

Baseline Assessment – Stream Attributes

Reach S- F36b (3) (Temporary Access Road)

Perennial

Spread D

Webster County, West Virginia

Data	Included
Photos	✓
SWVM Form	✓
FCI Calculator and HGM Form	N/A – Perennial stream (not shadeable)
RBP Physical Characteristics Form	✓
Water Quality Data	✓
RBP Habitat Form	✓
RBP Benthic Form	✓
Benthic Identification Sheet	✓ - Collected 9/14/21
Wolman Pebble Count	✓
Reference Reach Software Pebble Count Data	✓
Longitudinal Profile and Cross Sections	✓

Spread D Stream S-F36b (3) (Temporary Access Road) Webster County



Photo Type: DS, US View

Location, Orientation, Photographer Initials: Downstream Edge of ROW, Upstream View, CNJ
Lat: 38.417693 Long: -80.576495



Photo Type: DS, DS View

Location, Orientation, Photographer Initials: Downstream Edge of ROW, Downstream View CNJ
Lat: 38.417693 Long: -80.576495

Spread D Stream S-F36b (3) (Temporary Access Road) Webster County



Photo Type: US View from Center
Location, Orientation, Photographer Initials: Center ROW, Upstream View, CNJ
Lat: 38.417693 Long: -80.576495



Photo Type: DS View from Center
Location, Orientation, Photographer Initials: Center ROW, Downstream View CNJ
Lat: 38.417693 Long: -80.576495

Spread D Stream S-F36b (3) (Temporary Access Road) Webster County



Photo Type: US, US View

Location, Orientation, Photographer Initials: Upstream Edge of ROW, Upstream View CNJ

Lat: 38.417693 Long: -80.576495



Photo Type: US, DS View

Location, Orientation, Photographer Initials: Upstream Edge of ROW, Downstream View CNJ

Lat: 38.417693 Long: -80.576495

Spread D Stream S-F36b (3) (Temporary Access Road) Webster County



Photo Type: Riffle, US View

Location, Orientation, Photographer Initials: Upstream of Riffle, Downstream View, CNJ
Lat: 38.417693 Long: -80.576495



Photo Type: Riffle, DS View

Location, Orientation, Photographer Initials: Downstream of Riffle, Upstream View, CNJ
Lat: 38.417693 Long: -80.576495

Spread D Stream S-F36b (3) (Temporary Access Road) Webster County



Photo Type: Pool, US View

Location, Orientation, Photographer Initials: Upstream of Pool, Downstream View, CNJ

Lat: 38.417693 Long: -80.576495



Photo Type: Pool, DS View

Location, Orientation, Photographer Initials: Downstream of Pool, Upstream View, CNJ

