#### **APPENDIX D: HHEI AND QHEI FORMS**



QHEI Score: 24.0

Stream & Location: S-A1 UNT to Honey Creek	_ <i>RM:</i>	_ <b><i>Date:</i></b> 9/17/2018
Scorers Full Name & Affiliation:	JMM, KM	
River Code: STORET #: Lat./Long.: 41.058558, -82	2.852645	Office verified ☐
	ONE ( <i>Or 2</i> &	<b>3</b> ,
BEST TYPES	SILT	QUALITY    HEAVY [-2]   MODERATE [-1]   Substrate   NORMAL [0]   FREE [1]   3.0   MODERATE [-1]   Maximum   20   NONE [1]
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more commquality; 2-Moderate amounts, but not of highest quality or in small amounts quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functiona  UNDERCUT BANKS [1] POOLS > 70cm [2] OXBOWS, BACKWATI OVERHANGING VEGETATION [1] ROOTWADS [1] AQUATIC MACROPHY BOULDERS [1] LOGS OR WOODY DE ROOTMATS [1]  Comments	s of highest r, large I pools. [ ERS [1] [ 'TES [1] [	AMOUNT  Check ONE (Or 2 & average)  EXTENSIVE >75% [11]  MODERATE 25-75% [7]  SPARSE 5-<25% [3]  NEARLY ABSENT <5% [1]  Cover  Maximum 20  8.0
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)		
SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY		
☐ HIGH [4]       ☐ EXCELLENT [7]       ☐ NONE [6]       ☐ HIGH [3]         ☐ MODERATE [3]       ☐ GOOD [5]       ☐ RECOVERED [4]       ☐ MODERATE [2]         ☐ LOW [2]       ☐ FAIR [3]       ☐ RECOVERING [3]       ☐ LOW [1]         ☑ NONE [1]       ☐ POOR [1]       ☐ RECENT OR NO RECOVERY [1]         Comments		Channel Maximum 20 7.0
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (C	Dr 2 per bank	( & average)
River right looking downstream  RIPARIAN WIDTH  RROSION  WIDE > 50m [4]  NONE / LITTLE [3]  NODERATE [2]  NARROW 5-10m [2]  HEAVY / SEVERE [1]  VERY NARROW < 5m [1]  NONE [0]  Comments  RIPARIAN WIDTH  FOREST, SWAMP [3]  RESIDENTIAL, PARK, NEW FIELD  PENCED PASTURE [1]  POPEN PASTURE, ROWCROP [0]	[1] [1] [1] [1] [1] [2] [1] [2] [2] [2] [2] [2] [2] [2] [2] [2] [2	CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0]  The predominant land use(s)  Om riparian.  Maximum  Maximum  10  Riparian  10
5] POOL / GLIDE AND RIFFLE / RUN QUALITY		
MAXIMUM DEPTH Check ONE (ONLY!)  □ > 1m [6] □ 0.7-<1m [4] □ 0.4-<0.7m [2] □ 0.2-<0.4m [1] □ < 0.2m [0]  Check ONE (Or 2 & average) Check ALL that apply TORRENTIAL [-1] Check ALL that apply Check ALL that apply Torrential [-1] Check ALL that apply Check ALL that apply Torrential [-1] Check ALL that apply Tor	TIAL [-1] TTENT [-2] 1]	Recreation Potential Primary Contact Secondary Contact (circle one and comment on back)  Pool / Current Aprimum  0.0
Comments		Maximum 12
Indicate for functional riffles; Best areas must be large enough to support of riffle-obligate species:  Check ONE (Or 2 & average).  Check ONE (Or 2 & average).  RIFFLE DEPTH  RUN DEPTH  RIFFLE / RUN SUBSTRATE  PRIFFLE / RUN SUBSTRATE  RIFFLE / RUN SUBSTRATE  RIFFLE / RUN SUBSTRATE  PRIFFLE / RUN SUBSTRATE  RIFFLE / RUN SUBSTRATE  PRIFFLE / RUN SUBSTRATE  RIFFLE / RUN SUBSTRATE  PRIFFLE / RUN SUBSTRATE  RIFFLE / RUN SUBSTRATE  RIFFLE / RUN SUBSTRATE  RIFFLE / RUN SUBSTRATE  RIFFLE / RUN SUBSTRATE  PRIFFLE / RUN SUBSTRATE  RIFFLE / RUN SUBSTRATE  RIFF	FLE / RUI	N EMBEDDEDNESS  NEMBEDDEDNESS  ONE [2] OW [1] ODERATE [0]  XTENSIVE [-1]  Maximum  8
6] GRADIENT (ft/mi) VERY LOW - LOW [2-4] %POOL: 90%  DRAINAGE AREA MODERATE [6-10] %RUN:	%GLIDE	

AJ SAMPLED REACH		Comment RE: Reach consistency/ Is	reach typical of steam?, <i>Recreation</i>	//Observed - Inferred, Other/	Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/Observed - Inferred, Other/Sampling observations, Concerns, Access directions, etc.	ess directions, etc.
۵	STAGE					
DISTANCE   LOW						
O.5 Km	CLARITY	BJ AESTHETICS	DJ MAINTENANCE	Circle some & COMMENT	EJ ISSUES	FJ MEASUREMENTS
_	1stsample pass 2nd	☐ NUISANCE ALGAE	PUBLIC / PRIVATE / BOTH / NA		WWTP / CSO / NPDES / INDUSTRY	x width
_	o cm	☐ INVASIVE MACROPHYTES	ACTIVE / HISTORIC / BOTH / NA		HARDENED/URBAN/DIRT&GRIME	x depth
☑ OTHER ☐ 40-70 cm	C m	☐ DISCOLORATION	SPRAY / SNAG / REMOVED		BMPs-CONSTRUCTION-SEDIMENT	max. depth
.117   > 70 c	☐ > 70 cm/ CTB ☐ ☐ SECCHI DEPTH ☐	FOAM / SCUM	MODIFIED / DIPPED OUT / NA		LOGGING / IRRIGATION / COOLING	x bankfull widtn bankfull x depth
PY	E	☐ TRASH / LITTER	RELOCATED / CUTOFFS		FALSE BANK / MANURE / LAGOON	W/D ratio
Z		☐ NUISANCE ODOR	MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS		WASH H <sub>2</sub> 0 / TILE / H <sub>2</sub> 0 TABLE	bankfull max. depth floodprone x <sup>2</sup> width
55%-<85% 2nd	គ្ឆ   	CSOS/SSOS/OUTFALLS	ISLANDS / SCOURED		NATURAL/WETLAND/STAGNANT	entrench. ratio
SED	CJ RECRE	<i>CJ RECREATION</i> AREA DEPTH POOL: □>100ft²□>3ft	IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE		PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	Legacy Tree:

Stream Drawing:



QHEI Score:	26.0
- (	

Stream & Location: S-A2 UNT to Mud Run	RM:D	ate: 9/18/2018
Scorers Full Name	e & Affiliation:JMM, KMP	
River Code: STORET #: Lat./ Lon	<b>7g.:</b> nal <sup>o</sup> ) 41.073509, -82.843169	Office verified location ⊡
1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present  BEST TYPES POOL RIFFLE OTHER TYPES  BLDR /SLABS [10] 0% 0%		QUALITY EAVY [-2]
□ □ COBBLE [8]       0%       0%       □ ■ MUCK [2]       20%       0%       □ ■ MUCK [2]       25%       0% <t< td=""><td>WETLANDS [0] SILI □ NO HARDPAN [0] □ FR SANDSTONE [0] ODEN □ EX</td><td>DDERATE [-1] Substrate DRMAL [0] EEE [1] 8.0 EEE [1] DDERATE [-1] DRMAL [0] DNE [1]</td></t<>	WETLANDS [0] SILI □ NO HARDPAN [0] □ FR SANDSTONE [0] ODEN □ EX	DDERATE [-1] Substrate DRMAL [0] EEE [1] 8.0 EEE [1] DDERATE [-1] DRMAL [0] DNE [1]
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts quality; 2-Moderate amounts, but not of highest quality o	ts or if more common of marginal	AMOUNT
quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in diameter log that is stable, well developed rootwad in deep / fast water, or deep, well- UNDERCUT BANKS [1] POOLS > 70cm [2] OXBO OVERHANGING VEGETATION [1] ROOTWADS [1] AQUA	deep or fast water, large defined, functional pools.  OWS, BACKWATERS [1] MODE  ATIC MACROPHYTES [1] SPAR	ONE ( <i>Or 2 &amp; average</i> )  NSIVE >75% [11]  ERATE 25-75% [7]  ISE 5-<25% [3]  RLY ABSENT <5% [1]
ROOTMATS [1]  Comments		Cover Maximum 20
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION	STABILITY	
☐ HIGH [4]       ☐ EXCELLENT [7]       ☐ NONE [6]         ☐ MODERATE [3]       ☐ GOOD [5]       ☐ RECOVERED [4]	☐ HIGH [3]	Channel Maximum 20 8.0
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for River right looking downstream RIPARIAN WIDTH FLOOD	· · ·	ge)
RIVER right looking downstream RIPARIAN WIDTH REROSION WIDE > 50m [4] MODERATE [2] MODERATE 10-50m [3] MODERATE [2] MARROW 5-10m [2] HEAVY / SEVERE [1] WERY NARROW < 5m [1] MODERATE [2] M	D FIELD [2]  PARK, NEW FIELD [1]  URE [1]  URD [1]  URD [1]	RVATION TILLAGE [1] OR INDUSTRIAL [0] CONSTRUCTION [0] Dinant land use(s) Trian. Riparian
Comments		Maximum 2.0
Check ONE (ONLY!)       Check ONE (Or 2 & average)       Check         □ > 1m [6]       □ POOL WIDTH > RIFFLE WIDTH [2]       □ TORRENTIAL         □ 0.7-<1m [4]	ALL that apply  [-1] □ SLOW [1]  1] □ INTERSTITIAL [-1] □ INTERMITTENT [-2]	eation Potential mary Contact ondary Contact ne and comment on back)  Pool / Current 3.0
Comments		Maximum 12
Indicate for functional riffles; Best areas must be large enouge of riffle-obligate species:  RIFFLE DEPTH  BEST AREAS > 10cm [2]  BEST AREAS 5-10cm [1]  BEST AREAS < 5cm  [metric=0]  Comments  Check ONE (Or 2 & average of the control of the con	e).  STRATE RIFFLE / RUN EMB Boulder) [2]	
DRAINAGE AREA MODERATE [6-10]	POOL: 90% %GLIDE: 10	Gradient 2.0

AJ SAMPLED REACH Check ALL that apply	Comment RE: Reach consistency/	is reach typical of steam?, <i>Recreation</i>	n/Observed - Inferred, O <i>then</i>	Comment RE: Reach consistency/Is reach typical of steam?, Recreation/Observed - Inferred, Other/Sampling observations, Concerns, Access directions, etc.	ess directions, etc.
۵					
☐ L. LINE ☐ UP ☐ OTHER ☐ NORMAL ☐					
DISTANCE CLOW					
O.5 Km CLARITY	BJAESTHETICS	DJ MAINTENANCE	Circle some & COMMENT	EJ ISSUES	F] MEASUREMENTS
` _	☐ NUISANCE ALGAE	PUBLIC / PRIVATE / BOTH / NA		WWTP / CSO / NPDES / INDUSTRY	x width
0.12 Km	☐ INVASIVE MACROPHYTES	ACTIVE / HISTORIC / BOTH / NA		HARDENED/URBAN/DIRT&GRIME	x depth
U OIHER 40-70 cm	☐ □ DISCOLORATION	SPRAY / SNAG / REMOVED		BMPs-CONSTRUCTION-SEDIMENT	max. depth ⊽ bonkfull width
.100 □ > 70 cm/ CTB □ meters □ SECCHI DEPTH	☐ FOAM / SCUM	MODIFIED / DIPPED OUT / NA		LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE	bankfull x depth
Σ	cm TRASH/LITTER	RELOCATED / CUTOFFS		FALSE BANK / MANURE / LAGOON	W/D ratio
Z	☐ NUISANCE ODOR ☐ SLUDGE DEPOSITS	MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS		WASH H <sub>2</sub> 0 / TILE / H <sub>2</sub> 0 TABLE ACID / MINE / QUARRY / FLOW	bankfull max. depth floodprone x² width
	CSOS/SSOS/OUTFALLS	ISLANDS / SCOURED		NATURAL/WETLAND/STAGNANT	entrench. ratio
SED	<i>CJ RECREATION</i> AREA DEPTH <i>POOL:</i> □>100ft²□>3ft	IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE		PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	Legacy Tree:

Stream Drawing:



QHEI Score: 24.0

Stream & Location:	S-A3 UNT	to Honey Creek			_ <i>RM:</i>	_ <b>Date:</b> 9/18/2018
			_Scorers Full	Name & Affiliation:	JMM, KMF	
River Code:	<b>-</b>	_STORET#:_		./ Long.: 41.066194, -82	2.857122	Office verified location
BEST TYPES	nate % or note  POOL RIFFLI	every type present <b>OTHER TY</b>	ES; PES <sub>POOL RIFFL</sub>	Check (	ONE (Or 2 &	average) QUALITY
BLDR /SLABS [10] BOULDER [9] COBBLE [8] GRAVEL [7] SAND [6] BEDROCK [5] NUMBER OF BEST Comments	0% 0% 0% 0% 0% 0% 5% 0% 0% 0% TYPES: ☑ 4	HARDPAN DETRITUS MUCK [2] SILT [2] SICT [2] SCORE nat for more [2] Sludge or less [0]	5 [3] 25% 0% 40% 0% 30% 0% LL [0] 0% 0%	☐ LIMESTONE [1] ☐ TILLS [1] ☐ WETLANDS [0] ☐ HARDPAN [0] ☐ SANDSTONE [0] ☐ RIP/RAP [0] ☐ HACUSTURINE [0] ☐ SHALE [-1] ☐ COAL FINES [-2]	SILT SILT SILT	☐ HEAVY [-2] ☐ MODERATE [-1] ☐ NORMAL [0] ☐ FREE [1] ☐ MODERATE [-1] ☐ MODERATE [-1] ☐ NORMAL [0] ☐ NONE [1] ☐ NONE [1]
quality; 3-Highest quality diameter log that is stable UNDERCUT BANK OVERHANGING V  1 SHALLOWS (IN SI ROOTMATS [1]  Comments	quality; 2-N in moderate of e, well develop (S [1] EGETATION [	r greater amounts, be greater amounts (electrostward in deep POOLS ROOTW	out not of highest q .g., very large boul / fast water, or dee > 70cm [2] ADS [1]	uality or in small amounts ders in deep or fast wate	r, large I pools. ERS [1]	Check ONE ( <i>Or 2 &amp; average</i> )  ] EXTENSIVE >75% [11]  ] MODERATE 25-75% [7]  ] SPARSE 5-<25% [3]
3] CHANNEL MORPI						
☐ HIGH [4] ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	VELOPMEN EXCELLENT [' GOOD [5] FAIR [3] POOR [1]	7] NONE [6] RECOVER		STABILITY  ☐ HIGH [3] ☑ MODERATE [2] ☐ LOW [1]  '[1]		Channel Maximum 20 7.0
4] BANK EROSION	AND RIPAR	RIAN ZONE Che	ck <b>ONF</b> in each cat	egory for <b>FACH BANK</b> ((	r 2 ner hank	& average)
River right looking downstre  EROSION  NONE / LITTLE [3]  MODERATE [2]  HEAVY / SEVERE [1]	RIP	ARIAN WIDTH E > 50m [4] ERATE 10-50m [3] ROW 5-10m [2] Y NARROW < 5m [	FL  R FOREST SHRUB RESIDEN RESIDEN RESIDEN	OOD PLAIN QUAL , SWAMP [3] DR OLD FIELD [2] ITIAL, PARK, NEW FIELD PASTURE [1] ASTURE, ROWCROP [0]	ITY  R C C C C C C C C C C C C C C C C C C	ONSERVATION TILLAGE [1] RBAN OR INDUSTRIAL [0] IINING / CONSTRUCTION [0] predominant land use(s) Om riparian. Riparian
Comments						Maximum 3.0
5] POOL / GLIDE AN MAXIMUM DEPTH Check ONE (ONLY!)  > 1m [6] 0.7-<1m [4] 0.4-<0.7m [2] 0.2-<0.4m [1]  < 0.2m [0]	CH Check POOL WI	/ RUN QUALITY ANNEL WIDTH ONE (Or 2 & average DTH > RIFFLE WIDTH DTH = RIFFLE WIDTH DTH > RIFFLE WIDTH	GCU  Ge)  TH [2]	1] 🗌 🗹 INTERMIT	TIAL [-1] TENT [-2]	Recreation Potential Primary Contact Secondary Contact (circle one and comment on back)  Pool / Current
Comments						Maximum 12
Indicate for fund of riffle-obligate RIFFLE DEPTH  □ BEST AREAS > 10cm [2] □ BEST AREAS < 5cm [metric=0]	species: RUN 2] □ MAXIM 1] ☑ MAXIM	CHI DEPTH  UM > 50cm [2]	neck ONE ( <i>Or 2 &amp; a</i> RIFFLE / RUN STABLE (e.g., Col MOD. STABLE (e.	SUBSTRATE RIF	FLE / RUN	I EMBEDDEDNESS ONE [2] ODERATE [0] Riffle / Run Maximum 8
6] GRADIENT ( DRAINAGE AREA	ا⊡ٰ ۵	VERY LOW - LOW [ MODERATE [6-10] HIGH - VERY HIGH	<u> </u>	%POOL: 90% %RUN:	%GLIDE	<b>─</b>   3.0

AJ SAMPLED REACH		Comment RE: Reach consistency/ Is	s reach typical of steam?, <i>Recreation</i>	//Observed - Inferred, Other/	Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/Observed - Inferred, Other/Sampling observations, Concerns, Access directions, etc.	ess directions, etc.
۵	STAGE					
☐ L. LINE ☐ UP						
DISTANCE   LOW						
O.5 Km CLA	CLARITY	BJ AESTHETICS	DJ MAINTENANCE	Circle some & COMMENT	EJ ISSUES	FJ MEASUREMENTS
_	1stsample pass 2nd	☐ NUISANCE ALGAE	PUBLIC / PRIVATE / BOTH / NA		WWTP / CSO / NPDES / INDUSTRY	x width
□ 0.12 Km □ 20.70 cm	_ E	☐ INVASIVE MACROPHYTES	ACTIVE / HISTORIC / BOTH / NA		HARDENED/URBAN/DIRT&GRIME	x depth
☑ OTHER ☐ 40-70 cm	] [ ]	☐ EXCESS TURBIDITY ☐ DISCOLORATION	YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED		CONTAMINATED / LANDFILL BMPs-CONSTRUCTION-SEDIMENT	max. depth
.106	n/ CTB □	☐ FOAM / SCUM	MODIFIED / DIPPED OUT / NA		LOGGING / IRRIGATION / COOLING	x bankfull width bankfull x depth
CANOPY 1St		☐ OIL SHEEN ☐ TRASH / LITTER	LEVEED / ONE SIDED RELOCATED / CUTOFFS		BANK / EROSION / SURFACE FALSE BANK / MANURE / LAGOON	W/D ratio
Z		☐ NUISANCE ODOR	MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS		WASH H <sub>2</sub> 0 / TILE / H <sub>2</sub> 0 TABLE ACID / MINF / CUIARRY / FLOW	bankfull max. depth floodprone x <sup>2</sup> width
55%-<85% 2nd	ლე   	CSOs/SSOs/OUTFALLS	ISLANDS / SCOURED		NATURAL / WETLAND / STAGNANT	entrench. ratio
SED	y RECRE	<i>CJ RECREATION</i> AREA DEPTH POOL: □>100ft²□>3ft	IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE		PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	Legacy Tree:

Stream Drawing:



#### ChieFPA Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind SITE NUMBER S-A		
	A7 RIVER BASIN Sandusky DRAINAGE AREA (mi²)	.15
- ( )	AT. 41.08235 LONG82.89773 RIVER CODE RIVER MILE	
DATE 09/18/18 SCORER K. Pulver	COMMENTS Modified Class II	
NOTE: Complete All Items On This Form	- Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instr	uctions
STREAM CHANNEL NONE / NATUMODIFICATIONS:	JRAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☑ RECENT OR NO REC	OVERY
	y type of substrate present. Check ONLY two predominant substrate TYPE boxes nt substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI
	RCENT TYPE PERCENT 0% SILT [3 pt] 50%	Metric
	0%   SILT [3 pt]   50%   0%   LEAF PACK/WOODY DEBRIS [3 pts]   0%	
	0% FINE DETRITUS [3 pts] 0% 20%	Substrate Max = 40
	0% CLAY or HARDPAN [0 pt] 20% 15% MUCK [0 pts] 0%	
	ARTIFICIAL [3 pts]	7
Total of Percentages of 0.0	00% (A) Substrate Percentage 100% (B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock  SCORE OF TWO MOST PREDOMINATE SUBSTI	Cneck	
	ximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Dept
evaluation. Avoid plunge pools from road of > 30 centimeters [20 pts]	culverts or storm water pipes) (Check ONLY one box):  > 5 cm - 10 cm [15 pts]	Max = 30
> 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]	< 5 cm [5 pts] NO WATER OR MOIST CHANNEL [0 pts]	25
COMMENTS	MAXIMUM POOL DEPTH (centimeters): 18	
COMMENTS		
3. BANK FULL WIDTH (Measured as the a	verage of 3-4 measurements) (Check ONLY one box):	
3. BANK FULL WIDTH (Measured as the at > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]		Bankfull Width Max=30
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	verage of 3-4 measurements) (Check ONLY one box):  > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]  ≤ 1.0 m (<=3' 3") [5 pts]	Max=30
3. BANK FULL WIDTH (Measured as the at > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	verage of 3-4 measurements) (Check <i>ONLY</i> one box):  > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS	AVERAGE BANKFULL WIDTH (meters):  This information must also be completed	Width Max=30
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	AVERAGE BANKFULL WIDTH (meters):  AVERAGE BANKFULL WIDTH (meters):  This information must also be completed	Width Max=30
3. BANK FULL WIDTH (Measured as the at > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH  L R (Per Bank)	This information must also be completed  AIN QUALITY  A (Most Predominant per Bank)  Check ONLY one box):  > 1.0 m (-3' 3"   5 pts]  AVERAGE BANKFULL WIDTH (meters):  1.50  1.50  L R (Most Predominant per Bank)  L R	Width Max=30
3. BANK FULL WIDTH (Measured as the a  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  RIPARIAN ZONE AND FLOODPL  RIPARIAN WIDTH  (Per Bank)  Wide >10m	This information must also be completed  AIN QUALITY  L R (Most Predominant per Bank)  L R (Conservation Tillage Immature Forest, Shrub or Old	Width Max=30
BANK FULL WIDTH (Measured as the a  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  RIPARIAN ZONE AND FLOODPL  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Moderate 5-10m	This information must also be completed  AIN QUALITY  L R (Most Predominant per Bank)  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old  Field  Check ONLY one box):    Check ONLY one box):   1.50     AVERAGE BANKFULL WIDTH (meters):   1.50     1.50	Width Max=30
3. BANK FULL WIDTH (Measured as the a  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  RIPARIAN ZONE AND FLOODPL  RIPARIAN WIDTH  (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m	This information must also be completed  AIN QUALITY  L R (Most Predominant per Bank)  D (D (D) Pasture, Row Credominant per Bank)  Residential, Park, New Field  Open Pasture, Row Credominant per Bank)	Width Max=30
3. BANK FULL WIDTH (Measured as the a  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  RIPARIAN ZONE AND FLOODPL  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Moderate 5-10m	This information must also be completed  AIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  D (Conservation Tillage)  Immature Forest, Shrub or Old  Field  Residential, Park, New Field  Open Pasture, Row Creen  Fenced Pasture	Width Max=30
3. BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH  L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS Herbaceous vege	This information must also be completed  AIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old  Field  Residential, Park, New Field  Fenced Pasture  Mining or Construction  Petated banks	Width Max=30
3. BANK FULL WIDTH (Measured as the a  > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH  (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS Herbaceous vege  FLOW REGIME (At Time of Evalue) Stream Flowing	This information must also be completed  AIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream   FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old  Field  Residential, Park, New Field  Fenced Pasture  Moist Channel, isolated pools, no flow (Intermittent)    Check ONLY one box):	Width Max=30
BANK FULL WIDTH (Measured as the a  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  RIPARIAN ZONE AND FLOODPL  RIPARIAN WIDTH  (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m  None  COMMENTS Herbaceous vege  FLOW REGIME (At Time of Evalue)	This information must also be completed  AIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream   FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old  Field  Residential, Park, New Field  Fenced Pasture  Moist Channel, isolated pools, no flow (Intermittent)    Check ONLY one box):	Width Max=30
3. BANK FULL WIDTH (Measured as the a  > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS Herbaceous vege  FLOW REGIME (At Time of Evalue) Stream Flowing Subsurface flow with isolated pools COMMENTS	AVERAGE BANKFULL WIDTH (meters):    AVERAGE BANKFULL WIDTH (meters):	Width Max=30
3. BANK FULL WIDTH (Measured as the a  > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS Herbaceous vege  FLOW REGIME (At Time of Evalue) Stream Flowing Subsurface flow with isolated pools COMMENTS	This information must also be completed  AIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream   FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old  Field  Residential, Park, New Field  Fenced Pasture  Moist Channel, isolated pools, no flow (Intermittent)    Check ONLY one box):	Width Max=30
3. BANK FULL WIDTH (Measured as the a  > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH  (Per Bank) Wide >10m  Moderate 5-10m  Narrow <5m  None COMMENTS Herbaceous vege  FLOW REGIME (At Time of Evalue) Stream Flowing Subsurface flow with isolated pools COMMENTS  SINUOSITY (Number of bends per None 0.5  STREAM GRADIENT ESTIMATE	Verage of 3-4 measurements   (Check ONLY one box):   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   ≤ 1.0 m (<=3' 3") [5 pts]   AVERAGE BANKFULL WIDTH (meters): 1.50    This information must also be completed	Width Max=30 20
BANK FULL WIDTH (Measured as the a  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  RIPARIAN ZONE AND FLOODPL  RIPARIAN WIDTH  (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m  None  COMMENTS Herbaceous vege  FLOW REGIME (At Time of Evalue)  Stream Flowing  Subsurface flow with isolated pools  COMMENTS  SINUOSITY (Number of bends per None  0.5	This information must also be completed  AIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  Mature Forest, Wetland  Immature Forest, Wetland  Immature Forest, Shrub or Old  Field  Residential, Park, New Field  Fenced Pasture  Mining or Construction  Patated banks  Moist Channel, isolated pools, no flow (Intermittent Dry channel, no water (Ephemeral)  Telm (200 ft) of channel) (Check ONLY one box):  1.0  Check ONLY one box):	Width Max=30

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Att.	ach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: Honey Creek	Distance from Evaluated Stream 2.30
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHE	D AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Attica NRCS Soil Map I	Page: NRCS Soil Map Stream Order
County: Seneca Township / City:_Reed	
MISCELLANEOUS	
Base Flow Conditions? (Y/N):_Y Date of last precipitation:	Quantity: 0.10
Photograph Information:	
Elevated Turbidity? (Y/N): N Canopy (% open): 0%	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.)	Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain:	
Additional comments/description of pollution impacts:	
Additional commonweapon of policinos impacto.	
BIOTIC EVALUATION	
<u> </u>	
Performed? (Y/N): (If Yes, Record all observations. Voucher collections options	·
ID number. Include appropriate field data sheets from the Pi	rimary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Solamanders Observed? (Y/N) Aquatic Macroinvertebra	Voucher? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





## ChieFPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind	
SITE NUMBER S-A5 RIVER BASIN Sandusky DRAINAGE AREA (mi²) 1	.60
LENGTH OF STREAM REACH (ft) 974 LAT. 41.08517 LONG82.90691 RIVER CODE RIVER MILE	
DATE 09/18/18 SCORER K. Pulver COMMENTS Modified Class II	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instru	uctions
STREAM CHANNEL	OVERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI
TYPE PERCENT TYPE PERCENT	Metric Points
BLDR SLABS [16 pts]	r Onni
BEDROCK [16 pt] 0% FINE DETRITUS [3 pts] 0%	Substrat Max = 4
COBBLE (65-256 mm) [12 pts]	IVIAX - 4
GRAVEL (2-64 mm) [9 pts]  SAND (<2 mm) [6 pts]  MUCK [0 pts]  ARTIFICIAL [3 pts]  0%	7
T-1-1 (D) (A)	
Bldr Slabs, Boulder, Cobble, Bedrock Check	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3 TOTAL NUMBER OF SUBSTRATE TYPES: 4	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Dep
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):  > 30 centimeters [20 pts]  > 5 cm - 10 cm [15 pts]	Max = 3
> 22.5 - 30 cm [30 pts] < 5 cm [5 pts]	4.5
> 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	15
COMMENTS MAXIMUM POOL DEPTH (centimeters): 10	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankful
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.0 m (-1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (<=3' 3") [5 pts]	Width Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	
COMMENTS AVERAGE BANKFULL WIDTH (meters): 1.50	20
This information must also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆  RIPARIAN WIDTH FLOODPLAIN QUALITY	
L R (Per Bank) L R (Most Predominant per Bank) L R	
☐ Wide >10m ☐ Mature Forest, Wetland ☐ Conservation Tillage ☐ Madarate 5 10m ☐ Immature Forest, Shrub or Old ☐ Urban avladuation	
Field Field	
Narrow <5m Residential, Park, New Field Open Pasture, Row Cro	р
None Fenced Pasture Mining or Construction COMMENTS Herbaceous vegetated banks	_
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	
Stream Flowing Moist Channel, isolated pools, no flow (Intermittent)	1
Subsurface flow with isolated pools (Interstitial)  COMMENTS  Dry channel, no water (Ephemeral)	-
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0	
<ul><li>✓ 0.5</li><li>— 1.5</li><li>— 2.5</li><li>— &gt;3</li></ul>	
	)0 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Atta	ach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: Honey Creek	Distance from Evaluated Stream
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHE	D AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Attica NRCS Soil Map I	Page: NRCS Soil Map Stream Order
County: Seneca Township / City: Reed	
MISCELLANEOUS	
Base Flow Conditions? (Y/N):_Y Date of last precipitation:_ 09/10/18	Quantity: 0.10
Photograph Information:	
Elevated Turbidity? (Y/N): N Canopy (% open): 0%	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.)	Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain:	
Additional comments/description of pollution impacts:	
BIOTIC EVALUATION	
N N	
Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional ID number. Include appropriate field data sheets from the Pr	·
	N
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) N Voucher? (Y/N) Aquatic Macroinvertebra	Voucher? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





