

Baseline Assessment – Stream Attributes

Revisit

**Additional information was collected on 1/11/2022.*

Reach S-MN11-Downstream/Upstream (Temporary Access Road) Ephemeral Spread G Giles County, Virginia

Data	Included
Photos	✓*
SWVM Form	✓*
FCI Calculator and HGM Form	N/A – No assessable reach*
RBP Physical Characteristics Form	✓*
Water Quality Data	N/A – No flow*
RBP Habitat Form	✓*
RBP Benthic Form	✓*
Benthic Identification Sheet	N/A – No flow*
Wolman Pebble Count	✓*
RiverMorph Data Sheet	✓*
USM Form (Virginia Only)	✓
Longitudinal Profile and Cross Sections	✓

Spread G Stream S-MN11-Downstream/Upstream (Temporary AR) Giles County



Photo Type: DS View

Location, Orientation, Photographer Initials: Upstream at LOD looking SW downstream, KB



Photo Type: US View

Location, Orientation, Photographer Initials: Downstream at LOD looking E upstream, KB

Spread G Stream S-MN11-Downstream/Upstream (Temporary AR) Giles County



Photo Type: CL ACCESS 1
Location, Orientation, Photographer Initials: Standing in Access Road looking N, KB



Photo Type: CL ACCESS 2
Location, Orientation, Photographer Initials: Standing in Access Road looking SW, KB

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Spread GStream S-MN11-Downstream/Upstream (Temporary AR) Giles County



Photo Type: DS VIEW

Location, Orientation, Photographer Initials: Downstream view of LOC looking W/NW, KB



Photo Type: US VIEW

Location, Orientation, Photographer Initials: Upstream view of LOC looking E, KB

Spread GStream S-MN11-Downstream/Upstream (Temporary AR) Giles County



Photo Type: CL ACCESS 1

Location, Orientation, Photographer Initials: Standing in Access Road looking N/ NE, KB



Photo Type: CL ACCESS 2

Location, Orientation, Photographer Initials: Standing in Access Road looking S/SW, KB

Spread GStream S-MN11-Downstream/Upstream (Temporary AR) Giles County



Photo Type: DS COND

Location, Orientation, Photographer Initials: Downstream conditions outside of LOC looking W/SW, KB

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USACE FILE NO./ Project Name: (W-1, Sept 2015)		Mountain Valley Pipeline		IMPACT COORDINATES: (in Decimal Degrees)		Lat.	37.332146	Lon.	-80.560079	WEATHER:		Sunny	DATE:		January 11, 2022		
IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (watershed size (acres), unaltered or impairment)				S-MN11 Downstream/Upstream (0.1 acre)				MITIGATION STREAM CLASS/SITE ID AND SITE DESCRIPTION: (watershed size (acres), unaltered or impairment)				Comments:					
STREAM IMPACT LENGTH:		37	FORM OF MITIGATION:		RESTORATION (Levels I-III)		MIT COORDINATES: (in Decimal Degrees)		Lat.		Lon.		PRECIPITATION PAST 48 HRS:		0.29"	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:			Ephemeral			Stream Classification:			0			Stream Classification:			0		
Percent Stream Channel Slope			22.4			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):					
Average						Average						Average					
Hydrology						Hydrology						Hydrology					
Biogeochemical Cycling			0			Biogeochemical Cycling			0			Biogeochemical Cycling			0		
Habitat						Habitat						Habitat					
PART I - Physical, Chemical and Biological Indicators						PART I - Physical, Chemical and Biological Indicators						PART I - Physical, Chemical and Biological Indicators					
Points Score			Range			Points Score			Range			Points Score			Range		
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)					
1. Epifaunal Substrate/Available Cover			0-20			1. Epifaunal Substrate/Available Cover			0-20			1. Epifaunal Substrate/Available Cover			0-20		
2. Embeddedness			0-20			2. Embeddedness			0-20			2. Embeddedness			0-20		
3. Velocity/ Depth Regime			0-20			3. Velocity/ Depth Regime			0-20			3. Velocity/ Depth Regime			0-20		
4. Sediment Deposition			0-20			4. Sediment Deposition			0-20			4. Sediment Deposition			0-20		
5. Channel Flow Status			0-20			5. Channel Flow Status			0-20			5. Channel Flow Status			0-20		
6. Channel Alteration			0-20			6. Channel Alteration			0-20			6. Channel Alteration			0-20		
7. Frequency of Riffles (or bends)			0-20			7. Frequency of Riffles (or bends)			0-20			7. Frequency of Riffles (or bends)			0-20		
8. Bank Stability (LB & RB)			0-20			8. Bank Stability (LB & RB)			0-20			8. Bank Stability (LB & RB)			0-20		
9. Vegetative Protection (LB & RB)			0-20			9. Vegetative Protection (LB & RB)			0-20			9. Vegetative Protection (LB & RB)			0-20		
10. Riparian Vegetative Zone Width (LB & RB)			0-20			10. Riparian Vegetative Zone Width (LB & RB)			0-20			10. Riparian Vegetative Zone Width (LB & RB)			0-20		
Total RBP Score			Optimal			Total RBP Score			Poor			Total RBP Score			Poor		
Sub-Total			0.86666667			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)					
WVDEP Water Quality Indicators (General)						WVDEP Water Quality Indicators (General)						WVDEP Water Quality Indicators (General)					
Specific Conductivity			0-90			Specific Conductivity			0-90			Specific Conductivity			0-90		
pH			5.6-5.9 = 45 points			pH			5-90			pH			5-90		
DO			10-30			DO			10-30			DO			10-30		
Sub-Total						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)					
WV Stream Condition Index (WVSCI)						WV Stream Condition Index (WVSCI)						WV Stream Condition Index (WVSCI)					
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					
Index			Linear Feet			Index			Linear Feet			Index			Linear Feet		
0.833			37			0			0			0			0		
Unit Score			30.8333333			Unit Score			0			Unit Score			0		

