Reach S-MM8 (Timber Mat Crossing) Perennial Spread I Pittsylvania County, Virginia

Data	Included
Photos	\checkmark
SWVM Form	\checkmark
FCI Calculator and HGM Form	N/A – Perennial stream (not shadeable, slope less
	than 4%)
RBP Physical Characteristics Form	\checkmark
Water Quality Data	\checkmark
RBP Habitat Form	\checkmark
RBP Benthic Form	\checkmark
Benthic Identification Sheet	N/A – Lack of habitat
Wolman Pebble Count	\checkmark
RiverMorph Data Sheet	\checkmark
USM Form (Virginia Only)	\checkmark
Longitudinal Profile and Cross Sections	\checkmark

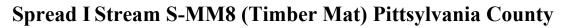




Photo Type: DS VIEW Location, Orientation, Photographer Initials: Downstream view of ROW looking NE, CB/BH



Photo Type: US VIEW Location, Orientation, Photographer Initials: Upstream view of ROW looking SW, CB/BH

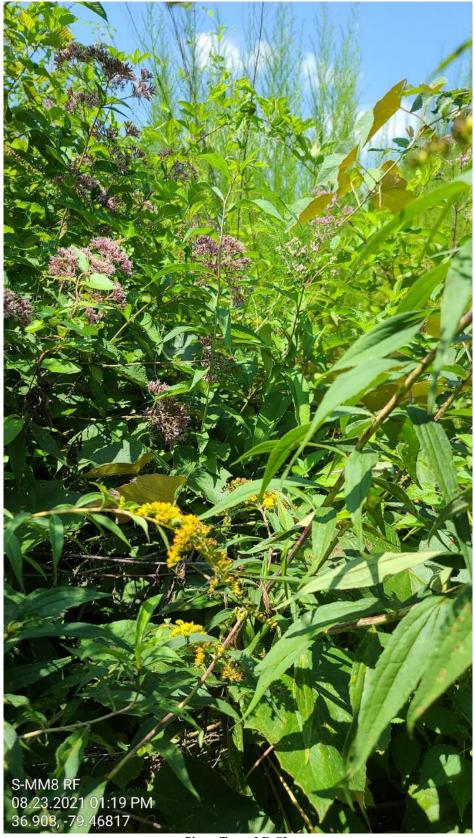


Photo Type: LB CL Location, Orientation, Photographer Initials: Standing on LB looking at RB looking N, CB/BH

DEQ Permit #21-0416



Photo Type: RB CL Location, Orientation, Photographer Initials: Standing on RB looking at LB looking N, CB/BH

DEQ Permit #21-0416



Photo Type: DS COND Location, Orientation, Photographer Initials: Downstream conditions outside of ROW looking NE, CB/BH

USACE FILE NO./ Project Name: Mountain Valley Pipeline (v2.1, Sept 2015)				IMPACT COORDINATES: (in Decimal Degrees)					
IMPACT STREAM/SITE ID (watershed size {acreage},					S-MM8	/ 19.06 a	5		
STREAM IMPACT LENGTH:	20	0	FORM MITIGA					COORDINATES: Decimal Degrees)	
Column No. 1- Impact Existing	g Conditie	on (Del	bit)		Column No. 2- Mitigation Existing Condition - Baseline (Cred			ine (Credit)	
Stream Classification:		Pere	nnial		Stream Classification:				
Percent Stream Channel SI	оре		2.18		Percent Stream Channel SI	оре			
HGM Score (attach d	ata form	s):			HGM Score (attach	data forn	ns):		
			Average					Average	
łydrology					Hydrology				
Biogeochemical Cycling			0		Biogeochemical Cycling			0	
labitat					Habitat				
PART I - Physical, Chemical and	Biologica	al Indic	ators		PART I - Physical, Chemical an	d Biologio	al Indi:	cators	
	Points Scale	Range	Site Score			Points Scale	Range	Site Score	
HYSICAL INDICATOR (Applies to all streams	classificat	ions)			PHYSICAL INDICATOR (Applies to all streams	classificatio	ons)		
SEPA RBP (High Gradient Data Sheet)					USEPA RBP (Low Gradient Data Sheet)				
Epifaunal Substrate/Available Cover	0-20		14		1. Epifaunal Substrate/Available Cover	0-20			
Embeddedness	0-20		7		2. Pool Substrate Characterization	0-20			
Velocity/ Depth Regime	0-20		7		3. Pool Variability	0-20			
Sediment Deposition	0-20		6		4. Sediment Deposition	0-20			
Channel Flow Status	0-20	0-1	6		5. Channel Flow Status	0-20	0-1		
Channel Alteration	0-20		13	_	6. Channel Alteration	0-20			
Frequency of Riffles (or bends)	0-20	-	1		7. Channel Sinuosity	0-20			
Bank Stability (LB & RB)	0-20	-	14		8. Bank Stability (LB & RB)	0-20			
. Vegetative Protection (LB & RB) 0. Riparian Vegetative Zone Width (LB & RB)	0-20	-	10 12	-	9. Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20			
otal RBP Score	Marg	inal	90		Total RBP Score	Po	or	0	
ub-Total			0.45		Sub-Total			0	
HEMICAL INDICATOR (Applies to Intermitter	nt and Pere	nnial Str	reams)		CHEMICAL INDICATOR (Applies to Intermitten	t and Peren	nial Stre	ams)	
VDEP Water Quality Indicators (General	()				WVDEP Water Quality Indicators (General))			
pecific Conductivity		-		_	Specific Conductivity			0	
<=99 - 90 points	0-90		37.1			0-90			
н	-	0-1		_	рН		0-1		
5.6-5.9 = 45 points	0-80	0-1	5.97			5-90	0-1		
0		-		_	DO				
>5.0 = 30 points	10-30		5.99			10-30			
ub-Total		I	0.825		Sub-Total			0	
IOLOGICAL INDICATOR (Applies to Intermit	tent and Pe	erennial	Streams)	1	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Per	ennial St	treams)	
/V Stream Condition Index (WVSCI)					WV Stream Condition Index (WVSCI)				
<u>^</u>	0-100	0-1				0-100	0-1		
			•	_			L		
Sub-Total			0		Sub-Total			0	
PART II - Index and U	Init Score)			PART II - Index and	Unit Scor	e		