## **ChieFP** Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind  SITE NUMBER S-A6 RIVER BASIN Sandusky DRAINAGE AREA (mi²)	.24
LENGTH OF STREAM REACH (ft) 333 LAT. 41.08040 LONG82.92462 RIVER CODE RIVER MILE	
DATE 09/18/18 SCORER K. Pulver COMMENTS Modified Class II	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instr	uctions
STREAM CHANNEL	OVERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes	
(Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.  TYPE  PERCENT  TYPE  PERCENT	HHEI   Metric
BLDR SLABS [16 pts]	Point
BOULDER (>256 mm) [16 pts]	Substrat
□       □       BEDROCK [16 pt]       0%       □       FINE DETRITUS [3 pts]       0%         □       □       COBBLE (65-256 mm) [12 pts]       0%       □       CLAY or HARDPAN [0 pt]       20%	Max = 4
GRAVEL (2-64 mm) [9 pts] 15% MUCK [0 pts] 0%	7
SAND (<2 mm) [6 pts]	7
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock (A) Substrate Percentage Check (B)	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3 TOTAL NUMBER OF SUBSTRATE TYPES: 4	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Dep
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):  > 30 centimeters [20 pts]  > 5 cm - 10 cm [15 pts]	Max = 3
> 22.5 - 30 cm [30 pts] < 5 cm [5 pts]	45
> 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	15
COMMENTS MAXIMUM POOL DEPTH (centimeters): 8	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankfu
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.0 m (-3' 3") [5 pts] ≤ 1.0 m (<=3' 3") [5 pts]	Width Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	
COMMENTS AVERAGE BANKFULL WIDTH (meters): 1.50	20
This information must also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY \$\times \text{NOTE: River Left (L) and Right (R) as looking downstream \$\frac{1}{2}\$	
RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆  RIPARIAN WIDTH  LR (Per Bank)  LR (Most Predominant per Bank)  LR	
RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆  RIPARIAN WIDTH FLOODPLAIN QUALITY  L R (Per Bank) L R (Most Predominant per Bank) L R  Wide >10m Mature Forest, Wetland Conservation Tillage	
RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Moderate 5-10m  L R (Most Predominant per Bank)  Immature Forest, Wetland  Immature Forest, Shrub or Old  Field  Conservation Tillage  Urban or Industrial	
RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream   RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m  Residential, Park, New Field  NOTE: River Left (L) and Right (R) as looking downstream   ANOTE: River Left (L) and Right (R) as looking downstream   ANOTE: River Left (L) and Right (R) as looking downstream   ANOTE: River Left (L) and Right (R) as looking downstream   L R (Most Predominant per Bank)  L R (Most Predominant per Bank)  L R (Conservation Tillage Immature Forest, Shrub or Old Immature Forest	qc
RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream   RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m  None  Residential, Park, New Field  Fenced Pasture  NOTE: River Left (L) and Right (R) as looking downstream  ANOTE: River Left (L) and R	op.
RIPARIAN ZONE AND FLOODPLAIN QUALITY  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m  None  Residential, Park, New Field  Residential, Park, New Field  Residential  River Left (L) and Right (R) as looking downstream  ANOTE: River Left (L) and Right (R) as looking downstream  ANOTE: River Left (L) and Right (R) as looking downstream  ANOTE: River Left (L) and Right (R) as looking downstream  ANOTE: River Left (L) and Right (R) as looking downstream  ANOTE: River Left (L) and Right (R) as looking downstream  L R  Conservation Tillage  Urban or Industrial  Open Pasture, Row Cr  None  Fenced Pasture  Mining or Construction  COMMENTS Herbaceous vegetated banks	<b>-</b>
RIPARIAN ZONE AND FLOODPLAIN QUALITY  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m  None  Residential, Park, New Field  None  COMMENTS Herbaceous vegetated banks  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  L R  (Most Predominant per Bank)  L R  (Most Predominant per Bank)  L R  (Most Predominant per Bank)  L R  Conservation Tillage  Urban or Industrial  Open Pasture, Row Cr  Mining or Construction  COMMENTS Herbaceous vegetated banks	_
RIPARIAN ZONE AND FLOODPLAIN QUALITY  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Immature Forest, Shrub or Old  Immature Forest, Shrub or Old  Narrow <5m  Residential, Park, New Field  None  COMMENTS Herbaceous vegetated banks  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  RIPARIAN WIDTH  FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream A  FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  L R  (Most Predominant per Bank)  L R  Conservation Tillage  Urban or Industrial  Open Pasture, Row Cr  Mining or Construction  Moist Channel, isolated pools, no flow (Intermittent Dry channel, no water (Ephemeral)	_
RIPARIAN ZONE AND FLOODPLAIN QUALITY  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Immature Forest, Shrub or Old  Immature Forest, Shrub or Old  Narrow <5m  Residential, Park, New Field  None  COMMENTS Herbaceous vegetated banks  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  NOTE: River Left (L) and Right (R) as looking downstream ★  NOTE: River Left (L) and Right (R) as looking downstream ★  NOTE: River Left (L) and Right (R) as looking downstream ★  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  L R  Conservation Tillage  Urban or Industrial  Open Pasture, Row Cr  Mining or Construction  COMMENTS Herbaceous vegetated banks  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing	_
RIPARIAN ZONE AND FLOODPLAIN QUALITY  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Immature Forest, Shrub or Old  Field  Narrow <5m  Residential, Park, New Field  None  COMMENTS Herbaceous vegetated banks  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	_
RIPARIAN ZONE AND FLOODPLAIN QUALITY  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Immature Forest, Shrub or Old  Immature Forest, Shrub or Old	_
RIPARIAN ZONE AND FLOODPLAIN QUALITY  RIPARIAN WIDTH FLOODPLAIN QUALITY  L R (Per Bank) Wide >10m Mature Forest, Wetland Moderate 5-10m Mature Forest, Wetland Moderate 5-10m Mature Forest, Shrub or Old Field  Narrow <5m Residential, Park, New Field  V V None COMMENTS Herbaceous vegetated banks  FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) None 1.0 0.5 1.5 2.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	_
RIPARIAN ZONE AND FLOODPLAIN QUALITY  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Moderate 5-10m  Moderate 5-10m  Residential, Park, New Field  Narrow <5m  Residential, Park, New Field  None  COMMENTS Herbaceous vegetated banks  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  NOTE: River Left (L) and Right (R) as looking downstream ★  NOTE: River Left (L) and Right (R) as looking downstream ★  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  L R  Conservation Tillage  Urban or Industrial  Open Pasture, Row Cr  Mining or Construction  Moist Channel, isolated pools, no flow (Intermittent Dry channel, no water (Ephemeral)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  3.0	)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):					
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Attach Completed QHEI Form)					
DOWNSTREAM DESIGNATED USE(S)					
www Name: Honey Creek	Distance from Evaluated Stream 1.40				
CWH Name:	Distance from Evaluated Stream				
EWH Name:	Distance from Evaluated Stream				
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION					
USGS Quadrangle Name: Attica NRCS Soil Map F	Page: NRCS Soil Map Stream Order				
County: Seneca Township / City:Venice	0				
MISCELLANEOUS					
Base Flow Conditions? (Y/N):_Y Date of last precipitation:	Quantity: 0.10				
Photograph Information:					
Elevated Turbidity? (Y/N): N Canopy (% open): 0%					
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:				
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.)	Conductivity (µmhos/cm)				
Is the sampling reach representative of the stream (Y/N) If not, please explain:					
Additional comments/description of pollution impacts:					
Account of policies and the policies of policies in passes.					
BIOTIC EVALUATION	<u>'</u>				
Porformed 2 (V/N):	NOTE: all variables complete must be labeled with the cite				
Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional ID number. Include appropriate field data sheets from the Pr	•				
	N				
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebra	Voucher? (Y/N) N Voucher? (Y/N) N				
Comments Regarding Biology:					
No fauna observed at time of survey					

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





## Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3)

43

SITE NAME/LOCATION Seneca Wind RIVER BASIN Sandusky S-A4 DRAINAGE AREA (mi²) 0.60 SITE NUMBER LONG. -82.89926 RIVER CODE 587 LENGTH OF STREAM REACH (ft) RIVER MILE DATE 09/18/18 **COMMENTS** | Modified Class II K. Pulver SCORER NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY STREAM CHANNEL **MODIFICATIONS:** SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes HHEI (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Metric **PERCENT PERCENT** Points BLDR SLABS [16 pts] SILT [3 pt] 40% 0% BOULDER (>256 mm) [16 pts] LEAF PACK/WOODY DEBRIS [3 pts] 0% 0% Substrate 0% 0% BEDROCK [16 pt] FINE DETRITUS [3 pts] Max = 4010% 20% COBBLE (65-256 mm) [12 pts] CLAY or HARDPAN [0 pt] 15% 0% GRAVEL (2-64 mm) [9 pts] MUCK [0 pts] 8 15% 0% SAND (<2 mm) [6 pts] ARTIFICIAL [3 pts] Total of Percentages of (B) Substrate Percentage 10.00% 100% A + BBldr Slabs, Boulder, Cobble, Bedrock TOTAL NUMBER OF SUBSTRATE TYPES: 5 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of Pool Depth evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): Max = 30> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts] > 22.5 - 30 cm [30 pts] < 5 cm [5 pts] > 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts] 15 5 COMMENTS **MAXIMUM POOL DEPTH (centimeters):** BANK FULL WIDTH (Measured as the average of 3-4 measurements) Bankfull (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] Width Max=30 > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  $\leq$  1.0 m (<=3' 3") [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] 1.50 COMMENTS AVERAGE BANKFULL WIDTH (meters): 20 This information must also be completed ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN ZONE AND FLOODPLAIN QUALITY **FLOODPLAIN QUALITY** RIPARIAN WIDTH (Per Bank) R (Most Predominant per Bank) Wide >10m Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Moderate 5-10m Urban or Industrial Field Open Pasture, Row Crop Narrow <5m Residential, Park, New Field Fenced Pasture None Mining or Construction **COMMENTS Herbaceous vegetated banks** FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent) Stream Flowing Subsurface flow with isolated pools (Interstitial) Dry channel, no water (Ephemeral) COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 2.0 3.0 0.5 1.5 2.5 >3 STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate Moderate (2 ft/100 ft) ■ Moderate to Severe Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also	be Completed):				
QHEI PERFORMED? - Yes V No QHEI Score	(If Yes, Attach Completed QHEI Form)				
DOWNSTREAM DESIGNATED USE(S)					
WWH Name: Mud Run	Distance from Evaluated Stream				
CWH Name:	Distance from Evaluated Stream				
EWH Name:	Distance from Evaluated Stream _				
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION					
USGS Quadrangle Name:_	NRCS Soil Map Page: NRCS Soil Map Stream Order				
County: Seneca Towns	hip / City: Reed				
MISCELLANEOUS					
Base Flow Conditions? (Y/N):_Y Date of last precipitation:_	<b>09/10/18</b> Quantity: <b>0.10</b>				
Photograph Information:					
Elevated Turbidity? (Y/N): N Canopy (% open): 0%					
Were samples collected for water chemistry? (Y/N): (Note lab	sample no. or id. and attach results) Lab Number:				
Field Measures: Temp (°C) Dissolved Oxygen (mg/l)	pH (S.U.) Conductivity (μmhos/cm)				
Is the sampling reach representative of the stream $(Y/N)$ If not,	please explain:				
Additional comments/description of pollution impacts:					
BIOTIC EVALUATION					
Performed? (Y/N): N (If Yes, Record all observations, Vouche	and the state of t				
( ) =	r collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual)				
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders O Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquat	bserved? (Y/N) N Voucher? (Y/N) N Voucher? (Y/N) N Voucher? (Y/N)				
Comments Regarding Biology:					

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location







QHEI Score:	33.0
<b>4.</b> . <b>–</b> . <b>3. 3. 3.</b>	

Stream & Location: S-B13 (UNT to Mud Run)	_ <i>RM:</i>	_ <b> <i>Date:</i></b> 09/28/2018
Scorers Full Name & Affiliation		
River Code: STORET #: Lat./ Long.: 41.101624 -8:	3.881949	Office verified ☐
1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present  BEST TYPES POOL RIFFLE OTHER TYPES POOL RIFFLE  BLDR /SLABS [10] 0% 0%	ONE (Or 2	& average)  QUALITY  □ HEAVY [-2]
□ BOULDER [9]         0%         0%         □ DETRITUS [3]         0%         □ TILLS [1]           □ COBBLE [8]         0%         5%         □ MUCK [2]         0%         0%         □ WETLANDS [0]           □ GRAVEL [7]         45%         45%         □ SILT [2]         25%         25%         □ HARDPAN [0]           □ SAND [6]         10%         10%         □ ARTIFICIAL [0]         0%         □ SANDSTONE [0]           □ BEDROCK [5]         0%         0%         ○ (Score natural substrates; ignore         □ RIP/RAP [0]           NUMBER OF BEST TYPES:         □ 4 or more [2]         sludge from point-sources)         □ LACUSTURINE [0]           □ SHALE [-1]         □ COAL FINES [-2]	SILT SIDDEDA DI III	MODERATE [-1] NORMAL [0] FREE [1]  MODERATE [-2] MODERATE [-1] Maximum 20 NONE [1]
2] INSTREAM COVER Indicate presence 0 to 3: <b>0</b> -Absent; <b>1</b> -Very small amounts or if more commodulity; <b>2</b> -Moderate amounts, but not of highest quality or in small amount quality; <b>3</b> -Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functions <b>0</b> UNDERCUT BANKS [1] UPOOLS > 70cm [2] UOSBOWS, BACKWAT OVERHANGING VEGETATION [1] ONDITION OVERHANGING VEGETATION [1] OBOULDERS [1] OLOGS OR WOODY DIRECTION OF THE PROPERTY OF THE PROP	s of highest er, large al pools. ERS [1] YTES [1]	AMOUNT  Check ONE ( <i>Or 2 &amp; average</i> )  EXTENSIVE >75% [11]  MODERATE 25-75% [7]  SPARSE 5-<25% [3]  NEARLY ABSENT <5% [1]  Cover  Maximum 20  4.0
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)		
SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY		
☐ HIGH [4]       ☐ EXCELLENT [7]       ☐ NONE [6]       ☐ HIGH [3]         ☐ MODERATE [3]       ☐ GOOD [5]       ☐ RECOVERED [4]       ☐ MODERATE [2]         ☐ LOW [2]       ☐ FAIR [3]       ☐ RECOVERING [3]       ☐ LOW [1]         ☐ NONE [1]       ☐ POOR [1]       ☐ RECENT OR NO RECOVERY [1]         Comments	1	Channel Maximum 20 6.0
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (	Or 2 per bar	k & average)
RIPARIAN WIDTH  EROSION  NONE / LITTLE [3]  NARROW 5-10m [2]  HEAVY / SEVERE [1]  NONE [0]  RIPARIAN WIDTH  FLOOD PLAIN QUAL  FOREST, SWAMP [3]  SHRUB OR OLD FIELD [2]  RESIDENTIAL, PARK, NEW FIEL  PENCED PASTURE [1]  OPEN PASTURE, ROWCROP [0]	D [1] D Indica	CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0] te predominant land use(s) 00m riparian. Riparian
Comments		Maximum 10
5] POOL / GLIDE AND RIFFLE / RUN QUALITY  MAXIMUM DEPTH Check ONE (ONLY!)  > 1m [6]  POOL WIDTH > RIFFLE WIDTH [2]  0.7-<1m [4]  POOL WIDTH = RIFFLE WIDTH [1]  0.2-<0.7m [2]  POOL WIDTH > RIFFLE WIDTH [0]  AND FAST [1]  INTERMIT ONLY:  MODERATE [1]	]  TTIAL [-1]  TTENT [-2]  1]	Recreation Potential Primary Contact Secondary Contact (circle one and comment on back)  Pool / Current
Comments		Maximum 12 4.0
☐ BEST AREAS > 10cm [2] ☐ MAXIMUM > 50cm [2] ☐ STABLE (e.g., Cobble, Boulder) [2]	FFLE / RU	UN EMBEDDEDNESS NONE [2]
<ul> <li>☑ BEST AREAS 5-10cm [1]</li> <li>☑ MAXIMUM &lt; 50cm [1]</li> <li>☑ MOD. STABLE (e.g., Large Gravel) [1]</li> <li>☑ UNSTABLE (e.g., Fine Gravel, Sand) [0]</li> </ul>		LOW [1] MODERATE [0] Riffle / Run
Comments	Ľ.	EXTENSIVE [-1] Run Maximum
6] GRADIENT (ft/mi) VERY LOW - LOW [2-4] %POOL: 20  DRAINAGE AREA MODERATE [6-10] %RUN: 60	) %GLID )%RIFFL	Maximum 2.0

Aj SAMPLED REACH Check ALL that apply	Comment RE: Reach consistency/ I	is reach typical of steam?, <i>Recreation</i>	n/Observed - Inferred, O <i>ther</i>	Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/Observed - Inferred, Other/Sampling observations, Concerns, Access directions, etc.	ess directions, etc.
٥	3				
<u> </u>	2 □ □				
☐ L. LINE ☐ UP ☐ OTHER ☐ NORMAL[					
DISTANCE DRY					
☐ 0.5 Km CLARITY	BJAESTHETICS	DJ MAINTENANCE	Circle some & COMMENT	EJ ISSUES	F] MEASUREMENTS
1stsample pass 2nd	☐ NUISANCE ALGAE	PUBLIC / PRIVATE / BOTH / NA		WWTP / CSO / NPDES / INDUSTRY	x width
	☐ ☐ INVASIVE MACROPHYTES	ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD		HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL	x depth
☐ OTHER ☐ 40-70 cm		SPRAY / SNAG / REMOVED		BMPs-CONSTRUCTION-SEDIMENT	max. depth
	THO DO SHEEN	MODIFIED / DIPPED OUT / NA		LOGGING / IRRIGATION / COOLING BANK / FROSION / SURFACE	bankfull x depth 8
ν	cm TRASH/LITTER	RELOCATED / CUTOFFS		FALSE BANK / MANURE / LAGOON	W/D ratio
<b>№ 85%- OPEN</b>	☐ NUISANCE ODOR	MOVING-BEDLOAD-STABLE ARMOLIRED / SLUMPS		WASH H <sub>2</sub> 0 / TILE / H <sub>2</sub> 0 TABLE ACID / MINE / OLIARRY / FLOW	bankfull max. depth floodprone x² width
55%-<85% 2nd	- cm CSOS/SSOS/OUTFALLS	ISLANDS / SCOURED		NATURAL / WETLAND / STAGNANT	entrench. ratio
SED	CJ RECREATION AREA DEPTH POOL: □>100ft²□>3ft	IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE		PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	Legacy Tree:

Stream Drawing:



#### ChiefPA Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind	, , , , , ,	
SITE NUMBER	S-B12 RIVER BASIN Mahoning DRAINAGE AREA (mi²) 0.2	20
LENGTH OF STREAM REACH (ft) 217	LAT. 41.10356 LONG82.87777 RIVER CODE RIVER MILE	
DATE 09/27/18 SCORER JB	COMMENTS	
NOTE: Complete All Items On This For	rm - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instru	ctions
STREAM CHANNEL NONE / NA MODIFICATIONS:	ATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECO	VERY
· · · · · · · · · · · · · · · · · · ·	very type of substrate present. Check ONLY two predominant substrate TYPE boxes ficant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHE
<u>TYPE</u>	PERCENT TYPE PERCENT	Metri Point
BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts]	0%   30%   30%   30%   0%   10	Politi
BEDROCK [16 pt]	0% FINE DETRITUS [3 pts] 0% 60%	Substra Max = 4
COBBLE (65-256 mm) [12 pts]  GRAVEL (2-64 mm) [9 pts]	5% CLAY or HARDPAN [0 pt] 60%  5% MUCK [0 pts] 0%	_
SAND (<2 mm) [6 pts]	0% ARTIFICIAL [3 pts] 0%	8
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock	5.00% (A) Substrate Percentage 100% (B)	A + B
SCORE OF TWO MOST PREDOMINATE SUB		
2. Maximum Pool Depth (Measure the	maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool De
evaluation. Avoid plunge pools from ro	pad culverts or storm water pipes) (Check ONLY one box):  > 5 cm - 10 cm [15 pts]	Max = 3
> 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts]	< 5 cm [5 pts]  NO WATER OR MOIST CHANNEL [0 pts]	0
COMMENTS	MAXIMUM POOL DEPTH (centimeters): 0	
3. BANK FULL WIDTH (Measured as th	ne average of 3-4 measurements) (Check ONLY one box):  > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankfu Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	≤ 1.0 m (<=3' 3") [5 pts]	Max=30
COMMENTS	AVERAGE BANKFULL WIDTH (meters): 0.90	15
O MINI ENTO	AVERAGE BARRY GEE WIBTH (Incleas).	13
	This information must also be completed	
<b>RIPARIAN ZONE AND FLOOD</b> <u>RIPARIAN WIDTH</u>	DPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ FLOODPLAIN QUALITY	
L R (Per Bank) Wide >10m	L R (Most Predominant per Bank) L R  Mature Forest, Wetland Conservation Tillage	
Moderate 5-10m	Immature Forest, Shrub or Old Urban or Industrial	
✓ ✓ Narrow <5m	Residential, Park, New Field Open Pasture, Row Crop	)
None	Fenced Pasture Mining or Construction	
COMMENTS		
FLOW REGIME (At Time of Ev	valuation) (Check ONLY one box):  Moist Channel, isolated pools, no flow (Intermittent)	
Subsurface flow with isolated po		
	s per 61 m (200 ft) of channel) (Check ONLY one box):	
None 0.5	1.0	
STREAM GRADIENT ESTIMATE		
Flat (0.5 ft/100 ft)	Moderate (2 ft/100 ft) Moderate to Severe Severe Severe (10 ft/100	. (4)

ADDITIONAL STREAM INFORMATION (This Information Must Also	be Completed):				
QHEI PERFORMED? - Yes No QHEI Score	(If Yes, Attach Completed QHEI Form)				
DOWNSTREAM DESIGNATED USE(S)					
WWH Name:	Distance from Evaluated Stream				
CWH Name: Mud Run	Distance from Evaluated Stream				
EWH Name:	Distance from Evaluated Stream				
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE EN	ITIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION				
USGS Quadrangle Name: Attica	NRCS Soil Map Stream Order				
County: Seneca Towns	hip / City: Reed				
MISCELLANEOUS					
Base Flow Conditions? (Y/N):Y Date of last precipitation:	09/26/18 Quantity: 0.42				
Photograph Information:					
Elevated Turbidity? (Y/N): N Canopy (% open): 0%					
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:					
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)					
Is the sampling reach representative of the stream (Y/N) Y If not,	please explain:				
Additional comments/description of pollution impacts:					
ID number. Include appropriate field data	r collections optional. NOTE: all voucher samples must be labeled with the site a sheets from the Primary Headwater Habitat Assessment Manual)				
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders C Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aqua	bserved? (Y/N) N Voucher? (Y/N) N Voucher? (Y/N) N Voucher? (Y/N) N Voucher? (Y/N) N				
Comments Regarding Biology:					
DRAWING AND NARRATIVE DESCRIPTION	OF STREAM REACH (This <u>must</u> be completed):				
	r site evaluation and a narrative description of the stream's location				
See Figure 4					





QHEI Score:	33.0
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Stream & Location: S-B10 (UNT to Mud Run)	_ <i>RM:</i>	_ <b> <i>Date:</i></b> 09/28/2018
Scorers Full Name & Affiliation:		
River Code: STORET #: Lat./ Long.: 41.105025 -83	.875068	Office verified ☐
1] SUBSTRATE Check ONLYTwo substrate TYPE BOXES; estimate % or note every type present  BEST TYPES POOL RIFFLE OTHER TYPES POOL RIFFLE ORIGIN	ONE (Or 2 o	& average)  QUALITY
□ BLDR /SLABS [10]       0%       0%       □ HARDPAN [4]       0%       0%       □ LIMESTONE [1]         □ BOULDER [9]       0%       0%       □ DETRITUS [3]       0%       0%       □ TILLS [1]         □ COBBLE [8]       0%       5%       □ MUCK [2]       0%       0%       □ WETLANDS [0]         □ GRAVEL [7]       45%       45%       □ SILT [2]       25%       25%       □ HARDPAN [0]         □ SAND [6]       10%       10%       □ ARTIFICIAL [0]       0%       0%       SANDSTONE [0]         □ BEDROCK [5]       0%       0%       (Score natural substrates; ignore       □ RIP/RAP [0]         NUMBER OF BEST TYPES:       □ 4 or more [2] sludge from point-sources)       □ LACUSTURINE [0]         □ SHALE [-1]       □ COAL FINES [-2]		☐ HEAVY [-2] ☐ MODERATE [-1] ☐ NORMAL [0] ☐ FREE [1] ☐ EXTENSIVE [-2] ☐ MODERATE [-1] ☐ NORMAL [0] ☐ NONE [1]  Substrate  12.0  Maximum 20
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more comme quality; 2-Moderate amounts, but not of highest quality or in small amounts quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functiona 0 UNDERCUT BANKS [1]	of highest r, large l pools. ERS [1] TES [1]	AMOUNT  Check ONE ( <i>Or 2 &amp; average</i> )  EXTENSIVE >75% [11]  MODERATE 25-75% [7]  SPARSE 5-<25% [3]  NEARLY ABSENT <5% [1]  Cover  Maximum  4.0
OLIVANIEL MODBILOLOGICA I ONE : 100 O.		20
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY		
□ HIGH [4]       □ EXCELLENT [7]       □ NONE [6]       □ HIGH [3]         □ MODERATE [3]       □ GOOD [5]       □ RECOVERED [4]       □ MODERATE [2]         □ LOW [2]       □ FAIR [3]       □ RECOVERING [3]       □ LOW [1]         □ NONE [1]       □ POOR [1]       □ RECENT OR NO RECOVERY [1]         Comments		Channel Maximum 20 6.0
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (C	or 2 per ban	k & average)
River right looking downstream RIPARIAN WIDTH REROSION WIDE > 50m [4] SHRUB OR OLD FIELD [2] MODERATE [2] NARROW 5-10m [2] HEAVY / SEVERE [1] VERY NARROW < 5m [1] OPEN PASTURE, ROWCROP [0]  Comments	ITY R	CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0] te predominant land use(s) 00m riparian. Riparian Maximum 3.0
		10
5] POOL / GLIDE AND RIFFLE / RUN QUALITY  MAXIMUM DEPTH Check ONE (ONLY!)  Check ONE (Or 2 & average)  > 1m [6]  O.7-<1m [4]  O.4-<0.7m [2]  O.2-<0.4m [1]  <0.2-c0.4m [1]  -0.2-c0.6m [0]  CURRENT VELOCITY  Check ALL that apply  TORRENTIAL [-1]  VERY FAST [1]  INTERSTITATION  FAST [1]  MODERATE [1]  MODERATE [1]  Indicate for reach - pools and reach.	TIAL [-1] TENT [-2] 1]	Recreation Potential Primary Contact Secondary Contact (circle one and comment on back)  Pool / Current Maximum  4.0
Comments		Maximum 12
Indicate for functional riffles; Best areas must be large enough to support of riffle-obligate species:  Check ONE (Or 2 & average).  RIFFLE DEPTH  RUN DEPTH  RIFFLE / RUN SUBSTRATE  RIFFLE / RUN S	FLE / RU	IN EMBEDDEDNESS  NONE [2]  OW [1]  MODERATE [0] Riffle / Run  MAXIMUM 2.0
61 CPADIENT		8
DRAINAGE AREA    MODERATE [6-10]   MODERATE [6-10]   WRUN: 60	%GLIDI %RIFFLI	Mayimum 2.0

AJ SAMPLED REACH Check All that apply		Comment RE: Reach consistency/ Is	s reach typical of steam?, Recreation	n/Observed - Inferred, Other/	Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/Observed - Inferred, Other/Sampling observations, Concerns, Access directions, etc.	ess directions, etc.
۵	STAGE					
	HIGH					
DISTANCE COR						
O.5 Km CL	CLARITY	BJ AESTHETICS	DJ MAINTENANCE	Circle some & COMMENT	EJ ISSNES	FJ MEASUREMENTS
_	1stsample pass 2nd	□ NUISANCE ALGAE	PUBLIC / PRIVATE / BOTH / NA		WWTP / CSO / NPDES / INDUSTRY	×width
	<u>`</u> ,	☐ INVASIVE MACROPHYTES	ACTIVE / HISTORIC / BOTH / NA		HARDENED/URBAN/DIRT&GRIME	x depth
	□ C m m	☐ EXCESS TURBIDITY	YOUNG-SUCCESSION-OLD		CONTAMINATED / LANDFILL	max denth
	E .	☐ DISCOLORATION	SPRAY / SNAG / REMOVED		<b>BMPs-CONSTRUCTION-SEDIMENT</b>	d‡biy
 I		☐ FOAM / SCUM	MODIFIED / DIPPED OUT / NA		<b>LOGGING / IRRIGATION / COOLING</b>	
meters SECC	□ SECCHI DEPIH□	☐ OIL SHEEN	<b>LEVEED / ONE SIDED</b>		BANK / EROSION / SURFACE	Maintain & deptin 10
CANOPY 1st	cm	☐ TRASH / LITTER	RELOCATED / CUTOFFS		FALSE BANK / MANURE / LAGOON	W/D ratio
		☐ NUISANCE ODOR	MOVING-BEDLOAD-STABLE		WASH H <sub>2</sub> 0 / TILE / H <sub>2</sub> 0 TABLE	bankfull max, depth
2nd 2md 2nd 2nd	E .	☐ SLUDGE DEPOSITS	ARMOURED / SLUMPS		ACID / MINE / QUARRY / FLOW	floodprone x <sup>2</sup> width
30%-755%		☐ CSOs/SSOs/OUTFALLS	ISLANDS / SCOURED		NATURAL / WETLAND / STAGNANT	entrench. ratio
	CIRECRE	CI RECREATION AREA DEPTH	IMPOUNDED / DESICCATED		PARK / GOLF / LAWN / HOME	Legacy Tree:
SED	<u> </u>	POOL: □>100ft <sup>2</sup> □>3ft	FLOOD CONTROL / DRAINAGE		ATMOSPHERE / DATA PAUCITY	

Stream Drawing:

