

<u>Appalachian Watershed and Stream Monitors</u> <u>(AWSM):</u>

<u>Report on data collected from Potomac and Ohio Basin streams</u> <u>during fall 2010 programs</u>

About AWSM

In 2004, The Mountain Institute (TMI) received funding from the National Oceanic and Atmospheric Administration (NOAA) to implement a watershed education project involving students and educators who live in West Virginia's Potomac River watershed. As part of a broader effort to educate the public about the compromised and increasingly stressed health of the Chesapeake Bay and its headwaters, *Potomac Stream Samplers* was designed by TMI to raise awareness of the connection between regions within the Potomac River drainage and the Bay itself.

Since 2004, TMI has successfully run the program for seven years with major funding from WV Department of Environmental Protection, Virginia Environmental Endowment, and the Toyota Foundation, National Fish and Wildlife Foundation, and expanded the program to schools in the Ohio River Basin under the new name of Appalachian Watershed and Stream Monitors. Each year TMI has built upon the previous year by enhancing, the curriculum, TMI staff development, teacher participation levels, and overall structure of activities. Over the course of the project, TMI has forged meaningful and long lasting relationships with WV-DEP staff and a cadre of enthusiastic, energetic teachers. Thousands of students have now been exposed to watershed education through stream testing and stewardship related exercises, both in their home environs and beyond. Many students have continued their *AWSM* education through science projects, presentations and involvement in local watershed organizations, while teachers have integrated the curriculum into their regular classroom lessons, and as local watershed associations have become involved. Furthermore, several teachers have gained graduate and continuing education credits through the program.

The *AWSM* model facilitates multiple interactions between staff, students and teachers to ensure greater impact on participants in terms of understanding concepts and developing stewardship mentalities. The initial activity is a four day professional development workshop for teachers at TMI's Spruce Knob Mountain Center. Here, teachers and TMI staff engage in detailed stream investigations and watershed assessment skills through the instruction of the WV-DEP and TMI senior staff. Near TMI's Spruce Knob Mountain Center, many of the most pristine streams in West Virginia serve as training sites in both the Potomac and Ohio watersheds. The workshop culminates in a visit to Spruce Knob, the highest point in West Virginia, to view and discuss local land use and its impact on water quality.

Throughout the autumn these trained teachers bring their students back to the mountain for a two-day field trip focusing on lessons related to stream and vegetation surveying, watershed awareness and stewardship. To put their new skills to work students then visit a local waterway to investigate water quality near their home. With the help of their teachers and a crew of TMI staff, students collect information on the biological, physical and chemical conditions of the streams.

Through a partnership with Trout Unlimited (TU) all students are able to support real world restoration projects. During their field trips to TMI students spent a morning touring the components of TU's Potomac Headwaters Initiative restoration project along tributaries of Big Run, (just a few hundred feet from the Eastern Continental Divide and the Ohio Basin) visiting fence ex-closures, watering troughs, bridges and tree plantings. They themselves plant trees, including willow and spruce, along riparian zones, often beginning the process by making the cuttings from nearby willows shrubs.

Presented in this report is water quality data collected during student training sessions to the Spruce Knob Mountain Center and from streams local to the schools. Maps showing the location of each sampling site and a selection of photographs taken throughout the season are also included. All data in this report was collected by students and teachers with TMI staff support as part of AWSM.

In doing so *AWSM* participants come to understand how their actions affect water quality and gain an appreciation for the importance of clean water. As inhabitants of this mountain state, their ability to be stewards of their local water resources in turn benefits millions of people downstream. Those involved in the program share their knowledge with others and encourage a broader concern for water quality.

Brief Explanation of Data

All stream sampling was completed using the West Virginia DEP's *Save Our Streams* Level One survey protocols. Assessments were made along a 100 meter reach of stream. Generally students were broken into two or three groups, each performing a complete survey along a portion of the reach so that the entire reach was assessed. These groups collected data on three major aspects of the stream: chemical, biological, and physical/habitat.

Chemical

Chemical data is procured using basic LaMotte test kits for nitrates, phosphates, alkalinity (measured in parts per million, ppm), dissolved oxygen is measured in ppm as well, but with the use of field titration kits), pH (1-14), turbidity (measured in Jackson Turbidity Units, JTU), temperature (Fahrenheit so that students have a reference) and conductivity (measured with electronic probes, in micro-semens, or uS). It is important to realize that chemical data is merely a snapshot of stream quality at the time of testing. Many chemical conditions naturally fluctuate over the course of a year, a month, a week, and even a day. However, each chemical parameter has its own specific range associated with ideal conditions, and results ought to fall within these ranges regardless of natural cycles. Any parameters that fall too far outside these acceptable ranges may be cause for concern, and draw students attention as they consider land uses within the watershed. There is no overall chemical score, rather a general picture of water quality emerges from all results taken together.

Physical/Habitat

Physical and habitat aspects of the stream are assessed both through simple observations as well as measurements and are used to calculate a Habitat Condition Index for the stream. This score corresponds to a rating of Optimal (>26), Sub-Optimal (26-20), Marginal (19-13) or Poor (<13).

Physical conditions include:

- Water Level/Discharge
 - measured in cubic feet per second (cfs) and refers to how many cubic feet of water pass by a given cross section of stream per second
- Channel measurements
 - depth and width of riffles, runs or pools; depth measured at deepest part of habitat
- Water clarity, color and odor
- Algae abundance, texture and color
- Streambed color
- Surface foam abundance
- Channel shade
 - \circ $\,$ % of the reach that would be shaded in full leaf conditions at the sun's zenith

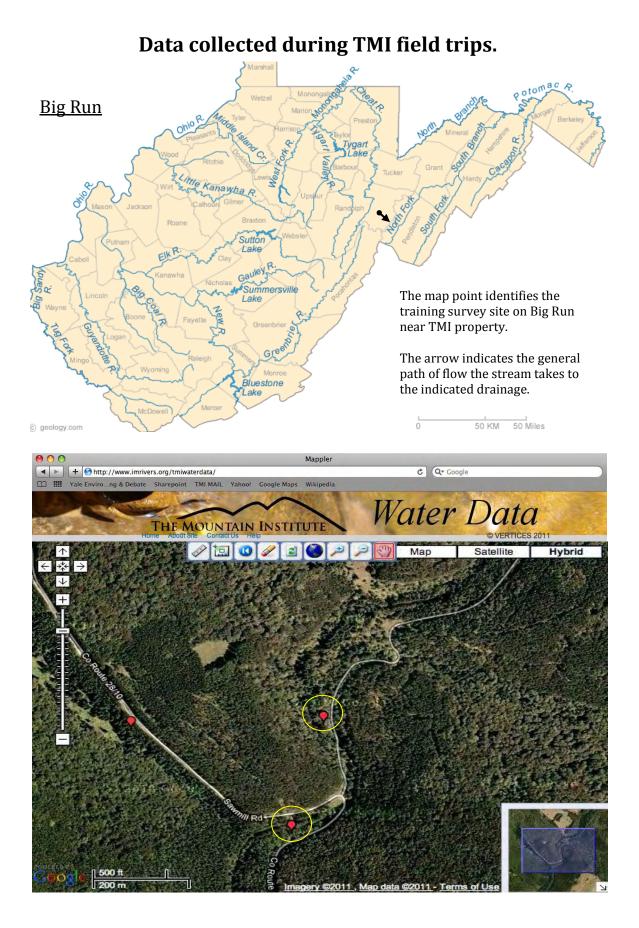
Habitat conditions include:

- Sediment Deposition & Embeddedness
 - affected by how much extra sediment is being introduced into streams; sediment deposition is evidenced by an increase in point bar and island formation and infilling of the channel; embeddedness refers to how much space around streambed gravel and cobble is filled in by fine sediment
- Bank Stability
 - o relates to evidence of erosion and potential for bank collapse or failure
- Buffer Width
 - scored based on how far the zone of mixed vegetation extends on either side of the stream before being disturbed
- Streambed Composition
 - percentage of silt/clay, sand, gravel, cobble, boulder, bedrock and woody debris that comprises streambed; this relates to sedimentation and available habitat for macroinvertebrates and is used to calculate a Composition Index.

<u>Biological</u>

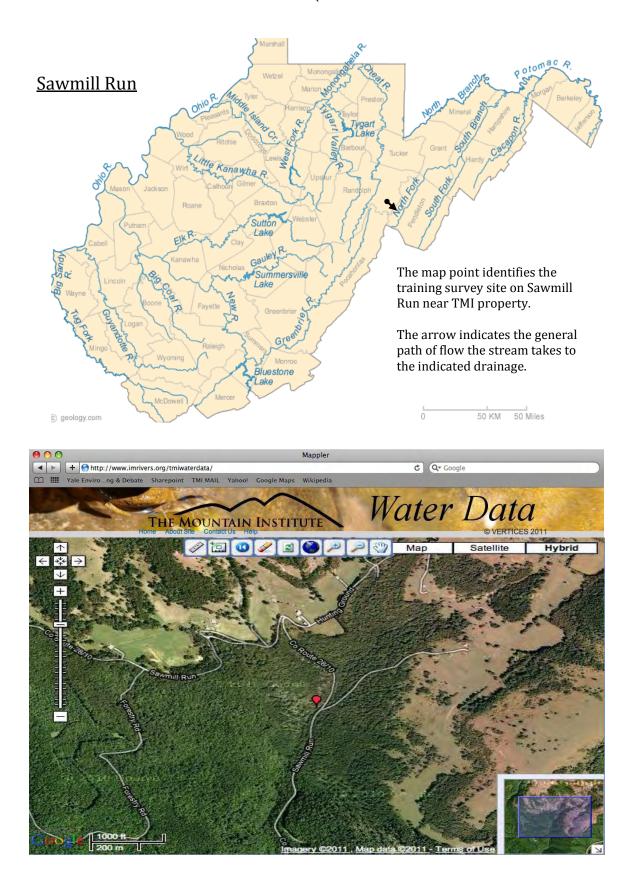
Biological data is gathered through the collection, identification and counting of macroinvertebrates. Two to four samples must be collected along the reach for an accurate assessment, and most cases three samples were collected. A Stream Integrity Index is computed from this data and corresponds to a rating a rating of Optimal (>24), Sub-Optimal (24-19), Marginal (18-12) or Poor (<12). In addition, macroinvertebrate information can be used to find a set of biological metrics which provide a general picture of tolerance levels and biodiversity in the sample. These include:

- Total Taxa
 - the total number of different kinds of animals found, including how many different kinds of a particular family were observed. Diversity is important to an ecosystem.
- EPT Taxa
 - the number of Ephemeroptera (Mayfly), Plecoptera (Stonefly) and Trichoptera (Caddisfly) taxa found; EPT families are the most sensitive to negative changes in stream conditions
- Biotic Index
 - relates to overall abundance and tolerance levels of macroinvertebrates; used to calculate Stream Condition Index
- % EPT
 - percentage of all animals found that are EPT taxa
- % Tolerant
 - the percentage of animals found that are considered stress tolerant; a high score may indicate unstable water conditions in which more tolerant species can thrive



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Rifle	19 ft	.63 ft	Discharge	2.9	Liet	oitat evalua	41 m m	12. Heligrai	nmile				3			
Run	No Data	No Data	Level	Normal	Пал	oitat evalua	tion	13. Alderly					6			
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Wat	ler odor	N	one	Estimate or	both banks	Left - L	Right - R	16. Black f	У				6			
Sedin	nent color	Br	DWMI	Bank	stability	3	3	17. Waters	nipe fly				3			
Alga	ae color	Dark	green	Riparian I	vulier width	3	3	18. Other tr	ue fies				6			
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Algae g	rowih habit	Eve	n coat	Habitat	integrity	Ор	fimal	20. Crayfisl	h				5			
Surfa	ice foarn	N	one	Habitat (H)	and Biologic	al (P) and a	and points	21. Sidesw	immer/Scud				5			
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^P hysical a	nd habitat con	iments		Codes		Po	ints	23. Opercu	late snails				4			
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				(H) - (Su	bopfimal)	6	3	25. Clams					6			
				(H) - (M	l arginal)	4	2	26. Musse	l i				4			
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EP	T Taxa	8	7	(B) - (C	ommon)	5 - 50	3	29. Flatwor	ms				7			
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Jnpaved r	oads	2	м					1								
-	illy homes	1	м					1								
Bridges	-	1	8					1								
~										Gene	dby d oradde	ck@wv.gov				