Index	Linear Feet	Unit Score
0.638	20	12.75

Index	Linear Feet	Unit Score
0	0	0

TION STREAM CLASS (watershed size {acreage olumn No. 3- Mitigation P Post Completion cation: cent Stream Channel S HGM Score (attack HGM Score (attack Cycling	Lon. Projected at F tion (Credit)	r impairments) Five Years 0 0	PRECIPITATION PAST 48 HRS Column No. 4- Mitigation Post Complet Stream Classification:	Projected at Te		Yes	Comments: Mitigation Length:	Augu	st 23,
(watershed size {acreage plumn No. 3- Mitigation P Post Completion ation: cent Stream Channel S HGM Score (attack HGM Score (attack	Lon. Projected at F tion (Credit)	r impairments) Five Years 0 0	PRECIPITATION PAST 48 HRS Column No. 4- Mitigation Post Complet Stream Classification:	Projected at Te					
olumn No. 3- Mitigation P Post Completion cation: cent Stream Channel S HGM Score (attack I Cycling	Lon. Projected at F tion (Credit)	Five Years	Column No. 4- Mitigation Post Complet Stream Classification:	Projected at Te			Mitigation Length:		
Post Completion cation: cent Stream Channel S HGM Score (attack Cycling	Projected at F tion (Credit)	0	Column No. 4- Mitigation Post Complet Stream Classification:	Projected at Te			Mitigation Length:		
Post Completion cation: cent Stream Channel S HGM Score (attack Cycling	tion (Credit)	0	Post Complet Stream Classification:		n Years				
Post Completion cation: cent Stream Channel S HGM Score (attack Cycling	tion (Credit)	0	Post Complet Stream Classification:		n Years	П			
cent Stream Channel S HGM Score (attacl	•	0				s	Column No. 5- Mitigation Projecte	ed at Maturit	(Cred
HGM Score (attacl	•	0 s):			0		Stream Classification:		0
Cycling	ch data form	s):	Percent Stream Channe	el Slope		0	Percent Stream Channel SI	оре	
			HGM Score (atta	ch data forms)	:		HGM Score (attach da	ata forms):	
		Average				Average			
			Hydrology				Hydrology		
I - Physical Chemical a		0	Biogeochemical Cycling			0	Biogeochemical Cycling		
[] - Physical, Chemical a			Habitat				Habitat		
, injered, enormour e	l and Biologica	al Indicators	PART I - Physical, Chemical	l and Biological	Indicat	ors	PART I - Physical, Chemical and	Biological In	dicato
	Points Scale	Range Site Score		Points Scale	Range	Site Score		Points Scale R	nge
CATOR (Applies to all stream	ams classification	ls)	PHYSICAL INDICATOR (Applies to all st	treams classificatior	ns)		PHYSICAL INDICATOR (Applies to all streams	classifications)	
gh Gradient Data Sheet)			USEPA RBP (High Gradient Data She				USEPA RBP (High Gradient Data Sheet)		
strate/Available Cover	0-20		1. Epifaunal Substrate/Available Cover	0-20			1. Epifaunal Substrate/Available Cover	0-20	
S	0-20		2. Embeddedness	0-20			2. Embeddedness	0-20	
n Regime	0-20		3. Velocity/ Depth Regime	0-20			3. Velocity/ Depth Regime	0-20	
osition	0-20		4. Sediment Deposition	0-20			4. Sediment Deposition	0-20	
Status	0-20	0-1	5. Channel Flow Status	0-20	0-1		5. Channel Flow Status	0-20	-1
ation	0-20	0-1	6. Channel Alteration	0-20	0-1		6. Channel Alteration	0-20	- 1
Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20			7. Frequency of Riffles (or bends)	0-20	
(LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20			8. Bank Stability (LB & RB)	0-20	
tection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20			9. Vegetative Protection (LB & RB)	0-20	
ative Zone Width (LB & RB)			10. Riparian Vegetative Zone Width (LB & R				10. Riparian Vegetative Zone Width (LB & RB)	0-20	
· · ·	Poor	0	Total RBP Score	Poor		0	Total RBP Score	Poor	
		0	Sub-Total			0	Sub-Total		
CATOR (Applies to Intermitte	ittent and Perenni	ial Streams)	CHEMICAL INDICATOR (Applies to Inter	rmittent and Perenn	nial Strea	ams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial	Stream
uality Indicators (Genera	eral)		WVDEP Water Quality Indicators (Ge	eneral)			WVDEP Water Quality Indicators (General))	
ctivity			Specific Conductivity				Specific Conductivity		
	0-90			0-90				0-90	
			рН	·			pH		
	5-90	0-1		5-90	0-1			5-90	-1
							DO.		
			DO		_		DO		
	10-30			10-30				10-30	
		0	Sub-Total	I I		0	Sub-Total	<u> </u>	
	ermittent and Po	erennial Streams)		Intermittent and P	erennia	ll Streams)		ittent and Per	nnial S
DICATOR (Applies to Inter			WV Stream Condition Index (WVSCI))			WV Stream Condition Index (WVSCI)	1	
DICATOR (Applies to Inter dition Index (WVSCI)		0-1		0-100	0-1			0-100	-1
	0-100	0	Sub-Total	I		0	Sub-Total		
	0-100	U					Joub-Total		
	ATOR (Applies to Int	ATOR (Applies to Intermittent and Po	ATOR (Applies to Intermittent and Perennial Streams)	O Sub-Total ATOR (Applies to Intermittent and Perennial Streams) BIOLOGICAL INDICATOR (Applies to WV Stream Condition Index (WVSCI) 0-100 0-1	O Sub-Total ATOR (Applies to Intermittent and Perennial Streams) BIOLOGICAL INDICATOR (Applies to Intermittent and P on Index (WVSCI) WV Stream Condition Index (WVSCI) 0-100 0-1	O Sub-Total ATOR (Applies to Intermittent and Perennial Streams) BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial October Condition Index (WVSCI) 0-100 0-1	O Sub-Total O ATOR (Applies to Intermittent and Perennial Streams) BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) on Index (WVSCI) WV Stream Condition Index (WVSCI) 0-100 0-1	O ATOR (Applies to Intermittent and Perennial Streams) on Index (WVSCI) 0-100	Image: Constraint of the constraint o