Primary Headwater Habitat Evaluation Form 18 HHEI Score (sum of metrics 1, 2, 3) SITE NAME/LOCATION Seneca Wind RIVER BASIN Mahoning S-B11 DRAINAGE AREA (mi²) 0.20 SITE NUMBER LAT. 41.10483 124 LONG. -82.87496 RIVER CODE LENGTH OF STREAM REACH (ft) RIVER MILE DATE 09/27/18 SCORER COMMENTS NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions STREAM CHANNEL **MODIFICATIONS:** SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. HHEI Metric **PERCENT PERCENT Points** BLDR SLABS [16 pts] SILT [3 pt] 35% 0% BOULDER (>256 mm) [16 pts] LEAF PACK/WOODY DEBRIS [3 pts] 0% 0% Substrate 0% 0% BEDROCK [16 pt] FINE DETRITUS [3 pts] Max = 4025% 5% COBBLE (65-256 mm) [12 pts] CLAY or HARDPAN [0 pt] 20% 0% GRAVEL (2-64 mm) [9 pts] MUCK [0 pts] 8 15% 0% SAND (<2 mm) [6 pts] ARTIFICIAL [3 pts] Total of Percentages of (A) (B) Substrate Percentage 5.00% 100% A + BBldr Slabs, Boulder, Cobble, Bedrock 3 TOTAL NUMBER OF SUBSTRATE TYPES: 5 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of Pool Depth evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): Max = 30> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts] > 22.5 - 30 cm [30 pts] < 5 cm [5 pts] > 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts] 5 3 COMMENTS **MAXIMUM POOL DEPTH (centimeters):** BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): Bankfull > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] Width Max=30 > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  $\leq$  1.0 m (<=3' 3") [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] 5 COMMENTS AVERAGE BANKFULL WIDTH (meters): 1.00 This information must also be completed

	RIPARIAN ZONE AND FLOODPI	LAIN QUAL	LITY ☆NOTE: R	iver Left (L) and Ri	ght (R) as lo	ooking downstream☆	
	RIPARIAN WIDTH	FLOODF	PLAIN QUALITY				
<u>L</u> R	(Per Bank)	L R	(Most Predominant	per Bank)	L R		
	Wide >10m		Mature Forest, Wet	and		Conservation Tillage	
	Moderate 5-10m	<b>V</b>	Immature Forest, S Field	hrub or Old		Urban or Industrial	
	Narrow <5m		Residential, Park, N	lew Field		Open Pasture, Row Crop	
<b>✓ ✓</b>	None		Fenced Pasture			Mining or Construction	
	COMMENTS						
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS  The control of Evaluation (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent) Dry channel, no water (Ephemeral)							
<b>/</b>	SINUOSITY (Number of bends per None 0.5	er 61 m (20 1.0 1.5	0 ft) of channel) (Ch	eck <i>ONLY</i> one bo 2.0 2.5	x):	3.0 >3	
	STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft)						

1

ADDITIONAL STREAM INFORMATION (This Information Mus	t Also be Completed):					
QHEI PERFORMED? - Yes ✓ No QHEI Score	(If Yes, Attach Completed QHEI Form)					
DOWNSTREAM DESIGNATED USE(S)						
WWH Name:	Distance from Evaluated Stream					
CWH Name: Mud Run	Distance from Evaluated Stream					
EWH Name:	Distance from Evaluated Stream					
MAPPING: ATTACH COPIES OF MAPS, INCLUDING T	THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION					
USGS Quadrangle Name: Attica	NRCS Soil Map Page: NRCS Soil Map Stream Order					
County: Seneca	Township / City:Reed					
MISCELLANEOUS						
Base Flow Conditions? (Y/N):Y Date of last precipitation	09/26/18 Quantity: 0.42					
Photograph Information:						
Elevated Turbidity? (Y/N): N Canopy (% open):	0%					
Were samples collected for water chemistry? (Y/N): _N (New	ote lab sample no. or id. and attach results) Lab Number:					
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)						
Is the sampling reach representative of the stream (Y/N) Y	If not, please explain:					
Additional comments/description of pollution impacts:						
BIOTIC EVALUATION						
Performed? (Y/N): N (If Yes, Record all observations. V	oucher collections optional. NOTE: all voucher samples must be labeled with the site ald data sheets from the Primary Headwater Habitat Assessment Manual)					
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamand Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N	ders Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)					
Comments Regarding Biology:						
DRAWING AND NARRATIVE DESCRIPT	TION OF STREAM REACH (This must be completed):					
	est for site evaluation and a narrative description of the stream's location					
See Figure 4	· · · · · · · · · · · · · · · · · · ·					
OCC 1 Iguic 7						





### Primary Headwater Habitat Evaluation Form

65

HHEI Score (sum of metrics 1, 2, 3): SITE NAME/LOCATION Seneca Wind SITE NUMBER S-A8 RIVER BASIN Sandusky DRAINAGE AREA (mi²) 3.57 3,278 LAT. 41.12607 LONG. -82.92074 RIVER CODE LENGTH OF STREAM REACH (ft) RIVER MILE DATE 09/18/18 **COMMENTS** | Modified Class II K. Pulver SCORER NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY STREAM CHANNEL **MODIFICATIONS:** SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes HHEI (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Metric **PERCENT PERCENT Points** BLDR SLABS [16 pts] SILT [3 pt] 40% 0% BOULDER (>256 mm) [16 pts] LEAF PACK/WOODY DEBRIS [3 pts] 0% 0% Substrate 5% 0% FINE DETRITUS [3 pts] BEDROCK [16 pt] Max = 4010% 10% COBBLE (65-256 mm) [12 pts] CLAY or HARDPAN [0 pt] 15% 0% GRAVEL (2-64 mm) [9 pts] MUCK [0 pts] 15 20% 0% SAND (<2 mm) [6 pts] ARTIFICIAL [3 pts] (B) Total of Percentages of Substrate Percentage 15.00% 100% A + BBldr Slabs, Boulder, Cobble, Bedrock 9 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES: Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of Pool Depth evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): Max = 30> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts] > 22.5 - 30 cm [30 pts] < 5 cm [5 pts] > 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts] 30 25 COMMENTS **MAXIMUM POOL DEPTH (centimeters):** BANK FULL WIDTH (Measured as the average of 3-4 measurements) Bankfull (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] Width Max=30> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  $\leq$  1.0 m (<=3' 3") [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] 20 2.10 COMMENTS AVERAGE BANKFULL WIDTH (meters): This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream **FLOODPLAIN QUALITY** RIPARIAN WIDTH (Per Bank) R (Most Predominant per Bank) Wide >10m Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Moderate 5-10m Urban or Industrial Field Open Pasture, Row Crop Narrow <5m Residential, Park, New Field Fenced Pasture None Mining or Construction COMMENTS FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent) Stream Flowing Dry channel, no water (Ephemeral) Subsurface flow with isolated pools (Interstitial) COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 2.0 3.0 1.5 2.5 0.5 >3

Moderate to Severe

Severe (10 ft/100 ft)

Moderate (2 ft/100 ft)

Flat (0.5 ft/100 ft)

STREAM GRADIENT ESTIMATE

Flat to Moderate

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):				
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Atta	ach Completed QHEI Form)			
DOWNSTREAM DESIGNATED LISE(S)				
DOWNSTREAM DESIGNATED USE(S)  WWH Name: Rock Creek	Distance from Evaluated Stream 3.90			
CWH Name:	Distance from Evaluated Stream			
EWH Name:	Distance from Evaluated Stream			
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHE	D AREA. CLEARLY MARK THE SITE LOCATION			
USGS Quadrangle Name: Fireside NRCS Soil Map F	Page: NRCS Soil Map Stream Order			
County: Seneca Township / City: Reed				
MISCELLANEOUS				
Base Flow Conditions? (Y/N):_Y Date of last precipitation:_ 09/10/18	Quantity: <b>0.01</b>			
Photograph Information:				
Elevated Turbidity? (Y/N): Y Canopy (% open): 0%				
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:			
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)				
Is the sampling reach representative of the stream (Y/N) If not, please explain:				
Additional community/decreistics of collection increase.				
Additional comments/description of pollution impacts:				
BIOTIC EVALUATION				
Portional (OVA)				
Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional ID number. Include appropriate field data sheets from the Pr	•			
	N			
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) N Voucher? (Y/N) Aquatic Macroinvertebra	Voucher? (Y/N)  N  Voucher? (Y/N)  N  Voucher? (Y/N)			
Comments Regarding Biology:				
Small fish observed				

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





#### ChieFPA Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind	
SITE NUMBER S-A10 RIVER BASIN Sandusky DRAINAGE AREA (mi²) 0.24	4
LENGTH OF STREAM REACH (ft) 1,245 LAT. 41.10885 LONG82.93562 RIVER CODE RIVER MILE	
DATE 09/19/18 SCORER K. Pulver COMMENTS Modified Class II	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruction	tions
STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVE MODIFICATIONS:	ERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes	HHEI
TYPE PERCENT TYPE PERCENT M	Metric
BLDR SLABS [16 pts]	Points
BEDROCK [16 pt] 0% FINE DETRITUS [3 pts] 0%	Substrate
COBBLE (65-256 mm) [12 pts] 0% CLAY or HARDPAN [0 pt] 25%	Max = 40
GRAVEL (2-64 mm) [9 pts]	7
SAND (CZ IIIII) [0 pts]	
Bldr Slabs, Boulder, Cobble, Bedrock	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3 TOTAL NUMBER OF SUBSTRATE TYPES: 4	
, , , , , , , , , , , , , , , , , , , ,	ool Dept
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):    Some of the continuous pools from road culverts or storm water pipes) (Check ONLY one box):	Max = 30
> 22.5 - 30 cm [30 pts]	25
	25
COMMENTS MAXIMUM POOL DEPTH (centimeters): 18	
<u> </u>	
	Bankfull
	Bankfull Width Max=30
	Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  This information <u>must</u> also be completed	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream ARIPARIAN WIDTH  FLOODPLAIN QUALITY	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream ☆  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  L R (Most Predominant per Bank)  L R	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ♣NOTE: River Left (L) and Right (R) as looking downstream ♣  RIPARIAN WIDTH  L R (Per Bank)  L R (Most Predominant per Bank)  Wide >10m  Moderate 5-10m  L R (Nost Predominant per Bank)  Urban or Industrial	Width Max=30
Solution	Width Max=30
S 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]   S 1.0 m (<=3' 3") [5 pts]   S 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]   S 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]   AVERAGE BANKFULL WIDTH (meters):   1.50      This information must also be completed   RIPARIAN ZONE AND FLOODPLAIN QUALITY   NOTE: River Left (L) and Right (R) as looking downstream	Width Max=30
Solution	Width Max=30
Source Signature Signatur	Width Max=30
Stream Flowing  AVERAGE BANKFULL WIDTH (meters):  AVERAGE BANKFULL WIDTH (meters):  AVERAGE BANKFULL WIDTH (meters):  1.50  AVERAGE BANKFULL WIDTH (meters):  AVERAGE BANKFULL WIDTH (meters):  1.50  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream Another RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Moderate 5-10m  Residential, Park, New Field  Open Pasture, Row Crop  None  COMMENTS Herbaceous vegetated banks  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Moist Channel, isolated pools, no flow (Intermittent)	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ♣NOTE: River Left (L) and Right (R) as looking downstream ♣  RIPARIAN WIDTH FLOODPLAIN QUALITY  L R (Per Bank) L R (Most Predominant per Bank) L R  Wide >10m Mature Forest, Wetland Conservation Tillage    Immature Forest, Wetland   Urban or Industrial    Moderate 5-10m   Residential, Park, New Field   ✓ ✓ Open Pasture, Row Crop    Narrow <5m   Residential, Park, New Field   ✓ ✓ Open Pasture, Row Crop    None   Fenced Pasture   Mining or Construction    COMMENTS   Herbaceous vegetated banks   FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	Width Max=30
3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	Width Max=30
Sinuosity (Number of bends per 61 m (200 ft) of channel, isolated pools, no flow (Intermittent)   Sinuosity (Number of bends per 61 m (200 ft) of channel, isolated pools.   None   1.00 m (≤3' 3") [5 pts]   Sinuosity (Number of bends per 61 m (200 ft) of channel, isolated pools.   None   1.00 m (≤3' 3") [5 pts]   Mining or Construction   Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel)   Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel)   Check ONLY one box):   None   1.00 mature of construction   Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel)   Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel)   Check ONLY one box):   None   1.00 mature of construction   Check ONLY one box):   None   1.00 mature of construction   Check ONLY one box):   None   1.00 mature of construction   Check ONLY one box):   None   1.00 mature of construction   Check ONLY one box):   None   1.00 mature of construction   Check ONLY one box):   None   1.00 mature of construction   Check ONLY one box):   None   1.00 mature of construction   Check ONLY one box):   None   1.00 mature of construction   Check ONLY one box):   None   1.00 mature of construction   Check ONLY one box):   None   1.00 mature of construction   Check ONLY one box):   None   1.00 mature of construction   1.00 mature of constructio	Width Max=30
Salo m - 4.0 m (> 9' 7" - 13') [25 pts]   Salo m (<=3' 3") [5 pts]   Salo m (> 9' 7" - 4' 8") [20 pt	Width Max=30
SINUOSITY (Number of bends per 61 m (200 ft) of channel)  AVERAGE BANKFULL WIDTH (meters):  1.50  AVERAGE BANKFULL WIDTH (met	Width Max=30

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):			
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Att.	ach Completed QHEI Form)		
DOWNSTREAM DESIGNATED USE(S)			
WWH Name: Rock Creek	Distance from Evaluated Stream 4.60		
CWH Name:	Distance from Evaluated Stream		
EWH Name:	Distance from Evaluated Stream		
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHE	D AREA. CLEARLY MARK THE SITE LOCATION		
USGS Quadrangle Name: Attica NRCS Soil Map I	Page: NRCS Soil Map Stream Order		
County: Seneca Township / City:_Reed			
MISCELLANEOUS			
Base Flow Conditions? (Y/N):_Y _ Date of last precipitation:	Quantity: 0.10		
Photograph Information:			
Elevated Turbidity? (Y/N): Y Canopy (% open): 0%			
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:		
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.)	Conductivity (µmhos/cm)		
Is the sampling reach representative of the stream (Y/N) If not, please explain:			
Additional comments/description of pollution impacts.			
Additional comments/description of pollution impacts:			
BIOTIC EVALUATION			
Υ			
Performed? (Y/N): (If Yes, Record all observations. Voucher collections options	·		
ID number. Include appropriate field data sheets from the Pi	Ilmary Headwater Habitat Assessment Manual)		
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Solamanders Observed? (Y/N) Aquatic Macroinvertebra	Voucher? (Y/N) N Voucher? (Y/N) N		
Comments Regarding Biology:			
No fauna observed at time of survey			

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





## Chief Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind	
SITE NUMBER S-A13 RIVER BASIN Sandusky DRAINAGE AREA (mi²) 2	2.87
LENGTH OF STREAM REACH (ft) 3,343 LAT. 41.11400 LONG82.96316 RIVER CODE RIVER MILE	
DATE 09/19/18 SCORER K. Pulver COMMENTS Modified Class II	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instr	uctions
STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERING RECENT OR NO RECOVERED RECOVERED RECOVERING RECENT OR NO RECOVERED RECOVERING RECENT OR NO RECOVERED RECOVERING RECENT OR NO RECOVERED RECO	OVERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes	
(Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.  TYPE  PERCENT  TYPE  PERCENT	HHEI   Metric
□ □ BLDR SLABS [16 pts] □ ✓ SILT [3 pt] 50%	Points
BOULDER (>256 mm) [16 pts]	Substrat
□       □       BEDROCK [16 pt]       0%       □       FINE DETRITUS [3 pts]       0%         □       COBBLE (65-256 mm) [12 pts]       0%       □       CLAY or HARDPAN [0 pt]       20%	Max = 40
GRAVEL (2-64 mm) [9 pts] 15% MUCK [0 pts] 0%	7
SAND (<2 mm) [6 pts]	
Total of Percentages of 0.00% (A) Substrate Percentage 100%	A + B
Bldr Slabs, Boulder, Cobble, Bedrock 500 N SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3	
<ol> <li>Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):</li> </ol>	Pool Dep Max = 3
> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	
> 22.5 - 30 cm [30 pts]	25
COMMENTS MAXIMUM POOL DEPTH (centimeters): 20	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankful
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  (Check ONLY one box):  > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]  ≤ 1.0 m (<=3' 3") [5 pts]	Bankful Width Max=30
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  ✓ 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]  ≤ 1.0 m (<=3' 3") [5 pts]	Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  ✓ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]  ≤ 1.0 m (<=3' 3") [5 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters): 1.20  This information must also be completed	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters): 1.20  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters): 1.20  This information must also be completed	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   ≤ 1.0 m (<=3' 3") [5 pts]   ≤ 1.0	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream ☆  RIPARIAN WIDTH  L R (Per Bank)  L R (Most Predominant per Bank)  L R  (Most Predominant per Bank)  L R	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream ★  RIPARIAN WIDTH  L R (Per Bank)  L R (Most Predominant per Bank)  Wide >10m  Mature Forest, Wetland  Immature Forest, Shrub or Old  Urban or Industrial	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   ≤ 1.0 m (<=3' 3") [5 pts]   ≤ 1.0	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   > 1.0 m (<=3' 3") [5 pts]   > 1.0	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   > 1.0 m (<=3' 3") [5 pts]   > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  NOTE: River Left (L) and Right (R) as looking downstream ↑  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Wide >10m  Mature Forest, Shrub or Old  Immature Forest, Shrub or Old  Narrow <5m  Narrow <5m  Residential, Park, New Field  None  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Noist Channel, isolated pools, no flow (Intermittent)	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   > 1.0 m (<=3' 3") [5 pts]   > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  AVERAGE BANKFULL WIDTH (meters):  I.20  This information must also be completed  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Moderate 5-10m  Mature Forest, Wetland  Moderate 5-10m  Narrow <5m  Narrow <5m  Residential, Park, New Field  None  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  COMMENTS  Moist Channel, isolated pools, no flow (Intermittent Dry channel, no water (Ephemeral))	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream ↑  RIPARIAN WIDTH  FLOODPLAIN QUALITY  RIPARIAN WIDTH  FLOODPLAIN QUALITY  Mide >10m  Mature Forest, Wetland  Moderate 5-10m  Moderate 5-10m  Residential, Park, New Field  Narrow <5m  Residential, Park, New Field  Fenced Pasture  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY	Width Max=30

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):				
QHEI PERFORMED? - Yes ✓ No QHEI Score (If Yes, Attach Completed QHEI Form)				
DOWNSTREAM DESIGNATED USE(S)				
WWH Name: Rock Creek	Distance from Evaluated Stream 3.00			
CWH Name:	Distance from Evaluated Stream			
EWH Name:	Distance from Evaluated Stream			
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHE	D AREA. CLEARLY MARK THE SITE LOCATION			
USGS Quadrangle Name: Attica NRCS Soil Map F	Page: NRCS Soil Map Stream Order			
County: Seneca Township / City: Scipio				
MISCELLANEOUS				
Base Flow Conditions? (Y/N): Y Date of last precipitation: 09/10/18	Quantity: 0.10			
Photograph Information:				
Elevated Turbidity? (Y/N): Y Canopy (% open): 10%				
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:			
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)				
Is the sampling reach representative of the stream (Y/N) If not, please explain:				
Additional comments/description of pollution impacts:				
Additional comments/description of politicion impacts.				
BIOTIC EVALUATION				
<u> </u>				
Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site				
ID number. Include appropriate field data sheets from the Pr	Imary Headwater Habitat Assessment Manual)			
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N Vouc				
Comments Regarding Biology:				
No fauna observed at time of survey				
	<del> </del>			

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





#### Chief Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

	THIEF GOOTE (Sum of metrics 1, 2, 3).	
SITE NAME/LOCATION Seneca Wind	DA4E	
SITE NOWDER_	S-A15 RIVER BASIN Sandusky DRAINAGE AREA (mi²) 0.69	9
LENGTH OF STREAM REACH (ft) 319	LAT. 41.10834 LONG82.97065 RIVER CODE RIVER MILE	
DATE 09/19/18 SCORER K. Pulve	er COMMENTS Modified Class II	
NOTE: Complete All Items On This Form	m - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruct	tions
STREAM CHANNEL NONE / NA	ATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOV	/EDV
MODIFICATIONS:	TIONAL CHANNEL   RECOVERED   RECOVERING   RECENT OF NO RECOV	EKI
SUBSTRATE (Estimate percent of every continuous)	constructions of substrate present Check ONI Visus and an insert substrate TVDT have	
	very type of substrate present. Check ONLY two predominant substrate TYPE boxes cant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHE
<u>TYPE</u> P	EROENT TEROENT	Metri
BLDR SLABS [16 pts]	υ ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο	Point
□ □ BOULDER (>256 mm) [16 pts] □ □ BEDROCK [16 pt]		Substra
COBBLE (65-256 mm) [12 pts]	10% CLAY or HARDPAN [0 pt]	Max = 4
GRAVEL (2-64 mm) [9 pts]	30% MUCK [0 pts] 0%	13
SAND (<2 mm) [6 pts]	20% ARTIFICIAL [3 pts] 0%	13
Total of Percentages of	10.00% (A) Substrate Percentage 100% (B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock _	Check 100%	ATD
SCORE OF TWO MOST PREDOMINATE SUBS	STRATE TYPES: 12 TOTAL NUMBER OF SUBSTRATE TYPES: 1	
2. Maximum Pool Depth (Measure the m	maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	ool De
		Max = 3
> 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts]	> 5 cm - 10 cm [15 pts] < 5 cm [5 pts]	
> 10 - 22.5 cm [25 pts]	NO WATER OR MOIST CHANNEL [0 pts]	15
COMMENTS	MAXIMUM POOL DEPTH (centimeters): 8	
3. BANK FULL WIDTH (Measured as the > 4.0 meters (> 13') [30 pts]	e average of 3-4 measurements) (Check ONL Y one box):  > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankfu Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]		Max=3
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		
COMMENTS	AVERAGE BANKFULL WIDTH (meters): 1.20	15
	This information must also be completed	_
RIPARIAN ZONE AND FLOODE	( ) ( )	
<u>RIPARIAN WIDTH</u> L R (Per Bank)	FLOODPLAIN QUALITY  LR (Most Predominant per Bank) LR	
Wide >10m	Mature Forest, Wetland Conservation Tillage	
Moderate 5-10m	Immature Forest, Shrub or Old Urban or Industrial	
ПП . N 5	Field Open Pasture, Row Crop	
Narrow <5m		
None COMMENTS	Fenced Pasture Mining or Construction	
FLOW REGIME (At Time of Eva	aluation) (Check ONLY one box):  ✓ Moist Channel, isolated pools, no flow (Intermittent)	
Subsurface flow with isolated poor		
COMMENTS_		
SINUOSITY (Number of bends p	per 61 m (200 ft) of channel) (Check ONLY one box):	
None `	1.0 2.0 3.0	
0.5	1.5 2.5 >3	
STREAM GRADIENT ESTIMATE		
Flat (0.5 ft/100 ft)	Moderate (2 ft/100 ft) Moderate to Severe Severe (10 ft/100 ft)	t)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):				
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Atta	ach Completed QHEI Form)			
DOWNSTREAM DESIGNATED USE(S)				
WWH Name: Rock Creek	Distance from Evaluated Stream 1.70			
CWH Name:	Distance from Evaluated Stream			
EWH Name:	Distance from Evaluated Stream			
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHE	D AREA. CLEARLY MARK THE SITE LOCATION			
USGS Quadrangle Name: Attica NRCS Soil Map F	Page: NRCS Soil Map Stream Order			
County: Seneca Township / City:_Scipio				
MISCELLANEOUS				
Base Flow Conditions? (Y/N):_Y Date of last precipitation:_ 09/10/18	Quantity: 0.10			
Photograph Information:				
Elevated Turbidity? (Y/N): Y Canopy (% open): 0%				
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:			
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)				
Is the sampling reach representative of the stream (Y/N) If not, please explain:				
Additional comments/description of pollution impacts:				
Additional comments/description of poliditon impacts.				
BIOTIC EVALUATION				
Parfarance d 2 (V/N). Y	L NOTE III			
Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional ID number. Include appropriate field data sheets from the Pr	•			
	N			
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) N Voucher? (Y/N) Aquatic Macroinvertebra	Voucher? (Y/N) N Voucher? (Y/N) N			
Comments Regarding Biology:				
No fauna observed at time of survey				

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





### **ChieFP** Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind	
SITE NUMBER S-A14 RIVER BASIN DRAINAGE AREA (mi²)	0.69
LENGTH OF STREAM REACH (ft) 3,555 LAT. 41.10535 LONG82.97415 RIVER CODE RIVER MILE	
DATE 09/19/18 SCORER K. Pulver COMMENTS Modified Class II	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Inst	ructions
STREAM CHANNEL	COVERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes	ı HHEI
(Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.  TYPE  PERCENT  TYPE  PERCENT	Metric
□ □ BLDR SLABS [16 pts] □ □ □ SILT [3 pt] 40%	Points
BOULDER (>256 mm) [16 pts]	Substrat
■ BEDROCK [16 pt]       0%       ■ FINE DETRITUS [3 pts]       0%         ■ COBBLE (65-256 mm) [12 pts]       15%       □ CLAY or HARDPAN [0 pt]       5%	Max = 40
GRAVEL (2-64 mm) [9 pts]	14
SAND (<2 mm) [6 pts] 25% ARTIFICIAL [3 pts] 0%	
Total of Percentages of 15.00% (A) Substrate Percentage 100% (B)	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9    Check   Ch	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Dep
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):	Max = 30
> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts] > 5 cm [5 pts]	
> 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	15
COMMENTS MAXIMUM POOL DEPTH (centimeters): 10	l
	Bankful
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankful Width
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts]	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONL Y one box):  > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (<=3' 3") [5 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Width Max=30
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts]	Width
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  2.10	Width Max=30
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONL Y one box):  > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (<=3' 3") [5 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Width Max=30
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONL Y one box):  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ♣ NOTE: River Left (L) and Right (R) as looking downstream ♣  RIPARIAN WIDTH  FLOODPLAIN QUALITY	Width Max=30
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONL Y one box):  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆	Width Max=30
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)	Width Max=30
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters): 2.10  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆  RIPARIAN WIDTH FLOODPLAIN QUALITY  L R (Per Bank) L R (Most Predominant per Bank) L R (Most Predominant per Bank) Wide >10 m Mature Forest, Wetland  Wide >10 m Moderate 5-10 m  Immature Forest, Shrub or Old Immature Forest, Shrub or Old Field  Onen Pasture Row Conservation Floods	Width Max=30
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream Note: River Left (L) and River Left (L) an	Width Max=30
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters): 2.10  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆  RIPARIAN WIDTH FLOODPLAIN QUALITY  L R (Per Bank) L R (Most Predominant per Bank) L R (Most Predominant per Bank) Wide >10 m Mature Forest, Wetland  Wide >10 m Moderate 5-10 m  Immature Forest, Shrub or Old Immature Forest, Shrub or Old Field  Onen Pasture Row Conservation Floods	Width Max=30
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY *NOTE: River Left (L) and Right (R) as looking downstream *\frac{1}{2} \text{RIPARIAN WIDTH} \text{FLOODPLAIN QUALITY}  L R (Per Bank) L R (Most Predominant per Bank) L R (Most Predomin	Width Max=30
BANK FULL WIDTH (Measured as the average of 3-4 measurements)  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  **NOTE: River Left (L) and Right (R) as looking downstream **  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Wide >10m  Mature Forest, Shrub or Old  Field  Narrow <5m  Residential, Park, New Field  None  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Moist Channel, isolated pools, no flow (Intermitten)  Moist Channel, isolated pools, no flow (Intermitten)	Width Max=30
BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  NOTE: River Left (L) and Right (R) as looking downstream RIPARIAN WIDTH  L R (Per Bank) Wide >10m Mature Forest, Wetland Wide >10m Moderate 5-10m Moderate 5-10m Residential, Park, New Field  Narrow <5m None Penced Pasture  None COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	Width Max=30
BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7' - 13') [25 pts]  > 1.0 m (<=3' 3") [5 pts]  > 1.0 m (<=3' 3") [5 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream And Predominant per Bank)  L R (Per Bank) Wide > 10m Mature Forest, Wetland Wide > 10m Moderate 5-10m Moderate 5-10m Residential, Park, New Field  None COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing Subsurface flow with isolated pools (Interstitial)  COMMENTS  Moist Channel, isolated pools, no flow (Intermitten Dry channel, no water (Ephemeral))	Width Max=30
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7' - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7' - 4' 8') [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆  RIPARIAN WIDTH FLOODPLAIN QUALITY  □ Note > 10 m (Most Predominant per Bank) □ Wide > 10 m (Most Predominant per Bank) □ Wide > 10 m (Most Predominant per Bank) □ Wide > 10 m (Most Predominant per Bank) □ Wide > 10 m (Most Predominant per Bank) □ Narrow < 5 m (Most Predominant per Bank) □ Narrow < 5 m (Most Predominant per Bank) □ Narrow < 5 m (Most Predominant per Bank) □ Narrow < 5 m (Most Predominant per Bank) □ None (Most Predominant per Bank) □ None (Most Predominant per Bank) □ Wide > 10 m (Most Predominant per Bank) □ Wide > 10 m (Most Predominant per Bank) □ Narrow < 5 m (Most Predominant per Bank) □ None (Most Channel, isolated pools, no flow (Intermitten Dry channel, no water (Ephemeral) □ COMMENTS □ SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): □ SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): □ None (Check ONLY one box): □ None (Check ONLY one box): □ None (Check ONLY one box): □ SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): □ None (Check ONLY one box): □ None (Check ONLY one box):	Width Max=30
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 41' 8") [25 pts] > 1.0 m (<=3' 3") [5 pts]  > 1.0 m (<=3' 3") [5 pts]  > 1.0 m (<=3' 3") [5 pts]   COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream Note: RIPARIAN WIDTH  EL R (Per Bank) L R (Most Predominant per Bank) L R Conservation Tillage  Wide >10m Mature Forest, Wetland Conservation Tillage  Wide >10m Residential, Park, New Field Open Pasture, Row C  None Residential, Park, New Field Open Pasture, Row C  None Fenced Pasture Mining or Construction  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	Width Max=30
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7' - 13') [25 pts]  > 1.5 m - 3.0 m (> 9' 7' - 4' 8') [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆  RIPARIAN WIDTH FLOODPLAIN QUALITY  □ Note > 10 m (Most Predominant per Bank) □ Wide > 10 m (Most Predominant per Bank) □ Wide > 10 m (Most Predominant per Bank) □ Wide > 10 m (Most Predominant per Bank) □ Wide > 10 m (Most Predominant per Bank) □ Narrow < 5 m (Most Predominant per Bank) □ Narrow < 5 m (Most Predominant per Bank) □ Narrow < 5 m (Most Predominant per Bank) □ Narrow < 5 m (Most Predominant per Bank) □ None (Most Predominant per Bank) □ None (Most Predominant per Bank) □ Wide > 10 m (Most Predominant per Bank) □ Wide > 10 m (Most Predominant per Bank) □ Narrow < 5 m (Most Predominant per Bank) □ None (Most Channel, isolated pools, no flow (Intermitten Dry channel, no water (Ephemeral) □ COMMENTS □ SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): □ SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): □ None (Check ONLY one box): □ None (Check ONLY one box): □ None (Check ONLY one box): □ SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): □ None (Check ONLY one box): □ None (Check ONLY one box):	Width Max=30  20  rop  n  tt)