Stream	Big Run						Basin	South Brand	h Potomac				2			
Monitori	ng group	Hardy Cour	ly Schools				•		Latitude	38	41	14.2	W		0.6872778	38.68727
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Station					RR-miles		Date	18-C	ct-10	Start-fime	13:	:30				
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Nitrile/ Alka		26.6	ppm		e gravel bble	50	200		iding caddist		1	1	4			
Aika	,	20.0	ppm JTU		ulder	21	105	4. Netspini 5. Free livir	ning caddis fi a	es	11		4			
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	Width (ft)	Depth (ft)							eelles or bug	18			8			
Rifle	No Data	No Data	Discharge	9.6				12. Hellgran	~	,-	2	1	3			
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Water	clarity	Cl	Э.Э.Г	Sediment	deposition	8		14. Non-bit	ng midge				8			
Water	r color	No	ne	Embed	dedness	6	t	15. Crane f	y v				4			
Water	r odor	No	ne	Estimate or	n both banks	Left-L	Right - R	16. Black f	I				6			
Sedime	ent color	Bro	wan	Bank	stability	3	3	17. Waters	nipe fly		2	1	3			
Algae	color	Dark	green	Riparian	buffer width	3	3	18. Other tr	ue fies				6			
Algae ab	undance	Sca	lered	Habita	at score	2	56	19. Water n	nite				6			
Algae gro	owih habit	Ever	i coat	Habitat	integrity	Subo	plimal	20. Crayfisl	า				5			
Surfac			ne	Habitat (H)) and Biologic	al (B) codes	and points		immer/Scud				5			
Channe			od) and biologic	. ,		22. Aquatic					7			
Physical and	d habitat corr	nments		Codes			ints	23. Opercu					4			
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Metrics		Value	Points		(Poor)	2	1	27. Aquatic					10			
Total		7	3		bundant)	> 50	6	28. Leeche	_				10			
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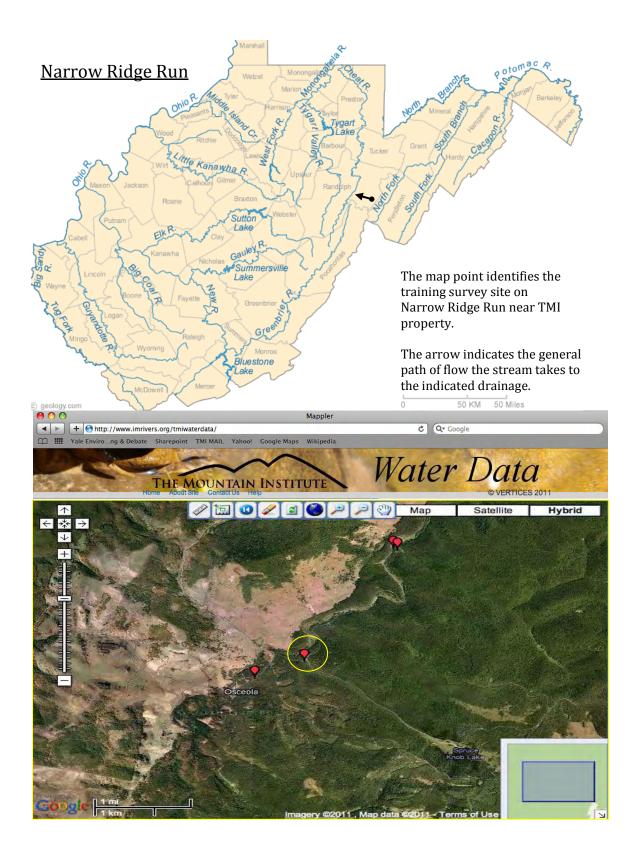
Stream	Sawmill Ru						Basin	South Branc	h Polomac							
Monitori	ng group	Wildwood N		-					Lafitude	38	38	50	M	4	0.64722222	38.647222
Direc	tions				on down sin	earn side of f	ne road. X p	oint is 300 feet	Longilude	79	33	13		—	0.55366667	79.553667
		downstream	from Sawimi	IRuin Road.			1		County		Pendleton					
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	H ·				1	-	0		ommon nam	es	Total	Taxa	VI			
	d oxygen					12	12	1. Mayfies			5 18	2	3			
	uctivity /nitrate			-		20	50	2. Stonelles 3. Case-bui	فمتاداتهم ومحتادا		18	1	2			
	alinity					36	144	4. Net-spinn			4	1	4			
	bidity					38	190	5. Free-livin				•	3	532		
	teria		310			6	36	6. Common			7	1	5	113		
	erature		F			No Data	No Data	7. Dragonfie	-		1	1	4	4.7079646		
		10.2	•			nille	100	8. Damselli			· ·		7			
*hosphate =	=0 ppm					Count	Estimate						4			
Physical c	onditions							10. Water p					3			
	Width (ft)	Depth (ft)						11. Other be		S			8			
Rifle	No Data	No Data	Discharge	8.3				12 Hellgran	U		3	1	3			
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Water	clarity	C		Sediment	deposition	6		14. Non-bili	ng midge				8			
Wate	r color	No	ne	Embedo	edness	8		15. Crane f	/				4			
Wate	rodor	No	ne	Estim ate on	both banks	Left - L	Right - R	16. Black fly	,				6			
Sedime	ant color	Bro	nwc	Bank s	tability	3	4	17. Watersr	lipe fly				3			
Algae	color	Bro	NWC	Riparian b	ufier width	2	4	18. Other tru					6			
Algae ab	undance	Sca	lered	Habitat	score	2	27	19. Water m	vite 🛛 👘				6			
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	e foarn			Habitat (H)	and Biologic	al (B) codes	and points		mmer/Scud				5			
	<b>shade</b>		bod		and Diologic			22. Aquatic					7			
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						6	3	25. Clams					6			
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Stream	Sawmill Ru	n					Basin	South Bran	ch Potomac					_		
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Dire	ections	downstream	from Sawmil	Run Road.			-		County		Pendleton					
Stafi	on code				RR-miles		Date	<b>29</b> -C	ct-14	Start-fime		:00				
Water ch	emistry			Streambed	compositio	on			Benthio	macroinver	tebrates					
	pH	8.0		S	/cly	0	0	C	ommon nam	es	Total	Taxa	τv			
Dissolv	ed oxygen	5.3	ppm	Sa	and	4	4	1. Maylies			9	3	3			
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A	kalinity	No Data		Co	bble	44	176	4. Net-spin	ning caddisfi	es	2		4			
Tu	irbidity	26.7	JTU	Bot	lder	25	125	5. Free-livin			2		3	410		
Ba	acteria	No Data		Bed	rock	0	0		n netspinner				5	115		
Tem	perature	53.3	F	Woody	debris	0	0	7. Dragoni	es		1	1	4	3.5652174		
				Rifle only or	enfire reach	No Data	No Data	8. Damseli	es				7			
				Index	3.56	Count	Estimate	9. Rifle bee					4			
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<u> </u>	<b>rowth habit</b>		i coat	Habitat	integrity	Opt	ma	20. Crayfis			2	1	5			
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					bopfmal)	6	3	25. Clams	-				6			
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Metrics		Value	Points	. ,	(Poor)		1	27. Aquatic								
	al Taxa	12	5		bundant)	> 50	6	28. Leeche					10			
	T Taxa	8	7		ommon)	5 - 50	3	29. Flatwor					7			
	ic Index	2.85	10		(Rare)	< 5	1	Miscella	ineous inver		20	40				
28,282,115	am score		2	Stream	integrity	5000	ptimal			Totals	39	12				
the second second second second second	assessment and use		(L)	Land	luse	(1)	(L)	Additional	comments							
Lar Active con		(l)	(L) M	Unpaved ro		(1)	(L) S	-								
		1	S N	Single-famil		1	M	Culvert upst	ream							
Logging Decreation	(parks etc.)	1	3 	Single-laming Paved road	/	1	S N	Canacaraba	Gall							
Pasturelan	u /	1	S	Bridges	3	1	S S	-								
I as uicidii	N.		<b>.</b>	വധ്യക		•	3			(m.o	fhy.d.craddo	ck@ww.oov	,			
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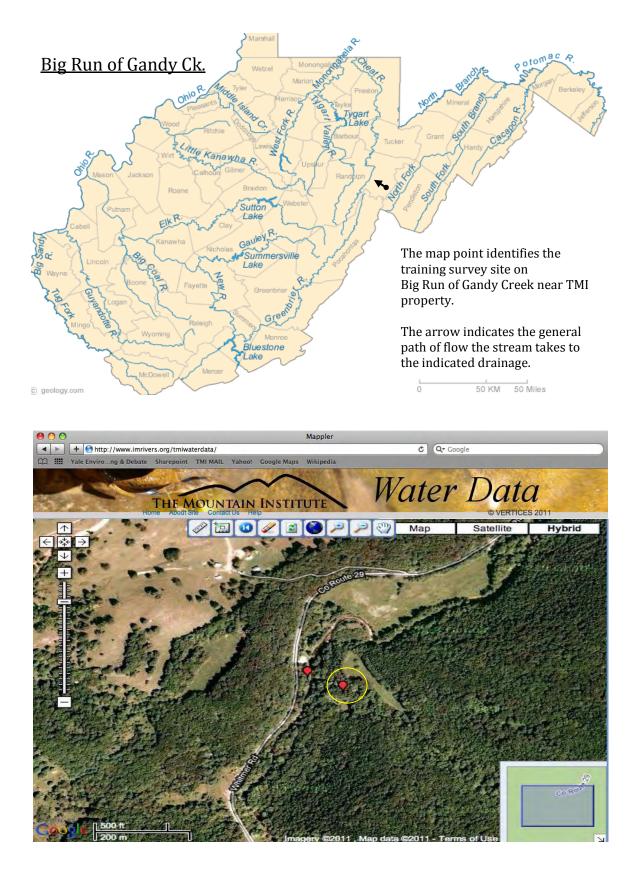
Stream	Sawmill Ru	Sawmill Run g group Frankfort MS, 7 some server from coale downstream from code istry					Basin	South Bran	ch Potomac			
Monitor	ing group	Frankfort M	S, 7th Grade						Latitude	38	38	53
		Image: South Branch Potomac           Frankfort MS, 7th Grade         Latitude         38           Sewmill Run road at Shade Tree lane on down stream side of the road. X point is 300 feet         Longitude         79           downstream from Sawmil Run Road.         RR-miles         Date         13-Oct-10         Start-lin           7.5         Streambed composition         Benthic macroin         Benthic macroin         County           7.5         Satt/Cly         0         0         Common names           9.3         ppm         Sand         8         1 <marylines< td="">         2 Stonefles           288         µ/s/cm         Fine gravel         0         58         3 Case-building caddisflies           10.0         ppm         Coarley gravel         23         115         5 ree-building caddisflies           110.0         ppm         Coble         44         176         4 Net-spinning caddisflies           0.0         JTU         Boulder         23         115         5 ree-building caddisflies           110         Bedrock         2         12         6 Common nespinner           56.0         F         Woody debris         No Data         No Data         7 Dragonflies           116         Discharge</marylines<>		79	33	17						
Dire	Clions	downstream	from Sawmill	Run Road.					County		Pendleton	•
Static	n code				RR-miles		Date	13-0		Start-time	14	:00
Vater che	mistry			Streambed	d compositio	n			Benthic	macroinver	tebrates	
	pH	7.5		S	it/cly	0	0	0	Common name	s	Tota	Taxa
		group     Frankfort MS, 7th G       Sawrrill Run road at downstream from Sc xode     Sawrrill Run road at downstream from Sc       stry     7.5       xygen     9.3       pg     7.5       xygen     9.3       pg     9.3       ivity     288       µs/     1.0       pg     1.0       izate     1.0       itae     1.0       privity     268       µs/     163.0       pg     163.0       ita     No Data       iture     56.0       pprn       ditions       Width (ft)     Depth (ft)       5.3     0.3       Disch       arity     Clear       color     None       dor     None       dor     None       state     Good       abitat comments       axa     11       ixa     7       qex     296       se     (I)	ppm			8	8	1. Mayflies			25	2
	bit     7.5       ad oxygen     9.3       uctivity     288       /mitrate     1.0       almity     163.0       bidity     0.0       zteria     No Data       erature     56.0       :4 ppm     5.3       Onditions       Width (ft)     Depth (ft)       r clarity     Cleaser color       r clor     Nomer odor       ent color     Brow       e color     Brow       bundance     Moder		Fine	gravel	0	50	2. Stonefle	5		19	3	
Nitrite	nitrale 1.0 pp linity 163.0 pp idity 0.0 J1 teria No Data srature 56.0 F 4 pprn molitions Width (ft) Depth (ft) 5.3 0.3 Disc Le clarity Clear	ppm	Coars	e gravel	23	58	3. Case-bu	ilding caddisfli	es	2	1	
Ak	alinity	163.0		Ca	bble	44	176	4. Net-spin	ning caddisflie	s	2	1
Tur	bidity	0.0		Во	ulder	23	115	5. Free-live	ng caddisfly			
Ba	cteria	No Data		Bec	irock	2	12	6. Commor	netspinner			
Temp	erature	4 ppm militions Width (ft) Depth (ft) 5.3 0.3 Discha Lew clanity Clear color None	F	Wood	y debris	No Data	No Data	7. Dragonfl	es		2	1
	initrate 1.0 pp initrate 1.0 pp inity 163.0 pp idity 0.0 JT eria No Data rrature 56.0 I 4 ppm inditions Width (ft) Depth (ft) 5.3 0.3 Discl Clarity Clear color None nt color Brown color Brown		Riffle only a	r entire reach	Riffle		8. Damself	es		1	1	
nospnale =	= 4 ppm	nity 163.0 ppm dity 0.0 JTU ria No Data rature 56.0 F ppm nditions Width (ft) Depth (ft) 5.3 0.3 Discha 3 0.3 Discha 2 Leve dor None odor None odor None odor Brown mdance Moderate with habit Even coat foam None		Index	3.70	<u>Count</u>	Estimate	9. Riffle be	etle			
hysical c	Width (ft)     Depth (ft)       5.3     0.3     Dischar       Level     Level       clarity     Clear       color     None						10. Water p	penny				
	Width (ft)	Depth (ft)						11. Other b	eetles or bugs	;		
Riffle	5.3	0.3	Discharge	0.3	Ца	hitat avaluat	ion	12 Helgra	mmite			
Run			Level	Low	па	Dilal evaluat	ION	13. Alderfly	1			
Wate	5.3     0.3     Dischar       clarity     Clear       r color     None       rodor     None       ent color     Brown	ear	Sedment	t deposition	4		14. Non-bit	ing midge				
Wate	Inditions       Join State         Width (ft)       Depth (ft)         5.3       0.3       Dischau         Image: State State       Level         clanity       Clear       Clear         color       None       not         nt color       Brown       color         color       Brown       color         undance       Moderate       with habit         e foam       None       Ishade	me	Embed	dedness	4		15. Crane f	y				
Wate	erodor	ria No Data rature 56.0 F ppm nditions Width (ft) Depth (ft) 5.3 0.3 Dischar 2 Di	me	Estimate o	n both banks	Left - L	Right - R					
Sedim	Onditions       Width (ft)     Depth (ft)       5.3     0.3     Discha       2     Leve       clarity     Clear       r color     None       nt color     Brown       color     Brown       color     Brown       color     Brown       color     Brown       color     Brown       with habit     Even coat       e foam     None	DWAN	Bank	stability		2						
Alga	color         None           rodor         None           nt color         Brown           color         Brown           undance         Moderate	DVAND	Riparian	buffer width								
	bundance	color         None           odor         None           nt color         Brown           color         Brown           undance         Moderate	erate	Habita	at score	1	9					
<u> </u>		Ever	n coat	Habitat	tintegrity	Mary	ginal				1	1
	ce foarn			Habitat (H	) and Biologi	cal (B) codes	and points					
	el shade		bod		i) and blologic				V			
hysical an	d habitat con	nments					11.7*					
									erculate snails	;		
					• •		_					
letrics						_					1	1
	Taxa						_					
	Taxa						_					
	<b>c Index</b>				(Rare)	< 5	1	Miscella	neous inverte			
	n score	a 7 7 x 2.96 10 ore 22	Stream	integrity	Subo	ptimal			Totals	53	11	
	assessment	Use of the sector of the se					Additional	comments				
	d use	0.0         JTU           No Data         -           56.0         F           ft)         Depth (ft)           0.3         Discharge           Level         Clear           None         None           Brown         Brown           Moderate         None           Level coat         None           Moderate         None           Clear         None           Moderate         None           11         5           7         7           296         10           22         M           (I)         (L)           2         S           2         M           1         W		d use	(I)	(L)						
ecreation	(parks etc.)	163.0         ppm           0.0         JTU           No Data	Single-famil		2	М	1					
		2	M	Paved road	S	1	М					
astureland		-										
astureland ropland ridges	-	-		Unpaved ro	ads	2	М			als 1		

