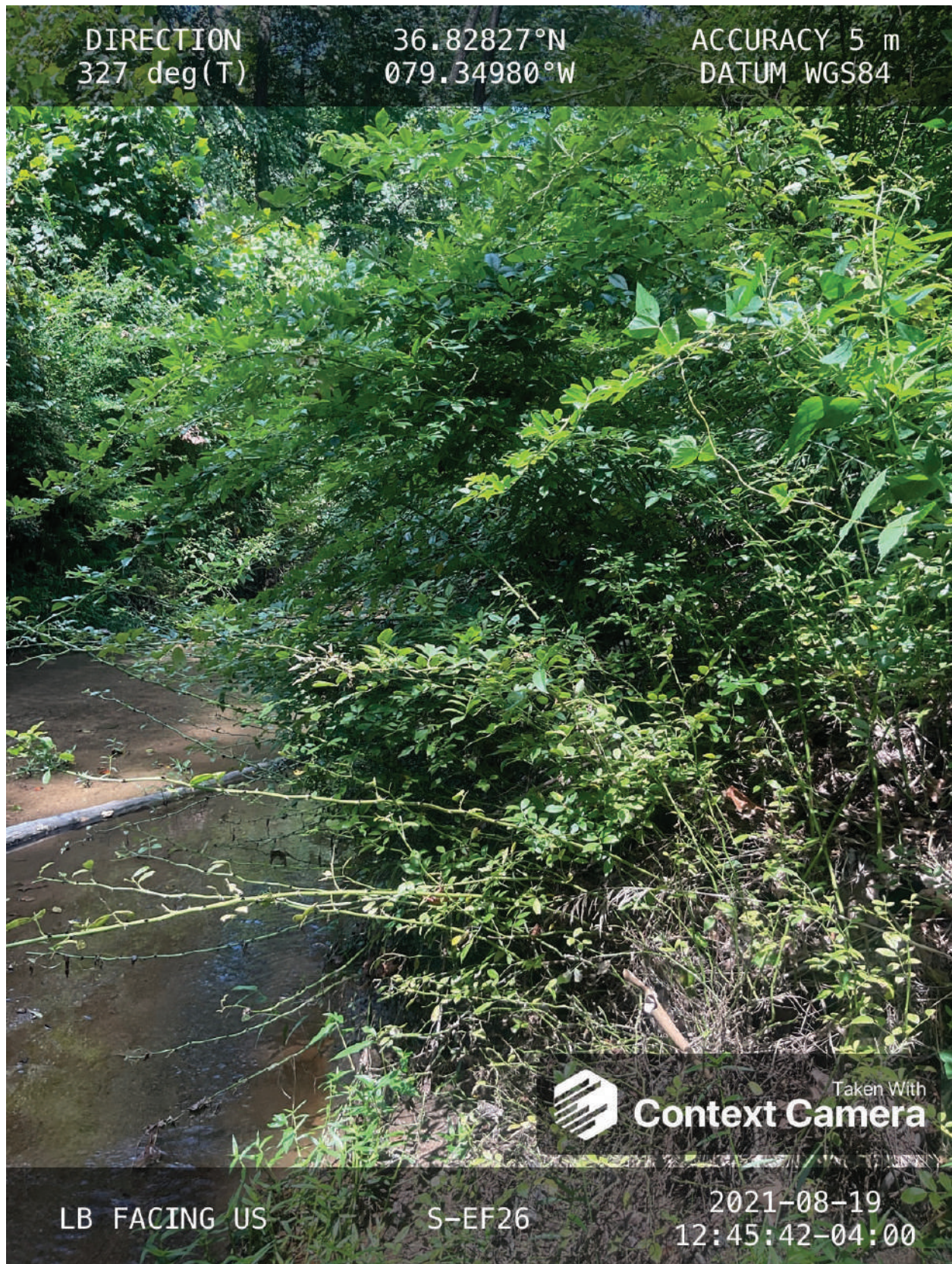


Photo Type: US COND

Location, Orientation, Photographer Initials: Upstream at S-EF26 looking N upstream, DW

Spread I Stream S-EF26 (Timber Mat Crossing) Pittsylvania County



Photo Type: DS VIEW

Location, Orientation, Photographer Initials: Downstream at S-EF26 looking SE downstream, DW