ADDITIONAL STREAM INFORMATION (This Information Must Also be C	ompleted):	
QHEI PERFORMED? - Yes V No QHEI Score	(If Yes, Attach Completed QHEI Form)	
DOWNSTREAM DESIGNATED USE(S)		
WWH Name: Rock Creek	Distance from Evaluated Stream 1.65	_
CWH Name:	Distance from Evaluated Stream	_
EWH Name: _	Distance from Evaluated Stream	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE	WATERSHED AREA. CLEARLY MARK THE SITE LOCATION	
USGS Quadrangle Name: NRC	S Soil Map Page: NRCS Soil Map Stream Order	
County: Seneca Township / C	Scipio	
MISCELLANEOUS		
Base Flow Conditions? (Y/N):_Y Date of last precipitation:09/	10/18 Quantity: 0.10	_
Photograph Information:		
Elevated Turbidity? (Y/N): Y Canopy (% open): 0%		
Were samples collected for water chemistry? (Y/N): (Note lab samples collected for water chemistry?	ole no. or id. and attach results) Lab Number:	
Field Measures: Temp (°C) Dissolved Oxygen (mg/l)	pH (S.U.) Conductivity (µmhos/cm)	
	• • • • • • • • • • • • • • • • • • • •	
Is the sampling reach representative of the stream $(Y/N)$ If not, please	e explain:	
Additional comments/description of pollution impacts:		
A data of the second plant of penalton impacts.		
BIOTIC EVALUATION		
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections)	ctions optional. NOTE: all voucher samples must be labeled with	the s
	s from the Primary Headwater Habitat Assessment Manual)	
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N) Agustic Modern (Y/N) Voucher? (Y/N) Agustic Modern (Y/N) Voucher? (Y/N) Voucher? (Y/N) Agustic Modern (Y/N) Voucher? (Y/N)	ed? (Y/N) N Voucher? (Y/N) N	1
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) Aquatic Mac	croinvertebrates Observed? (Y/N) Voucher? (Y/N)	
Comments Regarding Biology:		
Small fish observed		

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location







#### Chief Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind					
SITE NUMBER	S-A17 RIVER	R BASIN Sandusky	DRAI	NAGE AREA (mi²)	1.00
LENGTH OF STREAM REACH (ft) 649	LAT. 41.08972	LONG. <b>-82.97782</b> RIV	ER CODE	RIVER MILE	
DATE 09/20/18 SCORER K. Pu	Iver COMMENTS	Modified Class I			
NOTE: Complete All Items On This I	orm - Refer to "Field	Evaluation Manual for	Ohio's PHWH	Streams" for Ins	tructions
STREAM CHANNEL NONE / MODIFICATIONS:	NATURAL CHANNEL	RECOVERED REC	OVERING Z	ECENT OR NO RE	COVERY
SUBSTRATE (Estimate percent of			•		
(Max of 32). Add total number of sig	nificant substrate types for PERCENT TYPE	` ,	score is sum of t	ooxes A & B.  PERCENT	HHE
BLDR SLABS [16 pts]	0% TFE	SILT [3 pt]		60%	Point
BOULDER (>256 mm) [16 pts]	0%	LEAF PACK/WOOD		0%	Substra
BEDROCK [16 pt]	0%	FINE DETRITUS [3]		40%	Max =
COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts]	0%	CLAY or HARDPAN MUCK [0 pts]	[U pt]	0%	
SAND (<2 mm) [6 pts]	0%	ARTIFICIAL [3 pts]		0%	5
Total of Percentages of	0 00% (A)	Substrate Percentage		(B)	
Bldr Slabs, Boulder, Cobble, Bedroo	:k	Check	00%	(6)	A+B
SCORE OF TWO MOST PREDOMINATE S	JBSTRATE TYPES: 3	TOTAL NUMBE	R OF SUBSTRAT	E TYPES: 2	
2. Maximum Pool Depth (Measure ti		-	•	h at the time of	Pool De
evaluation. Avoid plunge pools from > 30 centimeters [20 pts]	road culverts or storm wat	er pipes) (Check <i>ONLY</i> > 5 cm - 10 cm [15]			Max =
> 20.5 - 30 cm [30 pts]	t	< 5 cm [5 pts]	pisj		
> 10 - 22.5 cm [25 pts]		NO WATER OR MO	DIST CHANNEL [	) pts]	0
COMMENTS		MAXIMUM PO	OOL DEPTH (cer	ntimeters): 0	
3. BANK FULL WIDTH (Measured as	the average of 2.4 mags	uramanta) (Chao	k <i>ONLY</i> one box	<u> </u>	Bankfu
> 4.0 meters (> 13') [30 pts]	the average of 3-4 ineas	> 1.0 m - 1.5 m (> 3'			Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts	_	≤ 1.0 m (<=3' 3") [5 p	ots]		Max=3
				4.50	20
COMMENTS		AVERAGE BA	ANKFULL WIDTH	I (meters): 1.50	20
	This inform	ation must also be sound	la ta d		
RIPARIAN ZONE AND FLO		ation <u>must</u> also be compl ANOTE: River Left (L) and		ing downstream分	
RIPARIAN WIDTH	FLOODPLAIN QUA				
L R (Per Bank) Wide >10m		edominant per Bank) orest, Wetland		onservation Tillage	
Moderate 5-10m	Immature	e Forest, Shrub or Old		ban or Industrial	
	Field			pen Pasture, Row C	ron
Narrow <5m	Resident	ial, Park, New Field		scirr dotare, now e	ТОР
None COMMENTS	Fenced F	Pasture	ШШ м	ining or Construction	<u>1</u>
FLOW REGIME (At Time of	Evaluation) (Check ONL		nal igalated page	no flow (Intermitter	·+\
Stream Flowing Subsurface flow with isolated	pools (Interstitial)		iei, isolated pools, , no  water (Epher	no flow (Intermitter neral)	11.)
COMMENTS					
SINUOSITY (Number of ber	ds per 61 m (200 ft) of cha	nnel) (Check ONLY one	box):		
None	1.0	2.0		3.0	
0.5	1.5	2.5		>3	
STREAM GRADIENT ESTIMATE					
OTKEAM OKAD <u>IEN</u> T EOTIMATE	_			_	
Flat (0.5 ft/100 ft)	Moderate (2 ft/10	0 ft) Moderate t	o Severe	Severe (10 ft	/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):				
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Attach Completed QHEI Form)				
DOWNSTREAM DESIGNATED USE(S)				
WWH Name: Honey Creek	Distance from Evaluated Stream 1.25			
CWH Name:	Distance from Evaluated Stream			
EWH Name:	Distance from Evaluated Stream			
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHE	D AREA. CLEARLY MARK THE SITE LOCATION			
USGS Quadrangle Name: Attica NRCS Soil Map I	Page: NRCS Soil Map Stream Order			
County: Seneca Township / City:_Scipic				
MISCELLANEOUS				
Base Flow Conditions? (Y/N):_Y _ Date of last precipitation:	Quantity: 0.10			
Photograph Information:				
Elevated Turbidity? (Y/N): Y Canopy (% open): 0%				
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:			
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)				
Is the sampling reach representative of the stream (Y/N) If not, please explain:				
Additional comments/description of pollution impacts:				
Additional commence accomption of policition impacts.				
BIOTIC EVALUATION				
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional	•			
ID number. Include appropriate field data sheets from the Pr	rimary Headwater Habitat Assessment Manual)			
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) N Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) Aquatic Macroinvertebra	Voucher? (Y/N) N Voucher? (Y/N) N			
Comments Regarding Biology:				
Small fish observed				

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





### Primary Headwater Habitat Evaluation Form

23

HHEI Score (sum of metrics 1, 2, 3): SITE NAME/LOCATION Seneca Wind RIVER BASIN Sandusky S-A39 DRAINAGE AREA (mi²) 0.25 SITE NUMBER I AT 41.08851 LONG. -82.98144 RIVER CODE 364 LENGTH OF STREAM REACH (ft) RIVER MILE DATE 09/27/18 **COMMENTS** Modified Class I K. Pulver SCORER NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY STREAM CHANNEL **MODIFICATIONS:** SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes HHEI (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Metric **PERCENT PERCENT Points** BLDR SLABS [16 pts] SILT [3 pt] 50% 0% BOULDER (>256 mm) [16 pts] LEAF PACK/WOODY DEBRIS [3 pts] 0% 0% Substrate 0% 0% FINE DETRITUS [3 pts] BEDROCK [16 pt] Max = 4010% 0% COBBLE (65-256 mm) [12 pts] CLAY or HARDPAN [0 pt] 15% 0% GRAVEL (2-64 mm) [9 pts] MUCK [0 pts] 13 25% 0% SAND (<2 mm) [6 pts] ARTIFICIAL [3 pts] (B) Total of Percentages of Substrate Percentage 0.00% 100% A + BBldr Slabs, Boulder, Cobble, Bedrock 9 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES: Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of Pool Depth evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): Max = 30> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts] > 22.5 - 30 cm [30 pts] < 5 cm [5 pts] > 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts] 5 3 COMMENTS **MAXIMUM POOL DEPTH (centimeters):** BANK FULL WIDTH (Measured as the average of 3-4 measurements) Bankfull (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] Width Max=30> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  $\leq$  1.0 m (<=3' 3") [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] 0.60 5 COMMENTS AVERAGE BANKFULL WIDTH (meters): This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream **FLOODPLAIN QUALITY** RIPARIAN WIDTH (Per Bank) R (Most Predominant per Bank) Wide >10m Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Moderate 5-10m Urban or Industrial Field Open Pasture, Row Crop Narrow <5m Residential, Park, New Field Fenced Pasture None Mining or Construction COMMENTS FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent) Stream Flowing Dry channel, no water (Ephemeral) Subsurface flow with isolated pools (Interstitial) COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 2.0 3.0 1.5 2.5 0.5 >3

Moderate to Severe

Severe (10 ft/100 ft)

Moderate (2 ft/100 ft)

Flat (0.5 ft/100 ft)

STREAM GRADIENT ESTIMATE

Flat to Moderate

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Atta	ach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
www Name: Honey Creek	Distance from Evaluated Stream 1.30
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHE	D AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Attica NRCS Soil Map F	Page: NRCS Soil Map Stream Order
County: Seneca Township / City:_Scipio	
MISCELLANEOUS	
Base Flow Conditions? (Y/N):_Y Date of last precipitation:_ 09/25/18	Quantity: 0.38
Photograph Information:	
Elevated Turbidity? (Y/N): Y Canopy (% open): 50%	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.)	Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain:	
Additional comments/decariation of nallation impacts.	
Additional comments/description of pollution impacts:	
BIOTIC EVALUATION	
Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional ID number. Include appropriate field data sheets from the Pr	•
	N
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) N Voucher? (Y/N) Aquatic Macroinvertebra	Voucher? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





## **ChieFP** Primary Headwater Habitat Evaluation Form

**52** 

HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind	
SITE NUMBER S-A18 RIVER BASIN Sandusky DRAINAGE AREA (mi²)	1.00
LENGTH OF STREAM REACH (ft) 344 LAT. 41.08548 LONG82.98627 RIVER CODE RIVER MILE	
DATE 09/20/18 SCORER K. Pulver COMMENTS	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Ins	ructions
STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO REMODIFICATIONS:	COVERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes	
(Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI
TYPE         PERCENT         TYPE         PERCENT           □ □ □ BLDR SLABS [16 pts]         0% □ □ □ SILT [3 pt]         50% □	Points
BOULDER (>256 mm) [16 pts]	Substrat
□       BEDROCK [16 pt]       0%       □       FINE DETRITUS [3 pts]       0%         □       COBBLE (65-256 mm) [12 pts]       0%       □       CLAY or HARDPAN [0 pt]       20%	Max = 40
GRAVEL (2-64 mm) [9 pts]  15%  MUCK [0 pts]  0%	7
SAND (<2 mm) [6 pts]	'
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock O.00% (A) Substrate Percentage Check (B)	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3 TOTAL NUMBER OF SUBSTRATE TYPES: 4	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Dep
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):  > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 30
> 22.5 - 30 cm [30 pts] < 5 cm [5 pts]	25
> 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	25
COMMENTS MAXIMUM POOL DEPTH (centimeters): 20	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check <i>ONL</i> Y one box):	Bankful
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (<=3' 3") [5 pts]	Width Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	I
COMMENTS AVERAGE BANKFULL WIDTH (meters): 1.80	20
This information must also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN WIDTH FLOODPLAIN QUALITY	
L R (Per Bank) L R (Most Predominant per Bank) L R	
Wide >10m	
Field Field Urban or Industrial	
Narrow <5m Residential, Park, New Field Open Pasture, Row C	rop
None Fenced Pasture Mining or Construction COMMENTS riparian partially imature forest/shrub	ו
	<del>_</del>
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing Moist Channel, isolated pools, no flow (Intermitter	t)
Subsurface flow with isolated pools (Interstitial)  Dry channel, no water (Ephemeral)	
COMMENTS_	
	]
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check <i>ONLY</i> one box):  None  1.0 2.0 3.0 0.5 1.5 2.5 3.0 >3	
None       1.0       2.0       3.0         ✓ 0.5       1.5       2.5       >3	]
☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0	1

ADDITIONAL STREAM INFORMATION (This Information Must Also be Cor	npleted):
QHEI PERFORMED? - Yes V No QHEI Score	If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: Honey Creek	Distance from Evaluated Stream 1.00
CWH Name:	Distance from Evaluated Stream
EWH Name: _	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE W	ATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Attica NRCS	Soil Map Page: NRCS Soil Map Stream Order
County: Seneca Township / Cit	y:Scipio
MISCELLANEOUS	
Base Flow Conditions? (Y/N):Y Date of last precipitation:09/10	<b>/18</b> Quantity: <b>0.10</b>
Photograph Information:	
Elevated Turbidity? (Y/N): Y Canopy (% open): 5%	
Were samples collected for water chemistry? (Y/N): (Note lab sample	no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) p	H (S.U.) Conductivity (μmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please	explain:
Additional comments/description of pollution impacts:	
Additional comments, description of politicism impacts.	
BIOTIC EVALUATION	
7 ( Y ) ( Y )	
	ons optional. NOTE: all voucher samples must be labeled with the from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed	? (Y/N) Voucher? (Y/N) Voucher? (Y/N) Voucher? (Y/N) Voucher? (Y/N)
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





#### Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind	
SITE NUMBER S-A19 RIVER BASIN Sandusky DRAINAGE AREA (mi²)	0.10
LENGTH OF STREAM REACH (ft) 352 LAT. 41.08574 LONG82.98857 RIVER CODE RIVER MILE	
DATE 09/20/18 SCORER K. Pulver COMMENTS Modified Class I	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Inst	tructions
STREAM CHANNEL	COVERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes	ı HHEI
(Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.  TYPE  PERCENT  PERCENT	Metri
BLDR SLABS [16 pts]	Points
BOULDER (>256 mm) [16 pts]  BEDROCK [16 pt]  0%  LEAF PACK/WOODY DEBRIS [3 pts]  0%  0%  0%  0%	Substrat
COBBLE (65-256 mm) [12 pts] 0% CLAY or HARDPAN [0 pt] 20%	Max = 4
GRAVEL (2-64 mm) [9 pts]  SAND (<2 mm) [6 pts]  15%  MUCK [0 pts]  0%  0%	7
Tatalad Bassadana ad	
Total of Percentages of 0.00% (A) Substrate Percentage Check 100% (B)	A+B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3 TOTAL NUMBER OF SUBSTRATE TYPES: 4	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Dep
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):  > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 3
> 22.5 - 30 cm [30 pts]	0
COMMENTS MAXIMUM POOL DEPTH (centimeters): 0	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankful
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONL Y one box):  > 4.0 meters (> 13') [30 pts]  > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  (Check ONL Y one box):  > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]  ≤ 1.0 m (<=3' 3") [5 pts]	Bankful Width Max=30
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] \( \leq 1.0 m (<=3' 3") [5 pts] \)	Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  1.20	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  This information must also be completed	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  FLOODPLAIN QUALITY  FLOODPLAIN QUALITY	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream ☆  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  L R (Most Predominant per Bank)  L R	Width Max=30
> 4.0 meters (> 13') [30 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  AVERAGE BANKFULL WIDTH (meters):  I.20  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  NOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Wide >10m  Moderate 5-10m  Onen Pasture Row Conservation Tillage  Immature Forest, Shrub or Old  Immature Forest, Shrub or Old  Immature Row Conservation Tillage  Onen Pasture Row Conservation Tillage	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   ≤ 1.0 m (<=3' 3") [5 pts]   ≤ 1.0	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  AVERAGE BANKFULL WIDTH (meters):  I.20  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  NOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Wide >10m  Moderate 5-10m  Onen Pasture Row Conservation Tillage  Immature Forest, Shrub or Old  Immature Forest, Shrub or Old  Immature Row Conservation Tillage  Onen Pasture Row Conservation Tillage	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   ≤ 1.0 m (<=3' 3") [5 pts]   ≤ 1.0	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY  RIPARIAN WIDTH  FLOODPLAIN QUALITY  RIPARIAN WIDTH (meters):  1.20  This information must also be completed  RIPARIAN WIDTH (meters):  1.20  This information must also be completed  RIPARIAN WIDTH (meters):  1.20  This information must also be completed  RIPARIAN WIDTH (meters):  1.20  This information must also be completed  RIPARIAN WIDTH (meters):  1.20  This information must also be completed  RIPARIAN WIDTH (meters):  1.20  This information must also be completed  RIPARIAN WIDTH (meters):  1.20  This information must also be completed  RIPARIAN WIDTH (meters):  1.20  This information must also be completed  RIPARIAN WIDTH (meters):  1.20  This information must also be completed  RIPARIAN WIDTH (meters):  1.20  This information must also be completed  RIPARIAN WIDTH (meters):  1.20  This information must also be completed  RIPARIAN WIDTH (meters):  1.20  This information must also be completed  RIPARIAN WIDTH (meters):  1.20  This information must also be completed  RIPARIAN WIDTH (meters):  1.2	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  NOTE: River Left (L) and Right (R) as looking downstream ☆  RIPARIAN WIDTH  FLOODPLAIN QUALITY  R (Per Bank)  Wide >10 m  Mature Forest, Wetland  None  Narrow <5m  Narrow <5m  Narrow <5m  None  COMMENTS  PLOW REGIME (At Time of Evaluation) (Check ONLY one box):	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  NOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  FLOODPLAIN QUALITY  Wide >10 m  Mature Forest, Wetland  Wide >10 m  Moderate 5-10 m  Narrow <5 m  None  Residential, Park, New Field  None  COMMENTS  Flow REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  None water (Ephemeral)	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7' - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream ANOTE: River Left (L) and Right (R) as looking downstream Mature Forest, Wetland  Wide >10m  Mature Forest, Wetland  Narrow <5m  Narrow <5m  Residential, Park, New Field  Narrow <5m  None  Fenced Pasture  Mining or Construction  COMMENTS  SibuoSiTy (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  SiNUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   > 1.0 m (> 9' 7" - 13') [25 pts]   > 1.5 m - 3.0 m (> 9' 7" - 13') [25 pts]   > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7' - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream ANOTE: River Left (L) and Right (R) as looking downstream Mature Forest, Wetland  Wide >10m  Mature Forest, Wetland  Narrow <5m  Narrow <5m  Residential, Park, New Field  Narrow <5m  None  Fenced Pasture  Mining or Construction  COMMENTS  SibuoSiTy (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  SiNUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.	Width Max=30  15

ADDITIONAL STREAM INFORMATION (This Information Must Also	be Completed):
QHEI PERFORMED? - Yes V No QHEI Score	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: Honey Creek	Distance from Evaluated Stream
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE EN	TIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name:Attica	NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Seneca Towns	hip / City:Scipio
MISCELLANEOUS	
Base Flow Conditions? (Y/N):_Y Date of last precipitation:	09/10/18 Quantity: 0.10
Photograph Information:	
Elevated Turbidity? (Y/N): Y Canopy (% open): 0%	
Were samples collected for water chemistry? (Y/N): (Note lab	sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l)	pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream $(Y/N)$ If not,	please explain:
Additional comments/description of pollution impacts:	
Additional comments/description of politicion impacts.	
DIOTIC EVALUATION	
BIOTIC EVALUATION	
	collections optional. NOTE: all voucher samples must be labeled with the s
	sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Of Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquat	bserved? (Y/N) N Voucher? (Y/N) N Voucher? (Y/N) N Voucher? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





# ChieFPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind	
SITE NUMBER S-A21 RIVER BASIN Sandusky DRAINAGE AREA (mi²)	00
LENGTH OF STREAM REACH (ft) 240 LAT. 41.09607 LONG82.99189 RIVER CODE RIVER MILE	
DATE 09/20/18 SCORER K. Pulver COMMENTS Modified Class II	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instru	ctions
STREAM CHANNEL	VERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes	UUEI
(Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.  TYPE  PERCENT  TYPE  PERCENT	HHEI Metric
BLDR SLABS [16 pts] 0% SILT [3 pt] 50%	Points
BOULDER (>256 mm) [16 pts]  BEDROCK [16 pt]  BEDROCK [16 pt]	Substrate
COBBLE (65-256 mm) [12 pts] 5% CLAY or HARDPAN [0 pt] 20%	Max = 40
GRAVEL (2-64 mm) [9 pts]	8
SAND (CZ IIIII) [0 pts]	
Total of Percentages of 5.00% (A) Substrate Percentage Check 100% (B)	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3 TOTAL NUMBER OF SUBSTRATE TYPES: 5	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Depth
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):  > 30 centimeters [20 pts]  > 5 cm - 10 cm [15 pts]	Max = 30
> 22.5 - 30 cm [30 pts]	15
	13
COMMENTS MAXIMUM POOL DEPTH (centimeters): 8	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankfull Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (<=3' 3") [5 pts]	Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	
COMMENTS AVERAGE BANKFULL WIDTH (meters): 1.80	20
This information <u>must</u> also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆	
RIPARIAN WIDTH FLOODPLAIN QUALITY	
L R (Per Bank) L R (Most Predominant per Bank) L R  Wide >10m Mature Forest, Wetland Conservation Tillage	
Moderate 5-10m Immature Forest, Shrub or Old Urban or Industrial	
Narrow <5m Residential, Park, New Field Open Pasture, Row Crop	)
None	
COMMENTS Herbaceous vegetated banks	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	
Stream Flowing Moist Channel, isolated pools, no flow (Intermittent) Subsurface flow with isolated pools (Interstitial)  Dry channel, no water (Ephemeral)	
Stream Flowing Subsurface flow with isolated pools (Interstitial)  COMMENTS  Moist Channel, isolated pools, no flow (Intermittent)  Dry channel, no water (Ephemeral)	
Subsurface flow with isolated pools (Interstitial)  Dry channel, no water (Ephemeral)	
Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  3.0	
Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  2.0  3.0  0.5  1.5  2.5	
Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  3.0	o ftj

ADDITIONAL STREAM INFORMATION (This Information Must Also	be Completed):
QHEI PERFORMED? - Yes V No QHEI Score	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: East Branch Rock Creek	Distance from Evaluated Stream 0.15
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE EN	TIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name:_	NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Seneca Towns	hip / City:_Scipio
MISCELLANEOUS	
Base Flow Conditions? (Y/N):Y Date of last precipitation:	09/10/18 Quantity: 0.10
Photograph Information:	
Elevated Turbidity? (Y/N): Y Canopy (% open): 0%	
Were samples collected for water chemistry? (Y/N): (Note lab	sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l)	pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream $(Y/N)$ If not,	please explain:
Additional comments/description of pollution impacts:	
Additional comments/description of political impacts.	
BIOTIC EVALUATION	
Performed? (Y/N): Y (If Yes, Record all observations. Voucher	collections optional. NOTE: all voucher samples must be labeled with the
,	sheets from the Primary Headwater Habitat Assessment Manual)
N N N N N N N N N N N N N N N N N N N	N N N N N N N N N N N N N N N N N N N
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Of Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquati	bserved? (Y/N) Voucher? (Y/N) N Voucher? (Y/N) Voucher? (Y/N) N Voucher? (Y/N)
Comments Regarding Biology:	, N
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





### Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) SITE NAME/LOCATION Seneca Wind RIVER BASIN Sandusky S-A20 DRAINAGE AREA (mi²) 0.10 SITE NUMBER I AT 41.08852 LONG. -82.99367 RIVER CODE 198 LENGTH OF STREAM REACH (ft) RIVER MILE DATE 09/20/18 **COMMENTS** | Modified Class I K. Pulver SCORER NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY STREAM CHANNEL **MODIFICATIONS:** SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes HHEI (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Metric **PERCENT PERCENT Points** BLDR SLABS [16 pts] SILT [3 pt] 50% 0% BOULDER (>256 mm) [16 pts] LEAF PACK/WOODY DEBRIS [3 pts] 0% 0% Substrate 0% BEDROCK [16 pt] 0% FINE DETRITUS [3 pts] Max = 4025% 0% COBBLE (65-256 mm) [12 pts] CLAY or HARDPAN [0 pt] 10% 0% GRAVEL (2-64 mm) [9 pts] MUCK [0 pts] 15% 0% SAND (<2 mm) [6 pts] ARTIFICIAL [3 pts] Total of Percentages of (B) Substrate Percentage 0.00% 100% A + BBldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of Pool Depth evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): Max = 30> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts] > 22.5 - 30 cm [30 pts] < 5 cm [5 pts] > 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts] 0 COMMENTS **MAXIMUM POOL DEPTH (centimeters):** BANK FULL WIDTH (Measured as the average of 3-4 measurements) Bankfull (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] Width Max=30 > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  $\leq$  1.0 m (<=3' 3") [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS AVERAGE BANKFULL WIDTH (meters): 1.80 20 This information must also be completed ☆NOTE: River Left (L) and Right (R) as looking downstream☆ RIPARIAN ZONE AND FLOODPLAIN QUALITY **FLOODPLAIN QUALITY** RIPARIAN WIDTH (Per Bank) R (Most Predominant per Bank) Wide >10m Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Moderate 5-10m Urban or Industrial Field Open Pasture, Row Crop Narrow <5m Residential, Park, New Field Fenced Pasture None Mining or Construction COMMENTS FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent) Stream Flowing Subsurface flow with isolated pools (Interstitial) Dry channel, no water (Ephemeral) COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 2.0 3.0 0.5 1.5 2.5 >3 STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate Moderate (2 ft/100 ft) Moderate to Severe Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be	e Completed):
QHEI PERFORMED? - Yes V No QHEI Score	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: Honey Creek	Distance from Evaluated Stream 1.00
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTI	RE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Attica	RCS Soil Map Page: NRCS Soil Map Stream Order
County: Seneca Township	/ City: Scipio
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Y Date of last precipitation: 0	9/10/18 Quantity: 0.10
Photograph Information:	
Elevated Turbidity? (Y/N): Y Canopy (% open): 0%	
Were samples collected for water chemistry? (Y/N): N (Note lab sa	ample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l)	pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, ple	ease explain:
Additional comments/description of pollution impacts:	
BIOTIC EVALUATION	
Y Y	
( )	ollections optional. NOTE: all voucher samples must be labeled with the sit leets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed	voucher? (Y/N) Voucher? (Y/N) Voucher? (Y/N) N Voucher? (Y/N)
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





#### Chief Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind	
SITE NAME/LOCATION SITE NUMBER S-A22 RIVER BASIN Sandusky DRAINAGE AREA (mi²)	0.12
LENGTH OF STREAM REACH (ft) 210 LAT. 41.09232 LONG83.00579 RIVER CODE RIVER MILE	
DATE 09/20/18 SCORER K. Pulver COMMENTS Modified Class I	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Inst	ructions
STREAM CHANNEL	COVERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	ı HHEI
TYPE  PERCENT  TYPE  PERCENT	Metri
BLDR SLABS [16 pts]	Points
BEDROCK [16 pt]  BEDROCK [16 pt]  O%  FINE DETRITUS [3 pts]  O%	Substrat
COBBLE (65-256 mm) [12 pts] 5% CLAY or HARDPAN [0 pt] 5%	Max = 4
GRAVEL (2-64 mm) [9 pts]  SAND (<2 mm) [6 pts]  MUCK [0 pts]  O%  ARTIFICIAL [3 pts]	10
Total of Percentages of 5.00% (A) Substrate Percentage 100% (B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock	^+5
	l
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):	Pool Dep Max = 3
> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	
> 22.5 - 30 cm [30 pts]	0
COMMENTS MAXIMUM POOL DEPTH (centimeters): 0	
	<u> </u>
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankful Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Max=30
	15
COMMENTS AVERAGE BANKFULL WIDTH (meters): 1.20	10
This information <u>must</u> also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY   ☆NOTE: River Left (L) and Right (R) as looking downstream ☆	
RIPARIAN WIDTH FLOODPLAIN QUALITY LR (Per Bank) LR (Most Predominant per Bank) LR	
☐ Wide >10m ☐ Mature Forest, Wetland ☐ Conservation Tillage	
✓ Moderate 5-10m ✓ Immature Forest, Shrub or Old ✓ Urban or Industrial	
Narrow <5m Residential, Park, New Field Open Pasture, Row C	rop
None Fenced Pasture Mining or Construction	n
COMMENTS	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing Moist Channel, isolated pools, no flow (Intermitten	+)
Subsurface flow with isolated pools (Interstitial)  Dry channel, no water (Ephemeral)	_
COMMENTS	7
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
None	
STREAM GRADIENT ESTIMATE	
STREAM GRADIENT ESTIMATE  Flat (0.5 ft/100 ft)  Flat to Moderate  Moderate (2 ft/100 ft)  Moderate to Severe  Severe (10 ft/	(100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Atta	ach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: East Branch Rock Creek	Distance from Evaluated Stream 1.00
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHEI	D AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Bloomville NRCS Soil Map F	Page: NRCS Soil Map Stream Order
County: Seneca Township / City: Scipio	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Y Date of last precipitation: 09/10/18	Quantity: 0.10
Photograph Information:	
Elevated Turbidity? (Y/N): Y Canopy (% open): 0%	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.)	Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain:	
Additional comments/description of pollution impacts:	
The state of the s	
BIOTIC EVALUATION	<u>'</u>
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional ID number. Include appropriate field data sheets from the Pr	•
	N
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebra	Voucher? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





