

## Baseline Assessment – Stream Attributes

### Reach S-H105 (Pipeline ROW) Perennial Spread C 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 habitat
Wolman Pebble Count	✓
Reference Reach Software Pebble Count Data	✓
Longitudinal Profile and Cross Sections	✓

**Spread C Stream S-H105 (Pipeline ROW) Webster County**



Photo Type: DS, US VIEW

Location, Orientation, Photographer Initials: Downstream Edge of ROW, Upstream View, HC/SK/JB  
Lat: 38.548824 Long: -80.539644



Photo Type: DS, DS VIEW

Location, Orientation, Photographer Initials: Downstream Edge of ROW, Downstream View, HC/SK/JB  
Lat: 38.548824 Long: -80.539644

**Spread C Stream S-H105 (Pipeline ROW) Webster County**



Photo Type: US View at Center  
Location, Orientation, Photographer Initials: Center ROW, Upstream View, HC/SK/JB  
Lat: 38.548824 Long: -80.539644



Photo Type: DS View at Center  
Location, Orientation, Photographer Initials: Center ROW, Downstream View, HC/SK/JB  
Lat: 38.548824 Long: -80.539644

**Spread C    Stream S-H105 (Pipeline ROW)    Webster County**



Photo Type: US, US View  
Location, Orientation, Photographer Initials: Upstream Edge of ROW, Upstream View, HC/SK/JB  
Lat: 38.548824 Long: -80.539644

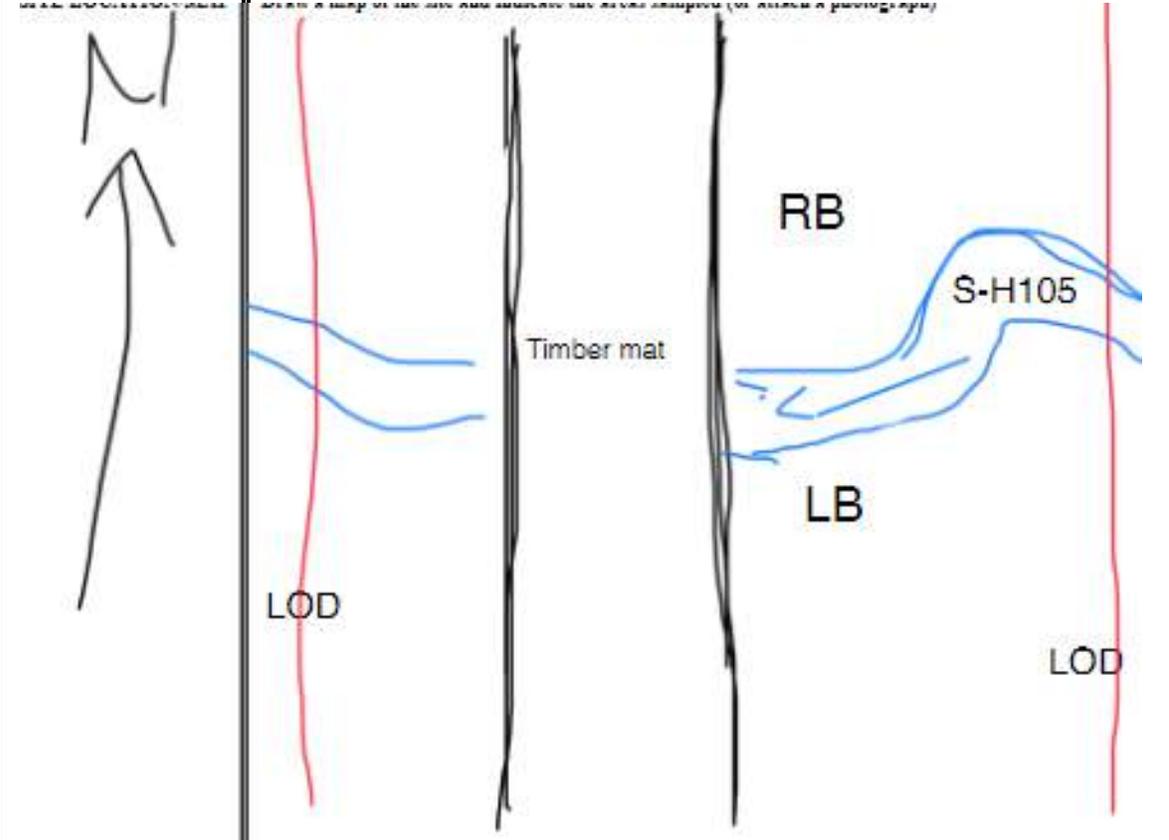


Photo Type: US, DS View  
Location, Orientation, Photographer Initials: Upstream Edge of ROW, Downstream View, HC/SK/JB  
Lat: 38.548824 Long: -80.539644