Index

0

Linear Feet Unit Score

0

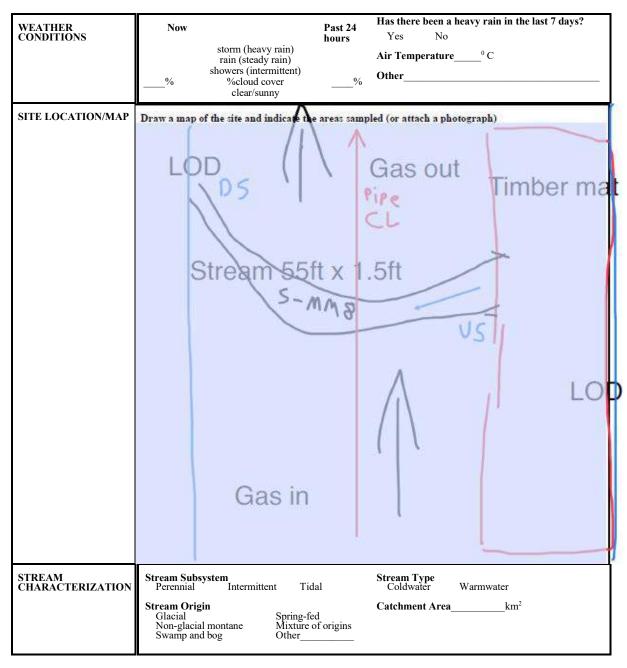
0

PART II - Index and Unit Score				
Index	Linear Feet	Unit Score		
0	0	0		

PART II - Index and Unit Score				
Index	Linear Feet	Unit Score		
0	0	0		

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME	LOCATION	
STATION # RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN	
STORET #	AGENCY	
INVESTIGATORS		
FORM COMPLETED BY	DATE TIME	REASON FOR SURVEY



PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES RIPARIAN VEGETATION (18 meter buffer)	Predominant Surrounding Landuse Forest Commercial Field/Pasture Industrial Agricultural Other Residential Indicate the dominant type and record the domin Trees Shrubs Dominant species present	Grasses Herbaceous
INSTREAM FEATURES	Estimated Reach Length m Estimated Stream Width m Sampling Reach Area ² Area in km² (m²x1000) km² Estimated Stream Depth m Surface Velocity m/sec (at thalweg) m/sec	Canopy Cover Partly open Partly shaded Shaded High Water Mark m Proportion of Reach Represented by Stream Morphology Types Riffle% Run% Riffle% Run% Channelized Yes No Dam Present Yes No
LARGE WOODY DEBRIS AQUATIC VEGETATION	LWDm² Density of LWDm²/km² (LWD/ reac Indicate the dominant type and record the domin Rooted emergent Rooted submergent Floating Algae Attached Algae Dominant species present	ant species present Rooted floating Free floating
WATER QUALITY	Temperature0 C Specific Conductance Dissolved Oxygen pH Turbidity WQ Instrument Used	Water Odors Normal/None Sewage Petroleum Chemical Fishy Other Water Surface Oils Slick Slick Sheen Globs Flecks None Other Turbidity (if not measured) Clear Slightly turbid Opaque Stained Other
SEDIMENT/ SUBSTRATE	Odors Petroleum Normal Sewage Petroleum Chemical Anaerobic None Other	Deposits Sludge Sawdust Paper fiber Sand Relict shells Other Lpoking at stones which are not deeply embedded, are the undersides black in color? Yes No

INC	DRGANIC SUBSTRATE (should add up to		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			Detritus	sticks, wood, coarse plant		
Boulder	> 256 mm (10")			materials (CPOM)		
Cobble	64-256 mm (2.5"-10")		Muck-Mud	black, very fine organic		
Gravel	2-64 mm (0.1"-2.5")			(FPOM)		
Sand	0.06-2mm (gritty)		Marl	grey, shell fragments		
Silt	0.004-0.06 mm		1			
Clay	< 0.004 mm (slick)					

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

STREAM NAME	LOCATION	
STATION # RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN	
STORET #	AGENCY	
INVESTIGATORS		
FORM COMPLETED BY	DATE TIME AM PM	REASON FOR SURVEY

	Habitat	Condition Category									
	Parameter	Optimal	Suboptimal	Marginal	Poor						
	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 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0						
n sampling reach	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.						
ted i	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0						
Parameters to be evaluated in sampling reach	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).						
uram	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0						
Pa	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	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 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0						

Rapid Bioassessment Protocols For Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish, Second Edition - Form 2

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

Habitat		Condition	1 Category	
Parameter	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	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.
SCORE	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)	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.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
 SCORE 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. SCORE (LB) SCORE (RB) 9. Vegetative Protection (score each bank) 	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.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	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.
SCORE(LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE(RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	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.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score _____

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME		LOCATION	
STATION #	RIVERMILE	STREAM CLASS	
LAT	LONG	RIVER BASIN	
STORET #		AGENCY	
INVESTIGATORS			LOT NUMBER
FORM COMPLETED	BY	DATE TIME	REASON FOR SURVEY
HABITAT TYPES	Indicate the percentage of Cobble% Sn Submerged Macrophytes	ags% Vegetated B	
SAMPLE COLLECTION	Indicate the number of jab	lected? wading fi ps/kicks taken in each habitat ty lags Vegetated B	anks Sand
GENERAL COMMENTS			

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						

WOLMAN PEBBLE COUNT FORM

County:	Pittsylvania	Stream ID:	S-MM8
Stream Name:	UNT to Cherrystone Creek		
HUC Code:	03010105	Basin:	Banister
Survey Date:	8/23/2021		
Surveyors:	AJ VM		
Type:	Representative		

			LE COUNT				1
Inches	PARTICLE	Millimeters		Particle Count	Total #	Item %	% Cum
	Silt/Clay	< .062	S/C	▲ ▼	14	14.00	14.00
	Very Fine	.062125		▲ ▼	5	5.00	19.00
	Fine	.12525		▲ ▼	20	20.00	39.00
	Medium	.255	SAND	▲ ▼	15	15.00	54.00
	Coarse	.50-1.0		▲ ▼	10	10.00	64.00
.0408	Very Coarse	1.0-2		▲ ▼	10	10.00	74.00
.0816	Very Fine	2 -4		▲ ▼	20	20.00	94.00
.1622	Fine	4 -5.7		▲ ▼		0.00	94.00
.2231	Fine	5.7 - 8		▲ ▼		0.00	94.00
.3144	Medium	8 -11.3		▲ ▼		0.00	94.00
.4463	Medium	11.3 - 16	G R A V E L	▲ ▼		0.00	94.00
.6389	Coarse	16 -22.6		▲ ▼		0.00	94.00
.89 - 1.26	Coarse	22.6 - 32		▲ ▼		0.00	94.00
1.26 - 1.77	Vry Coarse	32 - 45		▲ ▼		0.00	94.00
1.77 -2.5	Vry Coarse	45 - 64		▲ ▼		0.00	94.00
2.5 - 3.5	Small	64 - 90		▲ ▼	6	6.00	100.00
3.5 - 5.0	Small	90 - 128	CODDIE	▲ ▼		0.00	100.00
5.0 - 7.1	Large	128 - 180	COBBLE	▲ ▼		0.00	100.00
7.1 - 10.1	Large	180 - 256		▲ ▼		0.00	100.00
10.1 - 14.3	Small	256 - 362		* *		0.00	100.00
14.3 - 20	Small	362 - 512]	▲ ▼		0.00	100.00
20 - 40	Medium	512 - 1024	BOULDER	▲ ▼		0.00	100.00
40 - 80	Large	1024 -2048	1	▲ ▼		0.00	100.00
80 - 160	Vry Large	2048 -4096]	▲ ▼		0.00	100.00
	Bedrock		BDRK	▲ ▼		0.00	100.00
				Totals:	100		
	Total Tally:						

