

Baseline Assessment – Stream Attributes

Reach S-E46 TM (Timber Mat Crossing)

Perennial

Spread D

Webster County, West Virginia

Data	Included
Photos	✓
SWVM Form	✓
FCI Calculator and HGM Form	N/A – Perennial stream (not shadeable, slope <4%)
RBP Physical Characteristics Form	✓
Water Quality Data	✓
RBP Habitat Form	✓
RBP Benthic Form	✓
Benthic Identification Sheet	N/A – Lack of riffle habitat
Wolman Pebble Count	✓
Reference Reach Software Pebble Count Data	✓
Longitudinal Profile and Cross Sections	✓

Spread D Stream S-E46 TM (Timber Mat Crossing) Webster County

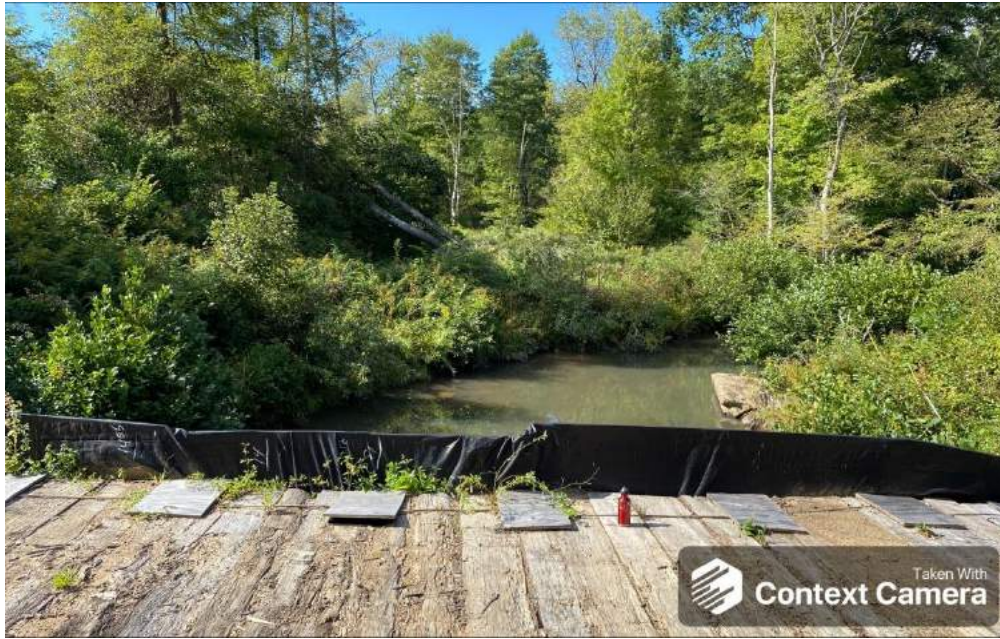


Photo Type: DS, US View
Location, Orientation, Photographer Initials: Downstream Edge of ROW, Upstream View, RC/CC
Lat: 38.363374 Long: -80.617277



Photo Type: DS, DS View
Location, Orientation, Photographer Initials: Downstream Edge of ROW, Downstream View, RC/CC
Lat: 38.363374 Long: -80.617277

Spread D Stream S-E46 TM (Timber Mat Crossing) Webster County



Photo Type: US View at Center
Location, Orientation, Photographer Initials: Center ROW, Upstream View, RC/CC
Lat: 38.363374 Long: -80.617277



Photo Type: DS View at Center
Location, Orientation, Photographer Initials: ROW Center, Downstream View, RC/CC
Lat: 38.363374 Long: -80.617277

Spread D Stream S-E46 TM (Timber Mat Crossing) Webster County



Photo Type: US, US View

Location, Orientation, Photographer Initials: Upstream Edge of ROW, Upstream View, RC/CC
Lat: 38.363374 Long: -80.617277