#### 0.725917 38.648056 0.23580556 -79.554722

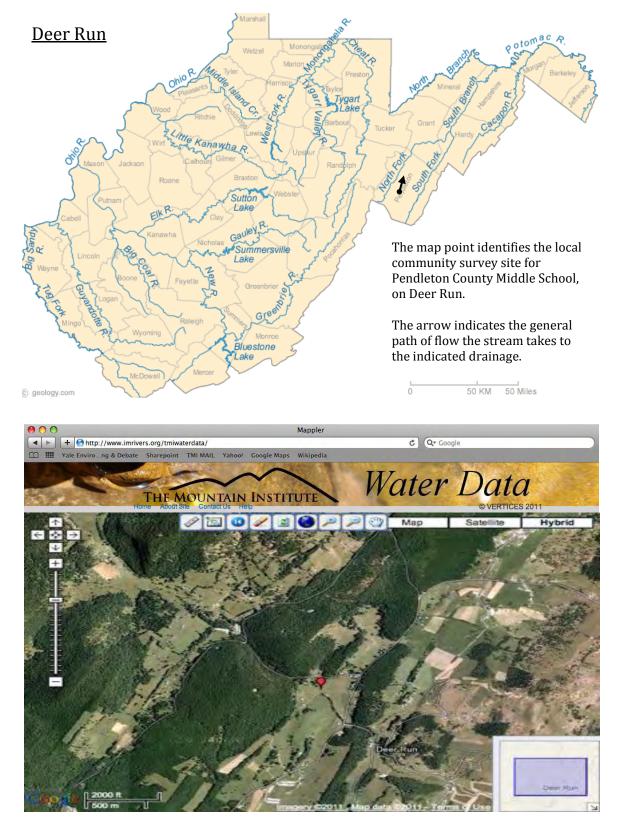
<u>firnofhy.d.craddock@wv.gov</u>



Stream	Narrow Rid	<u>v</u>					Basin	Cheat River					
Monitorii	ng group	Sissonville							Latitude	38	43	12.990	
Direc	tions			strd. 1 and C				ntill crossing	Longitude	-79	37	11.504	
		with Narrow	Ridge Run.	X point is 30 fi	-	from CR 29/			County		Randolph		
Station					RR-miles		Date	Novemb	er 8 2010	Start-time		:00	
Water che	-	-			compositio					macroinver			
	Н	6.3		Sit		4	0		ommon name	es	Total	Taxa	1
Dissolve		4.7	ppm		nd	9	9	1. Maylies			1	1	4
Condu		36	µs/cm		<b>r</b> avel	25	62.5	2. Stonefles			18	4	4
	nirale	0.2	ppm	Coarse	~	47	100		lding caddisf			<b> </b>	+
Alka Turb		40.0	ppm JTU	Cot Bou		47 23	188 115	5. Free-livir	ning caddisfie	5	4	1	+
	aleria.	No Data	310	Bed		23	115	6. Common	<b>U J</b>		4		_
	erature	39.8	F		debris	No Data	No Data	7. Dragoni					_
rempe	eraure	-33.0		Riffe only or		X	NO Dala	8. Damself				├────	
				Index	3.54	Count	Estimate	9. Rifle bee					-
Physical co	onditions			Index		Couni	Lounde	10. Water p					+
i ilysioar oo	Width (ft)	Depth (ft)	•						ee <b>l</b> es or bug	3			-
Rifle	110	0.5	Discharge	1.9				12. Hellgrar	<u> </u>	-			-
Run	No Data	No Data	Level	Normal	Hab	oitat evaluat	ion	13 Alderly					
Water	clarity		ear	Sediment	deposition	6		14. Non-biti	na midae				
	color	No	one	Ernbede		4		15. Crane f	<u>v v</u>		6	1	
Water	r odor	Mu	isky	Estimate on	both banks	Left - L	Right - R	16. Black f	, /				
Sedime	ent color	Bro	own	Banks	stability	2	3	17. Watersi	nipe fy				
Algae	color	Bro	own	Riparian b	uffer width	3	4	18. Other tr	ue fies				
Algae ab		Mod	lerate	Habita	t score	2	2	19. Water n					
<u> </u>	owih habit		n coat	Habitat	integrity	Subo	ptimal	20. Crayfish					
Surfac		_	one	Habitat (H)	and Biologic	al (B) codes	and points		immer/Scud		9	1	
	el shade		bod		and biologic			22. Aquatic					
^{&gt;} hysical and	d habitat con	nments		Codes			ints	23. Opercu					
				(H) - (C		8	4		erculate snai	s		L	_
				(H) - (Su	. ,	6	3	25. Clarns				L	_
				(H) - (M	<u>v</u> /	4	2	26. Mussel				<b></b>	-
Metrics		Value	Points	(H) - (	-	2	1	27. Aquatic				L	_
Total		8	5	(B) - (Al	,	> 50	6	28. Leeche				<b></b>	_
EPT		6	<b>5</b>	<b>(B)</b> - (C)		5 - 50 < 5	3	29. Flatwor					
	Index	3.16		(B) - (		-	-	Miscella	ineous invert			8	_
Stream	n score assessment		20	Stream	Integrity	Subo	ptimal	Additional		Totals	38	8	
Land use a		(1)	(L)	Land		(1)	(L)	Autional	comments				4
Jnpaved roa		(1)	(L) S	Lano	use		(L)	-1					
mpaveu 10i			3					-					
								-					
		1						4					
												ck@wv.gov	+