STREAM NAME S-MN11 Downstream/Upstream	LOCATION Giles County	
STATION # <u>AR-242.01</u> RIVERMILE _____	STREAM CLASS Ephemeral	
LAT <u>37.332146</u> LONG <u>-80.560079</u>	RIVER BASIN Middle New	
STORET # _____	AGENCY VADEQ	
INVESTIGATORS KB AB		
FORM COMPLETED BY KB	DATE <u>1/11/22</u> TIME <u>12:00 PM</u>	REASON FOR SURVEY Baseline Assessment

Rapid Bioassessment Protocols For Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish, Second Edition - Form 1

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	Predominant Surrounding Landuse ☒ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☐ Agricultural ☐ Other _____ ☐ Residential	Local Watershed NPS Pollution ☒ No evidence ☐ Some potential sources ☐ Obvious sources Local Watershed Erosion ☒ None ☐ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	Indicate the dominant type and record the dominant species present ☐ Trees ☒ Shrubs ☐ Grasses ☐ Herbaceous Dominant species present <u>Multiflora Rose</u>	
INSTREAM FEATURES	Estimated Reach Length <u>9</u> m Estimated Stream Width <u>0.25</u> m Sampling Reach Area <u>2</u> m² Area in km² (m²x1000) _____ km² Estimated Stream Depth <u>0</u> m Surface Velocity (at thalweg) <u>N/A</u> m/sec Canopy Cover ☐ Partly open ☒ Partly shaded ☐ Shaded High Water Mark <u>0</u> m Proportion of Reach Represented by Stream Morphology Types Riffle <u>0</u> % Run <u>100</u> % Pool <u>0</u> % Channelized ☐ Yes ☒ No Dam Present ☐ Yes ☒ No	
LARGE WOODY DEBRIS	LWD <u>3</u> m ² Density of LWD <u>1.500</u> 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 <u>N/A</u> Portion of the reach with aquatic vegetation <u>0</u> %	
WATER QUALITY	Temperature <u>N/A</u> °C Specific Conductance <u>N/A</u> Dissolved Oxygen <u>N/A</u> pH <u>N/A</u> Turbidity <u>N/A</u> WQ Instrument Used <u>N/A</u> Water Odors ☒ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ Water Surface Oils ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☒ None ☐ Other _____ Turbidity (if not measured) ☐ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other _____	
SEDIMENT/SUBSTRATE	Odors ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ Oils ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse Deposits ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other _____ Looking at stones which are not deeply embedded, are the undersides black in color? ☐ Yes ☒ No	