#### ChieFPA Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind		
SITE NUMBER S-A23 RIVER BASIN Sandusky DRAINAGE AREA (mi²)	.26	
LENGTH OF STREAM REACH (ft) 90 LAT. 41.09209 LONG83.01140 RIVER CODE RIVER MILE		
DATE 09/20/18 SCORER K. Pulver COMMENTS Modified Class I		
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instr	uctions	
STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO REC MODIFICATIONS:	OVERY	
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes	ı HHEI	
(Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.  TYPE  PERCENT  TYPE  PERCENT	Metri	
BLDR SLABS [16 pts] 0% SILT [3 pt] 45%	Point	
BOULDER (>256 mm) [16 pts]	Substrat	
COBBLE (65-256 mm) [12 pts] 0% CLAY or HARDPAN [0 pt] 20%	Max = 4	
GRAVEL (2-64 mm) [9 pts]	13	
SAND (<2 mm) [6 pts] 25% ARTIFICIAL [3 pts] 0%		
Total of Percentages of 0.00% (A) Substrate Percentage 100% (B)	A + B	
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9    Check   Ch		
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Dep	
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):  > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 3	
> 22.5 - 30 cm [30 pts] < 5 cm [5 pts]		
> 10 - 22.5 cm [25 pts]	0	
COMMENTS MAXIMUM POOL DEPTH (centimeters): 0		
DANK FILL MIDTH (M		
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankfu	
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width	
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (<=3' 3") [5 pts]	Width	
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  > 1.0 m (<=3' 3") [5 pts]  ≤ 1.0 m (<=3' 3") [5 pts]	Width Max=30	
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  This information must also be completed	Width Max=30	
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  NOTE: River Left (L) and Right (R) as looking downstream ☆	Width Max=30	
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  This information must also be completed	Width Max=30	
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   ≤ 1.0 m (<=3' 3") [5 pts]   ≤ 1.0	Width Max=30	
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Wide >10m  Moderate 5-10m  NOTE: River Left (L) and Right (R) as looking downstream  Mature Forest, Wetland  Wide >10m  Urban or Industrial	Width Max=30	
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream ☆  RIPARIAN WIDTH  L R (Per Bank)  L R (Most Predominant per Bank)  Wide >10m  Mature Forest, Wetland  Immature Forest, Shrub or Old  LIPAR or Industrial	Width Max=30	
> 4.0 meters (> 13') [30 pts]	Width Max=30	
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   > 1.0 m (<=3' 3") [5 pts]   > 1.0	Width Max=30	
> 4.0 meters (> 13') [30 pts]	Width Max=30	
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  L R (Per Bank) Wide >10m Wide >10m Mature Forest, Wetland Wide >10m Moderate 5-10m  Narrow <5m None Residential, Park, New Field  None COMMENTS  > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]  > 1.0 m (<=3' 3") [5 pts]    XVERAGE BANKFULL WIDTH (meters):    AVERAGE BANKFULL WIDTH (meters):    L R (Nost Predominant per Loop Bank)   L R (Most Predominant per Bank)   L R (Most Predominant per Bank)   L R (Conservation Tillage Immature Forest, Shrub or Old Immature	Width Max=30	
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  FLOODPLAIN QUALITY  Wide >10m  Mature Forest, Wetland  Wide >10m  Moderate 5-10m  Narrow <5m  None  Residential, Park, New Field  None  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONL Y one box):  Stream Flowing  Moist Channel, isolated pools, no flow (Intermittent)	Width Max=30	
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ∴ NOTE: River Left (L) and Right (R) as looking downstream ∴  RIPARIAN WIDTH  L R (Per Bank)  Wide >10 m  Mature Forest, Wetland  Wide >10 m  Mature Forest, Wetland  Woderate 5-10 m  Narrow <5 m  None  Residential, Park, New Field  None  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  None water (Ephemeral)	Width Max=30	
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY	Width Max=30	
> 4.0 meters (> 13) [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   > 1.5 m - 3.0 m (> 9' 7" - 13') [25 pts]   > 1.5 m - 3.0 m (> 9' 7" - 14' 8") [20 pts]	Width Max=30	
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY	Width Max=30	

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Atta	ach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: East Branch Rock Creek	Distance from Evaluated Stream 0.70
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHEI	D AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Bloomville NRCS Soil Map F	Page: NRCS Soil Map Stream Order
County: Seneca Township / City: Scipio	
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Y Date of last precipitation: 09/10/18	Quantity: 0.10
Photograph Information:	
Elevated Turbidity? (Y/N): Y Canopy (% open): 30%	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.)	Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain:	
Additional comments/description of pollution impacts:	
Account of policies and a policies a	
BIOTIC EVALUATION	<u>'</u>
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional ID number. Include appropriate field data sheets from the Pr	•
	N
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) N Voucher? (Y/N) Aquatic Macroinvertebra	Voucher? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





### Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): SITE NAME/LOCATION Seneca Wind S-A24

SITE NUMBER 3-AZ4 RIVER BASIN SANGUSKY DRAINAGE AREA (mi²)	0.31
LENGTH OF STREAM REACH (ft) 871 LAT. 41.08744 LONG83.01675 RIVER CODE RIVER MILE	
DATE 09/21/18 SCORER K. Pulver COMMENTS Modified Class I	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Ins	tructions
STREAM CHANNEL	COVERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes	HHEI
(Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.  TYPE  PERCENT  TYPE  PERCENT	Metric
□ BLDR SLABS [16 pts]	Points
BOULDER (>256 mm) [16 pts]	Substrate
COBBLE (65-256 mm) [12 pts] 0% CLAY or HARDPAN [0 pt] 15%	Max = 40
GRAVEL (2-64 mm) [9 pts]	12
SAIND (22 IIIII) [0 pts]	
Total of Percentages of 0.00% (A) Substrate Percentage 100% (B) Check	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9 TOTAL NUMBER OF SUBSTRATE TYPES: 3	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):	Pool Depth Max = 30
> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	IVIAX = 30
→       > 22.5 - 30 cm [30 pts]       < 5 cm [5 pts]	0
COMMENTS MAXIMUM POOL DEPTH (centimeters): 0	
	1
<ol><li>BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):</li></ol>	
	Bankfull Width
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (<=3' 3") [5 pts]	
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (<=3' 3") [5 pts]	Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  0.60	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  NOTE: River Left (L) and Right (R) as looking downstream ★	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  This information must also be completed	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream ↑  RIPARIAN WIDTH  L R (Per Bank)  L R (Most Predominant per Bank)  Wide >10m  Mature Forest, Wetland  Conservation Tillage	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   ≤ 1.0 m (<=3' 3") [5 pts]   ≤ 1.0	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   ≤ 1.0 m (<=3' 3") [5 pts]   < 1.0	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   ≤ 1.0 m (<=3' 3") [5 pts]   ≤ 1.0	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  NOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  L R (Per Bank)	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ♣ NOTE: River Left (L) and Right (R) as looking downstream ♣  RIPARIAN WIDTH  L R (Per Bank) L R (Most Predominant per Bank) Wide >10m Mature Forest, Wetland Moderate 5-10m  Moderate 5-10m Residential, Park, New Field  Narrow <5m Residential, Park, New Field  COMMENTS Herbaceous vegetated banks  FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing  Moist Channel, isolated pools, no flow (Intermitte	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  NOTE: River Left (L) and Right (R) as looking downstream RIPARIAN WIDTH  L R (Per Bank) Wide >10m Mature Forest, Wetland Moderate 5-10m Moderate 5-10m Residential, Park, New Field  Narrow <5m Residential, Park, New Field  None COMMENTS Herbaceous vegetated banks  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ↑ NOTE: River Left (L) and Right (R) as looking downstream ↑  RIPARIAN WIDTH  L R (Per Bank)	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  NOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Moderate 5-10m  Moderate 5-10m  Residential, Park, New Field  V None  COMMENTS Herbaceous vegetated banks  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  2.0  3.0	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  NOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Moderate 5-10m  Moderate 5-10m  Residential, Park, New Field  Narrow <5m  None  Residential, Park, New Field  Popen Pasture, Row Completed  RIPARIAN WIDTH  FLOODPLAIN QUALITY  Residential, Park, New Field  Popen Pasture, Row Completed  RIPARIAN WIDTH  FLOODPLAIN QUALITY  None  Fenced Pasture  Mining or Construction  COMMENTS Herbaceous vegetated banks  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	Width Max=30

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Atta	ach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: East Branch Rock Creek	Distance from Evaluated Stream 1.00
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHE	D AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Bloomville NRCS Soil Map F	Page: NRCS Soil Map Stream Order
County: Seneca Township / City: Scipic	
MISCELLANEOUS	
Base Flow Conditions? (Y/N):_Y Date of last precipitation:_ 09/10/18	Quantity: 0.10
Photograph Information:	
Elevated Turbidity? (Y/N): N Canopy (% open): 0%	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.)	Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain:	
Additional comments/description of pollution impacts:	
Account of policies and policie	
BIOTIC EVALUATION	<u>'</u>
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional ID number. Include appropriate field data sheets from the Pr	•
	N
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebra	Voucher? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





### Chief Primary Headwater Habitat Evaluation Form

	, , ,	
SITE NAME/LOCATION Seneca Wind		
SITE NAME/LOCATION SITE NUMBER S.	-A25 RIVER BASIN Sandusky DRAINAGE AREA (mi²) 0.20	
SITE NOWBEN	AL OTTOT	
DATE 09/21/18 SCORER K. Pulver	COMMENTS Modified Class II	
NOTE: Complete All Items On This Form	n - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruct	ions
STREAM CHANNEL NONE / NAT	TURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVE	EDV
MODIFICATIONS:	TOWARD TANNEL THEODYERED THEODYERING THEORY	-13.1
	ery type of substrate present. Check ONLY two predominant substrate TYPE boxes	HHEI
, , ,		/letric
BLDR SLABS [16 pts]	0%   SILT [3 pt]   P	oints
BOULDER (>256 mm) [16 pts]	0% LEAF PACK/WOODY DEBRIS [3 pts] 0%	ubstrat
BEDROCK [16 pt]	10% FINE DETRITUS [3 pts]	lax = 40
COBBLE (65-256 mm) [12 pts]	0% CLAY or HARDPAN [0 pt] 5% 0%	
OKAVEE (2-04 IIIII) [3 pt3]	35% MUCK [0 pts] 0% 0% 0%	13
SAND (<2 mm) [0 pts]	AKTIFICIAL [3 pts]	
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock	0.00% (A) Substrate Percentage 100% (B)	A + B
SCORE OF TWO MOST PREDOMINATE SUBS	STRATE TYPES: 9 TOTAL NUMBER OF SUBSTRATE TYPES: 4	
• •	, ,	ool Dep /lax = 3
> 30 centimeters [20 pts]	> 5 cm - 10 cm [15 pts]	iux – o
> 22.5 - 30 cm [30 pts]	< 5 cm [5 pts]	45
> 10 - 22.5 cm [25 pts]	NO WATER OR MOIST CHANNEL [0 pts]	15
COMMENTS	MAXIMUM POOL DEPTH (centimeters): 8	
3. BANK FULL WIDTH (Measured as the	average of 3-4 measurements) (Check ONLY one box):	Bankful
> 4.0 meters (> 13') [30 pts]		Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]		Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		
COMMENTS	AVERAGE BANKFULL WIDTH (meters): 0.90	5
	This information must also be completed	
RIPARIAN ZONE AND FLOODP	PLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆	
	( ) 3 ( )	
RIPARIAN WIDTH	FLOODPLAIN QUALITY	
RIPARIAN WIDTH  L R (Per Bank)	FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  L R	
RIPARIAN WIDTH  L R (Per Bank)  Wide >10m	FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old  Urban or Industrial	
RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Moderate 5-10m	FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old Field  Conservation Tillage  Urban or Industrial	
RIPARIAN WIDTH  L R (Per Bank)  Wide >10m	FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old  Urban or Industrial	
RIPARIAN WIDTH  (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m  None	FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old Field  Conservation Tillage  Urban or Industrial	
RIPARIAN WIDTH  (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m	FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old Field  Residential, Park, New Field  L R  Conservation Tillage  Urban or Industrial  Open Pasture, Row Crop	
RIPARIAN WIDTH  L R (Per Bank) Wide >10m Moderate 5-10m  V Narrow <5m None COMMENTS  FLOW REGIME (At Time of Eval	FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old Field  Residential, Park, New Field  Fenced Pasture  Mining or Construction	
RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m  None  COMMENTS  FLOW REGIME (At Time of Eval	FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old  Field  Residential, Park, New Field  Fenced Pasture  Mining or Construction  Muation) (Check ONLY one box):  Moist Channel, isolated pools, no flow (Intermittent)	
RIPARIAN WIDTH  L R (Per Bank) Wide >10m Moderate 5-10m  V Narrow <5m None COMMENTS  FLOW REGIME (At Time of Eval	FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old  Field  Residential, Park, New Field  Fenced Pasture  Mining or Construction  Muation) (Check ONLY one box):  Moist Channel, isolated pools, no flow (Intermittent)	
RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m  None  COMMENTS  FLOW REGIME (At Time of Eval Stream Flowing Subsurface flow with isolated pool COMMENTS	FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old  Field  Residential, Park, New Field  Fenced Pasture  Mining or Construction  Moist Channel, isolated pools, no flow (Intermittent)  Dry channel, no water (Ephemeral)	
RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m  None  COMMENTS  FLOW REGIME (At Time of Eval Stream Flowing Subsurface flow with isolated pool COMMENTS  SINUOSITY (Number of bends pool	FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old  Field  Residential, Park, New Field  Fenced Pasture  Mining or Construction  Moist Channel, isolated pools, no flow (Intermittent)  Dry channel, no water (Ephemeral)  Der 61 m (200 ft) of channel) (Check ONLY one box):	
RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m  None  COMMENTS  FLOW REGIME (At Time of Eval Stream Flowing Subsurface flow with isolated pool COMMENTS	FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  Mature Forest, Wetland  Immature Forest, Shrub or Old  Field  Residential, Park, New Field  Fenced Pasture  Mining or Construction  Moist Channel, isolated pools, no flow (Intermittent)  Dry channel, no water (Ephemeral)	
RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m  None  COMMENTS  FLOW REGIME (At Time of Eval Stream Flowing Subsurface flow with isolated pool COMMENTS  SINUOSITY (Number of bends pool None 0.5	FLOODPLAIN QUALITY  L R (Most Predominant per Bank)	
RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m  None  COMMENTS  FLOW REGIME (At Time of Eval Stream Flowing Subsurface flow with isolated pool COMMENTS  SINUOSITY (Number of bends p	FLOODPLAIN QUALITY  L R (Most Predominant per Bank)	

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Atta	ach Completed QHEI Form)
DOWNSTREAM DESIGNATED LISE(S)	
DOWNSTREAM DESIGNATED USE(S)  WWH Name: Honey Creek	Distance from Evaluated Stream 2.50
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHEE	D AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Bloomville NRCS Soil Map F	Page: NRCS Soil Map Stream Order
County: Seneca Township / City: Bloom	
MISCELLANEOUS	
Base Flow Conditions? (Y/N):_Y Date of last precipitation:	Quantity: 0.00
Photograph Information:	
Elevated Turbidity? (Y/N): N Canopy (% open): 0%	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.)	Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain:	
Additional comments/description of pollution impacts:	
The state of the s	
BIOTIC EVALUATION	
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional ID number. Include appropriate field data sheets from the Pr	•
	N
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) N Voucher? (Y/N) Aquatic Macroinvertebra	tes Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location







## Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

22

SITE NAME/LOCATION Seneca Wind SITE NUMBER S-A26 RIVER BASIN Sandusky DRAINAGE AREA (mi²) 0.33 I AT. 41.08543 LONG. -83.03265 RIVER CODE 1,256 LENGTH OF STREAM REACH (ft) RIVER MILE DATE 09/21/18 K. Pulver SCORER COMMENTS NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY STREAM CHANNEL **MODIFICATIONS:** SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes HHEI (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Metric **PERCENT PERCENT Points** BLDR SLABS [16 pts] SILT [3 pt] 45% 0% BOULDER (>256 mm) [16 pts] LEAF PACK/WOODY DEBRIS [3 pts] 0% 0% Substrate 0% 0% FINE DETRITUS [3 pts] BEDROCK [16 pt] Max = 4010% 10% COBBLE (65-256 mm) [12 pts] CLAY or HARDPAN [0 pt] 20% 0% GRAVEL (2-64 mm) [9 pts] MUCK [0 pts] 17 15% 0% SAND (<2 mm) [6 pts] ARTIFICIAL [3 pts] (B) Total of Percentages of Substrate Percentage 10.00% 100% A + BBldr Slabs, Boulder, Cobble, Bedrock 12 TOTAL NUMBER OF SUBSTRATE TYPES: 5 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of Pool Depth evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): Max = 30> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts] > 22.5 - 30 cm [30 pts] < 5 cm [5 pts] > 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts] 0 COMMENTS **MAXIMUM POOL DEPTH (centimeters):** BANK FULL WIDTH (Measured as the average of 3-4 measurements) Bankfull (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] Width Max=30> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  $\leq$  1.0 m (<=3' 3") [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] 0.61 5 COMMENTS AVERAGE BANKFULL WIDTH (meters): This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream **FLOODPLAIN QUALITY** RIPARIAN WIDTH (Per Bank) (Most Predominant per Bank) R Wide >10m Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Moderate 5-10m Urban or Industrial Field Open Pasture, Row Crop Narrow <5m Residential, Park, New Field Fenced Pasture None Mining or Construction **COMMENTS Herbaceous vegetated banks** FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent) Stream Flowing Dry channel, no water (Ephemeral) Subsurface flow with isolated pools (Interstitial) COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 2.0 3.0 0.5 1.5 2.5 >3 STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate Moderate (2 ft/100 ft) Moderate to Severe Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also b	e Completed):
QHEI PERFORMED? - Yes V No QHEI Score	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: East Branch Rock Creek	Distance from Evaluated Stream
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTI	RE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Bloomville	IRCS Soil Map Page: NRCS Soil Map Stream Order
County: Seneca Townshi	o / City:_Scipio
MISCELLANEOUS	
Base Flow Conditions? (Y/N):Y Date of last precipitation:	09/10/18 Quantity: 0.10
Photograph Information:	
Elevated Turbidity? (Y/N): _N Canopy (% open):0%	
Were samples collected for water chemistry? (Y/N): Note lab s	ample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l)	pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, pl	ease explain:
Additional comments/description of pollution imposts.	
Additional comments/description of pollution impacts:	
BIOTIC EVALUATION	
	ollections optional. NOTE: all voucher samples must be labeled with the sit heets from the Primary Headwater Habitat Assessment Manual)
N N	N N
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Obs	erved? (Y/N) Voucher? (Y/N) Voucher? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





#### **ChieFP** Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind  SITE NUMBER S-A28 RIVER BASIN Sandusky DRAINAGE AREA (mi²) 0.00  LENGTH OF STREAM REACH (ft) 44 LAT. 41.07747 LONG83.02449 RIVER CODE RIVER MILE	
DATE 09/20/18 SCORER K. Pulver COMMENTS Modified Class I	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruction	ons
STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVE MODIFICATIONS:	ERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes	HE
TYPE PERCENT TYPE PERCENT M	<b>letri</b>
BLDR SLABS [16 pts]	oint
BEDROCK [16 pt] 0% FINE DETRITUS [3 pts] 5% Su	ubstrat
COBBLE (65-256 mm) [12 pts]	lax = 4
☐ GRAVEL (2-64 mm) [9 pts]	14
Total of Percentages of A 2 2004 (A) Substrate Percentage (B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock 9  SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9  TOTAL NUMBER OF SUBSTRATE TYPES: 5	170
, , , , , , , , , , , , , , , , , , , ,	ol Dep lax = 3
> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	
→       > 22.5 - 30 cm [30 pts]       < 5 cm [5 pts]	0
COMMENTS MAXIMUM POOL DEPTH (centimeters): 0	
	1-61
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankful Width
M . 4.0 / 0178 400 505 43	
	1ax=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	1ax=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS AVERAGE BANKFULL WIDTH (meters): 0.30	
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  AVERAGE BANKFULL WIDTH (meters):  0.30  This information function with also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream A	
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters): 0.30  This information must also be completed	
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream ↑  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  L R (Most Predominant per Bank)  Wide >10m  Mature Forest, Wetland  Conservation Tillage	
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  AVERAGE BANKFULL WIDTH (meters):  0.30  This information must also be completed  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Most Predominant per Bank)  L R	
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ∴ NOTE: River Left (L) and Right (R) as looking downstream ∴  RIPARIAN WIDTH  L R (Per Bank)  L R (Most Predominant per Bank)  Wide >10m  Mature Forest, Wetland  Moderate 5-10m  Moderate 5-10m  AVERAGE BANKFULL WIDTH (meters):  0.30  L R  (Most Predominant per Bank)  L R  Moderate 5-10m  Moderate 5-10m  L R (Most Predominant per Bank)  L R  Moderate 5-10m  Moderate 5-10m  L R (Most Predominant per Bank)  L R  Moderate 5-10m  Moderate 5-10m	
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Moderate 5-10m  Moderate 5-10m  Residential, Park, New Field  Narrow <5m  None  AVERAGE BANKFULL WIDTH (meters):  0.30  L R  (Most Predominant per Bank)  Field  Open Pasture, Row Crop  Mining or Construction	
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  PLOODPLAIN QUALITY  PLOODPLAIN QUALITY  PLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Moderate 5-10m  Narrow <5m  Narrow <5m  AVERAGE BANKFULL WIDTH (meters):  0.30  L R (Nost Predominant per Bank)  L R (Most Predominant per Bank)  I Mature Forest, Wetland  Wide >10m  Residential, Park, New Field  Open Pasture, Row Crop	
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ♣ NOTE: River Left (L) and Right (R) as looking downstream ♣  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Moderate 5-10m  Moderate 5-10m  Residential, Park, New Field  None  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ↑NOTE: River Left (L) and Right (R) as looking downstream ↑  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Moderate 5-10m  Moderate 5-10m  Residential, Park, New Field  None  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  AVERAGE BANKFULL WIDTH (meters):  0.30  L R  (Most Predominant per Bank)  L R  (Most Predominant per Bank)  L R  (Most Predominant per Bank)  L R  Conservation Tillage  Urban or Industrial  Open Pasture, Row Crop  Mining or Construction  Moist Channel, isolated pools, no flow (Intermittent)  Dry channel, no water (Ephemeral)	
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  NOTE: River Left (L) and Right (R) as looking downstream  law (Most Predominant per Bank)    RIPARIAN WIDTH	
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ♣ NOTE: River Left (L) and Right (R) as looking downstream ♣  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Moderate 5-10m  Mature Forest, Shrub or Old  Immature Forest, Shrub or Old  V Narrow <5m  Residential, Park, New Field  Open Pasture, Row Crop  None  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ♣ NOTE: River Left (L) and Right (R) as looking downstream ♣  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Moderate 5-10m  Mature Forest, Wetland  Wide >10m  Mature Forest, Shrub or Old  Field  V Narrow <5m  Residential, Park, New Field  Open Pasture, Row Crop  None  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Moderate 5-10m  Mature Forest, Shrub or Old  Field  V Narrow <5m  Residential, Park, New Field  Open Pasture, Row Crop  None  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  AVERAGE BANKFULL WIDTH (meters):  0.30  AVERAGE BANKFULL WIDTH (meters):  0.30  Note Completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  Conservation Tillage  Urban or Industrial  Open Pasture, Row Crop  Mining or Construction  Comments  Moist Channel, isolated pools, no flow (Intermittent)  Dry channel, no water (Ephemeral)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  3.0	

ADDITIONAL STREAM INFORMATION (This Information Must Also be	Completed):
QHEI PERFORMED? - Yes V No QHEI Score	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: Honey Creek	Distance from Evaluated Stream
CWH Name:	Distance from Evaluated Stream
EWH Name: _	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIR	E WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Bloomville NR	CS Soil Map Page: NRCS Soil Map Stream Order
County: Seneca Township	City:Bloom
MISCELLANEOUS	
Base Flow Conditions? (Y/N):Y Date of last precipitation:09	/10/18 Quantity: 0.10
Photograph Information:	
Elevated Turbidity? (Y/N): N Canopy (% open): 50%	
Were samples collected for water chemistry? (Y/N): (Note lab sar	nple no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l)	pH (S.U.) Conductivity (µmhos/cm)
, , , , , , , , , , , , , , , , , , , ,	• • • • • • • • • • • • • • • • • • • •
Is the sampling reach representative of the stream (Y/N) If not, plea	ase explain:
Additional comments/description of pollution impacts:	
Additional comments/description of pollution impacts:	
BIOTIC EVALUATION	
Y	
	lections optional. NOTE: all voucher samples must be labeled with the si sets from the Primary Headwater Habitat Assessment Manual)
N N	N N
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed	ved? (Y/N) Voucher? (Y/N) Voucher? (Y/N) N Voucher? (Y/N)
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





## Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

51

SITE NAME/LOCATION Seneca Wind RIVER BASIN Sandusky S-A29 SITE NUMBER DRAINAGE AREA (mi²) 1.26 1 AT. 41.06752 LONG. -83.03830 RIVER CODE LENGTH OF STREAM REACH (ft) RIVER MILE DATE 09/24/18 **COMMENTS** Modified Class II K. Pulver SCORER NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY STREAM CHANNEL **MODIFICATIONS:** SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes HHEI (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Metric **PERCENT PERCENT Points** BLDR SLABS [16 pts] SILT [3 pt] 60% 0% BOULDER (>256 mm) [16 pts] LEAF PACK/WOODY DEBRIS [3 pts] 0% 0% Substrate 0% 0% FINE DETRITUS [3 pts] BEDROCK [16 pt] Max = 4025% 0% COBBLE (65-256 mm) [12 pts] CLAY or HARDPAN [0 pt] 0% 0% GRAVEL (2-64 mm) [9 pts] MUCK [0 pts] 6 15% 0% SAND (<2 mm) [6 pts] ARTIFICIAL [3 pts] (B) Total of Percentages of Substrate Percentage 0.00% 100% A + BBldr Slabs, Boulder, Cobble, Bedrock 3 TOTAL NUMBER OF SUBSTRATE TYPES: 3 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of Pool Depth evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): Max = 30> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts] > 22.5 - 30 cm [30 pts] < 5 cm [5 pts] > 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts] 25 18 COMMENTS **MAXIMUM POOL DEPTH (centimeters):** BANK FULL WIDTH (Measured as the average of 3-4 measurements) Bankfull (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] Width Max=30> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]  $\leq$  1.0 m (<=3' 3") [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] 20 2.10 COMMENTS AVERAGE BANKFULL WIDTH (meters): This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream **FLOODPLAIN QUALITY** RIPARIAN WIDTH (Per Bank) R (Most Predominant per Bank) Wide >10m Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old Moderate 5-10m Urban or Industrial Field Open Pasture, Row Crop Narrow <5m Residential, Park, New Field Fenced Pasture None Mining or Construction **COMMENTS Herbaceous vegetated banks** FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent) Stream Flowing Dry channel, no water (Ephemeral) Subsurface flow with isolated pools (Interstitial) COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 2.0 3.0 1.5 2.5 0.5 >3 STREAM GRADIENT ESTIMATE Flat (0.5 ft/100 ft) Flat to Moderate Moderate (2 ft/100 ft) Moderate to Severe Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Atta	ach Completed QHEI Form)
DOWNSTREAM DESIGNATED LISE(S)	
DOWNSTREAM DESIGNATED USE(S)  WWH Name: Honey Creek	Distance from Evaluated Stream 1.15
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHEI	
USGS Quadrangle Name: Bloomville NRCS Soil Map F	Page: NRCS Soil Map Stream Order
County: Seneca Township / City: Bloom	nville
MISCELLANEOUS	
Base Flow Conditions? (Y/N): Y Date of last precipitation: 09/10/18	Quantity: 0.10
Photograph Information:	
Elevated Turbidity? (Y/N): N Canopy (% open): 0%	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.)	Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain:	
Additional comments/description of pollution impacts:	
The state of the s	
BIOTIC EVALUATION	
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional ID number. Include appropriate field data sheets from the Pr	•
	N
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) N Voucher? (Y/N) Aquatic Macroinvertebra	Voucher? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





# **Qualitative Habitat Evaluation Index and Use Assessment Field Sheet**

QHEI Score:	23.0
GITEI OCCIC.	