River Name: Reach Name: Sample Name: Survey Date:				
Size (mm)	тот #	ITEM %	CUM %	
0 - 0.062 0.062 - 0.125 0.125 - 0.25 0.25 - 0.50 0.50 - 1.0 1.0 - 2.0 2.0 - 4.0 4.0 - 5.7 5.7 - 8.0 8.0 - 11.3 11.3 - 16.0 16.0 - 22.6 22.6 - 32.0 32 - 45 45 - 64 64 - 90 90 - 128 128 - 180 180 - 256 256 - 362 362 - 512 512 - 1024 1024 - 2048 Bedrock	$ \begin{array}{r} 14 \\ 5 \\ 20 \\ 15 \\ 10 \\ 10 \\ 20 \\ 0 $	$14.00 \\ 5.00 \\ 20.00 \\ 15.00 \\ 10.00 \\ 20.00 \\ 0.$	14.00 19.00 39.00 54.00 64.00 74.00 94.00 94.00 94.00 94.00 94.00 94.00 94.00 94.00 94.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00	
D16 (mm) D35 (mm) D50 (mm) D84 (mm) D95 (mm) D100 (mm) Silt/Clay (%) Sand (%) Gravel (%) Gravel (%) Boulder (%) Bedrock (%)	0.09 0.23 0.43 3 68.33 90 14 60 20 6 0 0			

Total Particles = 100.