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		0	Detritus	sticks, wood, coarse plant materials (CPOM)	25
Boulder	> 256 mm (10")	10			
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud	black, very fine organic (FPOM)	0
Gravel	2-64 mm (0.1"-2.5")	0			
Sand	0.06-2mm (gritty)	30	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	30			
Clay	< 0.004 mm (slick)	30			

Note: No water quality parameters were assessed due to lack of flowing water in the reach

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

STREAM NAME S-MN11 Downstream/Upstream		LOCATION Giles County	
STATION # <u>AR-242.01</u> RIVERMILE <u> </u>		STREAM CLASS Ephemeral	
LAT <u>37.332146</u> LONG <u>-80.560079</u>		RIVER BASIN Middle New	
STORET # <u> </u>		AGENCY VADEQ	
INVESTIGATORS KB AB			
FORM COMPLETED BY KB		DATE <u>1/11/22</u> TIME <u>12:00 PM</u> AM PM	REASON FOR SURVEY Baseline Assessment

	Habitat Parameter	Condition Category			
		Optimal	Suboptimal	Marginal	Poor
Parameters to be evaluated in sampling reach	1. Epifaunal Substrate/ Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
	SCORE 0	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 16	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 0	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	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 0	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Notes: Stream reach more than 50% covered by Timbermat bridge. Assessments done based on reach above and below bridge within LOD. No flowing water in stream reach.

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	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 0	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. Note: determine left or right side by facing downstream.						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 10	Left Bank	10	9			8	7	6			5	4	3			2	1	0			
SCORE 10	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 8	Left Bank	10	9			8	7	6			5	4	3			2	1	0			
SCORE 8	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 7	Left Bank	10	9			8	7	6			5	4	3			2	1	0			
SCORE 5	Right Bank	10	9			8	7	6			5	4	3			2	1	0			

Parameters to be evaluated broader than sampling reach
 Total Score **104** Notes: Stream reach more than 50% covered by Timbermat bridge. Assessments done based on reach above and below bridge within LOD. No flowing water in stream reach

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME S-MN11 Downstream/Upstream		LOCATION Giles County
STATION # <u>AR-242.01</u> RIVERMILE _____		STREAM CLASS Ephemeral
LAT <u>37.332146</u> LONG <u>-90.560079</u>		RIVER BASIN Middle New
STORET # _____		AGENCY VADEQ
INVESTIGATORS KB AB		LOT NUMBER _____
FORM COMPLETED BY KB		REASON FOR SURVEY Baseline Assessment
DATE <u>1/11/22</u>		TIME <u>12:00 PM</u>

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	Note: Benthic macroinvertebrates not sampled due to lack of flowing water in channel.

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: Giles
Stream Name: UNT to Sinking Creek
HUC Code: 05050002
Survey Date: 1/11/2022
Surveyors: KB, AB
Type: Representative Bankfull

Stream ID: S-MN11 Downstream/Upstream

Basin: Middle New

PEBBLE COUNT							
Inches	PARTICLE	Millimeters		Particle Count	Total #	Item %	% Cum
	Silt/Clay	< .062	S/C	▲ ▼	32	32.00	32.00
	Very Fine	.062-.125	S A N D	▲ ▼	9	9.00	41.00
	Fine	.125-.25		▲ ▼	10	10.00	51.00
	Medium	.25-.5		▲ ▼	15	15.00	66.00
	Coarse	.50-1.0		▲ ▼	17	17.00	83.00
.04-.08	Very Coarse	1.0-2		▲ ▼	7	7.00	90.00
.08 -.16	Very Fine	2 -4		G R A V E L	▲ ▼	0	0.00
.16 - .22	Fine	4 -5.7	▲ ▼		0	0.00	90.00
.22 - .31	Fine	5.7 - 8	▲ ▼		0	0.00	90.00
.31 - .44	Medium	8 -11.3	▲ ▼		0	0.00	90.00
.44 - .63	Medium	11.3 - 16	▲ ▼		0	0.00	90.00
.63 - .89	Coarse	16 -22.6	▲ ▼		0	0.00	90.00
.89 - 1.26	Coarse	22.6 - 32	▲ ▼		0	0.00	90.00
1.26 - 1.77	Vry Coarse	32 - 45	▲ ▼		0	0.00	90.00
1.77 -2.5	Vry Coarse	45 - 64	▲ ▼		0	0.00	90.00
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	90.00
5.0 - 7.1	Large	128 - 180		▲ ▼	0	0.00	90.00
7.1 - 10.1	Large	180 - 256		▲ ▼	0	0.00	90.00
10.1 - 14.3	Small	256 - 362	B O U L D E R	▲ ▼	7	7.00	97.00
14.3 - 20	Small	362 - 512		▲ ▼	3	3.00	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:						