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME S-EF26		LOCATION Pittsylvania County	
STATION # _____ RIVERMILE _____		STREAM CLASS Perennial	
LAT 36.828207 LONG -79.349814		RIVER BASIN Banister	
STORET # _____		AGENCY VADEQ	
INVESTIGATORS JM DW			
FORM COMPLETED BY JM		DATE 8/19/21 TIME 1100	REASON FOR SURVEY Baseline Assessment

WEATHER CONDITIONS	Now ☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) ☒ %cloud cover ☐ clear/sunny 33 % Past 24 hours ☐ ☐ ☐ ☒ 67 % ☐ Has there been a heavy rain in the last 7 days? ☒ Yes ☐ No Air Temperature 29.4 °C Other _____
SITE LOCATION/MAP	Draw a map of the site and indicate the areas sampled (or attach a photograph)
STREAM CHARACTERIZATION	Stream Subsystem ☒ Perennial ☐ Intermittent ☐ Tidal Stream Origin ☐ Glacial ☒ Spring-fed ☐ Non-glacial montane ☐ Mixture of origins ☐ Swamp and bog ☐ Other _____ Stream Type ☒ Coldwater ☐ Warmwater Catchment Area _____ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	Predominant Surrounding Landuse ☒ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☐ Agricultural ☒ Other <u>Wetland stream</u> ☐ Residential	Local Watershed NPS Pollution ☒ No evidence ☐ Some potential sources ☐ Obvious sources Local Watershed Erosion ☒ None ☐ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	Indicate the dominant type and record the dominant species present ☐ Trees ☒ Shrubs ☒ Grasses ☒ Herbaceous Dominant species present _____	
INSTREAM FEATURES	Estimated Reach Length <u>24.4</u> m Estimated Stream Width <u>4.3</u> m Sampling Reach Area <u>104.9</u> m² Area in km² (m²x1000) _____ km² Estimated Stream Depth <u>1</u> m Surface Velocity (at thalweg) <u>0.67</u> m/sec Canopy Cover ☐ Partly open ☒ Partly shaded ☐ Shaded High Water Mark <u>4</u> m Proportion of Reach Represented by Stream Morphology Types Riffle <u>15</u> % Run <u>85</u> % Pool _____ % Channelized ☐ Yes ☒ No Dam Present ☐ Yes ☒ No	
LARGE WOODY DEBRIS	LWD <u>0.5</u> m ² Density of LWD _____ m ² /km ² (LWD/ reach area)	
AQUATIC VEGETATION	Indicate the dominant type and record the dominant species present ☒ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae Dominant species present _____ Portion of the reach with aquatic vegetation _____ %	
WATER QUALITY	Temperature <u>22.3 D</u> °C Specific Conductance <u>55.3 D</u> ms/cm Dissolved Oxygen <u>8.39 D</u> mg/L pH <u>7.16 D</u> su Turbidity <u>N/A</u> WQ Instrument Used <u>YSI</u> Water Odors ☒ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ Water Surface Oils ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☒ None ☐ Other _____ Turbidity (if not measured) ☒ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other _____	
SEDIMENT/SUBSTRATE	Odors ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ Oils ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse Deposits ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other _____ Looking at stones which are not deeply embedded, are the undersides black in color? ☐ Yes ☒ No	

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		10	Detritus	sticks, wood, coarse plant materials (CPOM)	5
Boulder	> 256 mm (10")				
Cobble	64-256 mm (2.5"-10")	15	Muck-Mud	black, very fine organic (FPOM)	
Gravel	2-64 mm (0.1"-2.5")				
Sand	0.06-2mm (gritty)	70	Marl	grey, shell fragments	
Silt	0.004-0.06 mm				
Clay	< 0.004 mm (slick)	5			

HABITAT ASSESSMENT FIELD DATA SHEET - HG - USE ON ALL STREAMS (FRONT)

STREAM NAME S-EF26		LOCATION Pittsylvania County	
STATION # _____ RIVERMILE _____		STREAM CLASS Perennial	
LAT 36.828207 LONG -79.349814		RIVER BASIN Banister	
STORET # _____		AGENCY VADEQ	
INVESTIGATORS JM DW			
FORM COMPLETED BY JM		DATE 8/19/21 TIME 1100 AM PM	REASON FOR SURVEY Baseline Assessment