Stream	Big Run of	Gandy Creek	C C				Basin	Cheat River				
Monitori	ng group	Sherrard M	S 8th Grade					r	Lafitude	38	44	35
Dian		x point is 30	0 feet upstrea	rn from mouth	n of Big Run o	fGandy Cre	ek near the E	Sig Run	Longitude	79	36	5
Direc	cions	trailhead on	Whitmer Roa	d					County		Randolph	•
Station	n code				RR-miles		Date	3-No	w-10	Start-fime	15	:50
Nater che	mistry			Streambed	d compositio	on			Benthic	macroinve	tebrates	
р		8.0		Si	Voly	0	0	C	ommon nam	es	Total	Taxa
Dissolve	doxygen	No Data		Sa	and	0	0	1. Mayfies			72	3
Cond	uctivity	No Data	µs/cm	Fine	gravel	0	25	2. Stonetes	5		35	4
Nitrite	/nitrate	2.0	ppm	Coarse	e gravel	14	35	3. Case-bu	ilding caddist	ies	0	
Alka	alinity	No Data		Co	bble	38	152	4. Net-spin	ning caddisfie	**	123	2
Turt	bidity	20.0	JTU	Bou	ulder	43	215	5. Free-livir	ng caddisfly		60	1
Bac	teria	No Data		Bed	rock	0	0	6. Commo	n netspinner		55	1
Temp	erature	45.0	F	Wood	/ debris	0	0	7. Dragonfi	es		0	
		•		Rille only or	entire reach	x		8. Damself	ies		0	
everal of th	iese measur	ements could	not be									
ecorded du	e to lack of n	ecessary mai	erials and									
ave thus be	een denoted	as No Data.			4.23						0	
hosphate k	evels were 1	ppm										
				Index		<u>Count</u>	Estimate	9. Rifle bee	e			
Physical c	onditions							10. Water p			0	
	Width (ft)	Depth (ft)						11. Oher b	eelles or bug	8	0	
Rifle	No Data	No Data	Discharge	6.4		- :		12. Hellgra	mmile		0	
Run	17.5	0.2	Level	Low	e Har	oitat evaluat	lion	13. Alderly			0	
Water	clarity	CI	ear	Sediment	deposition	6		14. Non-bit	ng midge		0	
Wate	r color	N	one	Ernbed	dedness	6	1	15. Crane f	ly		0	
Wate	rodor	N	one	Estimate or	n both banks	Left - L	Right - R	16. Black f	y v		0	
Sedime	ent color	Br	own	Bank	stability	3	2	17. Waters	nipe <b>f</b> y		0	
Algae	color	Br	own	Riparian I	buffer width	4	3	18. Other tr	ue fies		1	1
Algae ab	undance	Mod	lerate	Habita	t score	1	24	19. Water r	nite		0	
Algae gr	owth habit	Ever	n coat	Habitat	integrity	Subo	plimal	20. Crayfs	n		3	1
Surfac	e foarn	Nk	one					21. Sidesw	immer/Scud		0	
Channe	al shade	Exc	ellent	Habitat (H)	and Biologic	al (B) codes	and points	22. Aquafic	sowbug		0	
^P hysical an	d habitat cor	nments		Codes		Po	ints	23. Opercu			0	
,				(H) - ((	Optimal)	8	4		erculate snai	5	0	
					ubopfimal)	6	3	25. Clarns			0	
					(larginal)	4	2	26. Musse	1		0	
Metrics		Value	Points		(Poor)	2	1	27. Aquatic	-		0	
	Таха	13	7		bundani)	> 50	6	28. Leeche			0	
	Taxa	11	10		Common)	5-50	3	29. Flatwor			0	
	Index	3.59	10		(Rare)	< 5	1		neous invert	ehrates	0	1
	nscore		7		integrity		imal			Totals	349	13
	assessment			Orodini	integrity	- Opi		Additional	commente	Totalo		
	luse	(1)	(L)	Long	duse	(1)	(L)	, tualional	Commentes			
Active const		1	w v	Pastureland		1		Three separ	rate biological	composition :	studies were	conducted
.ogging		1	Ŵ	Unpaved ro	-	1	S	within the re	ach to compile	e this data. B	ecause of tim	e constraints
Dil and gas	wolle	2	M	Single-famil		1	M		he kicknet.coi	npilations we	re able to be	accurately
<u> </u>	(parks etc.)	2	S	Bridges	y nornes	1	M	counted.				
		_ ∠	1 3	LILIUUUUUU			IVI IVI	1				



# Data collected during local sampling / restoration events.

J	Leve	-0	ne	Su	Irv	ev	S	um	mar	V

Stream	Deer Run						Basin	South Branch	Potomac				
		Pendleton Co	unty MS				Dasin	South Dranol	Latitude	38	43	32	6
WORITON	ng group			e vou head ov	er the mountain	n. vou'll turn left	onto Kiser Ga	o Road, It's					
Direc	tions	about 6 miles	on Kiser Gap R						Longitude	79	14	9	
		downstream o	f the culvert.						County		Pendleton		
Statio	n code				RR-miles		Date	10-N	ov-10	Start-time	9:	:30	
Water chem	istry	•		Streambed	composition				Benthi	c macroinver	ebrates		
р	H	7.5		Si	t/cly	No Data	No Data	0	Common name	S	Total	Taxa	TV
Dissolve	d oxygen	11.0	maa	S	and	No Data	No Data	1. Mayflies			23	2	3
Condu	Deer Run g group Pendleton County MS group From PCMS follow 33 E about 6 miles on Kiser C downstream of the culve code tions T 7.5 I 1.5 I			Fine	gravel	No Data		2. Stonefles			55	2	2
	Deer Run  g group Pendleton County MS From PCMS follow 33 E about 6 miles on Kiser downstream of the culve acode  stry 1 7.5 doxygen 11.0 pr ctivity 227 µs/c nitrate 0.5 pr inity 75.0 pr inity 75.0 pr idity 0.0 JTt eria No Data rature 47.0 F Phosphates: 1.5 PPM  ditions  Width (ft) Depth (ft) No Data No Data Lew clarity No Data No Data Lew clarity No Data No Data Lew clarity No Data No Data Color No Data color No Data color No Data undance No Data I shade No Data I shade No Data Serform streambed composition due to  Value Poin Taxa 7 Taxa 7 I Index 3.11 10 score 24 sessment			Coars	e gravel	No Data	No Data	3. Case-build	ling caddisflies	;	10	1	3
	Deer Run         ng group       Pendleton County MS         From PCMS follow 33         about 6 miles on Kiser         downstream of the cub         istry         H       7.5         d oxygen       11.0         puctivity       22.7         juctivity       22.7         puctivity       0.0         printrate       0.5         pendity       0.0         scature       47.0         Phosphates:       1.5 PPM         rotions       No Data         Voldth (ft)       Depth (ft)         No Data       No Data         rodor       No Data         ocolor       No Data         ocolor       No Data         undance       No Data         with habit       No Data         wold habitat comments				bble	No Data	No Data		ng caddisflies		1	1	4
	Deer Run       ng group     Pendleton County M       From PCMS follow 33     about 6 miles on Kise       downstream of the cu     istry       H     7.5       d oxygen     11.0       p uctivity     227       µs     µs       initrate     0.5       prinitrate     0.5       grature     47.0       arature     47.0       Phosphates:     1.5 PPM       nditions     Vidth (ft)       Width (ft)     Depth (ft)       No Data     No Data       r color     No Data       r color     No Data       color     No Data       ocolor     No Data       ocolor     No Data       ocolor     No Data       perform streambed composition due       Taxa     7       Index     3.11				ulder	No Data	No Data	5. Free-living					3
	Deer Run       Pendleton County M         ng group       From PCMS foliow 33         about 6 miles on Kiser       downstream of the cut         n code       istry         H       7.5         d oxygen       11.0         protectivity       227         µsi/       µsi/         d oxygen       11.0         puctivity       227         µsi/       µsi/         /nitrate       0.5         protectivity       227         µsi/       µsi/         /nitrate       0.5         protity       0.0         Jateria       No Data         erature       47.0         retria       No Data         Disct       No Data         No Data       No Data         r color       No Data         r color       No Data         ocolor       No Data         perform streambed composition due         I		0.0		drock	No Data	No Data	6. Common			15	1	5
	Deer Run         ng group       Pendleton County M         From PCMS foliow 33         about 6 miles on Kiser         downstream of the cut         n code         istry         H       7.5         d oxygen       11.0         proteivity       227         µstry         H       7.5         d oxygen       11.0         proteivity       227         µstry         /intrate       0.5         proteivity       227         µstry       0.0         Jatta       90         proteivity       227         µstry       75.0         proteivity       0.0         Jatta       No Data         erature       47.0         From Potes       1.5 PPM         nditions       No Data         Width (ft)       Depth (ft)         No Data       No Data         r color       No Data         r color       No Data         ocolor       No Data         ocolor       No Data         ocolor       No Data         ocolor       No Data		F		v debris	No Data	No Data	7. Dragonflie			2	2	4
I	Deer Run         ng group       Pendleton County MS         From PCMS follow 33         about 6 miles on Kiser         downstream of the cub         istry         H       7.5         d oxygen       11.0         puctivity       22.7         juctivity       22.7         puctivity       0.0         printrate       0.5         pendity       0.0         scature       47.0         Phosphates:       1.5 PPM         rotions       No Data         Voldth (ft)       Depth (ft)         No Data       No Data         rodor       No Data         ocolor       No Data         ocolor       No Data         undance       No Data         with habit       No Data         wold habitat comments				r entire reach	No Data	No Data	8. Damselflie			4	1	7
ron: 0.5 PPM;	Deer Run       ng group     Pendleton County MS       from PCMS follow 33     about 6 miles on Kiser       downstream of the culv     about 6 miles on Kiser       downstream of the culv     about 6 miles on Kiser       downstream of the culv     about 6 miles on Kiser       downstream of the culv     about 6 miles on Kiser       downstream of the culv     about 6 miles on Kiser       downstream of the culv     about 6 miles on Kiser       downstream of the culv     istry       H     7.5       doxygen     11.0       puctivity     227       uctivity     227       printrate     0.5       puctivity     227       printrate     0.5       printrate     0.5       printrate     0.5       printrate     0.0       grature     47.0       Phosphates:     1.5 PPM       rotions     No Data       Volth (ft)     Depth (ft)       No Data     No Data       rodor     No Data       color     No Data       odor     No Data       odor     No Data       odor     No Data       odor     No Data       undance     No Data       with habit     No Data			Index	No Data	Count	Estimate	9. Riffle beet					4
Physical co	ng group Pendleton County M From PCMS follow 33 about 6 miles on Kissel downstream of the cul n code istry H 7.5 d oxygen 11.0 pr uctivity 227 µs /nitrate 0.5 pr linity 75.0 pr linity 75.0 pr linity 0.0 J teria No Data erature 47.0 ff ; Phosphates: 1.5 PPM nditions Width (ft) Depth (ft) No Data No Data Le clarity No Data r odor No Data ent color No Data et color No Data et color No Data et color No Data et color No Data bundance No Data bundance No Data bundance No Data bundance No Data bundance No Data et com No Data bundance No Data			maex	NO Data	ooun	Loundo	10. Water pe			11	1	3
nysioar oor	Ing group     Pendleton County M       From PCMS rollow 33 about 6 miles on Kise downstream of the cu       on code       nistry       pH       7.5       ed oxygen       11.0       pH       7.5       ed oxygen       11.0       pH       7.5       ed oxygen       11.0       puctivity       22.7       µs       e/nitrate       0.5       plainity       75.0       pilainity       0.0       J       cteria       No Data       berature       47.0       At, Phosphates:       15 PPM       onditions       width (ft)       Depth (ft)       No Data       No Data       No Data       No Data       No Data       er color       No Data       et color       No Data       ie color <t< td=""><td></td><td></td><td></td><td></td><td></td><td>11. Other be</td><td></td><td></td><td></td><td></td><td>8</td></t<>							11. Other be					8
Riffle	ing group Pendleton County N From PCMS Follow 33 about 6 miles on Kisse downstream of the cu on code nistry oH 7.5 ad oxygen 11.0 p luctivity 227 µs p/nitrate 0.5 p luctivity 0.0 J cteria No Data verature 47.0 t, Phosphates: 1.5 PPM onditions Width (ft) Depth (ft) No Data No Data Disc No Data No Data Lee r clanty No Data Lee r clor No Data er odor No Data er odor No Data er odor No Data et color No Data et color No Data et color No Data et color No Data bundance No Data et color No Data thabitat comments t perform streambed composition due Value Po 1 Taxa 7 c index 3.11 m score 24 ssessment		Discharge					12. Hellaram	V				3
Run					- Ha	abitat evaluat	ion	13. Alderfly	mito				6
	From PCMS follow 33 about 6 miles on Kiser downstream of the cub         n code         istry         bH       7.5         ad oxygen       11.0         pH       7.5         ad oxygen       11.0         pH       7.5         ad oxygen       11.0         pH       7.5         ad oxygen       11.0         puctivity       22.7         puctivity       22.7         painity       75.0         ppi       ong         atinity       75.0         printite       0.0         erature       47.0         erature       47.0         strict       Phosphates: 1.5 PPM         inditions       No Data         width (ft)       Depth (ft)         No Data       No Data         er odor       No Data         er odor       No Data         e color       No Data         bundance       No Data         e color       No Data         bundance       No Data         bundance       No Data         perform streambed composition due to         i Taxa       7		Sodimont	deposition	No Data	1	14. Non-bitin	a midao		1	1	8	
					dedness		1	15. Crane fly	<u>v v</u>		4	1	0 4
						No Data	Dialet D	,	·		4	1	
					n both banks	Left - L	Right - R	16. Black fly 17. Watersni	0				6
	g group Pendleton County MS From PCMS follow 33 E about 6 miles on Kiser C downstream of the culve code stry 1 7.5 oxygen 11.0 ppm tivity 227 µs/cr iitrate 0.5 ppm nity 75.0 ppm nity 75.0 ppm dity 0.0 JTU eria No Data rature 47.0 F Phosphates: 1.5 PPM ditions Width (ft) Depth (ft) No Data No Data Discha No Data No Data Leve Slarity No Data Color No Data No Data No Data Leve Slarity No Data color No Data color No Data door No Data it color No Data it color No Data shade No Data				stability	No Data	No Data						3
•					ouffer width	No Data	No Data	18. Other tru					6
					at score		0	19. Water mi	te				6
<u> </u>		1		Habitat	integrity	Po	oor	20. Crayfish	10				5
				Habitat (	H) and Biologi	cal (B) codes a	and points	21. Sideswin					5
			Data		.,	. ,		22. Aquatic s					7
hysical and	istry     7.5       bH     7.5       bd oxygen     11.0       privity     227       psi/       viritrate     0.5       privity     75.0       ppi       atinity     75.0       privitify     0.0       erature     47.0       erature     47.0       erature     47.0       f     Phosphates:       1.5 PPM       nditions       Width (ft)     Depth (ft)       No Data     No Data       r clarity     No Data       r color     No Data       er odor     No Data       en color     No Data       e color     No Data       e color     No Data       bundance     No Data       bundance     No Data       bundance     No Data       bundance     No Data       perform streambed composition due to       I Taxa     15       r Taxa     7       r Taxa     7       stades     3.11		Codes			ints	23. Opercula					4	
Group did not	No Data           verature         47.0           verature         47.0           Phosphates: 1.5 PPM           onditions           Width (ft)         Depth (ft)           No Data         No Data           No Data         No Data           No Data         No Data           Image: Color         No Data           er odor         No Data           e olor         No Data           bundance         No Data           e olor         No Data           l habitat comments         It perform streambed composition due to           I Taxa         15         7           Taxa         7	ion due to cold		Optimal)	8	4	24. Non-oper	rculate snails				7	
veather.	ent color No Data e color No Data bundance No Data bwth habit No Data e foam No Data el shade No Data	200 10 0010		uboptimal)	6	3	25. Clams					6	
	Width (ft)       Depth (ft)         No Data       No Data       Discha         No Data       No Data       Leve         clarity       No Data       Leve         color       No Data       Leve         color       No Data       Leve         color       No Data       No Data         undance       No Data       No Data         wth habit       No Data       No Data         se foam       No Data       No Data         habitat comments       No Data       No Data         perform streambed composition due to       Value       Point         Taxa       15       7         Index       3.11       10       is score         sessment       24       sessment       Score			/larginal)	4	2	26. Mussel					4	
Metrics	No Data         No Data         Leve           color         No Data         color         No Data           undance         No Data         no Data         laba           e foam         No Data         No Data         laba           e foam         No Data         no Data         laba           l shade         No Data         nabitat comments         perform streambed composition due to           Taxa         15         7         T           Index         3.11         10         score         24	Points		(Poor)	2	1	27. Aquatic v	vorm		1	1	10	
	wth habit     No Data       e foam     No Data       il shade     No Data       il shade     No Data       habitat comments     perform streambed composition due to       Value     Poir       Taxa     15       7     7       Index     3.11     10	7		bundant)	> 50	6	28. Leeches					10	
		7			Common)	5 - 50	3	29. Flatworm			1	1	7
Biotic	Index	3.11	10	( <b>B</b> ) -	(Rare)	< 5	1	Miscellan	eous invertebr	ates			
Stream	1 score	axa 15 7 ixa 7 7 dex 3.11 10	24	Stream	integrity	Subo	ptimal			Totals	128	15	
Land use as	sessment	ade No Data at comments rm streambed composition due to o Value Points a 15 7 a 7 7 x 3.11 10 ore 24 sment						Additional co	omments				
Land	l use	nce No Data nabit No Data m No Data de No Data at comments rm streambed composition due to of Value Points 15 7 7 7 6 3.11 10 re 24 ment		Lan	d use	(I)	(L)						
lo Data		ty     227     µs/cm       ite     0.5     ppm       0.0     JTU       No Data     re       re     47.0     F       sphates:     1.5 PPM       ons       idth (ft)     Depth (ft)       o Data     No Data       or     No Data       ance     No Data       ata     No Data       orm streambed composition due to com		No Data				]					
						1		Beavers upstr	eam. 5 Salama	anders were fo	und in bio colle	ection as well.	
						1		1 .					
		7.5       gen     11.0     ppm       y     227     µs/cm       e     0.5     ppm       75.0     ppm       0.0     JTU       No Data     e       e     47.0     F       sphates: 1.5 PPM       ons       dth (ft)     Depth (ft)       o Data     No Data       b Data     No Data       v     No Data       c     No Data       r     No Data       nce     No Data       nce     No Data       nce     No Data       n     No Data       n <td>1</td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td>-</td>		1		1	1	1					-