RIVERMORPH PARTICLE SUMMARY

River Name: UNT to Sinking Creek
Reach Name: S-MN11 Downstream/Upstream
Sample Name: Representative Bankfull
Survey Date: 01/11/2022

Size (mm)	TOT #	ITEM %	CUM %
0 - 0.062	32	32.00	32.00
0.062 - 0.125	9	9.00	41.00
0.125 - 0.25	10	10.00	51.00
0.25 - 0.50	15	15.00	66.00
0.50 - 1.0	17	17.00	83.00
1.0 - 2.0	7	7.00	90.00
2.0 - 4.0	0	0.00	90.00
4.0 - 5.7	0	0.00	90.00
5.7 - 8.0	0	0.00	90.00
8.0 - 11.3	0	0.00	90.00
11.3 - 16.0	0	0.00	90.00
16.0 - 22.6	0	0.00	90.00
22.6 - 32.0	0	0.00	90.00
32 - 45	0	0.00	90.00
45 - 64	0	0.00	90.00
64 - 90	0	0.00	90.00
90 - 128	0	0.00	90.00
128 - 180	0	0.00	90.00
180 - 256	0	0.00	90.00
256 - 362	7	7.00	97.00
362 - 512	3	3.00	100.00
512 - 1024	0	0.00	100.00
1024 - 2048	0	0.00	100.00
Bedrock	0	0.00	100.00

D16 (mm)	0.03
D35 (mm)	0.08
D50 (mm)	0.24
D84 (mm)	1.14
D95 (mm)	331.71
D100 (mm)	511.99
Silt/Clay (%)	32
Sand (%)	58
Gravel (%)	0
Cobble (%)	0
Boulder (%)	10
Bedrock (%)	0

Total Particles = 100.

Ephemeral Stream Assessment Form (Form 1a)

Unified Stream Methodology for use in Virginia

For use in ephemeral streams

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	SAR #	Impact Length	Impact Factor
22865.06	Mountain Valley Pipeline (Mountain Valley Pipeline, LLC)	Giles County	R6	05050002	8/18/21	S-MN11-Downstream	37	1
Name(s) of Evaluator(s)		Stream Name and Information					SAR Length	
KB/TC		UNT to Sinking Creek					37	

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

Conditional Category								NOTES>>
	Optimal	Suboptimal		Marginal		Poor		
Riparian Buffers	Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover and a non-maintained understory. Wetlands areas.	High Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian areas with tree stratum (dbh > 3 inches) present, with >30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	High Marginal: Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	Low Marginal: Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh > 3 inches) present, with <30% tree canopy cover with maintained understory.	High Poor: Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	Low Poor: Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	
Condition Scores	1.5	High 1.2	Low 1.1	High 0.85	Low 0.75	High 0.6	Low 0.5	
1. Delineate riparian areas along each stream bank into Condition Categories and Condition Scores using the descriptors. 2. Determine square footage for each by measuring or estimating length and width. Calculators are provided for you below. 3. Enter the % Riparian Area and Score for each riparian category in the blocks below.								Ensure the sums of % Riparian Blocks equal 100
Right Bank	% Riparian Area>	90%	10%				100%	
	Score >	0.5	0.75					
Left Bank	% Riparian Area>	90%	10%				100%	CI= (Sum % RA * Scores*0.01)/2
	Score >	0.5	0.75					Rt Bank CI > 0.53 Lt Bank CI > 0.53

REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH

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

THE REACH CONDITION INDEX (RCI) >> 0.27

RCI= (Riparian CI)/2

COMPENSATION REQUIREMENT (CR) >> 10

CR = RCI X LF X IF

INSERT PHOTOS:

(WSSI Photo Location:L:\22000s\22800\22865.06\Admin\05-ENVR\Field Data\Spread G\Field Forms\S-MN11 Downstream\Photos\S-MN11 Downstream_2021-08-18_12-50-31.jpg)