Lat: 38.417693 Long: -80.576495

USACE FILE NO./ Project Name: (v2.1, Sept 2016)		Mountain Valley Pipeline		IMPACT COORDINATES: (in Decimal Degrees)		Lat. 38.417693		Lon. -80.576495		WEATHER:		40% Cloud Cover		DATE:		9/9/2021			
IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (watershed size (acreage), unaltered or impairments)				S-F36b (3)				MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (watershed size (acreage), unaltered or impairments)				Comments:							
STREAM IMPACT LENGTH:		16		FORM OF MITIGATION:		RESTORATION (Levels I-III)		MIT COORDINATES: (in Decimal Degrees)		Lat.		Lon.		PRECIPITATION PAST 48 HRS:		Mitigation Length:			
Column No. 1- Impact Existing Condition (Debit)				Column No. 2- Mitigation Existing Condition - Baseline (Credit)				Column No. 3- Mitigation Projected at Five Years Post Completion (Credit)				Column No. 4- Mitigation Projected at Ten Years Post Completion (Credit)				Column No. 5- Mitigation Projected at Maturity (Credit)			
Stream Classification: Perennial				Stream Classification:				Stream Classification: 0				Stream Classification: 0				Stream Classification: 0			
Percent Stream Channel Slope: 8				Percent Stream Channel Slope:				Percent Stream Channel Slope: 0				Percent Stream Channel Slope: 0				Percent Stream Channel Slope: 0			
HGM Score (attach data forms):				HGM Score (attach data forms):				HGM Score (attach data forms):				HGM Score (attach data forms):				HGM Score (attach data forms):			
Average				Average				Average				Average				Average			
Hydrology				Hydrology				Hydrology				Hydrology				Hydrology			
Biogeochemical Cycling: 0				Biogeochemical Cycling: 0				Biogeochemical Cycling: 0				Biogeochemical Cycling: 0				Biogeochemical Cycling: 0			
Habitat				Habitat				Habitat				Habitat				Habitat			
PART I - Physical, Chemical and Biological Indicators				PART I - Physical, Chemical and Biological Indicators				PART I - Physical, Chemical and Biological Indicators				PART I - Physical, Chemical and Biological Indicators				PART I - Physical, Chemical and Biological Indicators			
Points Score Range Site Score				Points Score Range Site Score				Points Score Range Site Score				Points Score Range Site Score				Points Score Range Site Score			
PHYSICAL INDICATOR (Applies to all streams classifications)				PHYSICAL INDICATOR (Applies to all streams classifications)				PHYSICAL INDICATOR (Applies to all streams classifications)				PHYSICAL INDICATOR (Applies to all streams classifications)				PHYSICAL INDICATOR (Applies to all streams classifications)			
USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)			
1. Epifaunal Substrate/Available Cover 0-20 17				1. Epifaunal Substrate/Available Cover 0-20 17				1. Epifaunal Substrate/Available Cover 0-20 17				1. Epifaunal Substrate/Available Cover 0-20 17				1. Epifaunal Substrate/Available Cover 0-20 17			
2. Embeddedness 0-20 12				2. Embeddedness 0-20 12				2. Embeddedness 0-20 12				2. Embeddedness 0-20 12				2. Embeddedness 0-20 12			
3. Velocity/Depth Regime 0-20 12				3. Velocity/Depth Regime 0-20 12				3. Velocity/Depth Regime 0-20 12				3. Velocity/Depth Regime 0-20 12				3. Velocity/Depth Regime 0-20 12			
4. Sediment Deposition 0-20 11				4. Sediment Deposition 0-20 11				4. Sediment Deposition 0-20 11				4. Sediment Deposition 0-20 11				4. Sediment Deposition 0-20 11			
5. Channel Flow Status 0-20 0-1 14				5. Channel Flow Status 0-20 0-1 14				5. Channel Flow Status 0-20 0-1 14				5. Channel Flow Status 0-20 0-1 14				5. Channel Flow Status 0-20 0-1 14			
6. Channel Alteration 0-20 13				6. Channel Alteration 0-20 13				6. Channel Alteration 0-20 13				6. Channel Alteration 0-20 13				6. Channel Alteration 0-20 13			
7. Frequency of Rifles (or bends) 0-20 18				7. Frequency of Rifles (or bends) 0-20 18				7. Frequency of Rifles (or bends) 0-20 18				7. Frequency of Rifles (or bends) 0-20 18				7. Frequency of Rifles (or bends) 0-20 18			
8. Bank Stability (LB & RB) 0-20 15				8. Bank Stability (LB & RB) 0-20 15				8. Bank Stability (LB & RB) 0-20 15				8. Bank Stability (LB & RB) 0-20 15				8. Bank Stability (LB & RB) 0-20 15			