	۹. ۱	Strear		tream Method	lology for use	in Virginia				
				able channels cla			al			
Project #	Project Name (App		Locality	Cowardin Class.	HUC	Date	SAR #	Impact Length	Impact Factor	
22865.06	Mountain Valley Pipeline Valley Pipeline, L	•	Pittsylvania	R3	03010105	8/23/21	S-MM8	20	1	
Name	e(s) of Evaluator(s)	Stream Name	e and Informa	ition				SAR Length		
	SK, VM	Spread I; UN	T to Cherryst	one Creek				76		
Channel C	ondition: Assess the cross-section	on of the stream a	nd prevailing cond	dition (erosion, ago	gradation)					
	Optimal	Subo	ptimal	Conditional Catego	ginal	D	oor	Sev	ioro	
Channel Condition	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, fr erosion or unprotec of banks are si Vegetative protect prominent (60 Depositional feat stability. The bar channels are well d has access to bankf developed flo	ew areas of active ted banks. Majority table (60-80%). tion or natural rock -80%) AND/OR ures contribute to nkfull and low flow efined. Stream likely uit benches, or newly odplains along reach. Transient 0-40% of the stream	Often incised, but Poor. Banks mores Poor due to lov Erosion may be pr both banks. Vege 40-60% of banks. S vertical or und 40-60% Sediment transient, contr Deposition that co may be forming/p shaped channels protection on > 40	less than Severe or table than Severe or wer bank slopes. esent on 40-60% of tative protection on treambanks may be ercut. AND/OR may be temporary // ibute instability. ntribute to stability, resent. AND/OR V- s have vegetative % of the banks and es which contribute	Overwidened/in laterally unstabl further. Majority of vertical. Erosion p banks. Vegetativ on 20-40% of bank to prevent erosion. the stream is cov Sediment is temp nature, and contri AND/OR V-shaj vegetative protec 40% of the banks.	cised. Vertically / e. Likely to widen both banks are near resent on 60-80% of e protection present s, and is insufficient AND/OR 60-80% of ered by sediment. sorary / transient in AND/OR 60-80% of ered by sediment. butting to instability. ped channels have tion is present on > and stable sediment n is absent.	Deeply incised vertical/lateral in incision, flow contair Streambed below av majority of banks Vegetative protecti than 20% of banks erosion. Obviou present. Erosion/OR Aggradin AND/OR Aggradin	(or excavated), stability. Severe eed within the banks. erage rooting depth, vertical/undercut. ton present on less i, is not preventing v banks on 80-100%. g channel. Greater n bed is covered by uting to instability.	CI
Saaraa	3	2	.4	to sta	ability. 2	1	.6		1	
Scores	ى ت	2		<u> </u>	2	1 1	.0	1	•	2.40
RIPARIAN	BUFFERS: Assess both bank's		areas along the enditional Cate		measurements of	length & width ma	ay be acceptable)	NOTES>>		
RIPARIAN	BUFFERS: Assess both bank's Optimal	Con Subo	ditional Cate	gory Mar	measurements of ginal Low Marginal: Non-maintained,	-	oor	NOTES>>		
		Con Suboy 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.	ditional Cate ptimal 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.	ginal 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.	Provide a state of the second and maintained areas, no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	COOT Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	NOTES>>		
Riparian Buffers	Optimal Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas.	Con Subo 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.	ginal 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. Low	Provide the second seco	Low Poor: Impervious spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	NOTES>>		
Riparian	Optimal Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian	Con Suboy 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.	ditional Cate ptimal 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.	ginal 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.	Provide a state of the second and maintained areas, no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	COOT Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	NOTES>>		
Riparian Buffers Scores Delineate ripar Determine squ	Optimal Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas. 1.5 Tian areas along each stream bank i trare footage for each by measuring	Con Suboy 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. High 1.2 nto Condition Cate or estimating lengt	ditional Cate ptimal 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). Low 1.1 egories and Cond th and width. Cale	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. High 0.85	ginal 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. Low 0.75 the descriptors.	Primoved, and maintained areas, nurseries, no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	Low Poor: Impervious spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	NOTES>>		
Riparian Buffers Scores Delineate ripar Determine squ Enter the % Ri	Optimal Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas. 1.5 fian areas along each stream bank i	Con Suboy 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. High 1.2 nto Condition Cate or estimating lengt	ditional Cate ptimal 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). Low 1.1 egories and Cond th and width. Cale	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. High 0.85	ginal 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. Low 0.75 the descriptors.	Primoved, and maintained areas, nurseries, no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	oor Impervious surfaces, mine spoil lands, Idenuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5	NOTES>>		
Riparian Buffers Scores Delineate ripar Determine squ Enter the % Ri	Optimal Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas. 1.5 Tian areas along each stream bank i uare footage for each by measuring iparian Area and Score for each ripa	Con Suboy 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. High 1.2 nto Condition Cate or estimating lengt	ditional Cate ptimal 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). Low 1.1 egories and Cond th and width. Cale	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. High 0.85	ginal 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. Low 0.75 the descriptors.	Primoved, and maintained areas, nurseries, no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	COOR Low Poor: Impervious surfaces, mine spoil lands, idenuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100			
Riparian Buffers Scores Delineate ripar Determine squ Enter the % Ri Right Bank	Optimal Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas. 1.5 Tian areas along each stream bank i uare footage for each by measuring iparian Area and Score for each ripa % Riparian Area> 100%	Con Suboy 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. High 1.2 nto Condition Cate or estimating lengt	ditional Cate ptimal 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). Low 1.1 egories and Cond th and width. Cale	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. High 0.85	ginal 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. Low 0.75 the descriptors.	Primoved, and maintained areas, nurseries, no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	COOR Low Poor: Impervious surfaces, mine spoil lands, idenuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100	NOTES>> CI= (Sum % RA * Sc Rt Bank CI >	ores*0.01)/2 0.75	CI
Riparian Buffers Scores Delineate ripar Determine squ Enter the % Ri Light Bank	Optimal Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas. I.5 Tian areas along each stream bank i uare footage for each by measuring iparian Area and Score for each ripa % Riparian Area? 100% Score > 0.75	Con Suboy 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. High 1.2 nto Condition Cate or estimating lengt	ditional Cate ptimal 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). Low 1.1 egories and Cond th and width. Cale	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. High 0.85	ginal 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. Low 0.75 the descriptors.	Primoved, and maintained areas, nurseries, no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F	COOP Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lost, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100	CI= (Sum % RA * Sc		
Riparian Buffers Scores Delineate ripar Determine squ Enter the % Ri Light Bank	Optimal Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas. 1.5 trian areas along each stream bank i lare footage for each by measuring iparian Area and Score for each ripa % Riparian Area % Riparian Area> 100% Score > % Riparian Area> 100% Score >	Con Suboy 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. High 1.2 nto Condition Cate or estimating lengt arian category in th	ditional Cate ptimal 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). Low 1.1 egories and Cond th and width. Calo ne blocks below.	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. High 0.85 ition Scores using culators are provid	ginal Low Marginal: Non-maintained, dense herbaccous 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. Low 0.75 the descriptors. ed for you below.	Provide and maintained areas, mowed, and maintained areas, norseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % Here Blocks et al. 1000 Stabilized area area area area area area area ar	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 Low 0.5 the sums Riparian equal 100 100%	Cl= (Sum % RA * Sc Rt Bank Cl > Lt Bank Cl >	0.75 0.75	
Riparian Buffers Scores Delineate ripar Determine squ Enter the % Ri Light Bank	Optimal Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas. 1.5 trian areas along each stream bank i lare footage for each by measuring iparian Area and Score for each ripa % Riparian Area % Riparian Area> 100% Score > % Riparian Area> 100% Score >	Con Suboy 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. High 1.2 nto Condition Cate or estimating lengt arian category in th	Aditional Cate ptimal 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. High 0.85 ition Scores using culators are provid	ginal Low Marginal: Non-maintained, dense herbaccous 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. Low 0.75 the descriptors. ed for you below.	Provide and maintained areas, mowed, and maintained areas, norseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % Here Blocks et al. 1000 Stabilized area area area area area area area ar	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 Low 0.5 the sums Riparian equal 100 100%	Cl= (Sum % RA * Sc Rt Bank Cl > Lt Bank Cl >	0.75 0.75	
Riparian Buffers Scores Delineate ripar Determine squ Enter the % R Right Bank Left Bank Left Bank	Optimal Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas. 1.5 trian areas along each stream bank i lare footage for each by measuring iparian Area and Score for each ripa % Riparian Area % Riparian Area> 100% Score > % Riparian Area> 100% Score >	Con Subo 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. High 1.2 nto Condition Cate or estimating lengt arian category in th	Aditional Cate ptimal 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).	y and leafy debris; al Category	ginal Low Marginal: Non-maintained, dense herbaccous 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. Low 0.75 the descriptors. ed for you below.	Provide a second	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 Low 0.5 the sums Riparian equal 100 100%	CI= (Sum % RA * Sc Rt Bank CI > Lt Bank CI > banks; root mats; S	0.75 0.75	CI 0.75
Riparian Buffers Scores Delineate ripar Determine squ Enter the % Ri Right Bank Left Bank INSTREAM mplexes, stable Instream Habitat/	Optimal Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas. 1.5 Trian areas along each stream bank i lare footage for each by measuring train Area and Score for each rips % Riparian Area? % Riparian Area? 100% % Riparian Area? 100% % Riparian Area? 100% % Riparian Area? 0.75 HABITAT: Varied substrate size a features. 100%	Con Suboy 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. High 1.2 nto Condition Cate or estimating lengt arian category in th set, water velocity a Subo	ditional Cate ptimal 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). Low 1.1 agories and Cond th and width. Cale he blocks below.	y and leafy debris;	ginal 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. Low 0.75 the descriptors. ed for you below. stable substrate; f ginal	Provide and maintained areas, mowed, and maintained areas, mowed, and maintained areas, norseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition. High 0.6 Ensure of % F Blocks e Blo	Coor Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100% 100% Shade; undercut	CI= (Sum % RA * Sc Rt Bank CI > Lt Bank CI > banks; root mats; S	0.75 0.75	
Riparian Buffers Scores Delineate ripar Determine squ Enter the % Ri Right Bank Left Bank INSTREAM mplexes, stable Instream Habitat/ Available	Optimal Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas. 1.5 rian areas along each stream bank i rare footage for each by measuring iparian Area and Score for each ripa % Riparian Area> % Riparian Area> 100% Score > 0.75 % Riparian Area> 100% Score > 0.75 HABITAT: Varied substrate size a features. Optimal	Con Suboy 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. High 1.2 nto Condition Cate or estimating leng arian category in th set, water velocity a Stable habitat elen present in 30-50% of	ditional Cate ptimal 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). Low 1.1 egories and Cond th and width. Cale th and width. Cale th and width. Cale the blocks below. blocks below. Conditiona ptimal ments are typically of the reach and are	High Marginal: Non-maintained, dense herbaccous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover. High 0.85 ition Scores using culators are provid culators are provid al Category Mar Stable habitat ele present in 10-30%	ginal 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. Low 0.75 the descriptors. ed for you below. stable substrate; I ginal ments are typically of the reach and are	Prime Price Prime	Coor Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100% 100% Sishade; undercut conditions Sishade; undercut Sishade; Habitat	CI= (Sum % RA * Sc Rt Bank CI > Lt Bank CI > banks; root mats; S	0.75 0.75	
Riparian Buffers Scores Delineate ripar Determine squ Enter the % Ri Right Bank Left Bank Left Bank INSTREAM mplexes, stable	Optimal Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas. 1.5 Trian areas along each stream bank i lare footage for each by measuring trainan Area and Score for each rips % Riparian Area? 100% Score > 0.75 % Riparian Area? 100% Score > 0.75 HABITAT: Varied substrate size a features. Optimal	Con Subo 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. High 1.2 nto Condition Cate or estimating lengt arian category in th set, water velocity a Stable habitat eleng present in 30-50% of adequate for n	Aditional Cate ptimal 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). Low 1.1 agories and Cond th and width. Cake the blocks below. blocks below. Conditional ptimal ments are typically	y and leafy debris; Stable habitat ele present in 10-30%	ginal 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. Low 0.75 the descriptors. ed for you below. stable substrate; i ginal ments are typically	Provide a second	Coor Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions. Low 0.5 the sums Riparian equal 100 100% 100% Sishade; undercut sisted above are	CI= (Sum % RA * Sc Rt Bank CI > Lt Bank CI > banks; root mats; S NOTES>>	0.75 0.75	