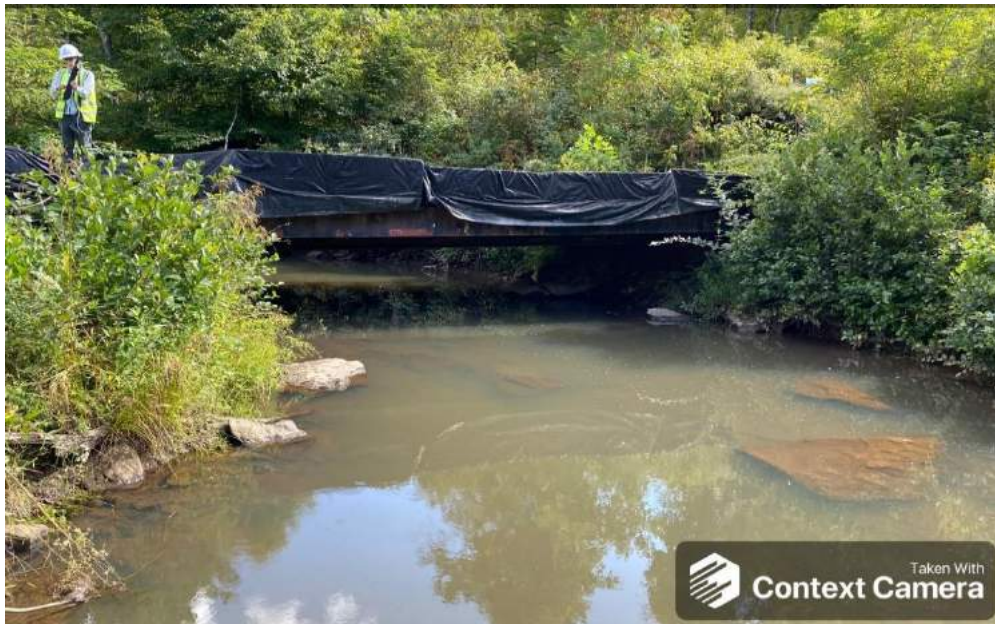


Photo Type: US, DS View

Location, Orientation, Photographer Initials: Upstream Edge of ROW, Downstream View, RC/CC
Lat: 38.363374 Long: -80.617277

Spread D Stream S-E46 TM (Timber Mat Crossing) Webster County



Photo Type: Pool, DS View
Location, Orientation, Photographer Initials: Upstream of Pool, Downstream View, RC/CC
Lat: 38.363374 Long: -80.617277



Photo Type: Pool, US View
Location, Orientation, Photographer Initials: Downstream of Pool, Upstream View, RC/CC
Lat: 38.363374 Long: -80.617277

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 _____

WEATHER CONDITIONS	Now _____ storm (heavy rain) _____ rain (steady rain) _____ showers (intermittent) _____ %cloud cover _____ clear/sunny _____	Past 24 hours _____ _____%	Has there been a heavy rain in the last 7 days? Yes _____ No _____ Air Temperature _____ °C Other _____																					
SITE LOCATION/MAP	Draw a map of the site and indicate the areas sampled (or attach a photograph)																							
STREAM CHARACTERIZATION	<table style="width: 100%; border: none;"> <tr> <td style="border: none;">Stream Subsystem</td> <td style="border: none;">Perennial _____</td> <td style="border: none;">Intermittent _____</td> <td style="border: none;">Tidal _____</td> <td style="border: none;">Stream Type</td> <td style="border: none;">Coldwater _____</td> <td style="border: none;">Warmwater _____</td> </tr> <tr> <td style="border: none;">Stream Origin</td> <td style="border: none;">Glacial _____</td> <td style="border: none;">Non-glacial montane _____</td> <td style="border: none;">Swamp and bog _____</td> <td style="border: none;">Spring-fed _____</td> <td style="border: none;">Mixture of origins _____</td> <td style="border: none;">Other _____</td> </tr> <tr> <td style="border: none;">Catchment Area</td> <td colspan="6" style="border: none;">_____ km²</td> </tr> </table>			Stream Subsystem	Perennial _____	Intermittent _____	Tidal _____	Stream Type	Coldwater _____	Warmwater _____	Stream Origin	Glacial _____	Non-glacial montane _____	Swamp and bog _____	Spring-fed _____	Mixture of origins _____	Other _____	Catchment Area	_____ km ²					
Stream Subsystem	Perennial _____	Intermittent _____	Tidal _____	Stream Type	Coldwater _____	Warmwater _____																		
Stream Origin	Glacial _____	Non-glacial montane _____	Swamp and bog _____	Spring-fed _____	Mixture of origins _____	Other _____																		
Catchment Area	_____ km ²																							