9. Vegetative Protection (LB & RB) 0-20 15				9. Vegetative Protection (LB & RB) 0-20 15				9. Vegetative Protection (LB & RB) 0-20 15				9. Vegetative Protection (LB & RB) 0-20 15				9. Vegetative Protection (LB & RB) 0-20 15			
10. Riparian Vegetative Zone Width (LB & RB) 0-20 12				10. Riparian Vegetative Zone Width (LB & RB) 0-20 12				10. Riparian Vegetative Zone Width (LB & RB) 0-20 12				10. Riparian Vegetative Zone Width (LB & RB) 0-20 12				10. Riparian Vegetative Zone Width (LB & RB) 0-20 12			
Total RBP Score Suboptimal 139				Total RBP Score Poor 0				Total RBP Score Poor 0				Total RBP Score Poor 0				Total RBP Score Poor 0			
Sub-Total 0.695				Sub-Total 0				Sub-Total 0				Sub-Total 0				Sub-Total 0			
CHEMICAL INDICATOR (Applies to Intermittent and Perennial Streams)				CHEMICAL INDICATOR (Applies to Intermittent and Perennial Streams)				CHEMICAL INDICATOR (Applies to Intermittent and Perennial Streams)				CHEMICAL INDICATOR (Applies to Intermittent and Perennial Streams)				CHEMICAL INDICATOR (Applies to Intermittent and Perennial Streams)			
WVDEP Water Quality Indicators (General)				WVDEP Water Quality Indicators (General)				WVDEP Water Quality Indicators (General)				WVDEP Water Quality Indicators (General)				WVDEP Water Quality Indicators (General)			
Specific Conductivity				Specific Conductivity				Specific Conductivity				Specific Conductivity				Specific Conductivity			
<99 = 90 points 0-90 57.1				<99 = 90 points 0-90 57.1				<99 = 90 points 0-90 57.1				<99 = 90 points 0-90 57.1				<99 = 90 points 0-90 57.1			
pH				pH				pH				pH				pH			
6.0-8.0 = 80 points 0-1 7.32				6.0-8.0 = 80 points 0-1 7.32				6.0-8.0 = 80 points 0-1 7.32				6.0-8.0 = 80 points 0-1 7.32				6.0-8.0 = 80 points 0-1 7.32			
DO				DO				DO				DO				DO			
>5.0 = 30 points 10-30 8.56				>5.0 = 30 points 10-30 8.56				>5.0 = 30 points 10-30 8.56				>5.0 = 30 points 10-30 8.56				>5.0 = 30 points 10-30 8.56			
Sub-Total 1				Sub-Total 0				Sub-Total 0				Sub-Total 0				Sub-Total 0			
BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams)				BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams)				BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams)				BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams)				BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams)			
WV Stream Condition Index (WVSCI)				WV Stream Condition Index (WVSCI)				WV Stream Condition Index (WVSCI)				WV Stream Condition Index (WVSCI)				WV Stream Condition Index (WVSCI)			
Good 0-100 0-1 74.3				Good 0-100 0-1 74.3				Good 0-100 0-1 74.3				Good 0-100 0-1 74.3				Good 0-100 0-1 74.3			
Sub-Total 0.743				Sub-Total 0				Sub-Total 0				Sub-Total 0				Sub-Total 0			
PART II - Index and Unit Score				PART II - Index and Unit Score				PART II - Index and Unit Score				PART II - Index and Unit Score				PART II - Index and Unit Score			
Index Linear Feet Unit Score				Index Linear Feet Unit Score				Index Linear Feet Unit Score				Index Linear Feet Unit Score				Index Linear Feet Unit Score			
0.813 16 13.0026667				0 0 0				0 0 0				0 0 0				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 _____

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	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).			
	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.			
	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.)			
	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.			
	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.			
	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				
Parameters to be evaluated broader than sampling reach	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
	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
	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 S-F36b (3)		LOCATION Webster County	
STATION # _____ RIVERMILE _____		STREAM CLASS Perennial	
LAT 38.417693 LONG -80.576495		RIVER BASIN None	
STORET # _____		AGENCY WVDEP	
INVESTIGATORS PF SM		LOT NUMBER _____	
FORM COMPLETED BY SM		DATE 9/14/21 TIME 1030	REASON FOR SURVEY Baseline Assessment