Reach R3-R4 File: C:\Users\dan.weidenhof\Documents\Documents\VA Stream Sampling\0 QAQC SUBMITTALS\QAQC working 1st submittal\Ready for Submittal\20211020 Submittal\Submitted 20211014\S-MM8_20211008SS_KEH\9. S-MM8_USM_MVP_20211008SS.xlsx

Project #	Project Name (Applicant)		Locality	Cowardin Class.	HUC	Date	SAR #	Impact Length	Impact Factor	
22865.06	Mountain Valley Pipeline Valley Pipeline, L		Pittsylvania	R3	03010105	8/23/21	S-MM8	20	1	
. CHANNEL	ALTERATION: Stream crossin	igs, riprap, concret	e, gabions, or con	crete blocks, strai	ghtening of chann	el, channelization	embankments, s	poil piles, constrictio	ons, livestock	
			Conditiona	al Category				NOTES>>		
	Negligible	Mi	nor	Mod 40 - 60% of reach	erate 60 - 80% of reach	Sev	vere			
Channel Alteration	hardening absent. Stream has an unaltered pattern or has naturalized.	the channel alterations listed in the parameter guidelines.	the channel alterations listed in the parameter guidelines.	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.	of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	by any of the chan in the parameter g 80% of banks sh riprap, o	uidelines AND/OR ored with gabion, · cement.			CI
Scores	1.5	1.3	1.1	0.9	0.7	-	.5			1.50
	REACH	CONDITION	INDEX and S	STREAM CO	NDITION UN	ITS FOR TH	S REACH			
OTE: The CIs a	nd RCI should be rounded to 2 decir	mal places. The Cl	R should be round	ed to a whole num	nber.		THE REACH	H CONDITION IN	DEX (RCI) >>	1.17
						RCI= (Sum of	all CI's)/5, exce	ept if stream is ep	hemeral RCI = (F	Riparian Cl
							COMPENSA	TION REQUIRE	MENT (CR) >>	23
							CR = RC	CI X L _I X IF		