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	Predominant Surrounding Landuse Forest _____ Field/Pasture _____ Agricultural _____ Residential _____ Commercial _____ Industrial _____ Other _____	Local Watershed NPS Pollution No evidence <input type="checkbox"/> 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 _____ m Estimated Stream Width _____ m Sampling Reach Area _____ m ² Area in km ² (m ² x1000) _____ km ² Estimated Stream Depth _____ m Surface Velocity _____ m/sec (at thalweg)	Canopy Cover Partly open _____ Partly shaded _____ Shaded _____ High Water Mark _____ m Proportion of Reach Represented by Stream Morphology Types Riffle _____ % Run _____ % Pool _____ % Channelized Yes _____ No _____ Dam Present Yes _____ No _____
LARGE WOODY DEBRIS	LWD _____ 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 (DS, US)	Temperature _____ °C Specific Conductance _____ Dissolved Oxygen _____ pH _____ Turbidity _____ WQ Instrument Used _____	Water Odors Normal/None _____ Sewage _____ Petroleum _____ Chemical _____ Fishy _____ Other _____ Water Surface Oils Slick _____ Sheen _____ Globs _____ Flecks _____ None _____ Other _____ Turbidity (if not measured) Clear _____ <input type="checkbox"/> 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			Detritus	sticks, wood, coarse plant materials (CPOM)	
Boulder	> 256 mm (10")				
Cobble	64-256 mm (2.5"-10")		Muck-Mud	black, very fine organic (FPOM)	
Gravel	2-64 mm (0.1"-2.5")				
Sand	0.06-2mm (gritty)		Marl	grey, shell fragments	
Silt	0.004-0.06 mm				
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 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 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 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	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	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

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

Habitat Parameter	Condition Category																				
	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
8. Bank Stability (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.					
Note: determine left or right side by facing downstream.																					
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 each habitat type present Cobble _____% Snags _____% Vegetated Banks _____% Sand _____% Submerged Macrophytes _____% Other (_____) _____%
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 _____ Snags _____ Vegetated Banks _____ Sand _____ Submerged Macrophytes _____ Other (_____) _____
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						