HABITAT TYPES	Indicate the percentage of each habitat type present <input checked="" type="checkbox"/> Cobble 70% <input type="checkbox"/> Snags _____% <input type="checkbox"/> Vegetated Banks _____% <input type="checkbox"/> Sand _____% <input type="checkbox"/> Submerged Macrophytes _____% <input type="checkbox"/> Other (_____) _____%
SAMPLE COLLECTION	Gear used <input type="checkbox"/> D-frame <input checked="" type="checkbox"/> kick-net <input type="checkbox"/> Other _____ How were the samples collected? <input checked="" type="checkbox"/> wading <input type="checkbox"/> from bank <input type="checkbox"/> from boat Indicate the number of jabs/kicks taken in each habitat type. <input checked="" type="checkbox"/> Cobble 4 <input type="checkbox"/> Snags _____ <input type="checkbox"/> Vegetated Banks _____ <input type="checkbox"/> Sand _____ <input type="checkbox"/> Submerged Macrophytes _____ <input type="checkbox"/> Other (_____) _____
GENERAL COMMENTS	US: Temp: 17.4°C, pH: 7.26, SPC: 59.0us/cm, DO: 6.05mg/L DS: Temp: 18.4°C, pH: 7.32, SPC: 57.1us/cm, DO: 8.56mg/L Small fish, crayfish, and salamanders observed.

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						

SITE ID: S-F36b(3)

9/14/2021

Insects	Count	Tolerance	TV	Insects	Count	Tolerance	TV	Non-Insects	Count	Tolerance	TV		
Ephemeroptera				Odonata				Crustacea					
Ameletidae		2	0	Aeshnidae	2	3	6	Asellidae		7	0		
Baetidae	4	4	16	Calopterygidae	1	6	6	Cambaridae		5	0		
Beatisidae		4	0	Coenagrionidae		7	0	Gammaridae		5	0		
Caenidae		5	0	Cordulegastridae		3	0	Palaemonidae		5	0		
Ephemerellidae	4	3	12	Gomphidae		5	0	Annelida					
Ephemeridae	1	5	5	Lestidae		7	0	Hirudinea		10	0		
Heptageniidae	19	3	57	Libellulidae		7	0	Nematoda		10	0		
Isonychiidae		3	0	Coleoptera				Nematomorpha					
Leptophlebiidae	14	4	56	Chrysomelidae		7	0	Oligochaeta		10	0		
Potamanthidae		5	0	Dryopidae		5	0	Turbellaria					
Siphonuridae		3	0	Dytiscidae		6	0	Turbellaria		7	0		
Tricorythidae		5	0	Elmidae	8	4	32	Bivalvia					
Plecoptera				Gyrinidae				Corbiculidae					
Capniidae		2	0	Halplidae		7	0	Sphaeriidae		5	0		
Chloroperlidae		2	0	Hydrophilidae		7	0	Unionidae		4	0		
Leuctridae	4	2	8	Psephenidae	3	3	9	Gastropoda					
Nemouridae		2	0	Ptilodactylidae		5	0	Ancylidae		7	0		
Peltoperlidae		1	0	Hemiptera				Hydrobiidae					
Perlidae		1	0	Belostomatidae		8	0	Physidae		7	0		
Perlodidae	1	1	1	Corixidae		8	0	Planorbidae		5	0		
Pteronarcyidae		1	0	Gerridae	3	10	30	Pleuroceridae		5	0		
Taeniopterygidae		2	0	Hydrometridae		8	0	Viviparidae		5	0		
Trichoptera				Nepidae				Miscellaneous					
Brachycentridae		2	0	Notonectidae		8	0	Collembola		6	0		
Glossosomatidae		2	0	Megaloptera				Lepidoptera					
Helicopsychidae		3	0	Corydalidae		3	0	Neuroptera		5	0		
Hydropsychidae	13	5	65	Sialidae		6	0	Hydrachnidae		6	0		
Hydroptilidae		3	0	Diptera				Totals					
Lepidostomatidae		3	0	Athericidae		3	0	Total number		127			
Leptoceridae		3	0	Blephariceridae		2	0	Total families		18			
Limnephilidae		4	0	Ceratopogonidae		8	0	Metric calculations					
Molannidae		3	0	Chironomidae	38	9	342	WVSCI Metric Scores			Additional metrics		
Philopotamidae	6	4	24	Culicidae		10	0	Total Taxa	18	81.8	Ephemeroptera Taxa	5	
Phryganeidae	1	4	4	Dixidae		6	0	EPT Taxa	11	84.6	Plecoptera Taxa	2	
Polycentropodidae		5	0	Empididae		7	0	% EPT Abundance	53.5	60.0	Trichoptera Taxa	4	
Psychomiidae		4	0	Psychodidae		8	0	% Chironomidae	29.9	71.3	Long-lived Taxa	11	
Rhyacophilidae	1	3	3	Ptychopteridae		8	0	Hilsenhoff Biotic Index (HBI)	5.48	61.2	Odonata Taxa	2	
Uenoidae		2	0	Simuliidae		7	0	% 2 Dominant Taxa	44.9	87.9	Diptera Taxa	2	
Total Tolerance Value				696	Stratiomyidae		10	0				% Sensitive	31.5
West Virginia Stream Condition Index (WVSCI)					Syrphidae		10	0	WV Stream Condition Index			% Tolerant	32.3
Gerritson, J., J. Burton, and M.T. Barbour. 2000. A stream condition index for West Virginia wadeable streams. Tetra Tech, Inc. Owing Mills, MD.					Tabanidae		7	0				% Clingers	41.7
					Tipulidae	4	5	20				% Net-spinners	15.0