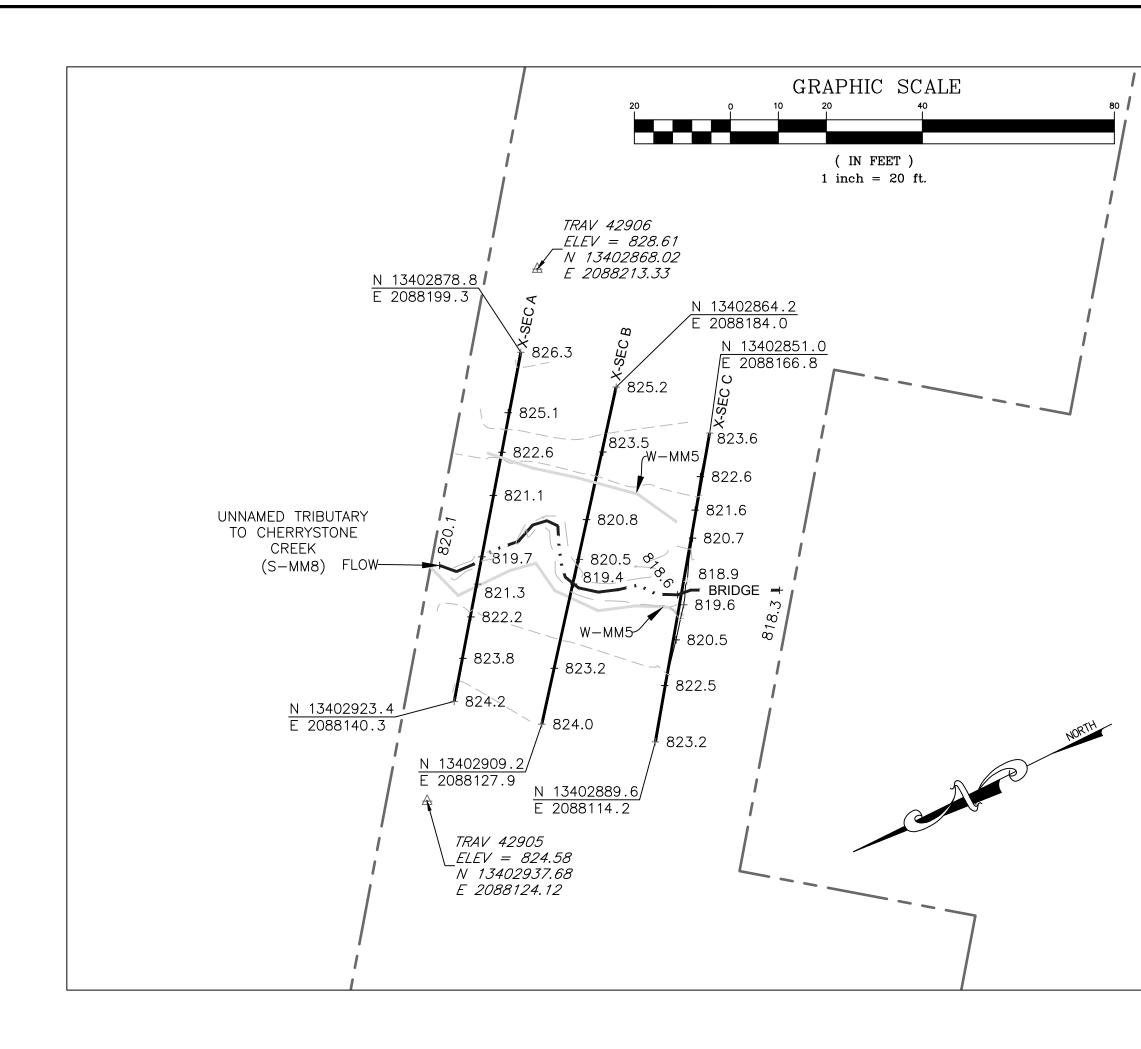


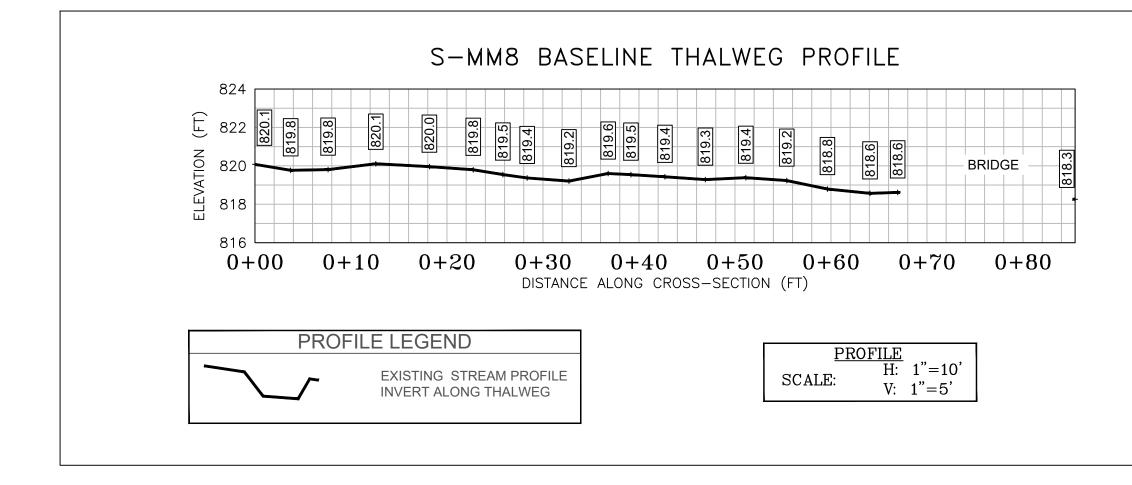
DESCRIBE PROPOSED IMPACT:

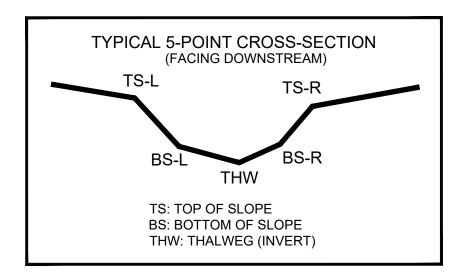
PROVIDED UNDER SEPARATE COVER

Reach R3-R4

File: C:\Users\dan.weidenhof\Documents\Documents\VA Stream Sampling\0 QAQC SUBMITTALS\QAQC working 1st submittal\Ready for Submittal\20211020 Submittal\Submitted 20211014\S-MM8_20211008SS_KEH19. S-MM8_USM_MVP_20211008SS.xlsx

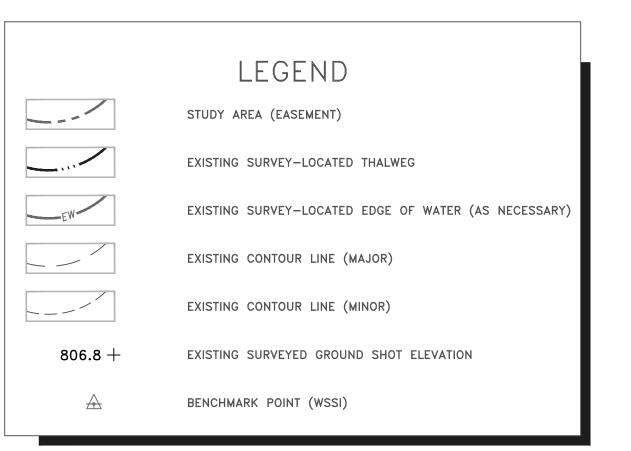






CL STAKEOUT POINTS: S-MM8 CROSS SECTION B (PIPE CL)											
	PRE-CROSSIN			POST-CI	ROSSING						
	NORTHING EASTING ELEV		FIEV	VERT.	HORZ.						
PT. LOC.	NOKIHING	EASTING	ELEV	DIFF.	DIFF.						
TS-L	13402886.93	2088155.23	820.51								
BS-L	13402888.23	2088153.72	819.83								
THW	13402890.29	2088151.18	819.36								
BS-R	13402891.00	2088150.45	819.65								
TS-R	13402891.73	2088149.36	820.27								

SURVEY NOTES:



1. This map has been oriented to NAD 1983 UTM ZONE 17N, and vertically to The North American Vertical Datum of 1988 (NAVD 88), using a Real Time Network (RTN) GPS. Field locations were completed on October 31, 2018.