	Habitat Parameter	Condition Category			
		Optimal	Suboptimal	Marginal	Poor
Parameters to be evaluated in sampling reach	1. Epifaunal Substrate/ Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
	SCORE 20	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
	SCORE 20	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	3. Velocity/Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/depth regime (usually slow-deep).
	SCORE 15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	SCORE 15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
	SCORE 20	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

Habitat Parameter	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
6. Channel Alteration SCORE <u>20</u>	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.					
	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
7. Frequency of Riffles (or bends) SCORE <u>13</u>	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.					
	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. SCORE <u>10</u> SCORE <u>6</u>	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.					
	Left Bank	10	9			8	7	6			5	4	3			2	1	0			
	Right Bank	10	9			8	7	6			5	4	3			2	1	0			
9. Vegetative Protection (score each bank) SCORE <u>10</u> SCORE <u>10</u>	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.					
	Left Bank	10	9			8	7	6			5	4	3			2	1	0			
	Right Bank	10	9			8	7	6			5	4	3			2	1	0			
10. Riparian Vegetative Zone Width (score each bank riparian zone) SCORE <u>10</u> SCORE <u>10</u>	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.					
	Left Bank	10	9			8	7	6			5	4	3			2	1	0			
	Right Bank	10	9			8	7	6			5	4	3			2	1	0			

Total Score 179

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME S-EF26		LOCATION Pittsylvania County	
STATION # _____ RIVERMILE _____		STREAM CLASS Perennial	
LAT <u>36.828207</u> LONG <u>-79.349814</u>		RIVER BASIN Banister	
STORET # _____		AGENCY VADEQ	
INVESTIGATORS ES/NF		LOT NUMBER _____	
FORM COMPLETED BY ES/NF		DATE <u>9/8/21</u> TIME <u>1100</u>	REASON FOR SURVEY Baseline Assessment

HABITAT TYPES	Indicate the percentage of each habitat type present ☒ Cobble <u>15</u> % ☐ Snags _____ % ☒ Vegetated Banks <u>5</u> % ☒ Sand <u>80</u> % ☐ Submerged Macrophytes _____ % ☐ Other (_____) <u>0.5</u> %
SAMPLE COLLECTION	Gear used ☐ D-frame ☒ kick-net ☐ Other _____ How were the samples collected? ☒ wading ☐ from bank ☐ from boat Indicate the number of jabs/kicks taken in each habitat type. ☒ Cobble <u>4</u> ☐ Snags _____ ☐ Vegetated Banks _____ ☐ Sand _____ ☐ Submerged Macrophytes _____ ☐ Other (_____) _____
GENERAL COMMENTS	4 kicks in riffle habitat.

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	0	1	2	3	4	Slimes	0	1	2	3	4
Filamentous Algae	0	1	2	3	4	Macroinvertebrates	0	1	2	3	4
Macrophytes	0	1	2	3	4	Fish	0	1	2	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

Sample ID Collection Date		S-EF26 09-08-2021
ORDER	GENUS/SPECIES	COUNT
Ephemeroptera	Baetis sp.	24
Ephemeroptera	Maccaffertium sp.	20
Ephemeroptera	Teloganopsis deficiens	1
Trichoptera	Cheumatopsyche sp.	88
Trichoptera	Glossosomatidae	2
Trichoptera	Hydropsyche sp.	15
Trichoptera	Hydropsychidae	1
Odonata	Calopterygidae	1
Odonata	Gomphidae	1
Coleoptera	Ectopria sp.	1
Coleoptera	Oulimnius sp.	4
Coleoptera	Psephenus sp.	2
Coleoptera	Stenelmis sp.	1
Megaloptera	Corydalus sp.	2
Diptera-Chironomidae	Brillia sp.	2
Diptera-Chironomidae	Cladotanytarsus sp.	10
Diptera-Chironomidae	Corynoneura sp.	2
Diptera-Chironomidae	Cricotopus sp.	1
Diptera-Chironomidae	Diamesa sp.	3
Diptera-Chironomidae	Microtendipes sp.	12
Diptera-Chironomidae	Nilotanypus sp.	1
Diptera-Chironomidae	Parametrioctenus sp.	1
Diptera-Chironomidae	Polypedilum sp.	24
Diptera-Chironomidae	Potthastia sp.	1
Diptera-Chironomidae	Rheotanytarsus sp.	2
Diptera-Chironomidae	Stempellinella sp.	2
Diptera-Chironomidae	Stenochironomus sp.	1
Diptera-Chironomidae	Tanytarsus sp.	5
Diptera-Chironomidae	Thienemanniella sp.	8
Diptera-Chironomidae	Thienemannimyia gr. sp.	4
Diptera	Antocha sp.	8
Diptera	Atrichopogon sp.	2
Diptera	Atylotus/Tabanus sp.	1
Diptera	Hemerodromia sp.	3
Diptera	Hexatoma sp.	5
Annelida	Naididae	4
Acari	Atractides sp.	1
Acari	Hygrobates sp.	1
Acari	Lebertia sp.	1
Other Organisms	Nematoda	1
TOTAL		269