## 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 _____

<b>WEATHER CONDITIONS</b>	<b>Now</b> _____% storm (heavy rain) _____% rain (steady rain) _____% showers (intermittent) _____% cloud cover _____% clear/sunny	<b>Past 24 hours</b> _____%	<b>Has there been a heavy rain in the last 7 days?</b> Yes _____ No _____ <b>Air Temperature</b> _____ °C <b>Other</b> _____
<b>SITE LOCATION/MAP</b>	<b>Draw a map of the site and indicate the areas sampled (or attach a photograph)</b> 		
<b>STREAM CHARACTERIZATION</b>	<b>Stream Subsystem</b> Perennial _____ Intermittent _____ Tidal _____ <b>Stream Origin</b> Glacial _____ Non-glacial montane _____ Swamp and bog _____ Spring-fed _____ Mixture of origins _____ Other _____		
	<b>Stream Type</b> Coldwater _____ Warmwater _____ <b>Catchment Area</b> _____ km <sup>2</sup>		

# PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

<b>WATERSHED FEATURES</b>	<b>Predominant Surrounding Landuse</b> Forest Field/Pasture Agricultural Residential Commercial Industrial Other _____	<b>Local Watershed NPS Pollution</b> No evidence <input type="checkbox"/> Some potential sources Obvious sources <b>Local Watershed Erosion</b> None      Moderate      Heavy
<b>RIPARIAN VEGETATION (18 meter buffer)</b>	<b>Indicate the dominant type and record the dominant species present</b> Trees      Shrubs      Grasses      Herbaceous Dominant species present _____	
<b>INSTREAM FEATURES</b>	Estimated Reach Length _____ m Estimated Stream Width _____ m Sampling Reach Area _____ m <sup>2</sup> Area in km <sup>2</sup> (m <sup>2</sup> x1000) _____ km <sup>2</sup> Estimated Stream Depth _____ m Surface Velocity _____ m/sec (at thalweg)	<b>Canopy Cover</b> Partly open      Partly shaded      Shaded <b>High Water Mark</b> _____ m <b>Proportion of Reach Represented by Stream Morphology Types</b> Riffle _____%      Run _____% Pool _____% <b>Channelized</b> Yes      No <b>Dam Present</b> Yes      No
<b>LARGE WOODY DEBRIS</b>	LWD _____ m <sup>2</sup> Density of LWD _____ m <sup>2</sup> /km <sup>2</sup> (LWD/ reach area)	
<b>AQUATIC VEGETATION</b>	<b>Indicate the dominant type and record the dominant species present</b> Rooted emergent      Rooted submergent      Rooted floating      Free floating Floating Algae      Attached Algae Dominant species present _____ Portion of the reach with aquatic vegetation _____ %	
<b>WATER QUALITY (DS ONLY)</b>	Temperature _____ °C Specific Conductance _____ Dissolved Oxygen _____ pH _____ Turbidity _____ WQ Instrument Used _____	<b>Water Odors</b> Normal/None      Sewage Petroleum      Chemical Fishy      Other _____ <b>Water Surface Oils</b> Slick      Sheen      Globs      Flecks None      Other _____ <b>Turbidity (if not measured)</b> Clear <input type="checkbox"/> Slightly turbid      Turbid Opaque      Stained      Other _____
<b>SEDIMENT/SUBSTRATE</b>	<b>Odors</b> Normal      Sewage      Petroleum Chemical      Anaerobic      None Other _____ <b>Oils</b> Absent      Slight      Moderate      Profuse <b>Deposits</b> Sludge      Sawdust      Paper fiber      Sand Relict shells      Other _____ <b>Looking at stones which are not deeply embedded, are the undersides black in color?</b> 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					
<b>6. Channel Alteration</b>	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.					
<b>SCORE</b>	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
<b>7. Frequency of Riffles (or bends)</b>	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.					
<b>SCORE</b>	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
<b>8. Bank Stability (score each bank)</b>	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			
<b>9. Vegetative Protection (score each bank)</b>	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			
<b>10. Riparian Vegetative Zone Width (score each bank riparian zone)</b>	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