Stream & Location:	S-A30 UNT	to East Branch	Rock Creek			RM:	Date: 9	9/25/2018
			_Scorers Fu				IP	
River Code:		_STORET #:_ <sub>.</sub>		at./Long.: 4 D 83 - decimal °)	41.064897, <b>-</b> 83.	044898		Office verified location
REST TYPES	ONLYTwo suate % or note 6 POOL RIFFLE 0% 0%	every type present	PES <sub>POOL RIF</sub>	FLE	Check C RIGIN STONE [1]	ONE ( <i>Or 2</i> &	average) QUAL ☑ HEAVY [-	ITY
□□ BOULDER [9] □□ COBBLE [8] □□ GRAVEL [7] □□ SAND [6] □□ BEDROCK [5] NUMBER OF BEST T Comments	0% 0% 0% 0% 0% 0% 35% 0% 0% 0%	DETRITUS  MUCK [2]  SILT [2]  ARTIFICIA	5 [3] 10% 0 20% 0 35% 0 AL [0] 0% 0 tural substrates; ic	% □ TILLS % □ WETI % □ HARD % □ SAND gnore □ RIP/R rces) □ LACU □ SHAL	S [1] LANDS [0] DPAN [0] DSTONE [0] RAP [0] JSTURINE [0]	SILT	MODERA  NORMAL  FREE [1]  EXTENS  MODERA  NORMAL	TE [-1] Substrate
2] INSTREAM COVER quality; 3-Highest quality ir diameter log that is stable, UNDERCUT BANKS OVERHANGING VE 1 SHALLOWS (IN SLO ROOTMATS [1] Comments	quality; 2-M n moderate or well develope [1] GETATION [1	oderate amounts, to greater amounts (end rootwad in deep POOLS ROOTW	out not of highest e.g., very large bo / fast water, or de > 70cm [2] /ADS [1]	t quality or in si oulders in deep eep, well-define — OXBOWS, — AQUATIC	mall amounts o or fast water ed, functional	of highest , large pools. [ RS [1] [ TES [1] [	Check ONE (C  EXTENSIVE  MODERATE  SPARSE 5  NEARLY AB	or 2 & average) >75% [11] 25-75% [7]
3] CHANNEL MORPH					A DULLTY			
☐ HIGH [4] ☐ EX ☐ MODERATE [3] ☐ G ☐ LOW [2] ☐ F/	ELOPMEN XCELLENT [7 OOD [5] AIR [3] OOR [1]	NONE [6] RECOVER		☐ HIC ☑ MC ☐ LO	DERATE [2]			Channel Maximum 20 7.0
4] BANK EROSION A	ND RIPAR	IAN ZONE Che	ck <b>ONE</b> in each o	category for <i>EA</i>	CH BANK (O	r 2 per bank	( & average)	
River right looking downstread  EROSION  NONE / LITTLE [3]  MODERATE [2]  HEAVY / SEVERE [1]	M RIPA	ARIAN WIDTH  5 > 50m [4]  ERATE 10-50m [3]  ROW 5-10m [2]  MARROW < 5m [	R R FORES	FLOOD PLA ST, SWAMP [3 B OR OLD FIE ENTIAL, PARK ED PASTURE	AIN QUALI ] ELD [2] K, NEW FIELD	TY   R   R   R   R   R   R   R   R   R	CONSERVATIO URBAN OR INI MINING / CONS	DUSTRIAL [0] STRUCTION [0]
Comments	☑ ☑ NONE	_		PASTURE, RO			00m riparian.	Riparian Maximum 10
	CHA Check ( POOL WID POOL WID	RUN QUALITY ANNEL WIDTH ONE (Or 2 & avera OTH > RIFFLE WIDTH OTH = RIFFLE WIDTH OTH > RIFFLE WIDTH	(ge)  TH[2]	r [1] [	that apply  SLOW [1]  INTERSTIT  INTERMIT  EDDIES [1	ΓΙΑL [-1] ΤΕΝΤ [-2] ]	(circle one and co	Contact y Contact
Indicate for funct	ional riffle	s: Best areas	must be large	e enough to	o support	a ponula		12
of riffle-obligate s RIFFLE DEPTH  BEST AREAS > 10cm [2] BEST AREAS 5-10cm [1] BEST AREAS < 5cm [metric=0] Comments	species: RUN ☐ MAXIMI ☑ MAXIMI	DEPTH  JM > 50cm [2]   JM < 50cm [1]	heck ONE ( <i>Or 2</i> RIFFLE / RU STABLE (e.g., 0	& average). N SUBSTR Cobble, Bould (e.g., Large Gr	ATE RIFF er) [2] ravel) [1]	··· FLE / RU □ N □ L	□ NO  N EMBEDDI  ONE [2]  OW [1]  IODERATE [0]  XTENSIVE [-1]	Riffle /
6] GRADIENT ( DRAINAGE AREA	, —	ERY LOW - LOW	[2-4]	%P00	L: 90%	%GLIDE		Gradient 3 0
DIVAINAGE AKEA		IIGH - VERY HIGH	[10-6]	%RUN	: ( )	%RIFFLE	E:( 5% )	Maximum 5.0

Stream Drawing:



# Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 61.0

Stream & Location: S-B8 (Hon	ey Creek)		RM: Date.	09/26/2018
	<del>-</del>	Full Name & Affiliation:_		Office verified —
River Code:	STORET #:	Lat./Long.: 41.04651 -83.05	7461	Iocation
BEST TYPES POOL RIFFL	every type present  OTHER TYPES POOL	Check O	NE (Or 2 & average) QUA	LITY
	☐ ☐ SILT [2] 30%	0% ☐ LIMESTONE [1] 0% ☐ TILLS [1] 0% ☐ WETLANDS [0] 20% ☐ HARDPAN [0] 0% ☐ SANDSTONE [0] es; ignore ☐ RIP/RAP [0] sources) ☐ LACUSTURINE [0] ☐ SHALE [-1] ☐ COAL FINES [-2]	SILT	RATE [-1] Substrate
2] INSTREAM COVER Indicate p quality; 2-quality; 3-Highest quality in moderate diameter log that is stable, well developed in the company of	Moderate amounts, but not of high greater amounts (e.g., very largued rootwad in deep / fast water,  U POOLS > 70cm [2]  O ROOTWADS [1]	plest quality or in small amounts of the boulders in deep or fast water, or deep, well-defined, functional p	of highest large Check ONE pools.   RS [1] MODERATES [1] SPARSE !	OUNT (Or 2 & average) /E >75% [11] FE 25-75% [7] 5-<25% [3] ABSENT <5% [1]  Cover  Maximum 20  13.0
3] CHANNEL MORPHOLOGY	theck ONE in each category (Or	2 & average)		
SINUOSITY DEVELOPME  ☐ HIGH [4] ☐ EXCELLENT ☐ MODERATE [3] ☐ GOOD [5] ☐ LOW [2] ☐ FAIR [3]	NT CHANNELIZATIO  [7] NONE [6] RECOVERED [4] RECOVERING [3]	N STABILITY    HIGH [3]   MODERATE [2]   LOW [1]		Channel
□ NONE [1] □ POOR [1]  Comments	☐ RECENT OR NO RECO	OVERY [1]		Channel Maximum 20
EROSION WID WID MONE / LITTLE [3] MODERATE [2] MODERATE [2]	PARIAN WIDTH   E > 50m [4]	FLOOD PLAIN QUALIT PREST, SWAMP [3] IRUB OR OLD FIELD [2] SIDENTIAL, PARK, NEW FIELD	「Y R CONSERVAT	NSTRUCTION [0]
Comments				Maximum 5.0
Check <b>ONE</b> ( <i>ONLY!</i> ) Check  □ > 1m [6] □ POOL W  □ 0.7-<1m [4] □ POOL W	HANNEL WIDTH  ONE (Or 2 & average)  IDTH > RIFFLE WIDTH [2]	CURRENT VELOCITY Check ALL that apply CORRENTIAL [-1] SLOW [1] VERY FAST [1] INTERSTITE AST [1] INTERMITT MODERATE [1] EDDIES [1] Indicate for reach - pools and riff	Primar Seconda (circle one and	on Potential by Contact ary Contact a comment on back)  Pool / Current Maximum 12  4.0
	Check ONE (C	Or 2 & average). RUN SUBSTRATE RIFF	<u>⊔N</u> LE / RUN EMBED	O RIFFLE [metric=0]
☑ BEST AREAS 5-10cm [1] ☑ MAXII ☐ BEST AREAS < 5cm [metric=0]	MUM > 50cm [2] ☑ STABLE (e. MUM < 50cm [1] ☐ MOD. STAB ☐ UNSTABLE	g., Cobble, Boulder) [2] LE (e.g., Large Gravel) [1] (e.g., Fine Gravel, Sand) [0]	☐ NONE [2] ☑ LOW [1] ☐ MODERATE [0	oj Riffle / 5.0
Comments				Maximum 8
DRAINAGE AREA 🕺 🗖	VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]	$\simeq$	%GLIDE: %RIFFLE: 40	Gradient Maximum 10

AJ SAMPLED REACH Check ALL that apply	Comment RE: Reach consistency/	Is reach typical of steam?, Recreatior	n/Observed - Inferred, <i>Other</i>	Comment RE: Reach consistency/Is reach typical of steam?, Recreation/Observed - Inferred, Other/Sampling observations, Concerns, Access directions, etc.	ess directions, etc.
۵					
<u> </u>					
☐ L. LINE ☐ UP ☐ OTHER ☐ NORMAL☐					
DISTANCE DRY					
CLARITY	BJ AESTHETICS	DJ MAINTENANCE	Circle some & COMMENT	EJ ISSUES	FJ MEASUREMENTS
` _	☐ NUISANCE ALGAE	PUBLIC / PRIVATE / BOTH / NA		WWTP / CSO / NPDES / INDUSTRY	x width
☐ 0.12 Km ☐ 20-540 cm	INVASIVE MACROPHYTES	ACTIVE / HISTORIC / BOTH / NA		HARDENED/URBAN/DIRT&GRIME	x depth
☐ OTHER ☐ 40-70 cm	☐ EXCESS IONBIDITE ☐ DISCOLORATION	SPRAY / SNAG / REMOVED		BMPs-CONSTRUCTION-SEDIMENT	
∠ > 70 cm/ CTB   SECCHI DEBTH	FOAM / SCUM	MODIFIED / DIPPED OUT / NA		LOGGING / IRRIGATION / COOLING	x pankfull x depth
	☐ ☐ OIL SHEEN	LEVEED / ONE SIDED RELOCATED / CUTOFFS		BANK / EROSION / SURFACE FALSE BANK / MANURE / LAGOON	W/D ratio
sse	ш	MOVING-BEDLOAD-STABLE		WASH H <sub>2</sub> 0 / TILE / H <sub>2</sub> 0 TABLE	bankfull max, depth
2nd	cm SLUDGE DEPOSITS	ARMOURED / SLUMPS		ACID / MINE / QUARRY / FLOW	floodprone x <sup>2</sup> width
□ 30%-<55%	CSOS/SSOS/OUTFALLS	ISLANDS / SCOUKED		DABY (COLE !! AWA! LOWE	entrench. ratio
☐ 10%-<30%	<i>CJ RECREATION</i> AREA DEPTH <i>POOL:</i> □>100ft²□>3ft	FLOOD CONTROL / DRAINAGE		ATMOSPHERE / DATA PAUCITY	Legacy Iree:

Stream Drawing:



#### Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind	
SITE NUMBER S-B9 RIVER BASIN Sandusky DRAINAGE AREA (mi²)	.20
LENGTH OF STREAM REACH (ft) 1,237 LAT. 41.04845 LONG83.02651 RIVER CODE RIVER MILE	
DATE 09/26/18 SCORER JB COMMENTS	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instr	uctions
STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERING.	OVERY
SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes	
(Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI   Metric
TYPE         PERCENT         TYPE         PERCENT           □ □ □ BLDR SLABS [16 pts]         0%         □ □ SILT [3 pt]         30%	Points
BOULDER (>256 mm) [16 pts]  0%  LEAF PACK/WOODY DEBRIS [3 pts]	
BEDROCK [16 pt]  0%  FINE DETRITUS [3 pts]	Substrat Max = 4
COBBLE (65-256 mm) [12 pts] 10% CLAY or HARDPAN [0 pt] 20%	linux = 1
GRAVEL (2-64 mm) [9 pts] 20% MUCK [0 pts] 0%  SAND (<2 mm) [6 pts] 20% ARTIFICIAL [3 pts] 0%	17
SAIND (CZ IIIIII) [0 pts]	
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock (A) Substrate Percentage Check (B)	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12 TOTAL NUMBER OF SUBSTRATE TYPES: 5	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Dep
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check <i>ONLY</i> one box):	Max = 3
> 30 centimeters [20 pts]	
> 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	15
COMMENTS MAXIMUM POOL DEPTH (centimeters): 0	
BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankful
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (<=3' 3") [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Max=30
COMMENTS AVERAGE BANKFULL WIDTH (meters): 1.50	20
This information must also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY \$\times \text{NOTE: River Left (L) and Right (R) as looking downstream \$\frac{1}{2}\$	
RIPARIAN WIDTH FLOODPLAIN QUALITY  L R (Per Bank) L R (Most Predominant per Bank) L R	
Wide >10m Mature Forest, Wetland Conservation Tillage	
Moderate 5-10m Immature Forest, Shrub or Old Urban or Industrial	
Field Open Pasture, Row Cr	ор
Narrow < 5m Residential, Park, New Field Line	
None Fenced Pasture Mining or Construction COMMENTS	L
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	
Stream Flowing Moist Channel, isolated pools, no flow (Intermittent	)
Subsurface flow with isolated pools (Interstitial)  Dry channel, no water (Ephemeral)  COMMENTS	1
	AL.
CINITION TO VALUE of bands not C1 m (200 ft) of shannelly (Chadr ONII Vana hav)	-
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	-
None	
None 1.0 2.0 3.0 3.0 0.5 1.5 2.5 >3	
☑ None ☐ 1.0 ☐ 2.0 ☐ 3.0	00 ft)

ADDITIONAL STREAM INFORMATION (This Information Musical Performed? - Yes ✓ No QHEI Score	
DOWNSTREAM DESIGNATED USE(S)  WWH Name: Honey Creek	Distance from Evaluated Stream
CWH Name:	
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING	THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Bloomville	NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Seneca	Township / City:Bloom
MISCELLANEOUS	
Base Flow Conditions? (Y/N):Y Date of last precipitation	on: 09/25/18 Quantity: 0.38
Photograph Information:	
Elevated Turbidity? (Y/N):N Canopy (% open):	5%
Were samples collected for water chemistry? (Y/N): (N	Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/	/I) pH (S.U.) Conductivity (μmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y	If not, please explain:
Additional comments/description of pollution impacts:	
ID number. Include appropriate fi	Voucher collections optional. NOTE: all voucher samples must be labeled with the sit ield data sheets from the Primary Headwater Habitat Assessment Manual) inders Observed? (Y/N) N Voucher? (Y/
	TION OF STREAM REACH (This <u>must</u> be completed): rest for site evaluation and a narrative description of the stream's location

FLOW





# **Qualitative Habitat Evaluation Index and Use Assessment Field Sheet**

QHEI Score:	58.0
- (	

Stream & Location: S-B6 (UNT to Honey Creek)	_ <i>RM:</i>	<i>Date:</i> 09/26/2018
Scorers Full Name & Affiliation:		
River Code: STORET #: Lat./ Long.: 41.033102 -83.	.063423	Office verified ☐
1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present  BEST TYPES   POOL RIFFLE   OTHER TYPES   POOL RIFFLE   ORIGIN	SILT	QUALITY    HEAVY [-2]   MODERATE [-1]   Substrate   NORMAL [0]   FREE [1]   MODERATE [-1]   Maximum   NONE [1]
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common quality; 2-Moderate amounts, but not of highest quality or in small amounts quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional 1 UNDERCUT BANKS [1]	of highest r, large l pools. [ ERS [1] [ TES [1] [	AMOUNT Check ONE (Or 2 & average) EXTENSIVE >75% [11] MODERATE 25-75% [7] SPARSE 5-<25% [3] NEARLY ABSENT <5% [1]  Cover Maximum 20 12.0
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)  SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY  HIGH [4] EXCELLENT [7] NONE [6] HIGH [3]  MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2]  LOW [2] FAIR [3] RECOVERING [3] LOW [1]  NONE [1] POOR [1] RECENT OR NO RECOVERY [1]  Comments		Channel Maximum 20 16.0
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Consider the content of the category for EACH BANK (Consider the category for EACH		CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0] e predominant land use(s) Oom riparian.  Riparian Maximum 10  5.0
5] POOL / GLIDE AND RIFFLE / RUN QUALITY  MAXIMUM DEPTH  Check ONE (ONLY!)  > 1m [6]  O.7-<1m [4]  O.4-<0.7m [2]  O.2-<0.4m [1]  <0.2cm [0]  Comments  CHANNEL WIDTH  Check ONE (Or 2 & average)  Check ALL that apply  Check ALL that apply  TORRENTIAL [-1]  Check ALL that apply  TORRENTIAL [-1]  Check ALL that apply  TORRENTIAL [-1]  FAST [1]  INTERMIT  MODERATE [1]  Indicate for reach - pools and recommends	TIAL [-1] TENT [-2] I]	Recreation Potential Primary Contact Secondary Contact (circle one and comment on back)  Pool / Current Maximum 12  3.0
□ BEST AREAS > 10cm [2] □ MAXIMUM > 50cm [2] □ STABLE (e.g., Cobble, Boulder) [2] □ BEST AREAS 5-10cm [1] □ MOD. STABLE (e.g., Large Gravel) [1] □ BEST AREAS < 5cm □ UNSTABLE (e.g., Fine Gravel, Sand) [0] Comments	FLE / RUI	NO RIFFLE [metric=0] N EMBEDDEDNESS ONE [2] OW [1] ODERATE [0] XTENSIVE [-1] Maximum 8 5.0
DRAINAGE AREA MODERATE [6-10]	%GLIDE	2.0

AJ SAMPLED REACH Check ALL that apply	Comment RE: Reach consistency/ I	s reach typical of steam?, <i>Recreation</i>	n/Observed - Inferred, O <i>then</i>	Comment RE: Reach consistency/Is reach typical of steam?, Recreation/Observed - Inferred, Other/Sampling observations, Concerns, Access directions, etc.	ess directions, etc.
۵					
☐ L. LINE ☐ UP ☐ OTHER ☐ NORMAL ☐					
DISTANCE DRY					
O.5 Km CLARITY	BJ AESTHETICS	DJ MAINTENANCE	Circle some & COMMENT	EJ ISSUES	F] MEASUREMENTS
□ 0.15 Km □ 1stsample pass 2nd	☐ NUISANCE ALGAE	PUBLIC / PRIVATE / BOTH / NA		WWTP / CSO / NPDES / INDUSTRY	x width
_	☐ INVASIVE MACROPHYTES	ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD		HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL	⊼ depth
☐ OTHER ☐ 40-70 cm	DISCOLORATION	SPRAY / SNAG / REMOVED		BMPs-CONSTRUCTION-SEDIMENT	max. deptn x bankfull width 30
meters SECCHI DEPTH	☐ ☐ FOAM / SCUM ☐ ☐ OIL SHEEN	MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED		LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE	
	cm TRASH / LITTER	RELOCATED / CUTOFFS		FALSE BANK / MANURE / LAGOON	W/D ratio
ssed c	☐ SLUDGE DEPOSITS	MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS		WASH H20 / IILE / H20 IABLE ACID / MINE / QUARRY / FLOW	floodprone x <sup>2</sup> width
	CSOS/SSOS/OUTFALLS	ISLANDS / SCOURED		NATURAL / WETLAND / STAGNANT	entrench. ratio
SED	CJ RECREATION AREA DEPTH POOL: □>100ft²□>3ft	IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE		PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	Legacy Tree:

Stream Drawing:



#### ChieFPA Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind  SITE NUMBER S-A35 RIVER BASIN Sandusky DRAINAGE AREA (mi²) 0	.00
LENGTH OF STREAM REACH (ft) 300 LAT. 41.03683 LONG83.07805 RIVER CODE RIVER MILE	
DATE 09/26/18 SCORER K. Pulver COMMENTS Modified Class II	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instr	uctions
STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO REC	OVERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes	HHE
(Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.  TYPE  PERCENT  TYPE  PERCENT	Metri
BLDR SLABS [16 pts] 0% SILT [3 pt] 30%	Point
BOULDER (>256 mm) [16 pts]  BEDROCK [16 pt]  D''  LEAF PACK/WOODY DEBRIS [3 pts]  0%  0%  0%	Substrat
COBBLE (65-256 mm) [12 pts] 15% CLAY or HARDPAN [0 pt] 5%	Max = 4
GRAVEL (2-64 mm) [9 pts] 20% MUCK [0 pts] 0%	15
SAND (<2 mm) [6 pts]	
Total of Percentages of 15.00% (A) Substrate Percentage 100% (B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock  SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9  TOTAL NUMBER OF SUBSTRATE TYPES: 6	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Dep
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):  > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 3
> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts] < 5 cm [5 pts]	
> 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	0
COMMENTS MAXIMUM POOL DEPTH (centimeters): 0	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	
	Bankful
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  > 1.0 m (<=3' 3") [5 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  > 1.0 m (<=3' 3") [5 pts]  ≤ 1.0 m (<=3' 3") [5 pts]	Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  This information must also be completed	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters): 1.50  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  This information must also be completed	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]     > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]     COMMENTS	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]     > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]     COMMENTS	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream ☆  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Conservation Tillage  Immature Forest, Shrub or Old  LIPAR or Industrial	Width Max=30
> 4.0 meters (> 13') [30 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]     > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]     > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  L R (Per Bank) Wide >10 m Wi	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream Another FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Wide >10m  Mature Forest, Wetland  Immature Forest, Shrub or Old  Immature Forest, Shrub or Old  Field  Narrow <5m  Narrow <5m  Residential, Park, New Field  Open Pasture, Row Crown Residential, Park, New Field  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Moist Channel, isolated pools, no flow (Intermittent)	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   > 1.0 m (<=3' 3") [5 pts]   > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8') [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  AVERAGE BANKFULL WIDTH (meters):  I.50  AVERAGE BANKFULL WIDTH (meters):  L R (Per Bank)  Wide >10 m	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   > 1.5 m - 3.0 m (× 9" 7" - 13') [25 pts]   > 1.5 m - 3.0 m (× 9" 7" - 4" 8") [20 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8') [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  AVERAGE BANKFULL WIDTH (meters):  I.50  AVERAGE BANKFULL WIDTH (meters):  L R (Per Bank)  Wide >10 m	Width Max=30

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Atta	ach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: Honey Creek	Distance from Evaluated Stream 0.05
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHE	D AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Bloomville NRCS Soil Map I	Page: NRCS Soil Map Stream Order
County: Seneca Township / City: Eden	
MISCELLANEOUS	
Base Flow Conditions? (Y/N):_Y Date of last precipitation:_ 09/25/18	Quantity: 0.38
Photograph Information:	
Elevated Turbidity? (Y/N): N Canopy (% open): 80%	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.)	Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain:	
Additional comments/description of pollution impacts:	
BIOTIC EVALUATION	<u>'</u>
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional ID number. Include appropriate field data sheets from the Pr	•
	N
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) N Voucher? (Y/N) Aquatic Macroinvertebra	Voucher? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





#### Chief Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind	
SITE NAME/LOCATION SITE NUMBER S-A36 RIVER BASIN Sandusky DRAINAGE AREA (mi²)	0.00
LENGTH OF STREAM REACH (ft) 87 LAT. 41.03647 LONG83.07822 RIVER CODE RIVER MILE	
DATE 09/26/18 SCORER K. Pulver COMMENTS Modified Class I	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Inst	ructions
STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERING.	COVERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHE
TYPE PERCENT TYPE PERCENT	Metri
BLDR SLABS [16 pts]	Points
BEDROCK [16 pt]  0%  FINE DETRITUS [3 pts]	Substrat Max = 4
COBBLE (65-256 mm) [12 pts]	
SAND (<2 mm) [6 pts] 25% ARTIFICIAL [3 pts] 0%	14
Total of Percentages of 0.00% (A) Substrate Percentage 100% (B) Check	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9 TOTAL NUMBER OF SUBSTRATE TYPES: 5	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Dep
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONL Y one box):  > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Max = 3
> 22.5 - 30 cm [30 pts] < 5 cm [5 pts]	
> 10 - 22.5 cm [25 pts]	
COMMENTS MAXIMUM POOL DEPTH (centimeters): 0	
	I
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check <i>ONLY</i> one box):  > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankful Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (<=3' 3") [5 pts]	Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (<=3' 3") [5 pts]	Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (<=3' 3") [5 pts]	Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  This information must also be completed	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters): 0.30  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream ★  RIPARIAN WIDTH  L R (Per Bank)  L R (Most Predominant per Bank)  L R	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ★NOTE: River Left (L) and Right (R) as looking downstream ★  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Moderate 5-10m  Moderate 5-10m  Note: River Left (L) and Right (R) as looking downstream ★  Conservation Tillage Immature Forest, Shrub or Old  Utban or Industrial	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   ≤ 1.0 m (<=3' 3") [5 pts]   ≤ 1.0	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]   > 1.0 m (<=3' 3") [5 pts]   > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Width Max=30
> 4.0 meters (> 13') [30 pts]     > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]     > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]     COMMENTS	Width Max=30
> 4.0 meters (> 13') [30 pts]   > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]     > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]   > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]     COMMENTS	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream And Riparian Multiput Plant Pla	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  RIPARIAN WIDTH  FLOODPLAIN QUALITY  RIPARIAN WIDTH  FLOODPLAIN QUALITY  Wide >10 m (<=3' 3") [5 pts]  > 1.0 m (<=3' 3") [5 pts]  > 1.0 m (<=3' 3") [5 pts]   AVERAGE BANKFULL WIDTH (meters):  0.30  This information must also be completed  RIPARIAN WIDTH  FLOODPLAIN QUALITY  RIPARIAN WIDTH  FLOODPLAIN QUALITY  Wide >10 m (=3' 3") [5 pts]   > 1.0 m (<=3' 3") [5 pts]   > 1.0 m (<=3' 3") [5 pts]    5 pts]    5 pts]    6 pts]   6 pts]   7 m (=3' 3") [5 pts]    7 m (=3' 3") [5 pts]    8 pts   9 pts	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (s 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (s 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  FLOODPLAIN QUALITY  A Moderate 5-10m  Mature Forest, Wetland  Moderate 5-10m  Narrow <5m  Residential, Park, New Field  None  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  FLOODPLAIN QUALITY  RIPARIAN WIDTH  FLOODPLAIN QUALITY  Mide >10m  Mature Forest, Wetland  Moderate 5-10m  Moderate 5-10m  Residential, Park, New Field  Narrow <5m  Residential, Park, New Field  None  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	Width Max=30
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (s 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (s 9' 7" - 4' 8") [20 pts]  COMMENTS  This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY ♣NOTE: River Left (L) and Right (R) as looking downstream ♣  RIPARIAN WIDTH  FLOODPLAIN QUALITY  Wide > 10m  Mature Forest, Wetland  Wide > 10m  Mature Forest, Wetland  Narrow <5m  Narrow <5m  Residential, Park, New Field  Narrow <5m  Residential, Park, New Field  None  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  Check ONLY one box):  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  Check ONLY one box):  None  1.0  3.0	Width Max=30

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Atta	ach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: Honey Creek	Distance from Evaluated Stream 0.05
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHE	D AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Bloomville NRCS Soil Map I	Page: NRCS Soil Map Stream Order
County: Seneca Township / City: Eden	
MISCELLANEOUS	
Base Flow Conditions? (Y/N):_Y Date of last precipitation:_ 09/25/18	Quantity: 0.38
Photograph Information:	
Elevated Turbidity? (Y/N): N Canopy (% open): 80%	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.)	Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain:	
Additional comments/description of pollution impacts:	
BIOTIC EVALUATION	<u>'</u>
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional ID number. Include appropriate field data sheets from the Pr	•
	N
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) N Voucher? (Y/N) Aquatic Macroinvertebra	Voucher? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:	
No fauna observed at time of survey	

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





#### Chief Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION SENECA WING	
SITE NAME/LOCATION Seneca Wind  SITE NUMBER S-A37 RIVER BASIN Sandusky DRAINAGE AREA (mi²)	0.00
LENGTH OF STREAM REACH (ft) 295 LAT. 41.03571 LONG83.07907 RIVER CODE RIVER MILE	
DATE 09/26/18 SCORER K. Pulver COMMENTS Modified Class I	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Ins	tructions
STREAM CHANNEL	COVERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	ı HHEI
TYPE PERCENT TYPE PERCENT	Metri
BLDR SLABS [16 pts]  BOULDER (>256 mm) [16 pts]  D' SILT [3 pt]  LEAF PACK/WOODY DEBRIS [3 pts]  0%	Point
BEDROCK [16 pt]  BEDROCK [16 pt]  D'A  FINE DETRITUS [3 pts]  5%	Substrat Max = 4
COBBLE (65-256 mm) [12 pts]	Wax = 4
☐ GRAVEL (2-64 mm) [9 pts] ☐ MUCK [0 pts] ☐ 0% ☐ ARTIFICIAL [3 pts] ☐ 0% ☐ 0% ☐ 0% ☐ 0% ☐ 0% ☐ 0% ☐ 0% ☐ 0	14
Total of Percentages of 0.00% (A) Substrate Percentage 100% (B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9  TOTAL NUMBER OF SUBSTRATE TYPES: 5	2
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	Pool Dep
evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):	Max = 3
> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts] > 5 cm - 10 cm [30 pts] < 5 cm [5 pts]	
> 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts]	0
COMMENTS MAXIMUM POOL DEPTH (centimeters): 0	
BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	' I <del></del>
	Bankful
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Width
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  > 1.0 m (<=3' 3") [5 pts]  ≤ 1.0 m (<=3' 3") [5 pts]	Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (<=3' 3") [5 pts]	
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  This information must also be completed	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  0.60	Width Max=30
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  ### Output	Width Max=30
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  LR (Per Bank)  Wide >10m  Wide >10m  Mature Forest, Wetland  Immature Forest, Shrub or Old  Wide >10m  Lyban or Industrial	Width Max=30
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  LR (Per Bank)  Wide >10m  Wide >10m  Mature Forest, Wetland  Wide >10m  Moderate 5-10m  AVERAGE BANKFULL WIDTH (meters):  0.60   This information must also be completed  RIPARIAN WIDTH  FLOODPLAIN QUALITY  Wide >10m  Mature Forest, Wetland  Wide >10m  Woderate 5-10m  Conservation Tillage  Immature Forest, Shrub or Old  Field  Conservation Flow Conservation  Conservation Flow Conservation  Conser	Width Max=30
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ARIPARIAN WIDTH  L R (Per Bank)  Wide >10m  Wide >10m  Wide >10m  Mature Forest, Wetland  Narrow <5m  Narrow <5m  Narrow <5m  Set 1.0 m (<=3' 3") [5 pts]   ✓ ≤ 1.0 m (<=3' 3") [5 pts]  ✓ ≤ 1.0 m (<=3' 3") [5 pts]   AVERAGE BANKFULL WIDTH (meters):  0.60   This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ♣ NOTE: River Left (L) and Right (R) as looking downstream And the properties of th	Width Max=30
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  LR (Per Bank)  Wide >10m  Wide >10m  Mature Forest, Wetland  Wide >10m  Moderate 5-10m  AVERAGE BANKFULL WIDTH (meters):  0.60   This information must also be completed  RIPARIAN WIDTH  FLOODPLAIN QUALITY  Wide >10m  Mature Forest, Wetland  Wide >10m  Woderate 5-10m  Conservation Tillage  Immature Forest, Shrub or Old  Field  Conservation Flow Conservation  Conservation Flow Conservation  Conser	Width Max=30
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Wide >10m  Mature Forest, Wetland  Wide >10m  Moderate 5-10m  Narrow <5m  None  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  1.0 m (<=3' 3") [5 pts]  2 1.0 m (<=3' 3") [5 pts]  2 1.0 m (<=3' 3") [5 pts]  2 1.0 m (<=3' 3") [5 pts]  AVERAGE BANKFULL WIDTH (meters):  0.60  AVERAGE BANKFULL WIDTH (meters):  0.60  L R (Wide also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  L R (Per Bank)  L R (Most Predominant per Bank)  Mature Forest, Wetland  Conservation Tillage  Immature Forest, Shrub or Old  Field  Narrow <5m  Residential, Park, New Field  None  COMMENTS  Mining or Construction	Width Max=30
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  RIPARIAN WIDTH  L R (Per Bank)  Wide >10m Mature Forest, Wetland  Wide >10m Moderate 5-10m  Narrow <5m  Narrow <5m  Narrow <5m  Narrow <5m  Residential, Park, New Field  None  COMMENTS  AVERAGE BANKFULL WIDTH (meters):  0.60  AVERAGE BANKFULL WIDTH (meters):  L R (Most Predominant per Bank)  L R (Most Predominant per Bank)  L R (Most Predominant per Bank)  Mature Forest, Wetland  Conservation Tillage  Immature Forest, Shrub or Old  Wide >10m  Narrow <5m  Residential, Park, New Field  Open Pasture, Row Completed  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Open Pasture, Row Completed  Residential, Park, New Field  Open Pasture, Row Completed  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Moist Channel, isolated pools, no flow (Intermittent)	Width Max=30
S 3.0 m - 4.0 m (> 9 7" - 13') [25 pts]   S 1.0 m (<=3' 3") [5 pts]	Width Max=30
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  AVERAGE BANKFULL WIDTH (meters):  O.60  This information must also be completed  RIPARIAN WIDTH  FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream  RIPARIAN WIDTH  FLOODPLAIN QUALITY  L R (Per Bank)  Wide >10m  Mature Forest, Wetland  Wide >10m  Moderate 5-10m  Narrow <5m  Narrow <5m  Residential, Park, New Field  None  COMMENTS  FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Subsurface flow with isolated pools (Interstitial)  Moderate 5-10m  Moist Channel, isolated pools, no flow (Intermitter Dry channel, no water (Ephemeral))	Width Max=30
Sinuosity (Number of bends per 61 m (200 ft) of channel)    Sinuosity (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):   None	Width Max=30
This information must also be completed  RIPARIAN ZONE AND FLOODPLAIN QUALITY  ANOTE: River Left (L) and Right (R) as looking downstream:  RIPARIAN WIDTH  L R (Most Predominant per Bank)  Wide >10m  Moderate 5-10m  Narrow <5m  Narrow <5m  Residential, Park, New Field  Narrow <5m  None  Fenced Pasture  Flow REGIME (At Time of Evaluation)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel)  SINUOSITY (Number of bends per 61 m (200 ft) of channel)  None  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.	Width Max=30
Sinuosity (Number of bends per 61 m (200 ft) of channel)    Sinuosity (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):   Sinuosity (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):   None	Width Max=30

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):	
QHEI PERFORMED? - Yes V No QHEI Score (If Yes, Atta	ach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: Honey Creek	Distance from Evaluated Stream 0.05
CWH Name:	Distance from Evaluated Stream
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHE	D AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Bloomville NRCS Soil Map I	Page: NRCS Soil Map Stream Order
County: Seneca Township / City: Eden	
MISCELLANEOUS	
Base Flow Conditions? (Y/N):_Y Date of last precipitation:_ 09/25/18	Quantity: 0.38
Photograph Information:	
Elevated Turbidity? (Y/N): N Canopy (% open): 80%	
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id.	and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.)	Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain:	
Additional comments/description of pollution impacts:	
BIOTIC EVALUATION	<u>'</u>
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional ID number. Include appropriate field data sheets from the Pr	•
	N
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) N Voucher? (Y/N) Aquatic Macroinvertebra	Voucher? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:	
No fauna observed at time of survey	

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW -





# **Qualitative Habitat Evaluation Index and Use Assessment Field Sheet**

QHEI Score:	62.0
Q. 12. 00010.	