Sample ID Collection Date		S-EF26 09-08-2021
WVSCI Metric Values		
Total taxa		19
EPT taxa		5
% EPT		56.1
% Chironomidae		29.4
% 2 Dominant		68.0
HBI		5.03
WVSCI Metric Scores		
Total taxa		90.5
EPT taxa		38.5
% EPT		61.1
% Chironomidae		71.3
% 2 Dominant		50.0
HBI		70.0
WVSCI Total Score		63.6

WVSCI Thresholds

Unimpaired = > 68.00
Gray Zone = 60.61 to 68.00
Impaired = <60.61

WOLMAN PEBBLE COUNT FORM

County: Pittsylvania
Stream Name: Little Cherrystone Creek
HUC Code: 03010105
Survey Date: 8/19/2021
Surveyors: JM, DW
Type: Representative

Stream ID: S-EF26

Basin: Banister

PEBBLE COUNT							
Inches	PARTICLE	Millimeters		Particle Count	Total #	Item %	% Cum
	Silt/Clay	< .062	S/C	▲ ▼	9	9.00	9.00
	Very Fine	.062-.125	S A N D	▲ ▼	9	9.00	18.00
	Fine	.125-.25		▲ ▼		0.00	18.00
	Medium	.25-.5		▲ ▼	1	1.00	19.00
	Coarse	.50-1.0		▲ ▼	1	1.00	20.00
.04-.08	Very Coarse	1.0-2		▲ ▼	7	7.00	27.00
.08 -.16	Very Fine	2 -4	G R A V E L	▲ ▼	10	10.00	37.00
.16 - .22	Fine	4 -5.7		▲ ▼	2	2.00	39.00
.22 - .31	Fine	5.7 - 8		▲ ▼	4	4.00	43.00
.31 - .44	Medium	8 -11.3		▲ ▼	6	6.00	49.00
.44 - .63	Medium	11.3 - 16		▲ ▼	6	6.00	55.00
.63 - .89	Coarse	16 -22.6		▲ ▼	3	3.00	58.00
.89 - 1.26	Coarse	22.6 - 32		▲ ▼	13	13.00	71.00
1.26 - 1.77	Vry Coarse	32 - 45		▲ ▼	7	7.00	78.00
1.77 -2.5	Vry Coarse	45 - 64		▲ ▼	4	4.00	82.00
2.5 - 3.5	Small	64 - 90	C O B B L E	▲ ▼	6	6.00	88.00
3.5 - 5.0	Small	90 - 128		▲ ▼	1	1.00	89.00
5.0 - 7.1	Large	128 - 180		▲ ▼	1	1.00	90.00
7.1 - 10.1	Large	180 - 256		▲ ▼		0.00	90.00
10.1 - 14.3	Small	256 - 362	B O U L D E R	▲ ▼		0.00	90.00
14.3 - 20	Small	362 - 512		▲ ▼		0.00	90.00
20 - 40	Medium	512 - 1024		▲ ▼		0.00	90.00
40 - 80	Large	1024 -2048		▲ ▼		0.00	90.00
80 - 160	Vry Large	2048 -4096		▲ ▼		0.00	90.00
	Bedrock		BDRK	▲ ▼	10	10.00	100.00
				Totals:	100		
	Total Tally:						

RIVERMORPH PARTICLE SUMMARY

River Name: Little Cherrystone Creek
Reach Name: S-EF26
Sample Name: Representative
Survey Date: 08/19/2021