0.7256389 38.725639 0.23575 -79.235750

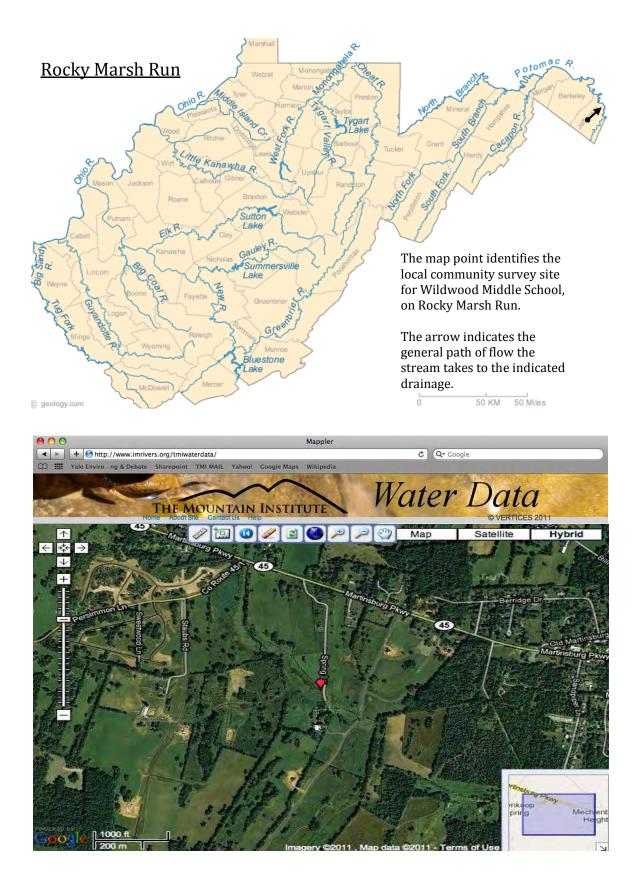
Stream	Deer Run						Basin	South Branch	Potomac				
Monitori	ng group	Pendleton Co	unty M S						Latitude	38	43	33	
		From PCMS for	ollow 33 E befo		ver the mountai				Longitude	79	14	9	
Direc	ctions		on Kiser Gap F of the culvert.	Road until you t	urn right onto S	Steele Gap Roa	ad. X point is 3	00 feet	County		Pendleton	•	
Station	n code				RR-miles		Date	15-0	ct-10	Start-time	g	:00	
Water chemi	istry	•		Streambed of	composition				Benthi	c macroinvert	ebrates		
pl	Н	7.0		Sil	t/cly	No Data	No Data	C	ommon name	S	Total	Taxa	T٧
Dissolved	doxygen	10.0	ppm	Sa	and	No Data	No Data	1. Mayflies			8	2	3
Condu	uctivity	255	µs/cm	Fine	gravel	No Data	No Data	2. Stonefles			12	3	2
Nitrite/	/nitrate	1.0	ppm	Coarse	e gravel	No Data	NOData	3. Case-build	ing caddisflies		9	1	3
Alka	alinity	245.0	ppm	Co	bble	No Data	No Data	4. Net-spinnir	ig caddisflies				4
Turb	oidity	20.0	JTU	Bou	ulder	No Data	No Data	5. Free-living	caddisfly				3
Bac	teria	No Data		Bed	Irock	No Data	No Data	6. Common r	netspinner				5
Tempe	erature	49.5	F	Woody	/ debris	No Data	No Data	7. Dragonflies	3				4
Iron: 0.5 ppm	Phoenhate - 1	2 000		Rifle only or	entire reach	No Data	No Data	8. Damselflies	3				7
iron. 0.5 pph		- Phili		Index	No Data	<u>Count</u>	Estimate	9. Riffle beetle					4
Physical con	nditions							10. Water per	nny				3
	Width (ft)	Depth (ft)						11. Other bee	ettes or bugs				8
Riffe			Discharge	3.4	U.,	bitat evaluat	ion	12. Hellgramı	nite				3
Run	8.0	0.4	Level	Normal	na			13. Alderfly					6
Water	clarity	CI	ear	Sediment	deposition	4		14. Non-biting	ı midge				8
Water	r color	No	one	Embed	dedness	4		15. Crane fly					4
Water	rodor	No	one	Estimate or	i both banks	Left - L	Right - R	16. Black fly					6
Sedime	ent color	No	one	Bank	s tability	2	2	17. Watersnip	oe fly				3
Algae	color	Bn	own	Riparian I	ouffer width	1	1	18. Other true	flies				6
Algae ab	oundance	Mod	lerate	Habita	it score		14	19. Water mit	e				6
Algae gro	owth habit	Even	Coating	Habitat	integrity	Ma	rginal	20. Crayfish					5
Surface	e foam	si	ight	Habitat (	H) and Biologic	al (B) codes a	and noints	21. Sideswim	mer/Scud				5
Channe	el shade	p	oor					22. Aquatic se	owbug				7
Physical and h	habitat comme	ents		Codes		Po	ints	23. Operculat	le snails				4
Cattle fenced fr	rom Riparian a	rea 2 years ag	o. Recent	(H) - ((	Optimal)	8	4	24. Non-oper	culate snails				7
		ed area presen	it There is a	(H) - (Su	uboptim al)	6	3	25. Clams					6
bridge at the to	op of the reach			(H) - (N	1 arginal)	4	2	26. Mussel					4
Metrics		Value	Points	(H) -	(Poor)	2	1	27. Aquatic w	orm				10
Total	Taxa	6	3	( <b>B</b> ) - (A	bundant)	> 50	6	28. Leeches					10
EPT	Taxa	6	5	( <b>B</b> ) - (C	ommon)	5 - 50	3	29. Flatworm:	5				7
Biotic	Index	2.59	10	( <b>B</b> ) -	(Rare)	< 5	1	Miscellane	eous invertebra	ates			
Stream	n score	1	18	Stream	integrity	Ma	rginal			Totals	29	6	
Land use as		-						Additional co	omments				
Land	l use	(1)	(L)	Land	d use	(1)	(L)						
Active Constru	uction	2	М	Paved roads		2	S	1					
Pastureland		3	S	Bridges		3	S	Streambed cor	mposition was r	ot done due to	Cold Weather		
Unpaved road		2	S					1					
	residences	3	S	1			1	1					