Stream & Location: S-B3 (Honey Creek)	RM:	<i>Date:</i> 09/25/2018
Scorers Full Name & Affiliation:_		Office verified
River Code: STORET #: Lat./Long.: 41.033560 -83.0	79193	location $\Box$
SUBSTRATE   Check ONLY Two substrate   TYPE BOXES; estimate % or note every type present   Substrate   Check Oncomments   Che	SILT	QUALITY    HEAVY [-2]   MODERATE [-1]   NORMAL [0]   FREE [1]   EXTENSIVE [-2]   MODERATE [-1]   NONE [1]    NONE [1]
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more commo quality; 2-Moderate amounts, but not of highest quality or in small amounts quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional 1 UNDERCUT BANKS [1]	of highest , large pools. [ RS [1] [ TES [1] [	AMOUNT  Check ONE ( <i>Or 2 &amp; average</i> )  EXTENSIVE >75% [11]  MODERATE 25-75% [7]  SPARSE 5-<25% [3]  NEARLY ABSENT <5% [1]  Cover  Maximum 20  13.0
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)  SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY  HIGH [4] EXCELLENT [7] NONE [6] HIGH [3]  MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2]  LOW [2] FAIR [3] RECOVERING [3] LOW [1]  NONE [1] POOR [1] RECENT OR NO RECOVERY [1]  Comments		Channel Maximum 20
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (ORiver right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY ROOMS (ORIGINAL PROPERTY OF THE	TY R R R R R R R R R R R R R R R R R R R	CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] WINING / CONSTRUCTION [0] e predominant land use(s) Om riparian.  Riparian Maximum 10  5.0
Solution   Pool   Poo	ΓΙΑL [-1] ΤΕΝΤ [-2] ]	Recreation Potential Primary Contact Secondary Contact (circle one and comment on back)  Pool / Current Maximum 12  4.0
□ BEST AREAS > 10cm [2] □ BEST AREAS 5-10cm [1] □ BEST AREAS 5-10cm [1] □ BEST AREAS < 5cm □ Long time tric=0]  Comments □ MAXIMUM > 50cm [2] □ STABLE (e.g., Cobble, Boulder) [2] □ MAXIMUM < 50cm [1] □ MOD. STABLE (e.g., Large Gravel) [1] □ UNSTABLE (e.g., Fine Gravel, Sand) [0]	FLE / RUI	N EMBEDDEDNESS ONE [2] OW [1] ODERATE [0] XTENSIVE [-1] Maximum 8  N EMBEDDEDNESS  Riffle  S.0  Maximum 8
DRAINAGE AREA   MODERATE [6-10]	%GLIDE RIFFLE%	2.0

Aj SAMPLED REACH Check All that apply	Comment RE: Reach consistency/1	s reach typical of steam?, <i>Recreation</i>	/Observed - Inferred, Other/	Comment RE: Reach consistency/Is reach typical of steam?, Recreation/Observed - Inferred, Other/Sampling observations, Concerns, Access directions, etc.	ess directions, etc.
۵					
<u> </u>					
☐ I. LINE ☐ UP ☐ ☐ OTHER ☐ ☐ NORMAL ☐					
DISTANCE DRY					
O.5 Km CLARITY	BJ AESTHETICS	DJ MAINTENANCE	Circle some & COMMENT	EJ ISSNES	F] MEASUREMENTS
0.15 Km 1stsample pass 2nd	INVASIVE MACBORINATES	PUBLIC / PRIVATE / BOTH / NA		WWTP / CSO / NPDES / INDUSTRY	x width
☐ 0.12 Km ☐ 20-40 cm		YOUNG-SUCCESSION-OLD		CONTAMINATED / LANDFILL	x depth
	☐ DISCOLORATION	SPRAY / SNAG / REMOVED		BMPs-CONSTRUCTION-SEDIMENT	iliax. ueptii Vankfiill width
meters SECCHI DEPTH	☐ FOAM / SCUM	MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED		LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE	
CANOPY 1st c	cm ☐ TRASH / LITTER	RELOCATED / CUTOFFS		FALSE BANK / MANURE / LAGOON	W/D ratio
ssed Z	☐ NUISANCE ODOR	MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS		WASH H <sub>2</sub> 0 / TILE / H <sub>2</sub> 0 TABLE ACID / MINF / QUARRY / FLOW	bankfull max. depth floodprone x <sup>2</sup> width
√ 55%-<85% 2nd Class Cl	Cm CSOS/SSOS/OUTFALLS	ISLANDS / SCOURED		NATURAL / WETLAND / STAGNANT	entrench. ratio
SED	CJ RECREATION AREA DEPTH POOL: □>100ft²□>3ft	IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE		PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	Legacy Tree:

Stream Drawing:



### Chief Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

THIEF COOL (Sum of metrics	
SITE NAME/LOCATION Seneca Wind	
SITE NUMBER S-B7 RIVER BASIN Sandusky DRAINA	GE AREA (mi²) 0.20
LENGTH OF STREAM REACH (ft) 3,363 LAT. 41.03333 LONG83.05881 RIVER CODE	RIVER MILE
DATE 09/26/18 SCORER JB COMMENTS	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Str	eams" for Instructions
STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECOVER	ENT OR NO RECOVERY
SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate present.)	te TYPE boxes
(Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of box	es A & B.
	PERCENT Metri
□ BLDR SLABS [16 pts] □ SILT [3 pt] □ SILT [3 pt] □ LEAF PACK/WOODY DEBRIS [3 pts]	15% 0%
BEDROCK [16 pt]  BEDROCK [16 pt]  BEDROCK [16 pt]  BEDROCK [16 pt]	0% Substra
COBBLE (65-256 mm) [12 pts]	20% Max = 4
GRAVEL (2-64 mm) [9 pts] 30% MUCK [0 pts]	0%
SAND (<2 mm) [6 pts]	0% 17
T. ( ( )	(D)
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 25.00% (A) Substrate Percentage Check 100%	(B) A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12 TOTAL NUMBER OF SUBSTRATE	TYPES: 5
<ol> <li>Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach a evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):</li> </ol>	t the time of Pool Dep
> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	Iviax – S
> 22.5 - 30 cm [30 pts] < 5 cm [5 pts]	
> 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pt	s]   0
COMMENTS MAXIMUM POOL DEPTH (centin	neters):
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):	Bankfu
> 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (<=3' 3") [5 pts]	Width Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	
AVED AGE DANGELLI AMBTU (	0.50
COMMENTS AVERAGE BANKFULL WIDTH (n	neters): 0.50   5
This information must also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking RIPARIAN WIDTH FLOODPLAIN QUALITY	downstream 🔀
<u>L R</u> (Per Bank) <u>L R</u> (Most Predominant per Bank) <u>L R</u>	
☐☐ Wide >10m ☐☐ Mature Forest, Wetland ☐☐ Cons	ervation Tillage
Moderate 5-10m Immature Forest, Shrub or Old Urbai	n or Industrial
Field —— Oper	Pasture, Row Crop
Narrow <5m Residential, Park, New Field	. actaro, rton Grop
	g or Construction
COMMENTS	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):	
Stream Flowing Moist Channel, isolated pools, no	
Subsurface flow with isolated pools (Interstitial)  Dry channel, no water (Ephemer	
Subsurface flow with isolated pools (Interstitial)  Dry channel, no water (Ephemer	
Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  2.0  3.0	ral)
Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	ral)
Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  2.0  3.0  3.0  3.1  STREAM GRADIENT ESTIMATE	ral)
Subsurface flow with isolated pools (Interstitial)  COMMENTS  SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None  1.0  2.0  3.0  3.0  3.0  3.0  3.0  3.0	ral)

ADDITIONAL STREAM INFORMATION (This Information Must Also b	e Completed):
QHEI PERFORMED? - Yes ✓ No QHEI Score	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: Honey Creek	_ Distance from Evaluated Stream
CWH Name:	
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTI	RE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Bloomville	IRCS Soil Map Page: NRCS Soil Map Stream Order
County: Seneca Townshi	o / City:Bloom
MISCELLANEOUS	
Base Flow Conditions? (Y/N):Y Date of last precipitation:	09/24/18 Quantity: 0.38
Photograph Information:	
Elevated Turbidity? (Y/N): N Canopy (% open): 50%	
Were samples collected for water chemistry? (Y/N): N (Note lab s	ample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l)	pH (S.U.) Conductivity (μmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, pl	ease explain:
Additional comments/description of pollution impacts:	
ID number. Include appropriate field data s  Fish Observed? (Y/N)  N  Salamanders Observed?	ollections optional. NOTE: all voucher samples must be labeled with the site heets from the Primary Headwater Habitat Assessment Manual)  erved? (Y/N)  Voucher? (Y/N)  Macroinvertebrates Observed? (Y/N)  N  Voucher? (Y/N)
DRAWING AND NARRATIVE DESCRIPTION O	F STREAM REACH (This must be completed):
	ite evaluation and a narrative description of the stream's location
See Figure 4	

FLOW -





# **Qualitative Habitat Evaluation Index and Use Assessment Field Sheet**

QHEI Score:	46.0
QIILI COOIO.	

Stream & Location: S-B2 (UNT to Honey Creek)	_RM:	_ <b>Date:</b> 09/24/2018
Scorers Full Name & Affiliation:		
River Code: STORET #: Lat./ Long.: 41.016957 -83.	081299	Office verified ☐
1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present  BEST TYPES POOL RIFFLE  OTHER TYPES  POOL RIFFLE  HARDPAN [4]  BOULDER [9]  COBBLE [8]  40%  50%  MUCK [2]  MUCK [2]	SILT	
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common quality; 2-Moderate amounts, but not of highest quality or in small amounts quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional 1 UNDERCUT BANKS [1]	of highest ; large pools. [ ERS [1] [ TES [1] [	Check ONE ( <i>Or 2 &amp; average</i> ) <b>EXTENSIVE &gt;75% [11] MODERATE 25-75% [7] SPARSE 5-&lt;25% [3]</b>
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)  SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY  HIGH [4] EXCELLENT [7] NONE [6] HIGH [3]  MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2]  LOW [2] FAIR [3] RECOVERING [3] LOW [1]  NONE [1] POOR [1] RECENT OR NO RECOVERY [1]  Comments		Channel Maximum 20 12.0
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (OR River right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW FIELD PLAYY / SEVERE [1] VERY NARROW < 5m [1] FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW FIELD PLAYY / SEVERE [1] POPEN PASTURE [1] OPEN PASTURE, ROWCROP [0] Comments	TY  R R C C C C C C C C C C C C C C C C C	& average)  CONSERVATION TILLAGE [1]  JRBAN OR INDUSTRIAL [0]  MINING / CONSTRUCTION [0]  a predominant land use(s)  Om riparian.  Riparian  Maximum  10  4.0
Solution   Pool   GLIDE AND RIFFLE   RUN QUALITY	ΓΙΑL [-1] ΤΕΝΤ [-2] ]	Recreation Potential Primary Contact Secondary Contact (circle one and comment on back)  Pool / Current Maximum 12  3.0
Indicate for functional riffles; Best areas must be large enough to support of riffle-obligate species: Check ONE (Or 2 & average).  RIFFLE DEPTH RUN DEPTH RIFFLE / RUN SUBSTRATE RIFFLE BEST AREAS > 10cm [2]	FLE / RUN □ No □ LO	N EMBEDDEDNESS ONE [2] OW [1] ODERATE [0] KTENSIVE [-1] RIFFLE [metric=0] Riffle / Run Maximum 8
DRAINAGE AREA MODERATE [6-10]	%GLIDE RIFFLE%	2.0

Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/Observed - Inferred, Other/Sampling observations, Concerns, Access directions, etc.				T EJ ISSUES FJ MEASUREMENTS	WWTP / CSO / NPDES / INDUSTRY X width		illax. deptill ⊽ hankfull width	LOGGING / IRRIGATION / COOLING X Dainwain 12 BANK / EROSION / SURFACE bankfull X depth 6	z	WASH H <sub>2</sub> 0 / TILE / H <sub>2</sub> 0 TABLE banktuli max. deptn ACID / MINE / QUARRY / FLOW floodprone x <sup>2</sup> width	NATURAL / WETLAND / STAGNANT entrench. ratio	PARK / GOLF / LAWN / HOME Legacy Tree: ATMOSPHERE / DATA PAUCITY
reach typical of steam?, Recreation/Observed - Inferred, Oth				DJ MAINTENANCE Circle some & COMMENT	PUBLIC / PRIVATE / BOTH / NA	YOUNG-SUCCESSION-OLD	SPRAY / SNAG / REMOVED	MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED	RELOCATED / CUTOFFS	MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS	ISLANDS / SCOURED	IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE
Comment RE: Reach consistency/ Is	-			BJAESTHETICS	☐ NUISANCE ALGAE		☐ DISCOLORATION	H POAM / SCUM	.cm TRASH/LITTER	☐ NUISANCE ODOR ☐ SLUDGE DEPOSITS	CSOS/SSOS/OUTFALLS	<i>CJ RECREATION</i> AREA DEPTH <i>POOL</i> : □>100ft²□>3ft
AJ SAMPLED REACH Check ALL that apply	۵	☐ L. LINE ☐ UP ☐ OTHER ☐ OTHER ☐ NORMAL□	DISTANCE DRY	☐ 0.5 Km CLARITY	0.15 Km	✓ 0.12 Km □ 20-<40 cm		Meters ☐ SECCHI DEPTH	CANOPY 1st	ssed $^{7}_{2}$	33%-483% Alio	SED

Stream Drawing:



#### ChiefPA Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind		
SITE NUMBER	S-B4 RIVER BASIN Sandusky DRAINAGE AREA (mi²) 0.20	D
LENGTH OF STREAM REACH (ft) 875	LAT. 41.00467 LONG83.08442 RIVER CODE RIVER MILE	
DATE 09/26/18 SCORER JB	COMMENTS	
DATE GOOKER		
NOTE: Complete All Items On This Fori	m - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruct	tions
STREAM CHANNEL NONE / NA MODIFICATIONS:	ATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVE	ERY
SUBSTRATE (Estimate percent of every strength of the stre	very type of substrate present. Check ONLY two predominant substrate TYPE boxes	
(Max of 32). Add total number of signific		HHE
	THE TENDENT	Metr Poin
BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts]	0% SILT [3 pt] 25%	0
BEDROCK [16 pt]		Substr
COBBLE (65-256 mm) [12 pts]	10% CLAY or HARDPAN [0 pt] 35%	Max =
GRAVEL (2-64 mm) [9 pts]	20% MUCK [0 pts] 0%	_
SAND (<2 mm) [6 pts]	10% ARTIFICIAL [3 pts] 0%	8
Total of Percentages of	10 00% (A) Substrate Percentage 100% (B)	
Bldr Slabs, Boulder, Cobble, Bedrock _	10.00% (A) Substrate Percentage 100% (B)	A + B
SCORE OF TWO MOST PREDOMINATE SUBS	STRATE TYPES: 3 TOTAL NUMBER OF SUBSTRATE TYPES: 5	
2. Maximum Pool Depth (Measure the n	maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of	ool De
. ,		Max =
> 30 centimeters [20 pts]	> 5 cm - 10 cm [15 pts]	
> 22.5 - 30 cm [30 pts]	< 5 cm [5 pts] NO WATER OR MOIST CHANNEL [0 pts]	25
> 10 - 22.5 cm [25 pts]	NO WATER OR MOIST CHANNEL [U pis]	25
COMMENTS	MAXIMUM POOL DEPTH (centimeters): 0	
3. BANK FULL WIDTH (Measured as the	e average of 3-4 measurements) (Check ONLY one box):	Bankf
> 4.0 meters (> 13') [30 pts]		Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]		Max=3
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		
COMMENTS	AVERAGE BANKFULL WIDTH (meters): 1.80	20
	· / L	
	This information <u>must</u> also be completed	
RIPARIAN ZONE AND FLOODI		
RIPARIAN WIDTH	FLOODPLAIN QUALITY	
L R (Per Bank)	L R (Most Predominant per Bank) L R	
Wide >10m	Mature Forest, Wetland Conservation Tillage Immature Forest, Shrub or Old	
Moderate 5-10m	Field Urban or Industrial	
✓ ✓ Narrow <5m	Residential, Park, New Field Open Pasture, Row Crop	
None	Fenced Pasture	
COMMENTS		
FLOW PEOINE (A) Time of F	ortestant (Oheada ONII) (ana hara)	
Stream Flowing	raluation) (Check ONLY one box):  Moist Channel, isolated pools, no flow (Intermittent)	
Subsurface flow with isolated poor		
COMMENTS_		
SINUOSITY (Number of bends a	per 61 m (200 ft) of channel) (Check ONLY one box):	
None (Namiber of Bellide)	1.0 2.0 3.0	
□ 0.5	1.5 🔲 2.5 🔲 >3	
	<del>_</del>	
STREAM GRADIENT ESTIMATE	<del>_</del>	
STREAM GRADIENT ESTIMATE  Flat (0.5 ft/100 ft)  Flat to Moderate	Moderate (2 ft/100 ft) Moderate to Severe Severe Severe (10 ft/100 ft)	)

ADDITIONAL STREAM INFORMATION (This Information Must Also	be Completed):
QHEI PERFORMED? - Yes V No QHEI Score	(If Yes, Attach Completed QHEI Form)
DOWNSTREAM DESIGNATED USE(S)	
WWH Name: Honey Creek	_ Distance from Evaluated Stream
CWH Name:	
EWH Name:	Distance from Evaluated Stream
	NTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Bloomville	NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Seneca Towns	ship / City:Eden
MISCELLANEOUS	
Base Flow Conditions? (Y/N):Y Date of last precipitation:	09/25/18 Quantity: 0.38
Photograph Information:	
Elevated Turbidity? (Y/N): N Canopy (% open): 109	<b>%</b>
Were samples collected for water chemistry? (Y/N): Note lat	o sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l)	pH (S.U.) Conductivity (μmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not,	please explain:
Additional comments/description of pollution impacts:	
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders C Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aqua Comments Regarding Biology:  DRAWING AND NARRATIVE DESCRIPTION Include important landmarks and other features of interest for	or collections optional. NOTE: all voucher samples must be labeled with the site a sheets from the Primary Headwater Habitat Assessment Manual)  Observed? (Y/N)  Voucher? (Y/N)  Voucher? (Y/N)  Voucher? (Y/N)  Voucher? (Y/N)  Voucher? (Y/N)  r site evaluation and a narrative description of the stream's location
See Figure 4	

FLOW -





### Chief Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION Seneca Wind	, , , , , ,	
	S-B5 RIVER BASIN Sandusky DRAINAGE AREA (mi²) 0.2	20
LENGTH OF STREAM REACH (ft) 371	LAT. 41.00273 LONG83.07786 RIVER CODE RIVER MILE	
DATE 09/26/18 SCORER JB	COMMENTS	
NOTE: Complete All Items On This For	rm - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instru	ctions
STREAM CHANNEL NONE / NA MODIFICATIONS:	ATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECO	VERY
· ·	very type of substrate present. Check ONLY two predominant substrate TYPE boxes ficant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHE
<u>TYPE</u>	PERCENT TYPE PERCENT	Metri Point
BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts]	0%   SILT [3 pt]   40%   0%   LEAF PACK/WOODY DEBRIS [3 pts]   0%	Point
BEDROCK [16 pt]	0% FINE DETRITUS [3 pts]	Substra Max = 4
☐ ☐ COBBLE (65-256 mm) [12 pts] ☐ ☐ GRAVEL (2-64 mm) [9 pts]	5% CLAY or HARDPAN [0 pt] 35% 0%	
SAND (<2 mm) [6 pts]	10% ARTIFICIAL [3 pts]	8
Total of Percentages of	5.00% (A) Substrate Percentage 100% (B)	A + B
Bldr Slabs, Boulder, Cobble, Bedrock  SCORE OF TWO MOST PREDOMINATE SUB	Check 10070	
2. Maximum Pool Depth (Measure the		Pool De
evaluation. Avoid plunge pools from ro	pad culverts or storm water pipes) (Check ONLY one box):	Max = 3
> 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts]	> 5 cm - 10 cm [15 pts] < 5 cm [5 pts]	
> 10 - 22.5 cm [25 pts]	NO WATER OR MOIST CHANNEL [0 pts]	30
COMMENTS	MAXIMUM POOL DEPTH (centimeters): 0	
3. BANK FULL WIDTH (Measured as the		Bankfu
> 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] ≤ 1.0 m (<=3' 3") [5 pts]	Width Max=3
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		
COMMENTS	AVERAGE BANKFULL WIDTH (meters): 1.00	5
RIPARIAN ZONE AND FLOOD	This information <u>must</u> also be completed  DPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆	
RIPARIAN WIDTH	FLOODPLAIN QUALITY	
L R (Per Bank) Wide >10m	L R (Most Predominant per Bank) L R  Mature Forest, Wetland Conservation Tillage	
Moderate 5-10m	Immature Forest, Shrub or Old  Urban or Industrial	
✓ ✓ Narrow <5m	Residential, Park, New Field Open Pasture, Row Crop	)
None	Fenced Pasture Mining or Construction	
COMMENTS	<u>_</u>	
FLOW REGIME (At Time of Ex	valuation) (Check ONLY one box):  Moist Channel, isolated pools, no flow (Intermittent)	
Subsurface flow with isolated po		
	The Color (200 ft) of showed (200 ft) (Charle ON) Versily (200 ft)	
None	s per 61 m (200 ft) of channel) (Check <i>ONLY</i> one box):  1.0	
0.5		
	1.5 2.5 >3	
STREAM GRADIENT ESTIMATE  Flat (0.5 ft/100 ft)  Flat to Moderate		) ff)

ADDITIONAL STREAM INFORMATION (This Information Must Also	on Completed):
QHEI PERFORMED? - Yes V No QHEI Score	
	(II Tes, Allaci Completed Wile Form)
DOWNSTREAM DESIGNATED USE(S)  WWH Name: Honey Creek	_ Distance from Evaluated Stream
CWH Name:	
EWH Name:	Distance from Evaluated Stream
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENT	IRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION
USGS Quadrangle Name: Bloomville	NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Seneca Townsh	ip / City:Eden
MISCELLANEOUS	
Base Flow Conditions? (Y/N):Y Date of last precipitation:	09/24/18 Quantity: 0.38
Photograph Information:	
Elevated Turbidity? (Y/N): N Canopy (% open): 0%	
Were samples collected for water chemistry? (Y/N): N (Note lab	sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l)	pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, p	lease explain:
Additional comments/description of pollution impacts:	
BIOTIC EVALUATION  Performed? (Y/N): N (If Yes, Record all observations. Voucher	collections optional. NOTE: all voucher samples must be labeled with the site
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N Aquation	sheets from the Primary Headwater Habitat Assessment Manual) served? (Y/N)  Voucher? (Y/N)  M  Voucher? (Y/N)  Voucher? (Y/N)
Comments Regarding Biology:	<u> </u>
	OF STREAM REACH (This must be completed):
	site evaluation and a narrative description of the stream's location
See Figure 4	

FLOW -





#### Chief Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

39

	THIEI GOOTE (sum of metrics 1, 2, 3) !	
SITE NAME/LOCATION Seneca Wind		
	-B1 RIVER BASIN Sandusky DRAINAGE AREA (mi²) 0.20	
LENGTH OF STREAM REACH (ft)	LAT. 41.01227 LONG83.08524 RIVER CODE RIVER MILE	
DATE 09/24/18 SCORER CV	COMMENTS At end of tile drain.	
NOTE: Complete All Items On This Form	n - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruction	ons
STREAM CHANNEL NONE / NAT MODIFICATIONS:	TURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVER	:RY
SUBSTRATE (Estimate percent of eve	ery type of substrate present. Check ONLY two predominant substrate TYPE boxes	
	ant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HE
	Po Do	letri oint
BLDR SLABS [16 pts]  BOULDER (>256 mm) [16 pts]	0% SILT [3 pt] 10% PC	Oiiit
BEDROCK [16 pt]		ıbstra
COBBLE (65-256 mm) [12 pts]	10% CLAY or HARDPAN [0 pt] 25%	ax = 4
☑	50% DD MUCK [0 pts] 0%	
SAND (<2 mm) [6 pts]	5% ARTIFICIAL [3 pts] 0%	14
Total of Percentages of	In no% (A) Substrate Percentage 4009/ (B)	
Bldr Slabs, Boulder, Cobble, Bedrock	O.00% (A) Substrate Percentage Check 100% (B) A	4 + B
SCORE OF TWO MOST PREDOMINATE SUBS	STRATE TYPES: 9 TOTAL NUMBER OF SUBSTRATE TYPES: 5	
2 Mayimum Daal Danth (Massure the m	povimum pool donth within the 54 mater (200 ft) evaluation reach at the time of	ol De
	· · · · · · · · · · · · · · · · · · ·	оі Dej
> 30 centimeters [20 pts]	> 5 cm - 10 cm [15 pts]	
> 22.5 - 30 cm [30 pts]	< 5 cm [5 pts]	_
> 10 - 22.5 cm [25 pts]	NO WATER OR MOIST CHANNEL [0 pts]	0
COMMENTS	MAXIMUM POOL DEPTH (centimeters): 0	
3. BANK FULL WIDTH (Measured as the > 4.0 meters (> 13') [30 pts]		ankfu Vidth
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]		lax=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		
COMMENTS Artificial channel	AVERAGE BANKFULL WIDTH (meters): 3.70	25
COMMENTS	AVERAGE BANKFOLL WIDTH (INELEIS).	23
RIPARIAN ZONE AND FLOODP	This information <u>must</u> also be completed  PLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆	
RIPARIAN WIDTH	FLOODPLAIN QUALITY	
L R (Per Bank)	L R (Most Predominant per Bank) L R	
✓ ✓ Wide >10m	Mature Forest, Wetland Conservation Tillage	
Moderate 5-10m	Immature Forest, Shrub or Old Urban or Industrial	
November 45 mg	Onen Pasture Row Crop	
Narrow <5m	Residential, Park, New Field	
None COMMENTS	Fenced Pasture Mining or Construction	
OOMINIEN 13		
`	aluation) (Check ONLY one box):	
Stream Flowing Subsurface flow with isolated poo	Moist Channel, isolated pools, no flow (Intermittent)  Dry channel, no water (Ephemeral)	
COMMENTS	Diy chailler, no water (Ephemeral)	
`	per 61 m (200 ft) of channel) (Check ONLY one box):	
✓ None	1.0	
STREAM GRADIENT ESTIMATE	Moderate (2 ft/100 ft)  Moderate to Severe  Severe (10 ft/100 ft)	
Flat (0.5 ft/100 ft)	Moderate (2 ft/100 ft) Moderate to Severe Severe (10 ft/100 ft)	

DOWNSTREAM DESIGNATED USE(S)  WWH Name: Honey Creek Di	istance from Evaluated Stream stance from Evaluated Stream stance from Evaluated Stream stance from Evaluated Stream stance from Evaluated Stream	1.50
WWH Name: Honey Creek D CWH Name: Di EWH Name: Di MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED ARE	stance from Evaluated Streamstance from Evaluated Stream	1.50
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED ARE	_	
	EA. CLEARLY MARK THE SITE LO	OCATION
USGS Quadrangle Name: NRCS Soil Map Page:	NDCC Cail Mars Chrosens	
County: Seneca Township / City: Eden	NRCS Soil Map Stream	Order
County: Township / City:		
MISCELLANEOUS  Base Flow Conditions? (Y/N): Y Date of last precipitation: 09/24/18	Quantity: 0.24	
Photograph Information:		
Elevated Turbidity? (Y/N): N Canopy (% open): 10%		
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and a	attach results) Lab Number:	
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.)	Conductivity (µmhos/cm)	
Is the sampling reach representative of the stream (Y/N) If not, please explain:		
Additional comments/description of pollution impacts:		
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NO ID number. Include appropriate field data sheets from the Primary Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Comments Regarding Biology:	Headwater Habitat Assessment Ma	nnual)
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REAL Include important landmarks and other features of interest for site evaluation and a respective to the second strength of the second s		•