Size (mm)	TOT #	ITEM %	CUM %
0 - 0.062	9	9.00	9.00
0.062 - 0.125	9	9.00	18.00
0.125 - 0.25	0	0.00	18.00
0.25 - 0.50	1	1.00	19.00
0.50 - 1.0	1	1.00	20.00
1.0 - 2.0	7	7.00	27.00
2.0 - 4.0	10	10.00	37.00
4.0 - 5.7	2	2.00	39.00
5.7 - 8.0	4	4.00	43.00
8.0 - 11.3	6	6.00	49.00
11.3 - 16.0	6	6.00	55.00
16.0 - 22.6	3	3.00	58.00
22.6 - 32.0	13	13.00	71.00
32 - 45	7	7.00	78.00
45 - 64	4	4.00	82.00
64 - 90	6	6.00	88.00
90 - 128	1	1.00	89.00
128 - 180	1	1.00	90.00
180 - 256	0	0.00	90.00
256 - 362	0	0.00	90.00
362 - 512	0	0.00	90.00
512 - 1024	0	0.00	90.00
1024 - 2048	0	0.00	90.00
Bedrock	10	10.00	100.00
D16 (mm)	0.11		
D35 (mm)	3.6		
D50 (mm)	12.08		
D84 (mm)	72.67		
D95 (mm)	Bedrock		
D100 (mm)	Bedrock		
Silt/Clay (%)	9		
Sand (%)	18		
Gravel (%)	55		
Cobble (%)	8		
Boulder (%)	0		
Bedrock (%)	10		

Total Particles = 100.

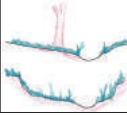
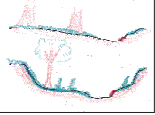
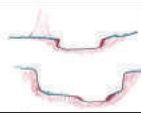
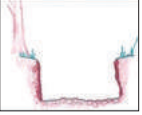
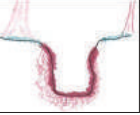
Stream Assessment Form (Form 1)

Unified Stream Methodology for use in Virginia

For use in wadeable channels classified as intermittent or perennial

Project #	Project Name (Applicant)	Locality	Cowardin Class.	HUC	Date	SAR #	Impact Length	Impact Factor
22865.06	Mountain Valley Pipeline (Mountain Valley Pipeline, LLC)	Pittsylvania	R3	03010105	8/19/2021	S-EF26	20	1
Name(s) of Evaluator(s)		Stream Name and Information					SAR Length	
JM DW		Little Cherrystone Creek					80	

1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation)

Channel Condition	Conditional Category					CI
	Optimal	Suboptimal	Marginal	Poor	Severe	
						
	Very little incision or active erosion; 80-100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars / bankfull benches are present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bars and transverse bars few. Transient sediment deposition covers less than 10% of bottom.	Slightly incised, few areas of active erosion or unprotected banks. Majority of banks are stable (60-80%). Vegetative protection or natural rock prominent (60-80%) AND/OR Depositional features contribute to stability. The bankfull and low flow channels are well defined. Stream likely has access to bankfull benches, or newly developed floodplains along portions of the reach. Transient sediment covers 10-40% of the stream bottom.	Often incised, but less than Severe or Poor. Banks more stable than Severe or Poor due to lower bank slopes. Erosion may be present on 40-60% of both banks. Vegetative protection on 40-60% of banks. Streambanks may be vertical or undercut. AND/OR 40-60% Sediment may be temporary / transient, contribute to instability. Deposition that contribute to stability, may be forming/present. AND/OR V-shaped channels have vegetative protection on > 40% of the banks and depositional features which contribute to stability.	Overwidened/incised. Vertically / laterally unstable. Likely to widen further. Majority of both banks are near vertical. Erosion present on 60-80% of banks. Vegetative protection present on 20-40% of banks, and is insufficient to prevent erosion. AND/OR 60-80% of the stream is covered by sediment. Sediment is temporary / transient in nature, and contributing to instability. AND/OR V-shaped channels have vegetative protection is present on > 40% of the banks and stable sediment deposition is absent.	Deeply incised (or excavated), vertical/lateral instability. Severe incision, flow contained within the banks. Streambed below average rooting depth, majority of banks vertical/undercut. Vegetative protection present on less than 20% of banks, is not preventing erosion. Obvious bank sloughing present. Erosion/raw banks on 80-100%. AND/OR Aggrading channel. Greater than 80% of stream bed is covered by deposition, contributing to instability. Multiple thread channels and/or subterranean flow.	
Scores	3	2.4	2	1.6	1	3.00