#### 0.7259167 38.725917 0.235805556 -79.235806

Stream	Deer Run						Basin	South Branch	Potomac				
	ng group	Pendleton Co	unty MS						Lattude	38	43	35	
				ore you head o	ver the mountai	n, you'll turn le	ft onto Kiser G	ap Road. It's	Longitude	79	14	13	
Direc	ctions	about 6 miles dow nstream		Road until you t	urn right onto S	iteele Gap Roa	id. X point is 3	00 feet	County	. •	Pendleton		
Station	n code				RR-miles		Date	28-0	ct-10	Start-time	9	:00	
Water chem	istry			Streambed	composition				Benthi	c macroin vert	ebrates		
D	H -	7.3	· · · · ·	Sil	/cly	No Data	No Data	С	ommon name	s	Total	Таха	T
Dissolve	d ox ygen	9.7	ppm		and	No Data	No Data	1. Mayfies			22	2	3
	uctivity	24	us/cm		gravel	No Data	•	2. Stonefles			24	1	2
Nitrite/	/nitrate	1.7	ppm		e gravel	No Data	No Data	3. Case-build	ing caddisfies		2	2	3
	alinity	101.7	ppm		bble	No Data	No Data	4. Net-spinnin			30	2	4
Turk	,	0.0	JTU		ulder	No Data	No Data	5. Free-living	0			-	3
	teria	No Data			Irock	No Data	No Data	6. Common r			2	1	5
	erature	54.5	F		y debris	No Data	No Data	7. Dragonflies			2	1	4
			· · ·		r entire reach	No Data	No Data	8. Damselfies			38	2	7
ron: 0.6 ppm,	Phosphate =	1 ppm		Index	No Data	Count	Estimate	9. Rifle beete			1	1	4
Physical cor	nditions							10. Water per			•		3
.,	Width (ft)	Depth (ft)						11. Other bee	,		6	2	8
Rifle			Discharge	1.2				12. Hellgram			9	1	3
Run	3.0	0.2	Level	normal	e Ha	bitat evaluati	on	13. Alderfy	1110				6
	clarity		ear		deposition	2		14. Non-biting	midae		1	1	8
	r color		one		dedness	2		15. Crane fly	Thugo		2	2	4
	rodor		one		i both banks	Left-L	Right - R	16. Black fly			-	2	6
	ent color		one		stability	1	1	17. Watersnip	ne fly				3
	e color		own		buffer width	1	1	18. Other true					6
0	oundance		avy		t score		8	19. Water mit					6
-	owth habit		ing, Floating		integrity		or	20. Cravfish					5
0 0	e foam		one		0,			21. Sideswim	mer/Scud				5
	el shade		oor	Habitat (	H) and Biologic	al (B) codes a	ind points	22. Aquatic se					7
	habitat comm			Codes		Po	ints	23. Operculat	•				4
		rea 2 years ago	However		Optimal)	8	4	24. Non-oper					7
		eached by cattle			uboptimal)	6	3	25. Clams					6
	op of the reach	· · · · ·	5. Thore is a	L	larginal)	4	2	26. Mussel					4
Metrics		Value	Points		(Poor)	2	1	27. Aquatic w	orm				1
	Таха	18	7		bundant)	> 50	6	28. Leeches	or fit				10
	Taxa	8	7	× / ×	ommon)	5 - 50	3	29. Flatworms	e				7
	Index	4,45	7		(Rare)	5 - 50 < 5	3 1		s eous invertebra	toe			- '
	n score		21		integrity		ptimal	wholeidite		Totals	139	18	-
Land use as			. 1	Steam	Integrity	3000	pundi	Additional co	ommonte	TUTAIS	155	10	-
	d use	(1)	(L)	lan	duse	(1)	(L)	Autonarco	omments				
Canc		2	(L) M	Paved roads	u u 30	2	(L) S	-					
astureland	uoion	3	S	Bridges		3	S	Groups did no	t do streambed	composition du	e to cold weat	her. Groups	
Jnpaved road	10	2	S S	Bridges		J	3	performed biol	ogy test. cheme	stry test and tre	ee planting.		-
Single-family r		3	S					-					-
angle-lamily i	Conces	3	3								imothy.d.crad		_

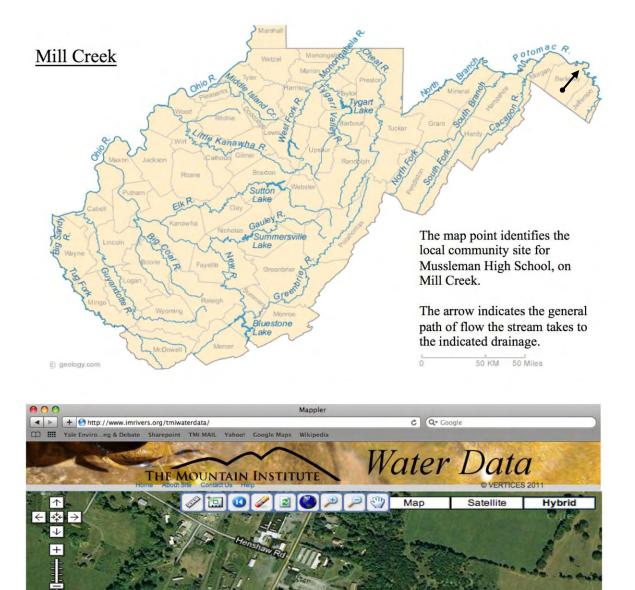
Level-One Survey Summary

#### 0.7263333 38.726333 0.236833333 -79.236833



Stream	Rockymarsh	Run					Basin	Potomac Ma	in Stem				
Monitorin		Wildwood M	S					-	Latitude	39	26	13	
		45W turn left o	onto Marsh Haw	k Way, cross o	over the bridge	and take first rig	ght onto drivew	ay. Follow	Longitude	77	50	43	
Direct	IONS	driveway to th	ne stream. X po	oint is upstream	of driveway.				County		Jefferson		
Station	code				RR-miles		Date	3-N	ov-10	Start-time	9:	30	
Nater chemis	stry			Streambed	composition				Benthio	macroinver	tebrates		
p⊢	1	7.5		Si	t/cly	No data	No Data	(	Common names	3	Total	Taxa	τv
Dissolved	oxygen	10.0	ppm	S	and	No data	No Data	1. Mayflies					3
Condu	ctivity	54	µs/cm	Fine	gravel	No data	Ne Dete	2. Stonefles					2
Nitrite/r	nitrate	No data		Coars	e gravel	No data	No Data	3. Case-buik	ding caddisflies				3
Alkali	inity	No data		Co	bble	No data	No Data	4. Net-spinni	ng caddisflies				4
Turbi	dity	No data		Bo	ulder	No data	No Data	5. Free-living	caddisfly				3
Bacte	eria	No data		Bec	drock	No data	No Data	6. Common	netspinner		1	1	5
Temper	rature	50.8	F	Wood	y debris	No data	No Data	7. Dragonflie	s				4
		usive. Somethin	ig was causing			No data	No Data	<u> </u>					
	to have a yel	low color instea	ad of a pink		r entire reach			8. Damselflie	-			L	7
olor.				Index	No data	<u>Count</u>	Estimate	9. Riffe beet	-		1	1	4
Physical con								10. Water pe	-				3
	Width (ft)							11. Other be	0				8
Riffle	2.3		Discharge	0.3	Ha	abitat evaluati	ion	12. Hellgram	mite				3
Run	No Data		Level	normal				13. Alderfly					6
Water					t deposition	No data	-	14. Non-bitin	<u> </u>				8
					Idedness	No data		15. Crane fly					4
					n both banks	Left - L	Right - R	16. Black fly					6
Sedimer	nt color	No	data	Bank	stability	No data	No Data	17. Watersni					3
<u> </u>					buffer width	No data	No Data	18. Other tru					6
					at score		data	19. Water m	ite				6
				Habitat	tintegrity	Opt	timal	20. Crayfish					5
		No	data	Habitat (	H) and Biologic	al (B) codes a	and points	21. Sideswin			3	1	5
Channel	shade	No	data		Thy and Biologic			22. Aquatic s	V		50	1	7
				Codes			ints	23. Opercula					4
					Optimal)	8	4	24. Non-ope	rculate snails			L	7
leavers upstre	Water color Water color Sediment color Algae color Igae abundance Igae growth habit Surface foam Channel shade				uboptimal)	6	3	25. Clams					6
			1		/l arginal)	4	2	26. Mussel					4
Metrics		Value	Points	(H) -	(Poor)	2	1	27. Aquatic v	vorm				10
		4	3		(bundant)	> 50	6	28. Leeches					10
	Value	3		Common)	5 - 50	3	29. Flatworm					7	
Biotic I	ndex		3	<b>(B)</b> -	(Rare)	< 5	1	Miscellar	ieous invertebra	tes			
Stream	score		9	Stream	n integrity	P	oor			Totals	55	4	
_and use ass	essment	de No data Value Poir 4 3 5 1 3 6.80 3 re 9 ment (1) (L) 3 S 3 S						Additional of	omments				
Land	use		(L)	Lan	duse	(I)	(L)						
astureland		3	S	Paved roads		2	S	Cold day. No.	physical test or p	obblo count	Doolay march o	intore Dotcom	
Jnpaved roads	3	3	S	Bridges		2	S	iust below Pot		Jennie count.	rtocky marsh e	mers Potoam	
Single-family re	esidences	2	S						unat Dan 4.				
Suburban deve		n 10.0 ppm 54 µs/cm No data No data No data 50.8 F conclusive. Something was caus a yellow color instead of a pink in (fi) Depth (fi) 3 0.2 Dischan No data No data S S S S S S S S	S					1					