Spreadsheet uses updated Best Standard Values [BSV] for each metric per WVSCI Addenda dated March 23, 2010

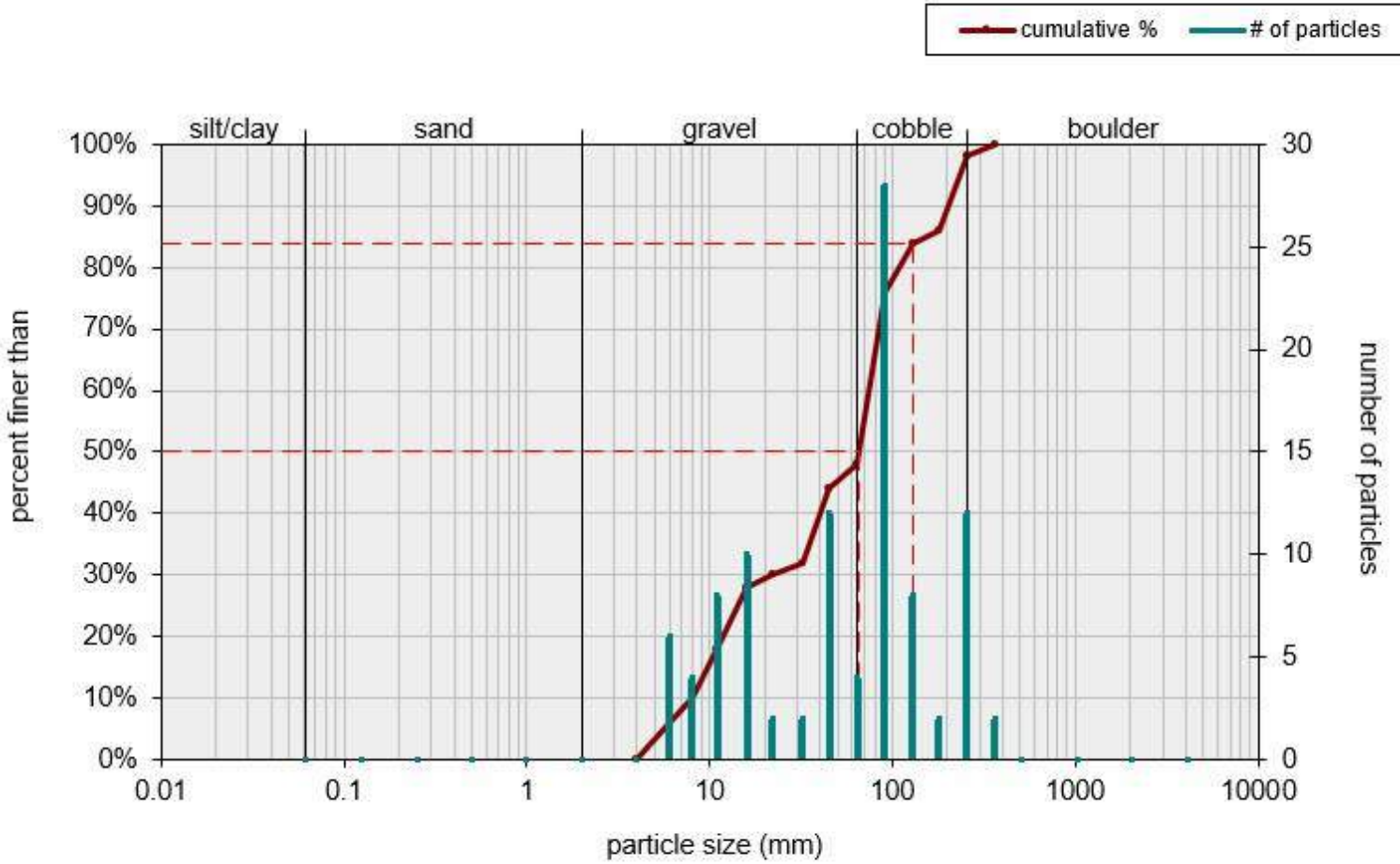
WOLMAN PEBBLE COUNT FORM

County: Webster
 Stream Name: UNT to Birch River (3)
 HUC Code: 05050007
 Survey Date: 9/9/2021
 Surveyors: JPD, CCC, CNJ
 Type: Bankfull Channel

Stream ID: S-F36b (3)
 Basin: Elk
 Impact: 5.57

PEBBLE COUNT							
Inches	PARTICLE	Millimeters		Particle Count	Total #	Item %	% Cum
	Silt/Clay	< .062	S/C	▲ ▼	0	0.00	0.00
	Very Fine	.062-.125	S A N D	▲ ▼	0	0.00	0.00
	Fine	.125-.25		▲ ▼	0	0.00	0.00
	Medium	.25-.5		▲ ▼	0	0.00	0.00
	Coarse	.50-1.0		▲ ▼	0	0.00	0.00
.04-.08	Very Coarse	1.0-2		▲ ▼	0	0.00	0.00
.08-.16	Very Fine	2-4		G R A V E L	▲ ▼	0	0.00
.16-.22	Fine	4-5.7	▲ ▼		6	6.00	6.00
.22-.31	Fine	5.7-8	▲ ▼		4	4.00	10.00
.31-.44	Medium	8-11.3	▲ ▼		8	8.00	18.00
.44-.63	Medium	11.3-16	▲ ▼		10	10.00	28.00
.63-.89	Coarse	16-22.6	▲ ▼		2	2.00	30.00
.89-1.26	Coarse	22.6-32	▲ ▼		2	2.00	32.00
1.26-1.77	Vry Coarse	32-45	▲ ▼		12	12.00	44.00
1.77-2.5	Vry Coarse	45-64	▲ ▼		4	4.00	48.00
2.5-3.5	Small	64-90	C O B B L E		▲ ▼	28	28.00
3.5-5.0	Small	90-128		▲ ▼	8	8.00	84.00
5.0-7.1	Large	128-180		▲ ▼	2	2.00	86.00
7.1-10.1	Large	180-256		▲ ▼	12	12.00	98.00
10.1-14.3	Small	256-362	B O U L D E R	▲ ▼	2	2.00	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
				Totals:	100		
Total Tally:							