NOTES>>

2. RIPARIAN BUFFERS: Assess both bank's 100 foot riparian areas along the entire SAR. (rough measurements of length & width may be acceptable)

Conditional Category								NOTES>>
Riparian Buffers	Optimal	Suboptimal		Marginal		Poor		
	Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas.	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	
			High	Low	High	Low	High	
Scores	1.5	1.2	1.1	0.85	0.75	0.6	0.5	

1. Delineate riparian areas along each stream bank into Condition Categories and Condition Scores using the descriptors.
2. Determine square footage for each by measuring or estimating length and width. Calculators are provided for you below.
3. Enter the % Riparian Area and Score for each riparian category in the blocks below.

Right Bank	% Riparian Area>	100%					100%		
	Score >	1.5							
									CI= (Sum % RA * Scores*0.01)/2
Left Bank	% Riparian Area>	100%					100%	Rt Bank CI >	1.50
	Score >	1.5						Lt Bank CI >	1.50

3. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths; woody and leafy debris; stable substrate; low embeddedness; shade; undercut banks; root mats; SAV; riffle/pool complexes, stable features.

Instream Habitat/ Available Cover	Conditional Category				NOTES>>
	Optimal	Suboptimal	Marginal	Poor	
	Habitat elements are typically present in greater than 50% of the reach.	Stable habitat elements are typically present in 30-50% of the reach and are adequate for maintenance of populations.	Stable habitat elements are typically present in 10-30% of the reach and are adequate for maintenance of populations.	Habitat elements listed above are lacking or are unstable. Habitat elements are typically present in less than 10% of the reach.	
Scores	1.5	1.2	0.9	0.5	Stream Gradient High / Low

Stream Impact Assessment Form Page 2

Project #	Project Name (Applicant)	Locality	Cowardin Class.	HUC	Date	SAR #	Impact Length	Impact Factor
22865.06	Mountain Valley Pipeline (Mountain Valley Pipeline, LLC)	Pittsylvania	R3	03010105	8/19/2021	S-EF26	20	1

4. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock

Channel Alteration	Conditional Category						NOTES>>	CI
	Negligible	Minor		Moderate		Severe		
	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines AND/OR 80% of banks shored with gabion, riprap, or cement.		
Scores	1.5	1.3	1.1	0.9	0.7	0.5		1.50

REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH

NOTE: The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.

THE REACH CONDITION INDEX (RCI) >> **1.50**

RCI= (Sum of all CI's)/5, except if stream is ephemeral RCI = (Riparian CI/2)

COMPENSATION REQUIREMENT (CR) >> **30**

CR = RCI X L_i X IF

INSERT PHOTOS:



CAPTION. Assessment is limited to areas within the temporary ROW.

DESCRIBE PROPOSED IMPACT:

PROVIDED UNDER SEPARATE COVER

 Wetland Studies and Solutions, Inc. a DMET company 5300 Wellington Branch Drive • Suite 100 Gainesville, Virginia 20155 Phone: 703-679-5000 • Fax: 703-679-5001 www.wetlands.com					
Profile and Cross-Sections Baseline Survey Prepared For: MVP Crossing S-EF26 & W-IJ22 - Little Cherrystone Creek (MP 302.6) Pittsylvania County, Virginia Copyright © 2021 Wetland Studies and Solutions, Inc.					
REVISIONS					
No.	Date	Description	Rev. By	App. By	
DATE: September, 2021				SCALE: AS NOTED	
Horizontal Datum: NAD 1983 UTM ZONE 17N					
Vertical Datum: NAVD 88					
Boundary and Topo Source:					
MVP					
WSSI 2' C.I. Topo					
Design	Draft	Approved			
EJC	APE	PFS			
Sheet # 1 of 1					
Computer File Name: L:\Survey\2020\210901\210901.dwg / Special 1 Work Drawg 22065_00_S-1-MP-262-303 Sheets.dwg					