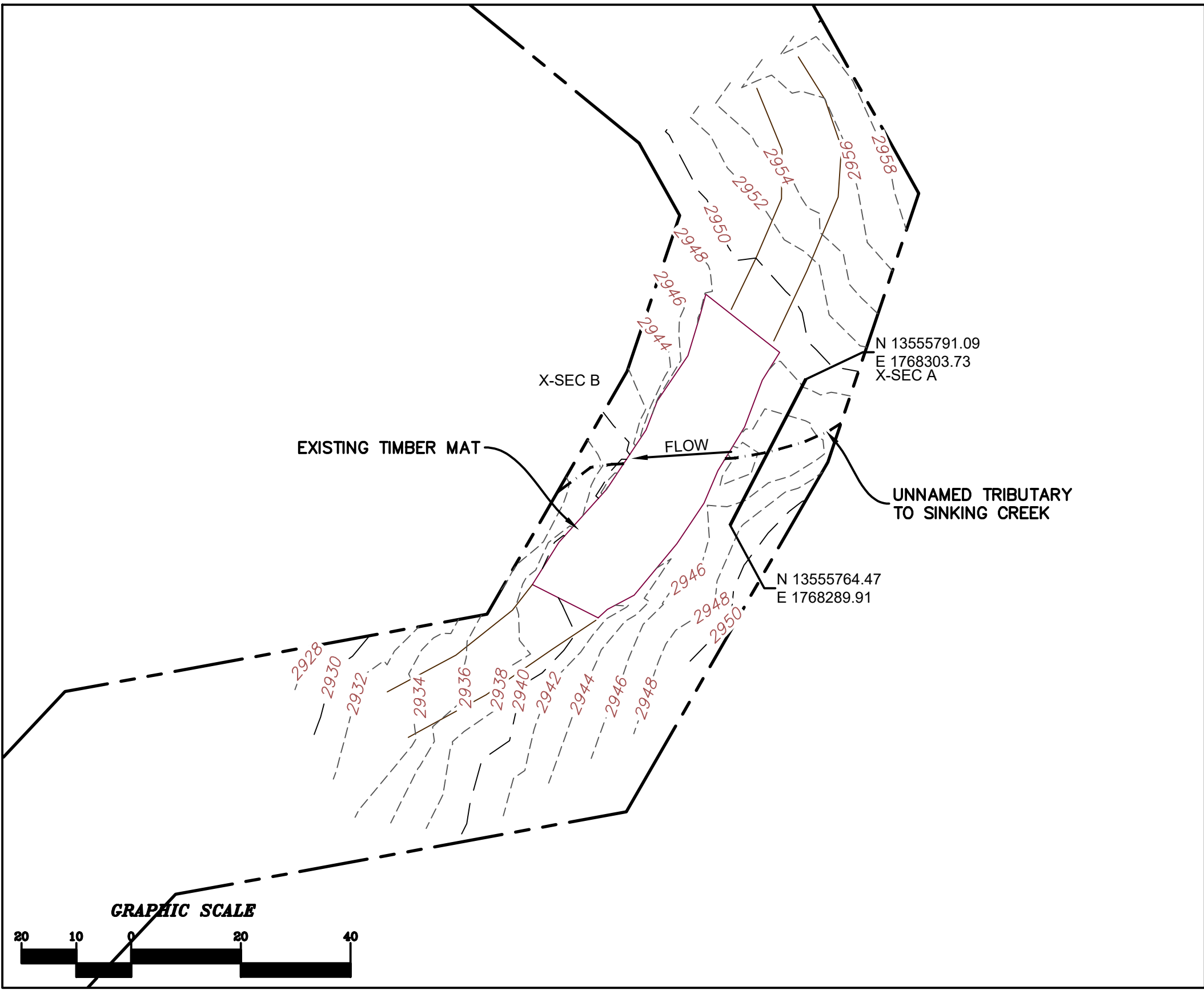


Looking SW from within the access road. Assessment is limited to areas within the temporary ROW.