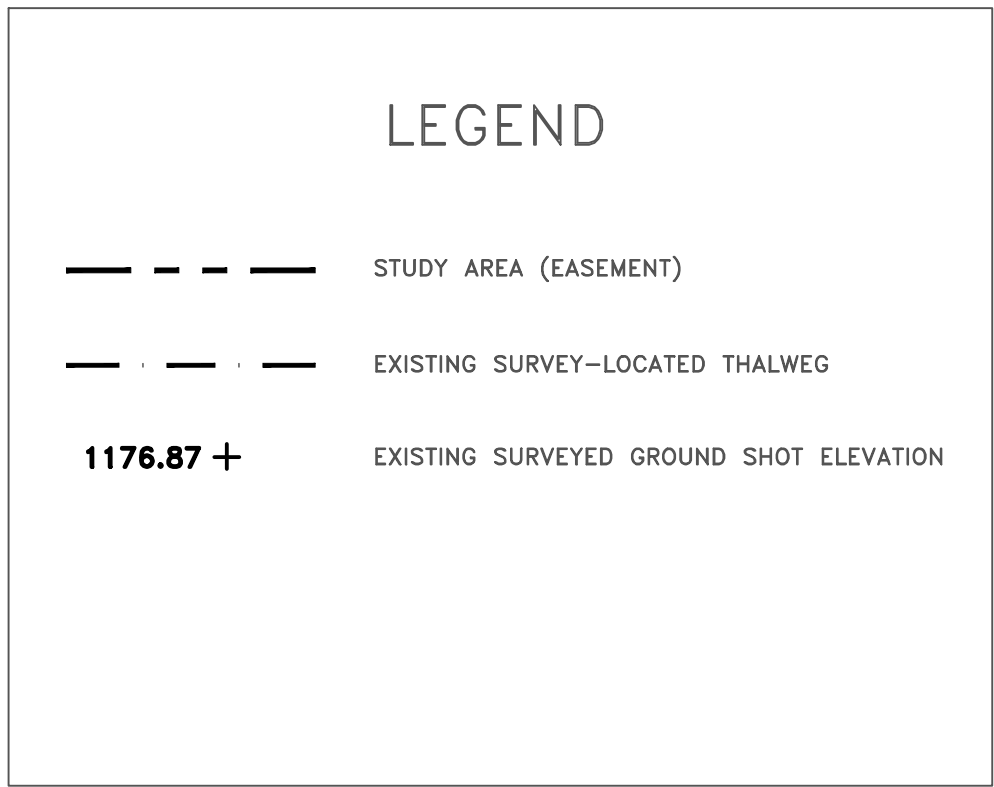
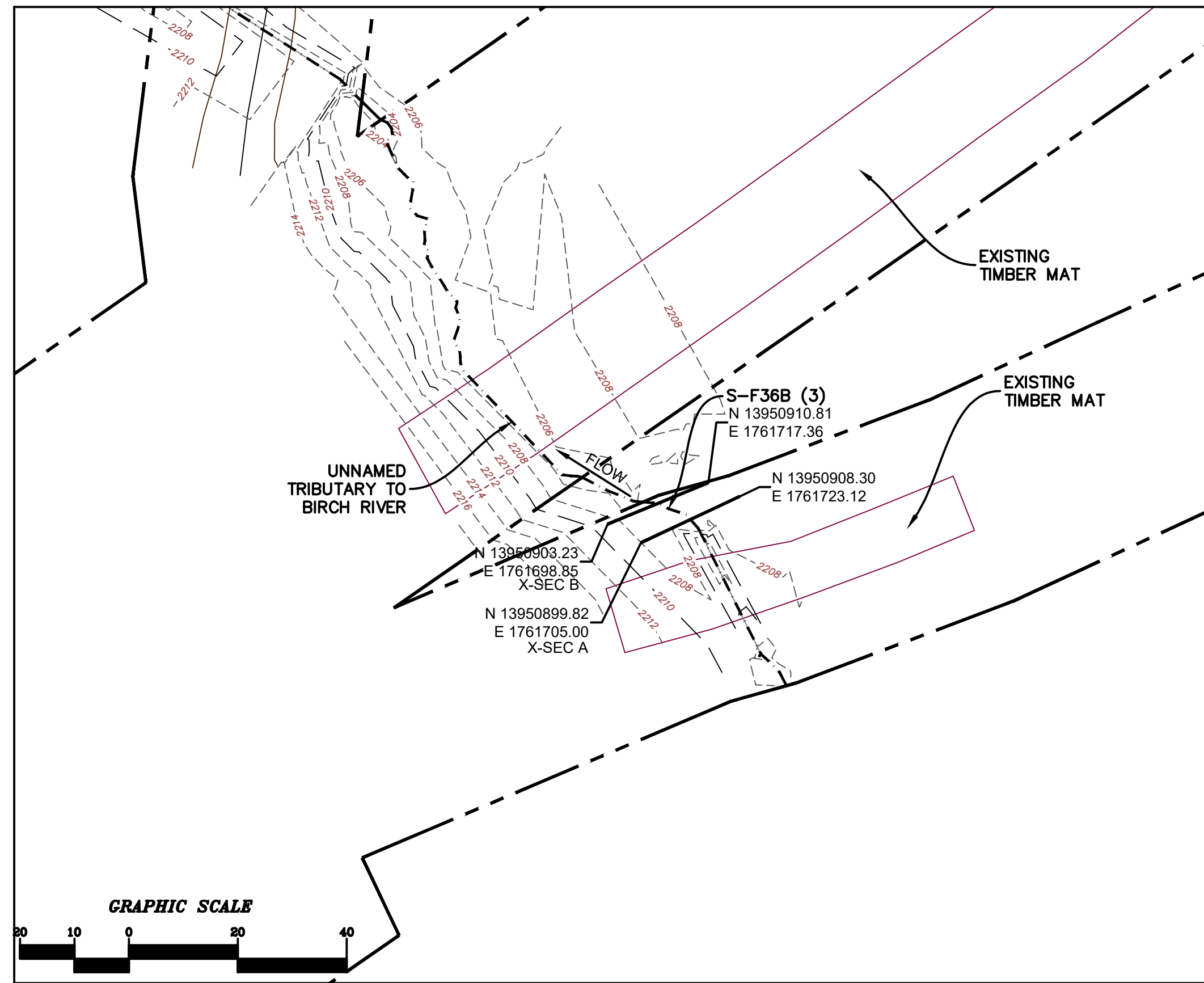
Bankfull Channel Pebble Count, S-F36b (3), UNT to Birch River (3)