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

### 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)

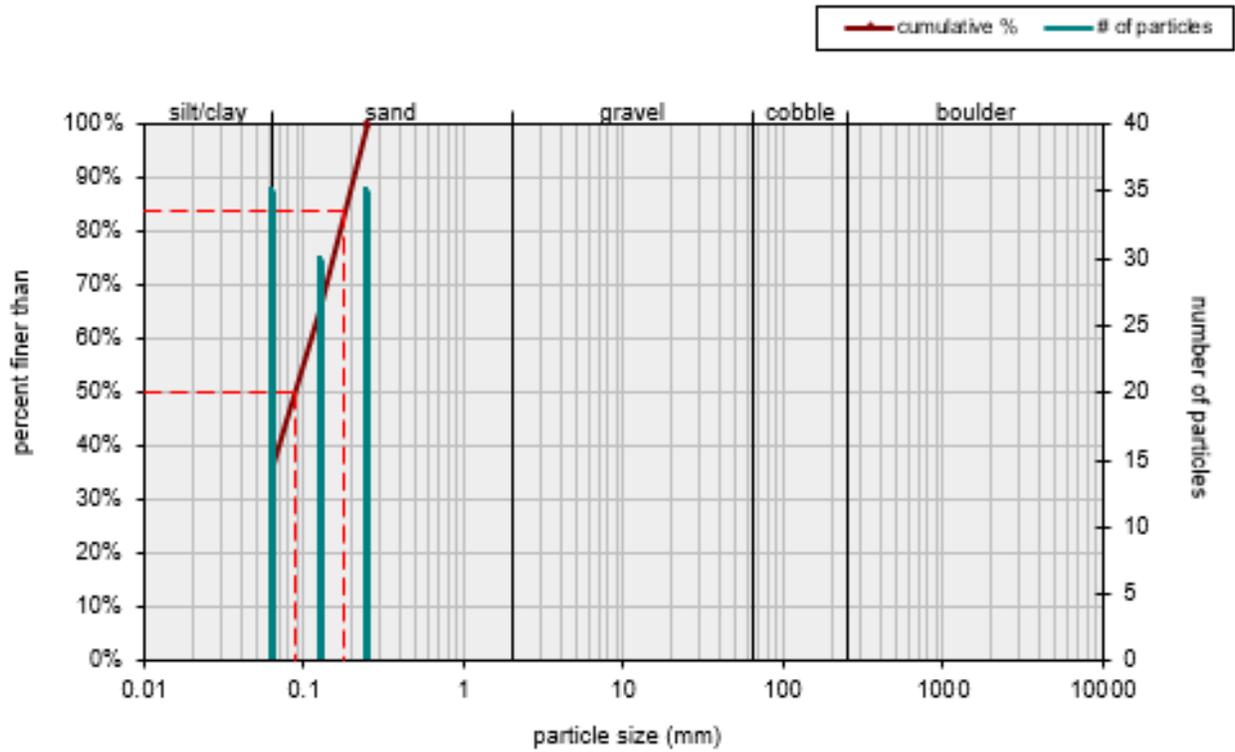
Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
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 ID: S-H105  
 Stream Name: UNT to Camp Creek  
 HUC Code: Basin:  
 Survey Date: 9/8/2021  
 Surveyors: HC JB SK Reach 21.5 m  
 Type: Bankfull Channel

PEBBLE COUNT							
Inches	PARTICLE	Millimeters		Particle Count	Total #	Item %	% Cum
	Silt/Clay	< .062	S/C	▲ ▼	35	35.00	35.00
	Very Fine	.062-.125	S A N D	▲ ▼	30	30.00	65.00
	Fine	.125-.25		▲ ▼	35	35.00	100.00
	Medium	.25-.5		▲ ▼	0	0.00	100.00
	Coarse	.50-1.0		▲ ▼	0	0.00	100.00
.04-.08	Very Coarse	1.0-2		▲ ▼	0	0.00	100.00
.08 - .16	Very Fine	2 - 4	G R A V E L	▲ ▼	0	0.00	100.00
.16 - .22	Fine	4 - 5.7		▲ ▼	0	0.00	100.00
.22 - .31	Fine	5.7 - 8		▲ ▼	0	0.00	100.00
.31 - .44	Medium	8 - 11.3		▲ ▼	0	0.00	100.00
.44 - .63	Medium	11.3 - 16		▲ ▼	0	0.00	100.00
.63 - .89	Coarse	16 - 22.6		▲ ▼	0	0.00	100.00
.89 - 1.26	Coarse	22.6 - 32		▲ ▼	0	0.00	100.00
1.26 - 1.77	Vry Coarse	32 - 45		▲ ▼	0	0.00	100.00
1.77 - 2.5	Vry Coarse	45 - 64		▲ ▼	0	0.00	100.00
2.5 - 3.5	Small	64 - 90		C O B B L E	▲ ▼	0	0.00
3.5 - 5.0	Small	90 - 128	▲ ▼		0	0.00	100.00
5.0 - 7.1	Large	128 - 180	▲ ▼		0	0.00	100.00
7.1 - 10.1	Large	180 - 256	▲ ▼		0	0.00	100.00
10.1 - 14.3	Small	256 - 362	B O U L D E R	▲ ▼	0	0.00	100.00
14.3 - 20	Small	362 - 512		▲ ▼	0	0.00	100.00
20 - 40	Medium	512 - 1024		▲ ▼	0	0.00	100.00
40 - 80	Large	1024 - 2048		▲ ▼	0	0.00	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-H105



Size (mm)		Size Distribution		Type	
D16	0.062	mean	0.1	silt/clay	35%
D35	0.062	dispersion	1.7	sand	65%
D50	0.088	skewness	0.12	gravel	0%
D65	0.13			cobble	0%
D84	0.18			boulder	0%
D95	0.23				