DESCRIBE PROPOSED IMPACT:

PROVIDED UNDER SEPARATE COVER

File: \\C:\Users\mshapiro\OneDrive\Documents\2021-10-15 - S-MN11 SOUTH STREAM THW.dwg Plot Date: 10/21/2021 Plot Time: 11:58am Plotter: HP DesignJet 500



S-MN11 SOUTH

LEGEND

STUDY AREA (EASEMENT)

EXISTING SURVEY-LOCATED THALWEG

EXISTING MAJOR CONTOUR

EXISTING MINOR CONTOUR

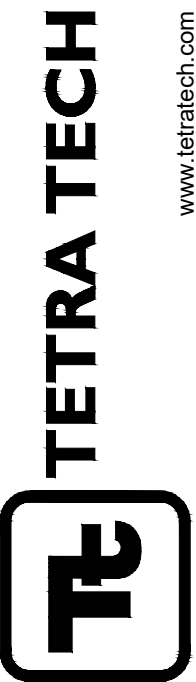
SURVEY NOTES:

- 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 OCTOBER 15, 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.

No.	Date	Eng.	Revision

CAD File No.	JZ
Drawn	GH
Checked	DW
Approved	NOTED
Scale:	SEPT. 2021
Date:	112IC07157
Project No.	

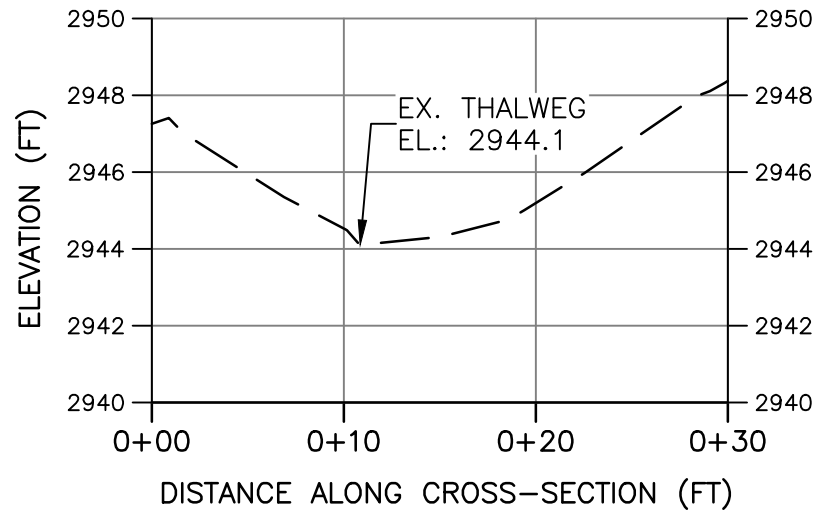
TETRA TECH, INC.
881 ANDERSEN DRIVE FOSTER PLAZA 7
PITTSBURGH, PA 15220
TEL: (412) 921-7090 FAX: (412) 921-4040
E-Mail Address: WWW.TETRA TECH.COM



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

Title
PROFILE AND CROSS-SECTIONS
BASELINE SURVEY
CROSSING S-MN11 SOUTH - UNNAMED TRIB.
TO SINKING CREEK (MP 208.00)
GILES COUNTY, VA