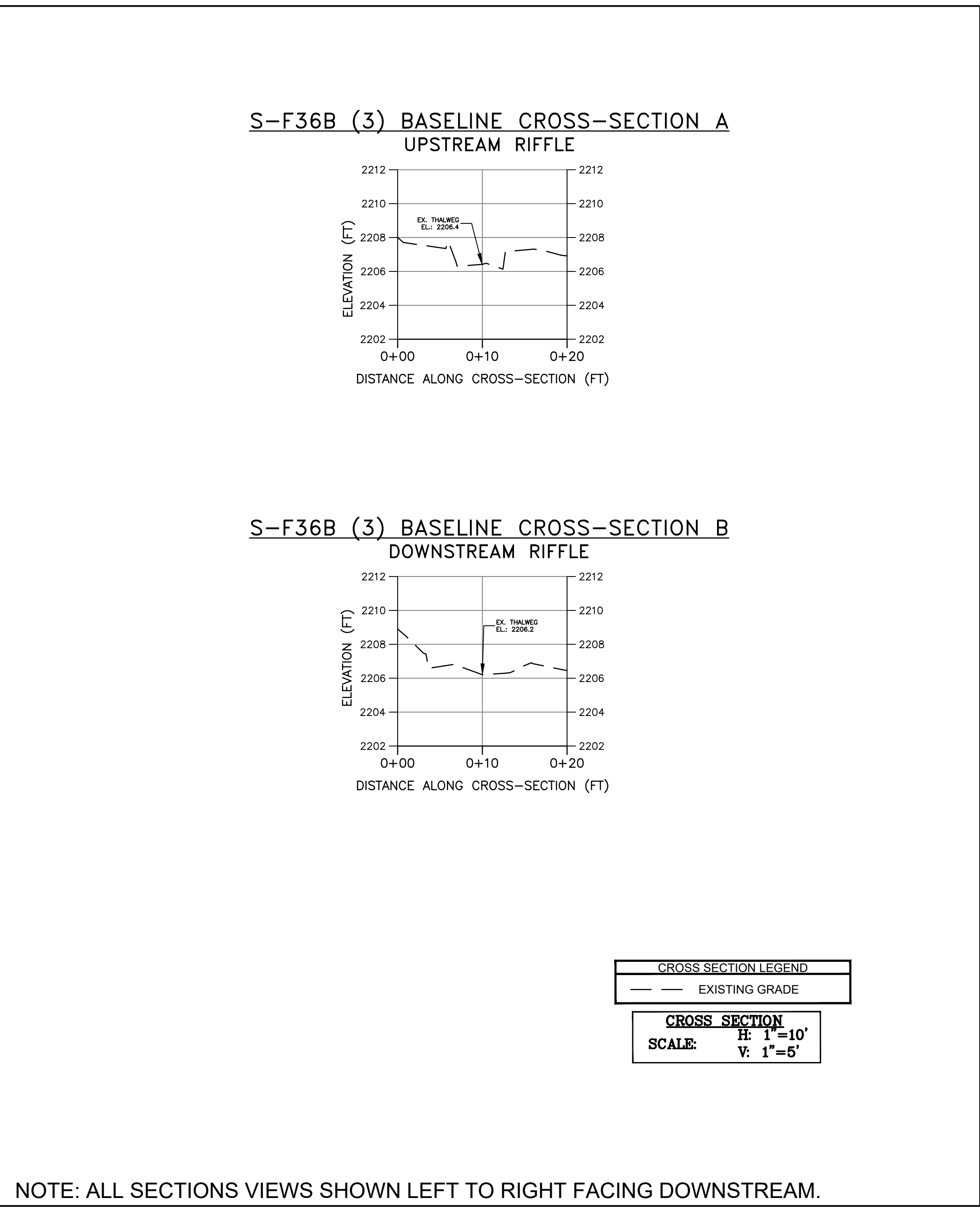
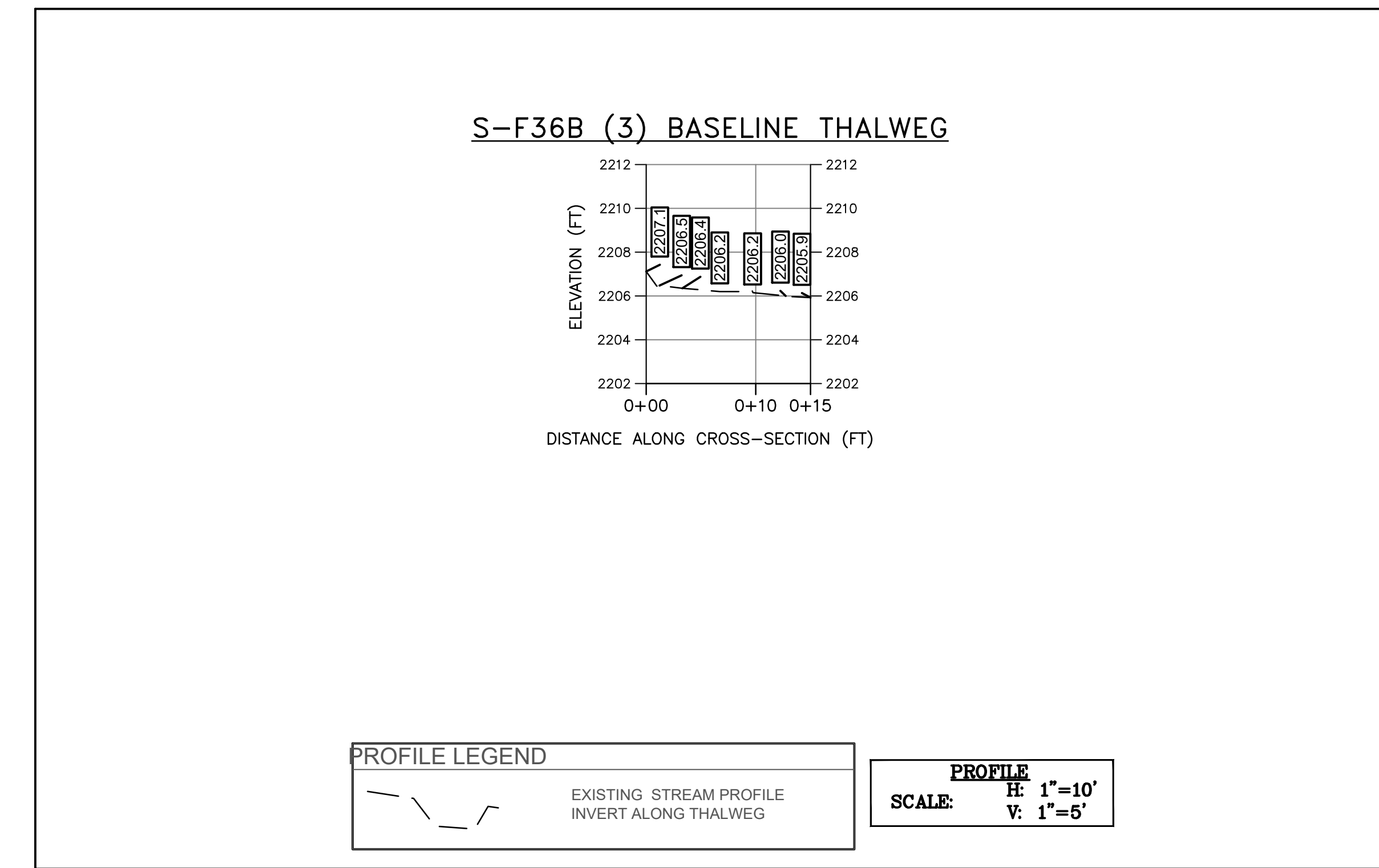
Size (mm)	
D16	10
D35	35
D50	66
D65	79
D84	130
D95	230