#### 0.43688889 39.436889 0.845138889 -77.845139



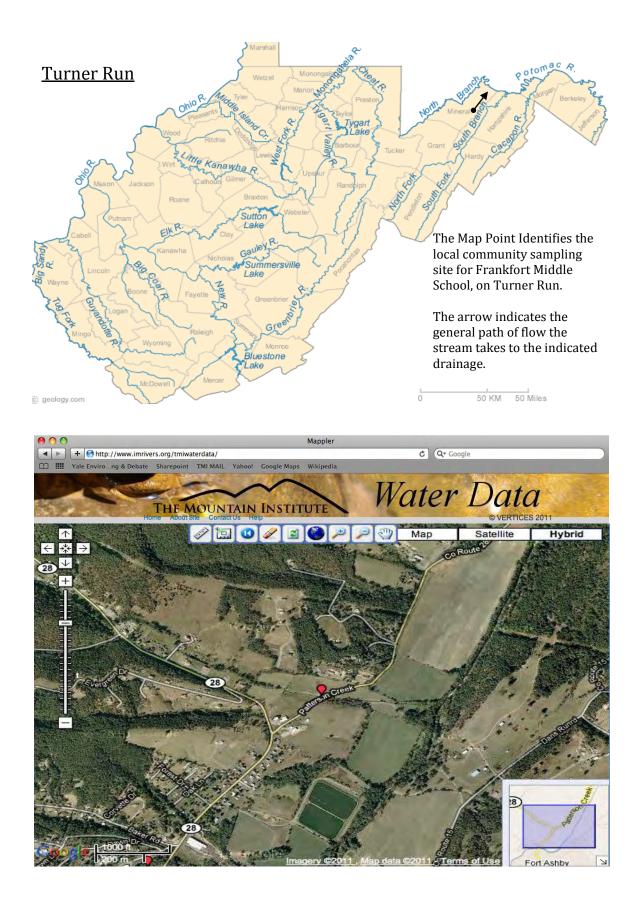
11

Bunker Hill

Rt 26

Cha and	MillOneal					Desia	Dataman Di-	-+ Duning				
	Mill Creek	Maralana	10			Basin	Potomac Dire	· · · · · · · · · · · · · · · · · · ·				- 6
Monitorir	ng group	Mussleman I		Alista Marana Davk inst hafas		and Verinti	- 200 64	Latitude	39	20	5	
Direc	tions	1 1	om brindge ov	eft into Morgan Park just before	e crossing Mill C	reek. X point is	300 feet	Longitude	78	3	-	_
Station	aada	downstream i	ombrindgeov	RR-miles	1	Date	4.11	County ov-10	Start-time	Berkeley Count	15y :00	-
Vater chemi				Streambed composition		Date	4-IN(		c macroinver		.00	_
vvaler chemi		7.5		Sit/cly	No Data	No Data		Common name		Total	Таха	TV
Dissolved		10.0	ppm	Sand	No Data	No Data	1. Mayflies	ommon name	• •	8	2	3
Condu		52	µs/cm	Fine gravel	No Data	NODala	2. Stonefles			1	1	2
Nitrite/	,	1.5	ppm	Coarse gravel	No Data	No Data		3. Case-building caddisflies				3
Alka		392.5	ppm	Cobble	No Data	No Data	4. Net-spinning caddisflies			5	2	4
Turbidity		10.0	JTU	Boulder	No Data	No Data	5. Free-living caddisfly				-	3
Bacteria		No Data	010	Bedrock	No Data	No Data	6. Common netspinner			11	1	5
Temperature		45.4	F	Woody debris	No Data	No Data	7. Dragonflies					4
				Riffle only or entire reach	No Data	No Data	8. Dam selflie					7
ron: 0.5 PPM,	Phosphate =	4 ppm		Index No Data	Count	Estimate	9. Riffle beetle			1		4
Physical con	ditions						10. Water pe	nny		1		3
Width (ft) Depth (ft)						11. Other bee	ettes or bugs		2	1	8	
Riffle	No Data	No Data	Discharge	NoData			12. Hellgram	mite				3
Run	No Data	No Data	Level	NoData	abitat evaluat	ion	13. Alderfly					6
Water	Water clarity Other: Foggy		Sediment deposition	8		14. Non-biting	g midge				8	
Water color Gray/		/White	Embeddedness	6	1	15. Crane fly			1	1	4	
Water odor		Musky,	Sewage	Estimate on both banks	Left - L	Right - R	16. Black fly					6
Sedime	ent color	Gr	een	Bank stability	3	3	17. Watersnipe fly					3
Algae	color		en, Brown	Riparian buffer width	2	1	18. Other true	e flies				6
Algae ab		Scattered, Moderate		Habitat score	2	3	19. Water mi	te				6
Algae gro	owth habit	Even Coating, Matted		Habitat integrity Sub		ptimal	20. Crayfish			2	1	5
Surface			one	Habitat (H) and Biologi	ind points	21. Sideswim					5	
Channe			bod	() 0		22. Aquatic sowbug			55	1	7	
hysical and h	habitatcomme	ents		Codes		ints	23. Opercula					4
Collected on a	day with verv	cold air temp. T	Foo cold to do	( <b>H</b> ) - (Optimal)	8	4	24. Non-operculate snails				7	
ebble count.				(H) - (Suboptimal)	6	3	25. Clams				6	
				(H) - (Marginal)	4	2	26. Mussel					4
Metrics	_	Value	Points	(H) - (Poor)	2	1	27. Aquatic w	/orm				10
Total		10	5	(B) - (Abundant)	> 50	6	28. Leeches			<u> </u>		10
EPT		6	5	(B) - (Common)	5 - 50	3	29. Flatworm	-		+		7
Biotic Stream		6.07	3	(B) - (Rare)	< 5		IVIIscellan	eous invertebra	tes Totals	s 85	10	_
Stream		1	13 Stream integrity			ginal	Additional c	ommont-	iotals	; <b>60</b>	10	-
Land use as: Land		(1)	(1)	Land use	(1)	(1)	Additional C	omments				-
Land		(l)	(L) M	Bridges	(l)	(L) S	-					
aved Roads		3	S	Unpaved roads	3	M	-					
Recreation		1	M	Trash dumps	2	M	-					_
Pastureland		2	M	Single-family residences	3	S	1					
	velopments	3	S	Parking lots	2	S				<u> </u>	dock@wv.go	_

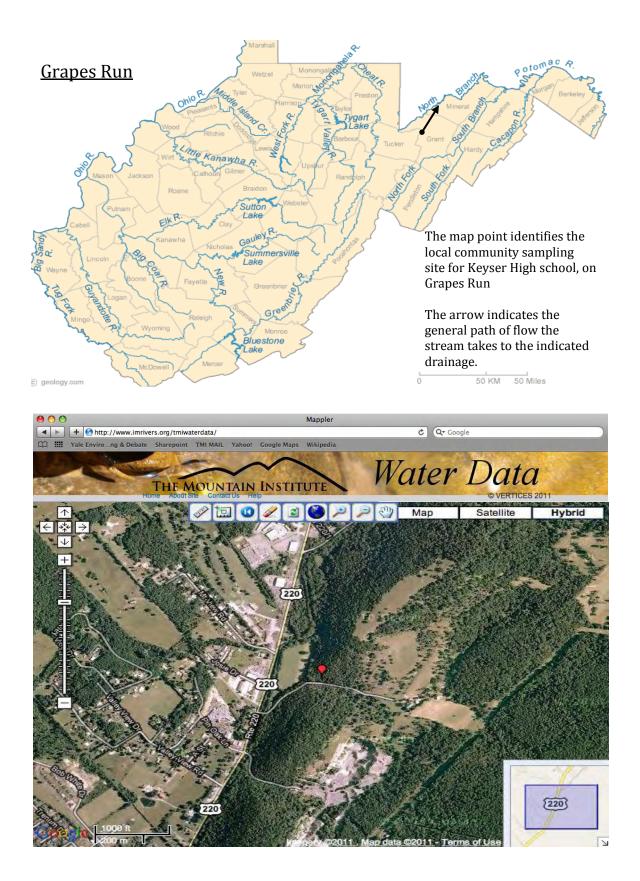
0.3347222 39.334722 0.05175 -78.05175



Stream	Turner Run						Basin	North Branch	Potomac						
	ing group	FrankfortMS	6th and 8th gra	ade					Latitude	39	31	4	W	0.517861111	3
		From Middle School. Left on 28 S. travel 3.5 miles and turn left on to Patter						Go .2 miles	Longitude	78	45	45		0.762472222	-7
Dire	ctions	and the stream	n travels under	first bridge. X p	tbridge. X point is on upstream side of bridge.				County		Mineral				
Statio	n code				RR-miles		Date	5-N	ov-10	Start-time	8:20				
Water chemistry			Streambed composition					Benthi	c macroinverte	ebrates					
	ЪН	8.0		Silt		No data	No Data		Common name	s	Total	Таха	TV		
	ed oxygen	No data	ppm	Sa		No data	No Data	1. Mayfies			1	1	3		
	luctivity	476	µs/cm	Fine		No data	No Data	2. Stonefles					2		
	/nitrate	2.7	ppm		gravel	No data			ling caddisflies				3		
	alinity	110.0	ppm	Col		No data	No Data		ng caddisflies		4	1	4		
	bidity	20.0	JTU	Bou		No data	No Data	5. Free-living			0	4	3		
	cteria	No data 48.2	F	Bed		No data	No Data	6. Common			2	1	5		
	erature	48.2 d seems there w		Woody Diffe only on		No data No data	No Data No Data	7. Dragonflie 8. Damselflie			3	1	4		
	iot accurate and the chemicals.	u seems inere w	ras some	Index	entire reach No data	Count	Estimate	9. Riffle beet			1	1	4		
Physical conditions				index	NU Udid		LSundle	10. Water pe			15	1	3		
Width (ft) Depth (ft)								11. Other be			10	1	8		
Riffle	No Data	No Data	Discharge	1.5			•	12. Hellgram	0		2	1	3		
Run	10.5	0.2	Level	Normal	H	abitat evaluat	ion	13. Alderfly		L	•	6			
	r clarity		ear	Sediment	deposition	6		14. Non-bitin	a midae		14	1	8		
	r color		one	Embedo	-	5	—	15. Crane fly					4		
	Water odor None			Estim ate on		Left - L	Right - R	16. Black fly					6		
Sedim	entcolor	No	one	Bank s	ability	2	1	17. Watersni	pe fly				3		
Algae	e color	Br	own	Riparian b	uffer width	1	1	18. Other tru	e flies				6		
Algae at	bundance	Mod	lerate	Habitat score		1	16	19. Water m	te				6		
Algae gr	rowth habit	Even	Coating	Habitat integrity		Marginal		20. Crayfish					5		
Surfac	ce foam	No	one	Habitat (H) and Biological (B) codes a			and points	21. Sideswin	nmer/Scud				5		
Channe	el shade	P	oor					22. Aquatic sowbug					7		
^o hysical and	habitatcomme	ents		Codes		Points		23. Operculate snails					4		
				(H) - (C		8	4	24. Non-ope	rculate snails				7		
				(H) - (Su		6	3	25. Clams					6		
				(H) - (N	- ·	4	2	26. Mussel					4		
Metrics		Value	Points	(H) - (	,	2	1	27. Aquatic v	vorm		3	1	10		
	I Taxa	10	5	(B) - (Al	,	> 50	6	28. Leeches					10		
	Таха	3	3	( <b>B</b> ) - (Co		5 - 50	3	29. Flatworm			1	1	7		
	lndex	5.33	5	(B) - (	,	< 5	1	Miscellan	eous invertebra			10			
	mscore	1	3	Stream	integrity	Mai	rginal			Totals	46	10			
Land use as		(1)	(1)	r .		(1)	(1)	Additional o	omments						
	d use	(I)	(L)	Land	use	(I)	(L)	-							
Recreation	- 1-	1	W	Pastureland		3	S	7		a ta an an a					
Jnpaved Roa	ads	1	W	Surburban de	velopment	3	M	/ small fish we	ere also collecte	d in the stream.					
Cropland		2	M	Parking lots		1	M	4							
single-family	residences	3	M	Paved Roads		3	S	1							

Stream	Turner Run						Basin	North Branch	Potomac				
Monitorir		FrankfortMS	-7th graders				Daoin		Latitude	39	31	4	
WORkork	ig gi oup		School: Left on 2	28 S. travel ab	out3.5 miles an	d turn left on to	Patterson Cree	k Rd. Go					+ '
Direc	tions			ms travels under the first bridge. X point is on upstream side of					Longitude	78	45	50	
					Ŭ			U U	County		Mineral	F	TV 3 2 3 4 3 5 4 7 4 3 5 4 7 4 3 8 8 3 6 6 8 8 4 4 6 6 8 8 4 4 6 5 5 7 7 4 7 7 4 7 6 6 6 6 6 5 5 7 7 4 10 10 10 10 10 10 10 10 10 10 10 10 10
Station	code				RR-miles		Date	26-C	ct-10	Start-time	8:	30	
Nater chemi	stry			Streambed	composition				Benthi	c macroinvert	ebrates		
pl	4	7.5		Sil	t/cly	No Data	No Data	C	common name	s	Total	Taxa	Т
Dissolved	loxygen	10.0	ppm	S	and	No Data	No Data	1. Mayflies			6	1	3
Condu	ictivity	552	µs/cm	Fine	gravel	No Data	No Data	2. Stonefles			1	1	2
Nitrite/	nitrate	0.5	ppm	Coars	e gravel	No Data	No Data	3. Case-build	ing caddisflies				3
Alka	linity	280.0	ppm	Cobble		No Data	No Data	4. Net-spinnir	ng caddisflies		7	2	4
Turb	idity	0.0	JTU	Boulder		No Data	No Data	5. Free-living	V				3
Bact	eria	No Data		Bedrock		No Data	No Data	6. Common	netspinner		8	1	5
Tempe	rature	13.5	С	Wood	y debris	No Data	No Data	7. Dragonflies					4
			•		r entire reach	No Data	No Data	8. Damselflie					17
on: 0.5 ppm,	Phosphate = 4	1 ppm.		Index	No Data	Count	Estimate	9. Riffle beetle	•				4
Physical con	ditions				•			10. Water per	nnv		10	1	3
	Width (ft) Depth (ft)							11. Other bee					8
Riffle	90	0.1	Discharge	0.9		abitat evaluati		12. Hellgram	v				3
Run	No Data	No Data	Level		normal		ion	13. Alderfly					6
Water			ear	Sediment deposition		4		14. Non-biting	n midae		3	1	8
,			one		dedness	2		15. Crane fly	,				4
Water odor			one		n both banks	Left - L	Right-R	16. Black fly					_
Sediment color			one		stability	2	1	17. Watersni	oe flv				-
Algae color			own	Riparian buffer width		1	1	18. Other true flies					
Algae ab		Heavy		Habitat score			11						
-			atted	Habitat integrity			DOL	19. Water mit 20. Cravfish					
Algae growth habit Surface foam			one					21. Sideswim	mer/Scud				_
			oor	Habitat (	H) and Biologic	cal (B) codes a	and points	22. Aquatic s					_
Channel shade Physical and habitat comments		1	001	Codes		Points		23. Opercula					_
Thy Sicar and T	abilat comm	5116			Optimal)	8	4	24. Non-oper					
						6	3	25. Clams					_
				(H) - (Suboptimal) (H) - (Marginal)		4	2	26. Mussel					4       1     3       8     3       6     3       1     8       6     3       6     3       7     6       7     6       4     1
Vetrics		Value	Points		(Poor)	2	1	27. Aquatic w	orm		3	1	_
Total	Таха	Value 8	5		(F00F) .bundant)	> 50	6	28. Leeches	onn		0		_
EPT		5	5		common)	5 - 50	3	29. Flatworm	•				
Biotic		4.53	7		/	< 5	1		s eous invertebra	atoe			+'
Stream			7	(B) - (Rare) Stream integrity		_	rainal	wiscellan		Totals	38	0	+
Land use as				Sueam	megniy	I Wai	yı idi	Additional c	ommente	rotais	30	0	+
Land use as		(1)	(L)	Lon	duse	(1)	(L)	Additional C	ominents				-
ctive Constru		1	(L) W	Cropland		(1)	(L) W	4					$\vdash$
lountaintop m		1	W	Unpaved roa	de	2	M	4					
Recreation	mmy	1	M	Single-family		2	M	4					
ecreation Pastureland		3	S	Single-family Paved roads	residences	2	IVI S	-					-
asiureiand		3	S	r aveu roads			3					dock@.wv.go	_