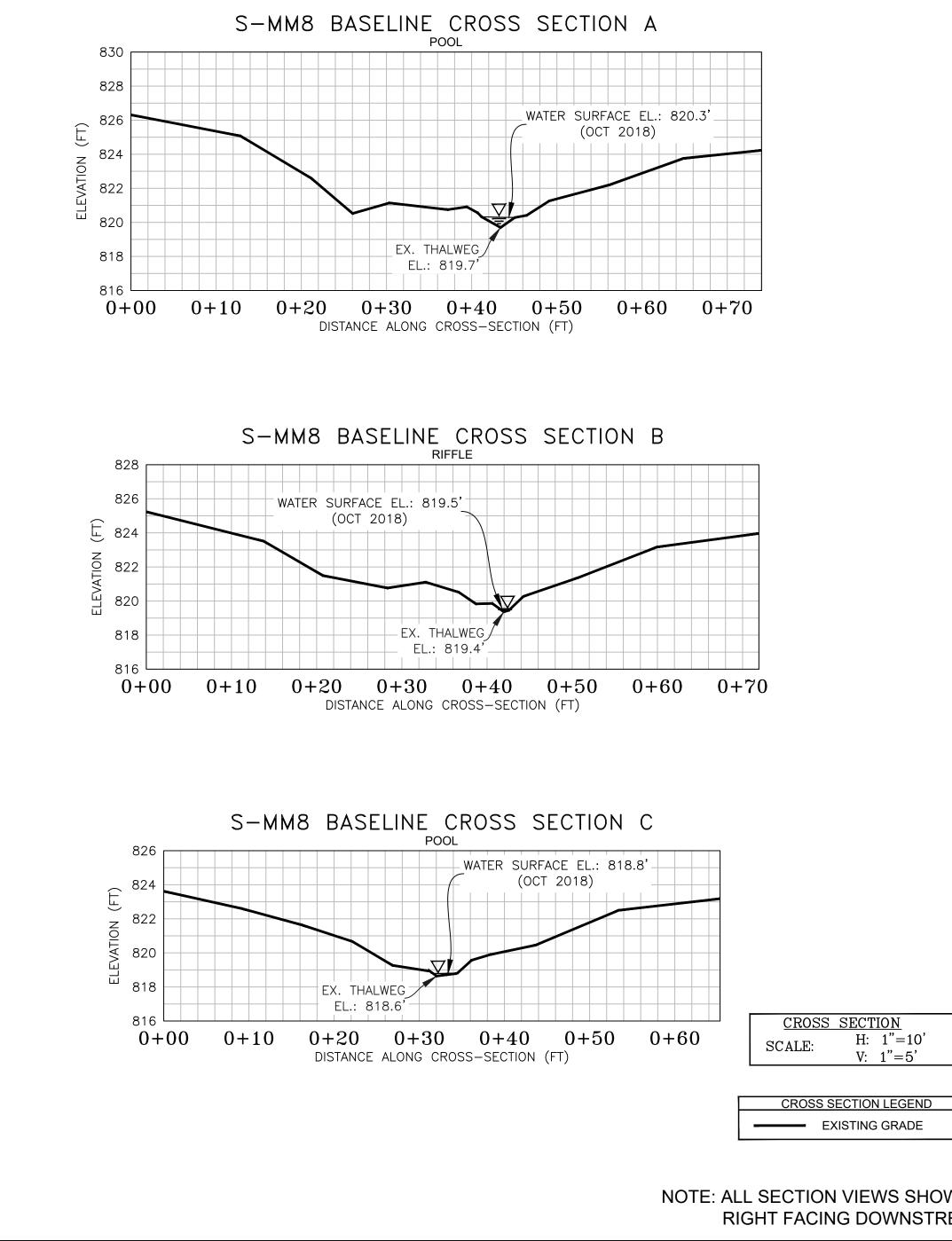
2. Monumentation, including traverse stations and fly points, shown on this drawing should be used to orient any future boundary, topographic, or location survey.

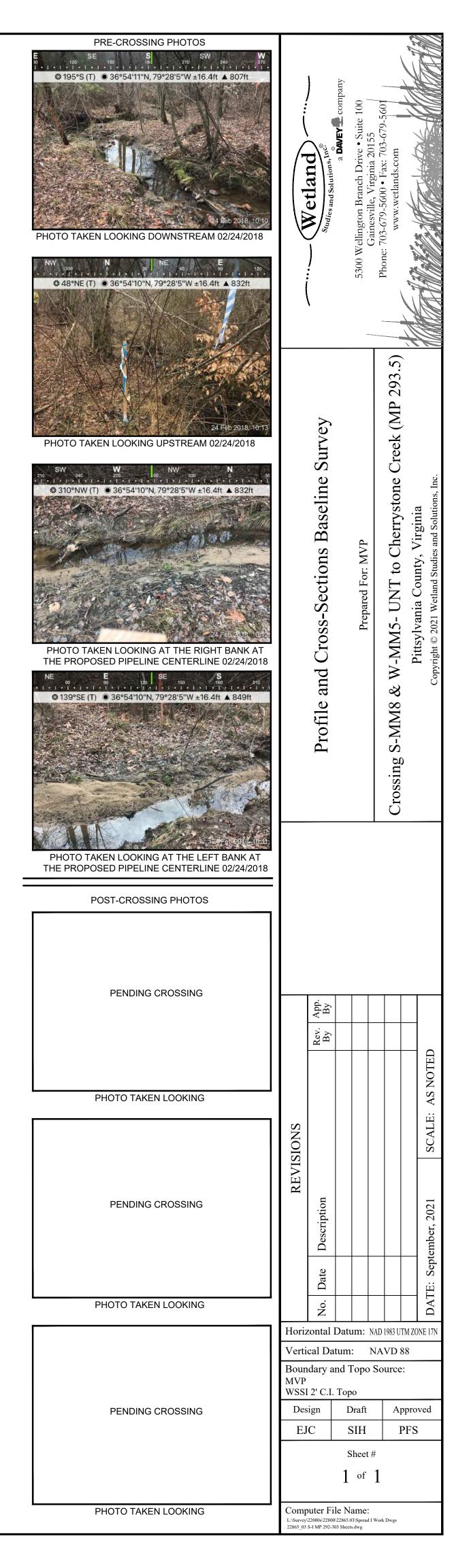
3. Easement lines shown on plan view were provided by Mountain Valley Pipeline (MVP).

4. WSSI Contour Interval = 2.0'. Contours within the channel were interpolated using stream channel breaklines (i.e. top of slopes, toe of slopes, thalweg) and cross-sectional points. Contours outside the channel were interpolated using cross-sectional spot shots.

5. All section views shown are left to right facing downstream.

6. Cross-section B shot at location of pipe centerline (based on best professional judgement).





H: 1"=10' V: 1"=5'

NOTE: ALL SECTION VIEWS SHOWN LEFT TO **RIGHT FACING DOWNSTREAM.**