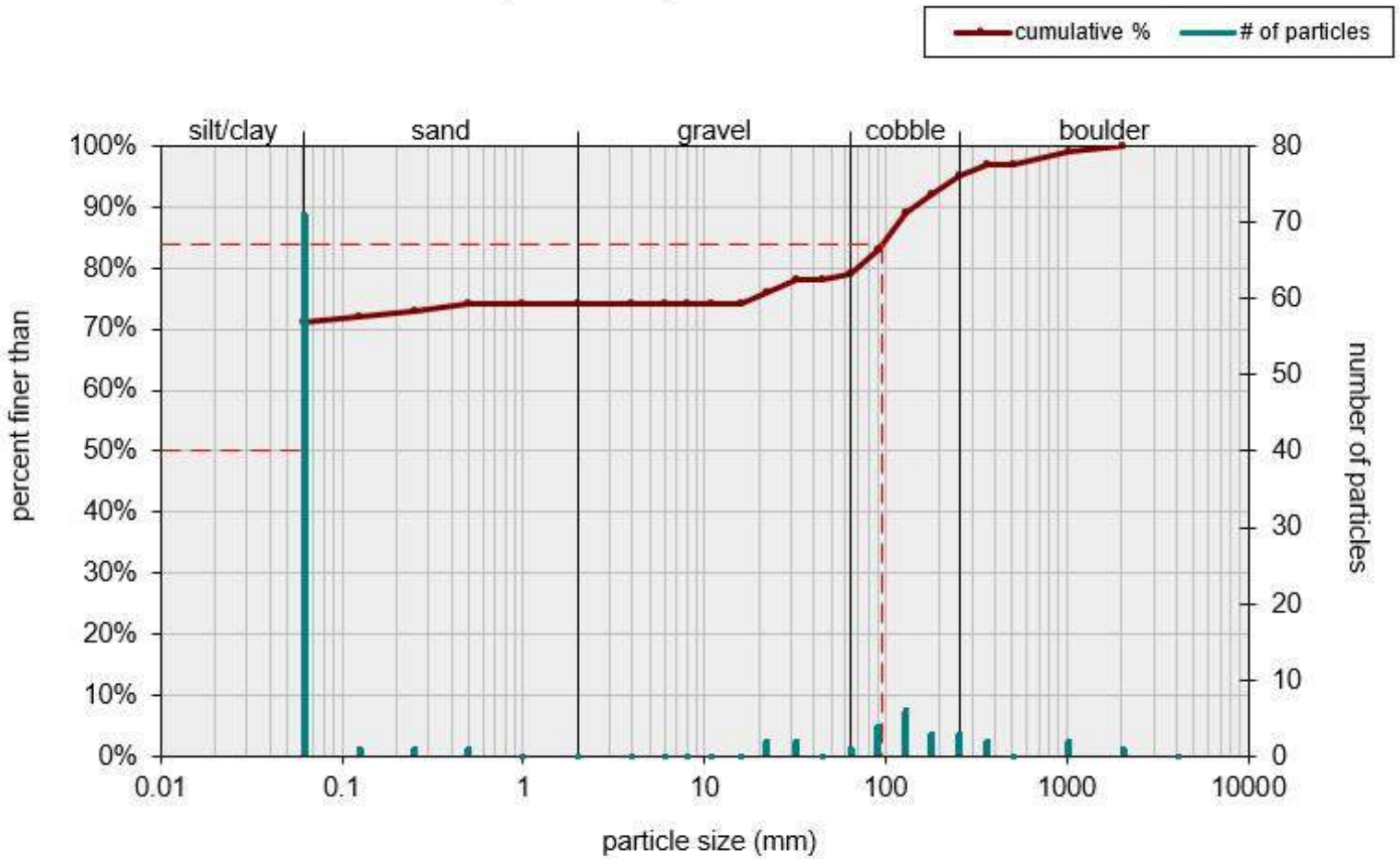
WOLMAN PEBBLE COUNT FORM

County: Webster
 Stream Name: Strouds Creek TM
 HUC Code:
 Survey Date: 9/9/2021
 Surveyors: RFC, COC
 Type: Bankfull Channel

Stream ID: S-E46 TM
 Basin:
 Reach: 15.7 m

PEBBLE COUNT							
Inches	PARTICLE	Millimeters		Particle Count	Total #	Item %	% Cum
	Silt/Clay	< .062	S/C	▲ ▼	71	71.00	71.00
	Very Fine	.062-.125	S A N D	▲ ▼	1	1.00	72.00
	Fine	.125-.25		▲ ▼	1	1.00	73.00
	Medium	.25-.5		▲ ▼	1	1.00	74.00
	Coarse	.50-1.0		▲ ▼	0	0.00	74.00
.04-.08	Very Coarse	1.0-2		▲ ▼	0	0.00	74.00
.08-.16	Very Fine	2-4		G R A V E L	▲ ▼	0	0.00
.16-.22	Fine	4-5.7	▲ ▼		0	0.00	74.00
.22-.31	Fine	5.7-8	▲ ▼		0	0.00	74.00
.31-.44	Medium	8-11.3	▲ ▼		0	0.00	74.00
.44-.63	Medium	11.3-16	▲ ▼		0	0.00	74.00
.63-.89	Coarse	16-22.6	▲ ▼		2	2.00	76.00
.89-1.26	Coarse	22.6-32	▲ ▼		2	2.00	78.00
1.26-1.77	Vry Coarse	32-45	▲ ▼		0	0.00	78.00
1.77-2.5	Vry Coarse	45-64	▲ ▼		1	1.00	79.00
2.5-3.5	Small	64-90	C O B B L E		▲ ▼	4	4.00
3.5-5.0	Small	90-128		▲ ▼	6	6.00	89.00
5.0-7.1	Large	128-180		▲ ▼	3	3.00	92.00
7.1-10.1	Large	180-256		▲ ▼	3	3.00	95.00
10.1-14.3	Small	256-362	B O U L D E R	▲ ▼	2	2.00	97.00
14.3-20	Small	362-512		▲ ▼	0	0.00	97.00
20-40	Medium	512-1024		▲ ▼	2	2.00	99.00
40-80	Large	1024-2048		▲ ▼	1	1.00	100.00
80-160	Vry Large	2048-4096		▲ ▼	0	0.00	100.00
	Bedrock		BDRK	▲ ▼	0	0.00	100.00
				Totals:	100		
	Total Tally:						

Bankfull Channel Pebble Count, S-E46 TM, Strouds Creek TM



Size (mm)		Size Distribution		Type	
D16	0.062	mean	2.4	silt/clay	71%
D35	0.062	dispersion	766.6	sand	3%
D50	0.062	skewness	0.89	gravel	5%
D65	0.062			cobble	16%
D84	95			boulder	5%
D95	260				