Size Distribution	
mean	36.1
dispersion	4.3
skewness	-0.25

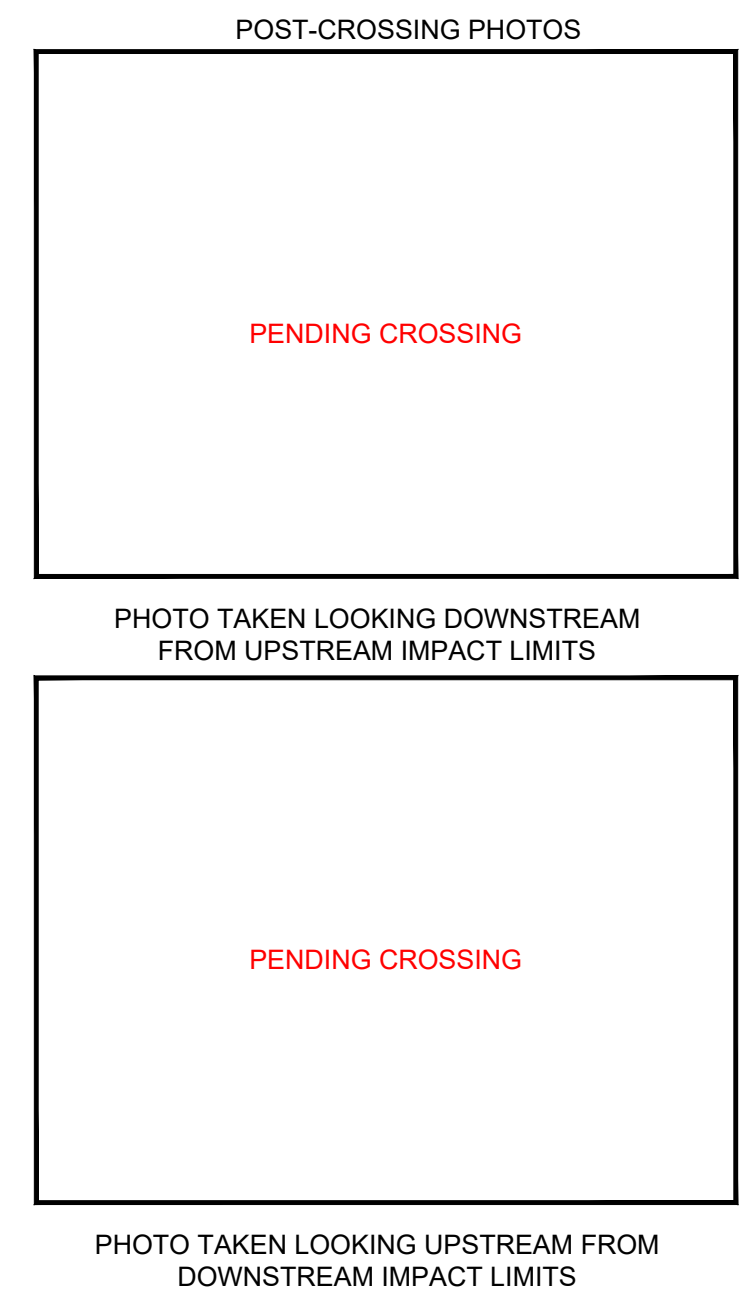
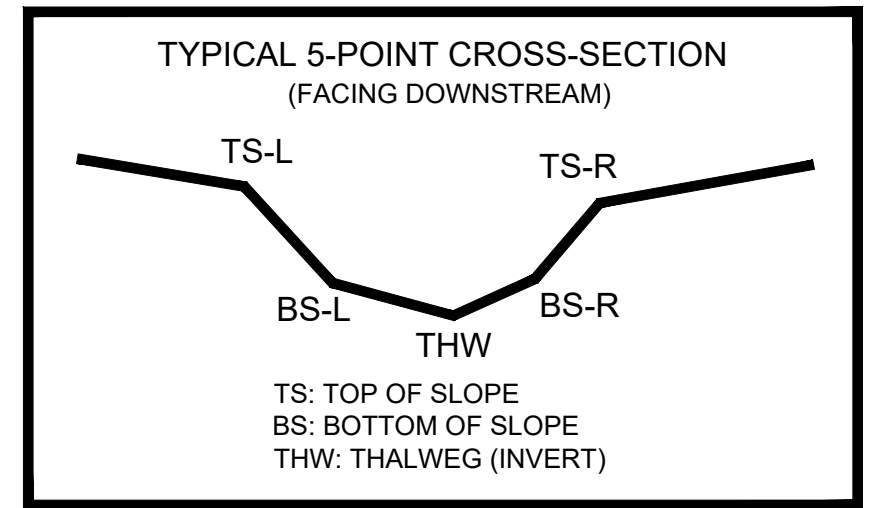
Type	
silt/clay	0%
sand	0%
gravel	48%
cobble	50%
boulder	2%



- SURVEY NOTES:**
- THIS MAP HAS BEEN ORIENTED TO NAD 1983 UTM ZONE 17N, AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), USING REAL TIME DGPS. FIELD LOCATIONS WERE COMPLETED ON SEPTEMBER 9, 2021.
 - EASEMENT LINES SHOWN ON PLAN VIEW WERE PROVIDED BY MOUNTAIN VALLEY PIPELINE.
 - SURVEY POINTS FOR CROSS SECTIONS AND THALWEG PROFILES COLLECTED IN 2021 HAVE BEEN USED IN COMBINATION WITH SURVEY POINTS COLLECTED PREVIOUSLY IN 2020 IN ORDER TO GENERATE THE PRE-CROSSING SURFACE SHOWN IN PLAN. DUE TO NATURAL EROSIONAL STREAM PROCESSES THAT CAN OCCUR OVER TIME, MINOR ADJUSTMENTS TO THE PROFILE ALIGNMENTS MAY HAVE BEEN REQUIRED IN ORDER TO GENERATE A CLEAN PRE-CROSSING SURFACE.
 - ALL SECTION VIEWS SHOWN LEFT TO RIGHT FACING DOWNSTREAM.
 - POST-CROSSING SURVEY INFORMATION SHOWN IN RED. DATA PENDING.
 - POST-CROSSING SURVEY POINTS FOR CROSS SECTIONS AND THALWEG ARE PROJECTED ONTO PRE-CROSSING SECTION AND PROFILE VIEWS FOR COMPARISON.



AS-BUILT TABLE: S-F36B (3) CROSS SECTION B					
PT. LOC.	PRE-CROSSING			AS-BUILT	
	NORTHING	EASTING	ELEV.	VERT. DIFF.	HORZ. DIFF.
TS-L	13950904.1200	1761702.1950	2207.545'		
BS-L	13950904.9100	1761702.2840	2206.031'		
THW	13950904.9500	1761713.3030	2206.352'		
BS-R	13950908.3800	1761710.5890	2206.310'		
TS-R	13950909.0300	1761711.9420	2206.666'		



CAD File No. JZ
Drawn GH
Checked DW
Approved NOTED
Scale: OCT. 2021
Date: 1121C07157
Project No.

TETRA TECH, INC.
881 ANDERSEN DRIVE FOSTER PLAZA 7
PITTSBURGH, PA 15220
TEL: (412) 921-7090 FAX: (412) 921-4040
E-Mail Address: WWW.TETRA TECH.COM

TETRA TECH
www.tetra-tech.com

Client: MOUNTAIN VALLEY PIPELINE, LLC
2200 ENERGY DRIVE, 2ND FLOOR
CANONSBURG, PA 15317

Title: PROFILE AND CROSS-SECTIONS
BASELINE SURVEY
CROSSING S-F36B (3) - UNNAMED
TRIBUTARY TO BIRCH RIVER (MP 104.89)
WEBSTER COUNTY, WV

1
Drawing No.

File: I:\CADD\Projects\2021\2107 - MP Crossing Permit\Map_Vegline_1888_Crossing\Crossing\01 - Crossing\Crossing\01 - Crossing\Crossing\01 - Crossing\01 - Crossing.dwg
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