#### 0.5178611 39.517861 0.763833333 -78.763833



Grape's Run						Basin							
a group			North Branch	Potomac									
Monitoring group Keyser High School								Latitude	39	24	40		
ions	Turn on unmarked bridge on 220 S. across from Sheetz gas station. Walk up the road ab							Longitude	78	59	53		
	and creek flow	s under a smal	l bridge. X poin		om bridge.		County		Mineral				
						Date	27-0				12:20		
Water chemistry			Streambed composition							ebrates	-		
рН			Silt/cly		No Data	No Data	C	Common names			Таха	T۷	
oxygen	No Data	ppm	Sa	ind	No Data	No Data	1. Mayflies					3	
ctivity	No Data	µs/cm	Fine gravel		No Data	No Data	2. Stonefles					2	
Nitrite/nitrate		ppm	Coarse gravel		No Data	NO Data						3	
inity	No Data	ppm	Cobble		No Data	No Data	4. Net-spinning caddisflies					4	
dity	No Data	JTU	Boulder		No Data	No Data	5. Free-living caddisfly					3	
eria	No Data		Bedrock		No Data	No Data	6. Common netspinner					5	
rature	57.2	F	Woody debris		No Data	No Data	7. Dragonflies					4	
Students arrived late. Chemestry analysis was not done.		Riffle only or entire reach		No Data	No Data	8. Damselflies					7		
omposition an	alysis done	/sis done		No Data	Count	Estimate	9. Riffle beetle				4		
Physical conditions							10. Water penny					3	
Width (ft)	Depth (ft)	L					11. Other beetles or bugs					8	
No Data	· · · · /	Discharge						ÿ		5	1	3	
No Data	No Data	Level	Habitat evaluatio		on				1	1	6		
clarity	Clear		Sediment deposition		4		,	ı midae				8	
color	None		Embeddedness		2							4	
	None				left-l	Right - R	,					6	
						-	,	ne flv				3	
			,			1		,				6	
			-			2						6	
					Poor			0		17	1	5	
	<b>v</b>		<b>3</b> 7				,	mer/Scud			1	5	
			Habitat (H	H) and Biologic	al (B) codes a	nd points				100		7	
			Codes		Poi	ints						4	
				)nfimal)								7	
m and bridge	downstream of	the reach	1 / 1	. ,	-							6	
					-	-						4	
-	Value Pointe		() ( )		-							10	
222							· ·					10	
						-						10	
EPT Taxa Biotic Index									too.			- ·	
		-		( ) ( )						400	4	_	
	1	3	Stream	integrity	IVI dr	ginai			Totais	123	4	_	
	(1)	(1)			(1)	(1)	Additional Co	Juninents					
JSE		. ,			. ,		ł					_	
				trip mails, etc			ł						
							ł						
esidence	2	S M	Bridges		3	S	ł					_	
elopments													
	oxygen stivity itrate nity dity tria ature d late. Cheme composition ar litions Width (t) No Data No Data No Data larity color odor t color color ndance wth habit foam shade abitat comme m and bridge axa axa axa axa score essment Jse	code         try         No Data         civity       No Data         dity       No Data         ature       57.2         d late. Chemestry analysis woomposition analysis done         litions       Width (ft)         Width (ft)       Depth (ft)         No Data       No Data         No Data       No Data	code     Image: style in the system of the sys	code       Streambed c         try       Streambed c         stivity       No Data       ppm       Sa         civity       No Data       ppm       Sa         civity       No Data       ppm       Coarse         itrate       No Data       ppm       Coarse         nity       No Data       ppm       Coarse         nity       No Data       ppm       Coarse         nity       No Data       JTU       Bou         ature       57.2       F       Woody         fate.       Chemestry analysis was not done.       Riffle only or         omposition analysis done       Index       Index         No Data       No Data       Discharge       No Data         No Data       No Data       Level       Index         datarity       Clear       Sediment       Sediment         color       None       Estimate on       Index         color       None       Bank s       Solor       Bank s         color       None       Bank s       Solor       Habitat       (H) - (O         manance       Moderate       Habitat       (H) - (O       (H) - (O       (H) - (O	RR-miles         try       Streambed composition         No Data       ppm         oxygen       No Data       ppm         stivity       No Data       ppm         citvity       No Data       ppm         citvity       No Data       ppm         correct       Coarse gravel         nity       No Data       ppm         Coarse gravel       file         nity       No Data       ppm         Coarse gravel       Bedrock         ature       57.2       F         Woody debris       Riffle only or entire reach         omposition analysis done       Riffle only or entire reach         Index       No Data       Discharge         Width (ft)       Depth (ft)       Moene         No Data       No Data       Level         Value       None       Bank stability         color       None       Bank stability         color       Brown       Riparian buffer width         ndance       Moderate       Habitat score         with habit       Even Coafing       Habitat integrity         foam       None       Habitat (H) and Biologic         abita	Image: system         Streambed composition           Image: system         No Data         ppm         Sand         No Data           civity         No Data         ppm         Sand         No Data           civity         No Data         ppm         Coarse gravel         No Data           itrate         No Data         ppm         Coarse gravel         No Data           itrate         No Data         ppm         Coarse gravel         No Data           itrate         No Data         ppm         Cobble         No Data           itrate         No Data         JTU         Boulder         No Data           itrate         No Data         JTU         Boulder         No Data           ature         57.2         F         Woody debris         No Data           ature         57.2         F         Woody debris         No Data           itation analysis was not done.         rifile only or entire reach         No Data           Width (ft)         Depth (ft)         No Data         Level         Habitat evaluati           itarity         Clear         Sediment deposition         4           color         None         Estimate on both banks         Left - L	code     RR-miles     Date       try     Streambed composition       oxygen     No Data     ppm       Sand     No Data     No Data       ivity     No Data     ppm       Siticly     No Data     No Data       ivity     No Data     ppm       Coarse gravel     No Data     No Data       ivity     No Data     ppm       Coarse gravel     No Data     No Data       nity     No Data     ppm       Coarse gravel     No Data     No Data       ital     No Data     No Data       No Data     No Data     No Data       Ital     No Data     No Data       No Data     No Data     No Data       Ital     No Data     No Data       No Data     Level     Habitat evaluation       No Data     None     Estimate on both banks       Itarity     Clear     S	code     RR-miles     Date     27-O       try     Streambed composition     No Data     No Data     No Data       oxygen     No Data     ppm     Sand     No Data     No Data     1. Mayfiles       itrate     No Data     ppm     Coarse gravel     No Data     No Data     1. Mayfiles       itrate     No Data     ppm     Coarse gravel     No Data     No Data     3. Case-build       ity     No Data     ppm     Cobie     No Data     No Data     4. Net-spinini       ity     No Data     JTU     Boulder     No Data     No Data     5. Free-lving       ity     No Data     JTU     Boulder     No Data     No Data     6. Common r       ature     57.2     F     Woody debris     No Data     No Data     8. Damsellite       itate     No Data     Discharge     No Data     No Data     8. Damsellite       width (t)     Depth (t)     Index     No Data     No Data     8. Damsellite       itarity     Clear     Sediment deposition     4     14. Non-biting       solor     None     Estimate on both banks     Left-L     Right-R     16. Black fty       color     None     Bank stability     2     2     <	code     Rr-miles     Date     27-Oct-10       try     Streambed composition     Benthic       wo Data     No Data     No Data     No Data     Common name       stivity     No Data     ppm     Sand     No Data     No Data     Common name       stivity     No Data     ppm     Coarse gravel     No Data     No Data     No Data     No Data     An arrow       itrate     No Data     ppm     Coarse gravel     No Data     No Data     No Data     Stressing cadisities       itrate     No Data     Data     No Data     No Data     No Data     Stressing cadisities       itrate     ST.2     F     Woody debris     No Data     No Data     No Data     Stressing cadisities       itrate     St.2     F     Woody debris     No Data     Levelete     No Data     Le	code         RR-miles         Date         27-Oct-10         Start-time           ty         Streambed composition         Date         27-Oct-10         Start-time           oxygen         No Data         ppm         Sand         No Data         No Data         No Data         No Data         Start-time           divity         No Data         ppm         Sand         No Data         Start-time           divity         No Data         ppm         Coarse gravel         No Data         No Data         No Data         Start-time           divity         No Data         ppm         Cobbie         No Data         No D	code         RR-miles         Date         27-Oct 10         Startime         Mathematical 22           try         Streambed composition         Date         27-Oct 10         Startime         Mathematical 22           try         No Data         ppm         Streambed composition         No Data         No Data         Common names         Total           oxygen         No Data         ppm         Cases gravel         No Data         No Data         Common names         Total           trade         No Data         ppm         Cases gravel         No Data         No Data         Common names         Total           trade         No Data         ppm         Cases gravel         No Data         No Data         Cases-building caddisfies         Common netspinner           trade         No Data         JTU         Boulder         No Data         No Data         Cases-building caddisfies           trade         No Data         No Data         No Data         No Data         Scares or No         Scares or No           table         Chemestry analysis was not done.         Redicor No Data         No Data         No Data         Scares or No         Scares or No           Widh (f)         Deph (f)         No Data         No Data <th< td=""><td>code         RR-miles         Date         27-Oct-10         Start-time         12:20           try         Streambed composition         Benthic macroinvertebrates         Common names         Total         Taxa           avgen         No Data         ppm         Sand         No Data         No Data         Common names         Total         Taxa           avgen         No Data         µs/cm         Fine gravel         No Data         No Data         2. Stonetes        </td></th<>	code         RR-miles         Date         27-Oct-10         Start-time         12:20           try         Streambed composition         Benthic macroinvertebrates         Common names         Total         Taxa           avgen         No Data         ppm         Sand         No Data         No Data         Common names         Total         Taxa           avgen         No Data         µs/cm         Fine gravel         No Data         No Data         2. Stonetes	

0.4111111 39.411111 0.998166667 -78.998167

#### Level-One Survey Summary