S-MN11 SOUTH BASELINE CROSS-SECTION A
UPSTREAM OF TIMBER MAT



PRE-CROSSING PHOTOS



PHOTO TAKEN OCTOBER 15, 2021 LOOKING
DOWNSTREAM FROM UPSTREAM IMPACT LIMITS



PHOTO TAKEN OCTOBER 15, 2021 LOOKING
UPSTREAM FROM DOWNSTREAM IMPACT LIMITS

POST-CROSSING PHOTOS

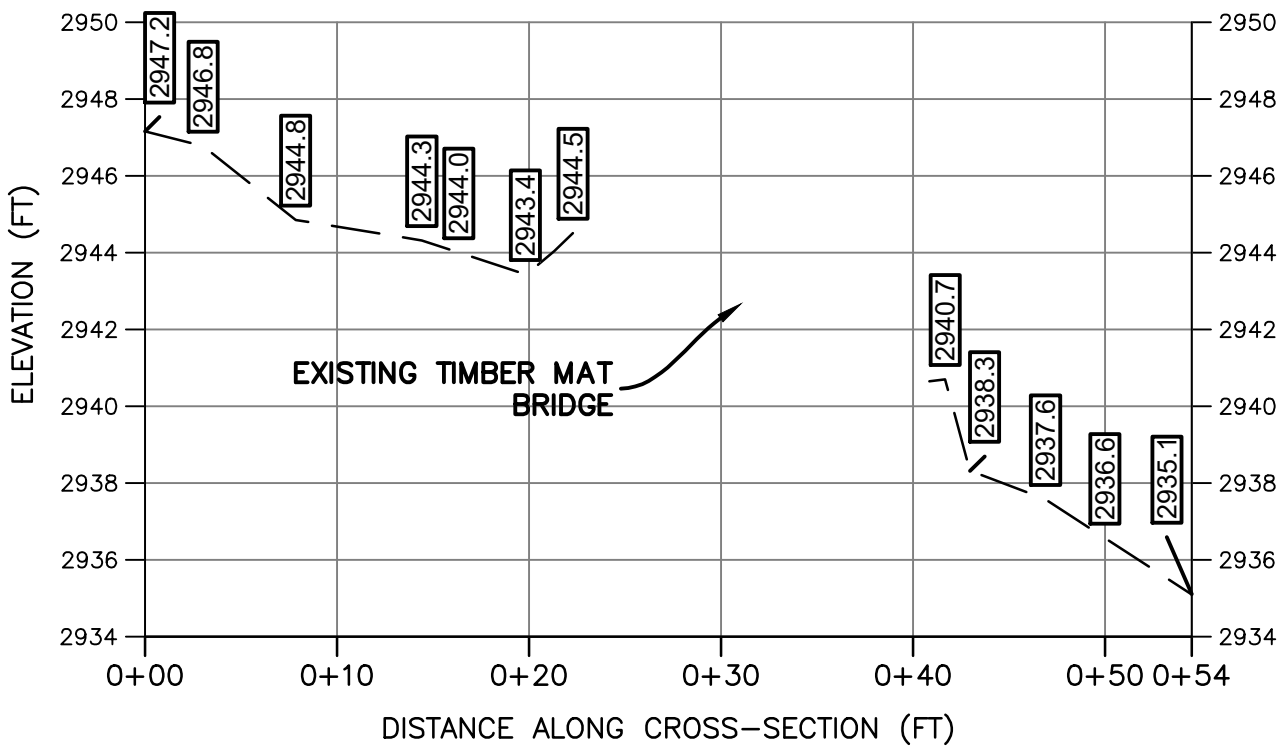
PENDING CROSSING

PHOTO TAKEN LOOKING DOWNSTREAM
FROM UPSTREAM IMPACT LIMITS

PENDING CROSSING

PHOTO TAKEN LOOKING UPSTREAM FROM
DOWNSTREAM IMPACT LIMITS

S-MN11 SOUTH BASELINE THALWEG PROFILE



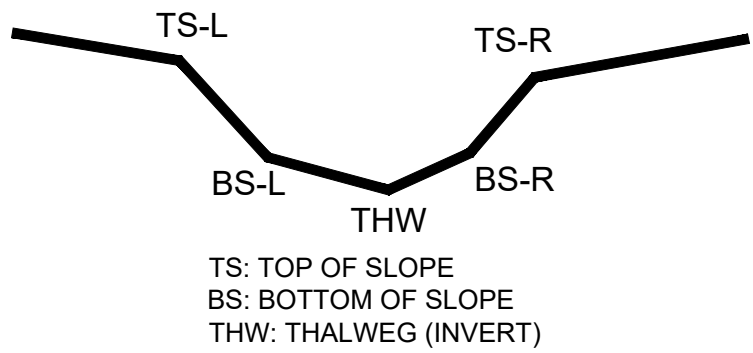
PROFILE LEGEND



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

CL STAKEOUT POINTS: S-MN11 S. CROSS SECTION A (UPSTREAM)					
PT. LOC.	PRE-CROSSING			POST-CROSSING	
	NORTHING	EASTING	ELEV	VERT. DIFF.	HORZ. DIFF.
TS-L	13555764.4600'	1768291.6040'	2947.809'		
BS-L	13555773.8900'	1768293.8830'	2944.022'		
THW	13555777.7800'	1768296.8200'	2944.316'		
BS-R	13555781.2400'	1768297.2110'	2944.731'		
TS-R	13555790.2500'	1768304.2070'	2948.311'		

TYPICAL 5-POINT CROSS-SECTION
(FACING DOWNSTREAM)



CROSS SECTION LEGEND

EXISTING GRADE

CROSS SECTION

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

NOTE: ALL SECTIONS VIEWS SHOWN LEFT TO RIGHT
FACING DOWNSTREAM.