FLOW -





## **Qualitative Habitat Evaluation Index and Use Assessment Field Sheet**

QHEI Score: 24.0

Stream & Location: S-A32 UNT to Rock Creek	_ <i>RM:</i>	_ <b></b> <i>Date:</i> 9/26/2018
Scorers Full Name & Affiliation:	JMM, KM	
River Code: STORET #: Lat./Long.: 41.041726 -83	.106755	Office verified location □
1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present Check Ch	ONE ( <i>Or 2</i> &	average)
DEST TYPES OFFICE OFFICE	514L (01 2 Q	QUALITY
BEST TYPES   POOL RIFFLE   DOTHER TYPES   POOL RIFFLE   UMBER OF BEST TYPES:   4 or more [2]   Sludge from point-sources   COAL FINES [-2]   CORRES   CORE	SILT BDEON	
		<u> </u>
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common quality; 2-Moderate amounts, but not of highest quality or in small amounts quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functionalOVERHANGING VEGETATION [1] POOLS > 70cm [2] OXBOWS, BACKWATE OVERHANGING VEGETATION [1] ROOTWADS [1] AQUATIC MACROPHY BOULDERS [1] LOGS OR WOODY DE COMMENTS [1] ROOTMATS [1] BOULDERS [1] LOGS OR WOODY DE COMMENTS COMMENTS COMMENTS COMMENTS	of highest r, large I pools. [ ERS [1] [ TES [1] [	Check ONE (Or 2 & average)  EXTENSIVE >75% [11]  MODERATE 25-75% [7]  SPARSE 5-<25% [3]  NEARLY ABSENT <5% [1]  Cover  Maximum  5.0
OLOHANNEL MODBILOLOOV Objet ONE is such astrony (Oso Assesse)		20
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY		
□ HIGH [4]       □ EXCELLENT [7]       □ NONE [6]       □ HIGH [3]         □ MODERATE [3]       □ GOOD [5]       □ RECOVERED [4]       □ MODERATE [2]         □ LOW [2]       □ FAIR [3]       □ RECOVERING [3]       □ LOW [1]         ☑ NONE [1]       □ POOR [1]       □ RECENT OR NO RECOVERY [1]         Comments		Channel Maximum 20 7.0
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (C	r 2 per bank	· & average)
RIPARIAN WIDTH  EROSION  WIDE > 50m [4]  NONE / LITTLE [3]  MODERATE [2]  NARROW 5-10m [2]  HEAVY / SEVERE [1]  WONE [0]  RIPARIAN WIDTH  FLOOD PLAIN QUAL  FOREST, SWAMP [3]  SHRUB OR OLD FIELD [2]  RESIDENTIAL, PARK, NEW FIELD  FENCED PASTURE [1]  POPEN PASTURE, ROWCROP [0]  Comments	ITY  R R R R R R R R R R R R R R R R R R	CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0] Expredominant land use(s) Om riparian.  Riparian Maximum  2.0
		10
5] POOL / GLIDE AND RIFFLE / RUN QUALITY  MAXIMUM DEPTH Check ONE (ONLY!) Check ONE (Or 2 & average) Check ALL that apply  1 only 1 only 2 only 2 only 3 only 4 only 4 only 4 only 4 only 5 only 5 only 6 onl	TIAL [-1] TENT [-2] 1]	Recreation Potential Primary Contact Secondary Contact (circle one and comment on back)  Pool / Current Maximum  0.0
	0 man1	12
Indicate for functional riffles; Best areas must be large enough to support of riffle-obligate species:  Check ONE (Or 2 & average).  RIFFLE DEPTH  RUN DEPTH  RIFFLE / RUN SUBSTRATE RIF  BEST AREAS > 10cm [2]  MAXIMUM > 50cm [2] □ STABLE (e.g., Cobble, Boulder) [2]  MAXIMUM < 50cm [1] □ MOD. STABLE (e.g., Large Gravel) [1]  MAXIMUM < 50cm [1] □ UNSTABLE (e.g., Fine Gravel, Sand) [0]  Comments	FLE / RUI	NO RIFFLE [metric=0] N EMBEDDEDNESS ONE [2] OW [1] ODERATE [0] KTENSIVE [-1] Maximum 8
6] GRADIENT ( ft/mi) VERY LOW - LOW [2-4] %POOL: 90%  DRAINAGE AREA	%GLIDE	
DRAINAGE AREA	%RIFFLE	

A   SAMPLED REACH
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Stream Drawing:



### Chief Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3):

63

SITE NAME/LOCATION Seneca Wind	
SITE NUMBER S-A33 RIVER BASIN Sandusky DRAINAGE AREA (mi²)	.33
LENGTH OF STREAM REACH (ft) 1,666 LAT. 41.04681 LONG83.10662 RIVER CODE RIVER MILE	
DATE 09/26/18 SCORER K. Pulver COMMENTS Modified Class II	
NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instru	uctions
STREAM CHANNEL	OVERY
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	HHEI
TYPE  PERCENT  TYPE  PERCENT	Metri
BLDR SLABS [16 pts]	Points
BEDROCK [16 pt]  0%  FINE DETRITUS [3 pts]  0%	Substrat Max = 4
COBBLE (65-256 mm) [12 pts]	IVIAX = 4
☐ GRAVEL (2-64 mm) [9 pts] ☐ MUCK [0 pts] ☐ 0% ☐ SAND (<2 mm) [6 pts] ☐ ARTIFICIAL [3 pts] ☐ 0% ☐ 0% ☐ 0% ☐ 0% ☐ 0% ☐ 0% ☐ 0% ☐ 0	13
Total of Percentages of Control (A) Substrate Percentage (B)	A . D
Bldr Slabs, Boulder, Cobble, Bedrock	A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9 TOTAL NUMBER OF SUBSTRATE TYPES: 4	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):	Pool Dep Max = 3
> 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts]	max – o
> 22.5 - 30 cm [30 pts]	30
COMMENTS MAXIMUM POOL DEPTH (centimeters): 30	
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):  > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]	Bankful Width
> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (<=3' 3") [5 pts]	Max=30
> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	20
COMMENTS AVERAGE BANKFULL WIDTH (meters): 2.10	20
This information must also be completed	
RIPARIAN ZONE AND FLOODPLAIN QUALITY    ☆NOTE: River Left (L) and Right (R) as looking downstream ☆	
RIPARIAN WIDTH FLOODPLAIN QUALITY  L R (Per Bank) L R (Most Predominant per Bank) L R	
☐ Wide >10m ☐ Mature Forest, Wetland ☐ Conservation Tillage	
Moderate 5-10m Immature Forest, Shrub or Old Urban or Industrial	
Narrow <5m Residential, Park, New Field Open Pasture, Row Cro	þ
None Fenced Pasture Mining or Construction	
COMMENTS Mixed herbaceous and shrub cover on banks	
FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  Stream Flowing  Moist Channel, isolated pools, no flow (Intermittent)	
Subsurface flow with isolated pools (Interstitial)  Dry channel, no water (Ephemeral)	
Subsurface flow with isolated pools (Interstitial)  COMMENTS  Dry channel, no water (Ephemeral)	
COMMENTSSINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):	
COMMENTS	
SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  None 1.0 2.0 3.0 3.0 3.5 STREAM GRADIENT ESTIMATE	
COMMENTS           SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):           None         ✓ 1.0         2.0         3.0           0.5         1.5         2.5         >3	10 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Complete	eted):	
QHEI PERFORMED? - Yes V No QHEI Score (If Yes	es, Attach Completed QHEI Form)	
DOWNSTREAM DESIGNATED USE(S)		
WWH Name: Honey Creek	Distance from Evaluated Stream	6.00
CWH Name:	Distance from Evaluated Stream	
EWH Name:	Distance from Evaluated Stream	
MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATE	RSHED AREA. CLEARLY MARK THE SITE LO	CATION
USGS Quadrangle Name: Bloomville NRCS Soil	Map Page: NRCS Soil Map Stream	Order
County: Seneca Township / City:_	Eden	
MISCELLANEOUS		
Base Flow Conditions? (Y/N):_Y Date of last precipitation:09/24/18	Quantity: 0.19	
Photograph Information:		
Elevated Turbidity? (Y/N): Y Canopy (% open): 0%		
Were samples collected for water chemistry? (Y/N): (Note lab sample no.	or id. and attach results) Lab Number:	
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S	S.U.) Conductivity (µmhos/cm)	
Is the sampling reach representative of the stream (Y/N) Y If not, please explain	ain:	
Additional comments/description of pollution impacts:		
Additional Softmioritor description of policinor impacto.		
BIOTIC EVALUATION		·
Porformed 2 (V/N)). Y		haladiah aha at
Performed? (Y/N): (If Yes, Record all observations. Voucher collections ID number. Include appropriate field data sheets from	·	
FILE NOVE N	N	
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y	Voucher? (Y/N)  ertebrates Observed? (Y/N)  N  Voucher? (`	Y/N) N
Comments Regarding Biology:		
No fauna observed at time of survey		

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW





# **Qualitative Habitat Evaluation Index and Use Assessment Field Sheet**

QHEI Score:	23.0

Stream & Location: S-A31 UNT to Rock Creek	<i>RM:</i>	<i>Date:</i> 9/25/2018
Scorers Full Name & Affiliation	:JMM, KN	MP
River Code: STORET #: Lat./ Long.: 41.040011, -8	33.125388	Office verified location ☐
1] SUBSTRATE Check ONLYTwo substrate TYPE BOXES; estimate % or note every type present Check  BEST TYPES POOL RIFFLE OTHER TYPES POOL RIFFLE ORIGIN	ONE (Or 2	& average)  QUALITY
□ BLDR /SLABS [10]       0%       0%       □ HARDPAN [4]       0%       0%       □ LIMESTONE [1]         □ BOULDER [9]       0%       0%       □ DETRITUS [3]       10%       0%       □ TILLS [1]         □ COBBLE [8]       0%       0%       □ MUCK [2]       20%       0%       □ WETLANDS [0]         □ GRAVEL [7]       0%       0%       □ SILT [2]       35%       0%       □ HARDPAN [0]         □ SAND [6]       35%       0%       □ ARTIFICIAL [0]       0%       □ SANDSTONE [0]         □ BEDROCK [5]       0%       0%       (Score natural substrates; ignore       RIP/RAP [0]         NUMBER OF BEST TYPES:       □ 4 or more [2] sludge from point-sources)       □ LACUSTURINE [         □ SHALE [-1]       □ COAL FINES [-2	SILT  SILT  O DECO	☐ HEAVY [-2] ☐ MODERATE [-1] ☐ NORMAL [0] ☐ FREE [1] ☐ MODERATE [-2] ☐ MODERATE [-1] ☐ NORMAL [0] ☐ NONE [1] ☐ NONE [1]
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more comme quality; 2-Moderate amounts, but not of highest quality or in small amount quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast wat diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, function UNDERCUT BANKS [1] POOLS > 70cm [2] OXBOWS, BACKWAT OVERHANGING VEGETATION [1] ROOTWADS [1] AQUATIC MACROPH BOULDERS [1] LOGS OR WOODLY DEFINITION [1] ROOTMATS [1] ROOTMATS [1] BOULDERS [1] LOGS OR WOODLY DEFINITION [1] ROOTMATS [1] ROOTMATS [1] ROOTMATS [1] ROOTMATS [1] ROOTMATS [1]	ts of highest er, large al pools. [ERS [1] YTES [1]	AMOUNT   Check ONE (Or 2 & average)   EXTENSIVE >75% [11]   MODERATE 25-75% [7]   SPARSE 5-<25% [3]   NEARLY ABSENT <5% [1]   Cover   Maximum   20   4.0
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)		
SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY  HIGH [4]	2]	Channel Maximum 20 7.0
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (	Or 2 per bar	nk & average)
RIPARIAN WIDTH  EROSION    WIDE > 50m [4]   SHRUB OR OLD FIELD [2]   MODERATE [2]   NARROW 5-10m [2]   RESIDENTIAL, PARK, NEW FIELD [2]   PENCED PASTURE [1]   WONE [0]   OPEN PASTURE, ROWCROP [6]	LITY   R   R   R   R   R   R   R   R   R	CONSERVATION TILLAGE [1]
Comments		Maximum 2.0
5] POOL / GLIDE AND RIFFLE / RUN QUALITY  MAXIMUM DEPTH  Check ONE (ONLY!)  > 1m [6]  0.7-<1m [4]  0.4-<0.7m [2]  POOL WIDTH > RIFFLE WIDTH [1]  0.2-<0.4m [1]  <0.2-m [0]  Current VELOCIT  Check ALL that apply  TORRENTIAL [-1]  VERY FAST [1]  INTERST  MODERATE [1]  MODERATE [1]  Indicate for reach - pools and Comments	] [ITIAL [-1]  TTENT [-2] [1]	Recreation Potential Primary Contact Secondary Contact (circle one and comment on back)
Indicate for functional riffles; Best areas must be large enough to suppor	t a popul	ation
of riffle-obligate species: Check ONE (Or 2 & average).	FFLE / RU	□ NO RIFFLE [metric=0]  JN EMBEDDEDNESS  NONE [2] LOW [1] MODERATE [0] EXTENSIVE [-1]  Maximum  Maximum  8
6] GRADIENT ( ft/mi) very Low - Low [2-4] %POOL: 90%	) %GLID	E: Gradient
DRAINAGE AREA	) %RIFFL	3.0

A   SAMPLED REACH
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Stream Drawing:



## **Qualitative Habitat Evaluation Index and Use Assessment Field Sheet**

QHEI Score: 24.0

Stream & Location: S-A34 UNT to Honey Creek	RM:	<i>Date:</i> 9/26/2018
Scorers Full Name & Affiliati	on:JMM, KN	
River Code: STORET #: Lat./Long.: 41.036761	, -83.138692	Office verified ☐
1] SUBSTRATE Check ONLYTwo substrate TYPE BOXES; estimate % or note every type present  BEST TYPES POOL RIFFLE OTHER TYPES POOL RIFFLE ORIGIN	eck ONE (Or 2	<u> </u>
□ BLDR /SLABS [10]       0%       0%       □ HARDPAN [4]       0%       0%       □ LIMESTONE         □ BOULDER [9]       0%       0%       □ DETRITUS [3]       10%       0%       □ TILLS [1]         □ COBBLE [8]       0%       0%       □ MUCK [2]       15%       0%       □ WETLANDS [0]         □ GRAVEL [7]       0%       0%       □ SILT [2]       35%       0%       □ HARDPAN [0]         □ SAND [6]       40%       0%       □ ARTIFICIAL [0]       0%       □ SANDSTONE         □ BEDROCK [5]       0%       0%       (Score natural substrates; ignore       RIP/RAP [0]         NUMBER OF BEST TYPES:       4 or more [2]       sludge from point-sources)       □ LACUSTURIN         □ SHALE [-1]       □ COAL FINES	0] SILT	MODERATE [-1]  NORMAL [0]  FREE [1]  EXTENSIVE [-2]  MODERATE [-1]  NORMAL [0]  NONE [1]
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more conquality; 2-Moderate amounts, but not of highest quality or in small amounts; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast valued diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, funct UNDERCUT BANKS [1] POOLS > 70cm [2] OXBOWS, BACKW OVERHANGING VEGETATION [1] ROOTWADS [1] AQUATIC MACRO BOULDERS [1] BOULDERS [1] LOGS OR WOODY COMMENTS	ounts of highest vater, large ional pools.  VATERS [1]  PHYTES [1]	AMOUNT Check ONE ( <i>Or 2 &amp; average</i> )  EXTENSIVE >75% [11]  MODERATE 25-75% [7]  SPARSE 5-<25% [3]  NEARLY ABSENT <5% [1]  Cover  Maximum 20  5.0
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)		
SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY  HIGH [4]		Channel Maximum 20
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BAN	<b>lK</b> (Or 2 per bar	ok & average)
River right looking downstream RIPARIAN WIDTH L R FLOOD PLAIN QU	ALITY L R	
REROSION	Indica	
Comments	,	Maximum 10
	y / [1] RSTITIAL [-1] RMITTENT [-2]	
✓ < 0.2m [0] Indicate for reach - pools a		Pool / Current Maximum
Indicate for functional riffles; Best areas must be large enough to supp of riffle-obligate species:  Check ONE (Or 2 & average).	RIFFLE / RU	UNO RIFFLE [metric=0]  JN EMBEDDEDNESS  NONE [2]  LOW [1]  MODERATE [0]  Riffle / Run  Maximum  0.0
6] GRADIENT ( ft/mi) VERY LOW - LOW [2-4] %POOL: 90	%)%GLID	F: Gradient
DRAINAGE AREA	% %GLID %RIFFL	3.0

A   SAMPLED REACH
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Stream Drawing:

### **APPENDIX E: STREAM PHOTOGRAPHS**



**Photograph Number:** 1

Direction: S

Feature Name: S-A1

Flow Regime: Intermittent

**Date:** 9/17/2018 **Remarks:** 



**Photograph Number:** 2

Direction: SW

Feature Name: S-A2

Flow Regime: Intermittent

**Date:** 9/18/2018 **Remarks:** 



Photograph Number: 3 Feature Name: S-A3 Flow Regime: Intermittent

**Direction:** W **Date:** 9/18/2018 **Remarks:** 



Photograph Number:4Feature Name:S-A7Flow Regime:IntermittentDirection:SWDate:9/18/2018Remarks:



Photograph Number: 5 F
Direction: N D

Feature Name: S-A5

Flow Regime: Intermittent

**Date:** 9/18/2018 **Remarks:** 



**Photograph Number:** 6

Feature Name: S-A6

Flow Regime: Intermittent

Direction: N Date: 9/18/2018 Remarks:



Photograph Number: 7
Direction: SE

Feature Name: S-A4

Flow Regime: Intermittent

**Date:** 9/18/2018 **Remarks:** 



**Photograph Number:** 8

Direction: SE

Feature Name: S-B13

Flow Regime: Perennial

**Date:** 9/27/2018 **Remarks:** 



Photograph Number: 9
Direction: N

Feature Name: S-B12

Flow Regime: Ephemeral

**Date:** 9/27/2018 **Remarks:** 



**Photograph Number:** 10 **Direction:** S

Feature Name: S-B10

Remarks:

Flow Regime: Perennial

Date: 9/27/2018



Photograph Number: 11 Feature Name: S-B11

Direction: SE

Flow Regime: Intermittent

**Date:** 9/27/2018 **Remarks:** 



Photograph Number: 12 Feature Name: S-A8 Flow Regime: Perennial

**Direction:** SW **Date:** 9/18/2018 **Remarks:** 



Photograph Number: 13 Feature Name: S-A10 Flow Regime: Intermittent

9/19/2018

Date:

Remarks:

Direction: S



Photograph Number:14Feature Name:S-A13Flow Regime:PerennialDirection:EDate:9/19/2018Remarks:



Photograph Number: 15

Direction: NW

Feature Name: S-A15

Flow Regime: Intermittent

Remarks: Date: 9/19/2018



Photograph Number: 16

Direction: NW

Feature Name: S-A14 Date:

Flow Regime: Intermittent

9/19/2018 Remarks:



Photograph Number: 17 Direction: SW

Feature Name: S-A17

Flow Regime: Ephemeral

Remarks: Date: 9/20/2018



**Photograph Number:** 18

Feature Name: S-A39

Flow Regime: Intermittent

Direction: E

Date:

10/1/2018

Remarks:



Photograph Number: 19

Direction: SW

Feature Name: S-A18

Flow Regime: Intermittent

Remarks: Date: 9/20/2018



Photograph Number: 20

**Direction:** S

Feature Name: S-A19 Date:

Flow Regime: Ephemeral

9/20/2018 Remarks:



Photograph Number: 21 Feature Name: S-A21 Flow Regime: Intermittent





Photograph Number:22Feature Name:S-A20Flow Regime:EphemeralDirection:SEDate:9/20/2018Remarks:



**Photograph Number: 23** 

Direction: NW

Feature Name: S-A22

Flow Regime: Ephemeral

**Date:** 9/20/2018 **Remarks:** 



Photograph Number: 24

Direction: S

Feature Name: S-A23

Flow Regime: Ephemeral

**Date:** 9/20/2018 **Remarks:** 



**Photograph Number:** 25 **Feature Name:** S-A24 **Flow Regime:** Ephemeral

**Direction:** NW **Date:** 9/21/2018 **Remarks:** 



Photograph Number:26Feature Name:S-A25Flow Regime:IntermittentDirection:WDate:9/21/2018Remarks:



Photograph Number: 27

Direction: S

Feature Name: S-A26

Flow Regime: Ephemeral

**Date:** 9/21/2018 **Remarks:** 



Photograph Number: 28

Direction: SE

Feature Name: S-A28

Flow Regime: Ephemeral

**Date:** 9/20/2018 **Remarks:** 



Photograph Number: 29 Direction: W

Feature Name: S-A29

Flow Regime: Intermittent

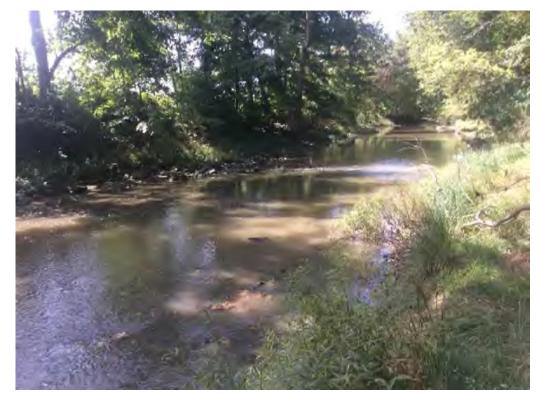
**Date:** 9/24/2018 **Remarks:** 



Photograph Number: 30 Direction: W Feature Name: S-A30

Flow Regime: Intermittent

**Date:** 9/24/2018 **Remarks:** 



Direction: NW

Feature Name: S-B8

Flow Regime: Perennial

**Date:** 9/26/2018 **Remarks:** 



**Photograph Number:** 32

**Direction:** W

Feature Name: S-B9

Flow Regime: Perennial

**Date:** 9/26/2018 **Remarks:** 



Direction: NW

Feature Name: S-B6

Flow Regime: Perennial

Remarks: 9/26/2018 Date:



Photograph Number: 34

**Direction:** W

Feature Name: S-A35 Date:

Flow Regime: Intermittent

9/26/2018 Remarks:



Direction: S

Feature Name: S-A36

Flow Regime: Ephemeral

**Date:** 9/26/2018 **Remarks:** 



**Photograph Number:** 36

Direction: SE

Feature Name: S-A37

Flow Regime: Ephemeral

**Date:** 9/26/2018

Remarks:



Photograph Number: 37 Direction: W

Feature Name: S-B3

Date:

9/25/2018

Flow Regime: Perennial

Remarks:



Photograph Number: 38

Direction: SW

Feature Name: S-B7

Date:

9/26/2018

Flow Regime: Ephemeral

Remarks:



Photograph Number: 39 Direction: E

Feature Name: S-B2

Flow Regime: Perennial

Remarks: 9/24/2018 Date:



Photograph Number: 40 **Direction:** NW

Feature Name: S-B4

Flow Regime: Perennial

9/26/2018 Remarks: Date:



Direction: NW

Feature Name: S-B5

Flow Regime: Intermittent

**Date:** 9/26/2018 **Remarks:** 



**Photograph Number: 42** 

Direction: NW

Feature Name: S-B1

Flow Regime: Intermittent

**Date:** 9/24/2018 **Remarks:** 



Photograph Number: 43 Feature Name: S-A32 Flow Regime: Intermittent

**Direction:** SW **Date:** 9/26/2018 **Remarks:** 



Photograph Number:44Feature Name:S-A33Flow Regime:IntermittentDirection:SDate:9/26/2018Remarks:



Photograph Number: 45 Feature Name: S-A31 Flow Regime: Intermittent

**Direction:** NW **Date:** 9/25/2018 **Remarks:** 



Photograph Number:46Feature Name:S-A34Flow Regime:IntermittentDirection:NDate:9/26/2018Remarks:

### **APPENDIX F: RESUMES**



## Jason McGuirk Wetland/Environmental Scientist IV

#### **EXPERIENCE SUMMARY**

Mr. Jason McGuirk has seven years of professional experience in wetland delineation, permitting, fisheries and wildlife, and stream assessments and classification in Pennsylvania, New York, Ohio, and Alaska. Mr. McGuirk has conducted hundreds of wetland delineations, stream evaluations as well as conducted and produced habitat assessments, and post monitoring impact statements and assessments on over 800 miles of proposed natural gas pipeline, and fifty plus proposed well pad sites. He has extensive knowledge in watercourse classification and assessment including the Rosgen method. In particular attention of his has been focused on fisheries habitat and macro-invertebrate work, with over fifty miles of stream classifications in Alaska. Mr. McGuirk's educational background is in Fisheries and Aquaculture with a minor focus in Marine Biology and Wildlife management.

#### RELEVANT EXPERIENCE

Environmental Scientist IV; MVP LLC; Wetland Delineations for Natural Gas Pipeline Project Responsibilities include organizing and conducting field work operations for multiple task including, wetland delineations and stream assessments for the proposed 300 mile West Virginia Pipeline Project. Additional work included proposing potential re-route on an environmental basis. Preformed benthic macroinvertebrate surveys for over 100 identified streams using the US EPA Rapid Bioassessment Protocols. Responsible for field coordination preforming field surveys and identification of all macroinvertebrate species collected to family level.

Environmental Scientist IV; Sunoco Logistics; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects, Engendered Species Surveys; Reptilia (Glyptemys muhlenbergii), Plantae (Ellisia nyctelea); Pennsylvania. Segments 1, 2, and 3 wetlands field lead, and crew leader. Responsibilities include organizing and conducting all field work operations for multiple wetlands crews, wetland delineations and stream assessments for the proposed 450 mile Pennsylvania Pipeline Project. Additional work included proposing potential reon an environmental basis. Preformed macroinvertebrate surveys for over 200 identified streams using the Headwater Macroinvertebrate Field Evaluation Index (HMFEI). Additionally preforming field surveys on all stream identified in OH using the Primary Headwater Habitat Evaluation Form. HHEI and QHEI. Responsible for field coordination preforming field surveys and identification of all macroinvertebrate species collected to family level.

#### **EDUCATION**

B.T. Fisheries and Aquaculture, SUNY Cobleskill, 2011T

#### **REGISTRATIONS**

Wild Plant Management Permit, PA, 2016, Permit # 14-651

#### **AREA OF EXPERTISE**

Wetland Delineation and Stream Identification, Fisheries, and Botanical Surveys

#### TRAINING/CERTIFICATIONS

Winter Vegetation ID, Rutgers University, 2012

Amtrak Contractor Certification, 2014

Certified Wetland Assessment Delineator, NY, 2009

#### **OFFICE**

Pittsburgh, PA

#### YEARS OF EXPERIENCE

7+

#### YEARS WITH TETRA TECH

4+

Résumé 1

Environmental Scientist III; MarkWest Liberty Midstream & Resources, LLC; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Pennsylvania. Responsible for performing and assisting with wetland delineations for various proposed natural gas pipeline projects in southwestern Pennsylvania. Specific tasks included field survey, report preparation, and wetland functional assessments.

Environmental Scientist III; MarkWest Ohio Gathering Company, LLC; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Ohio. Responsible for performing and assisting with wetland delineations for various proposed natural gas pipeline projects in eastern Ohio. Specific tasks included field survey, report preparation, and completion of Ohio EPA specific wetland and stream assessments.

Environmental Scientist III; Gulfport Energy Corporation; Wetland Delineations for Miscellaneous Natural Gas Well Pad Projects; Ohio. Responsible for performing and assisting with wetland delineations for various proposed natural well pads southeastern Ohio. Specific tasks included field survey, report preparation, PCN preparation, and completion of Ohio EPA specific wetland and stream assessments.

Environmental Scientist III; MarkWest Liberty Midstream & Resources, LLC; Wetland Delineation and Engendered Species Survey (*Ranunculus flabellaris and Alopecurus aequalis*) for Vanport to Butler Gas Pipeline; Butler County, Pennsylvania. Responsible for performing and assisting with wetland delineation and endangered species survey along pipeline right-of-way. Specific tasks included field survey and report preparation.

Environmental Scientist III; Antero Resources Appalachian Corp.; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Ritchie and Doddridge Counties, West Virginia. Responsible for performing and assisting with wetland delineations for various proposed natural gas well pads and access roads in northern West Virginia. Specific tasks included field survey and report preparation.

Wetland & Watercourse Biologist; Chesapeake Energy; Schoharie County, PA; November 2011 to October 2012. Responsible for conducting wetland delineations for proposed pipe line routes and reroutes. Performed PA Rapid Assessments, stream evaluation, and preparation of wetland report for 30 miles of pipeline in Northeastern Pennsylvania.

Wetland & Watercourse Biologist; Southwest Energy L.P; Schoharie County, PA; November 2011 to October 2012. Responsible for conducting wetland delineations on proposed Well pad and compressor sites. Performed PA Rapid Assessments, stream evaluation, and preparation of wetland report for 15 proposed well pad locations in Northeastern Pennsylvania.

Wetland & Watercourse Biologist; Southwest Energy L.P; Susquehanna County, PA; November 2011 to October 2012. Responsible for conducting wetland delineations on proposed Well pad and compressor sites. Performed PA Rapid Assessments, stream evaluation, and preparation of wetland report for 20 proposed well pad locations in Northeastern Pennsylvania.

Wetland & Watercourse Biologist; Chesapeake Energy; Carroll, Jefferson County, OH; November 2011 to October 2012. Responsible for conducting wetland delineations for proposed pipe line routes and reroutes. Performed ORAM and QHEI Assessments, and preparation of wetland report for 30 miles of pipeline in Eastern Ohio.

Wetland & Watercourse Biologist; Shell Oil; Butler County, PA; November 2011 to October 2012. Responsible for conducting wetland delineations for proposed pipe line routes and reroutes. Performed PA

Rapid Assessments, stream evaluation, and preparation of wetland report for 40 miles of pipeline in Western Pennsylvania.

Wetland & Watercourse Biologist; Chesapeake Energy; Schoharie County, PA; November 2011 to October 2012. Responsible for conducting Indiana Bat habitat surveys on multiple proposed natural gas pipelines in Northeastern Pennsylvania.

Wetland & Watercourse Biologist; Chesapeake Energy; Schoharie County, PA; November 2011 to October 2012. Responsible for conducting post construction habitat monitoring and assessment of constructed natural gas pipelines in Northeastern Pennsylvania.

Salmonid & Stream Biologist; US Forest Service Thorne Bay, AK, May 2009 to August 2009. Responsible for preforming stream assessments using the Rosgen Method for stream classification. Benthic macro invertebrate surveys sampling and native salmonid and native fish species surveys.

#### CHRONOLOGICAL HISTORY

Wetland Environmental Scientist IV; Tetra Tech, Inc.; Pittsburgh, PA, June 2014 - Present

Wetland Environmental Scientist III; Tetra Tech, Inc.; Pittsburgh, PA, February 2013 - June 2014

Wetland & Watercourse Biologist; Hanover Engineering & Associates; Towanda, PA, November 2011 - October 2012

Assistant Hatchery Manager; SUNY Cobleskill; Cobleskill, NY, September – May of 2009-2011

Biological Fisheries Technician, US Forest Service; Thorne Bay, AK, May 2010 - August 2010

Fisheries Technician, Cook Inlet Aquaculture Association, Kenai, AK, May 2009 – August 2009

#### SCIENTIFIC/TECHNICAL PUBLICATIONS

 McGuirk, J, M, "Walleye (Sander vitreus) spawning movements and habitat utilization in Otsego Lake, NY, 2011

#### **MEMBERSHIPS**

N/A

#### **AWARDS**

David E. Moorehouse Award for Outstanding Junior in Fisheries and Aquaculture B.T.



### Codie Vileno Environmental Scientist IV

#### **EXPERIENCE SUMMARY**

Mr. Vileno has worked in the environmental field for over ten years. He has extensive experience conducting wetland delineations. His experience also includes habitat assessments, endangered species surveys, and permit preparation. He has additional experience performing and supervising Phase 1 archaeological surveys. Mr. Vileno's educational background includes graduate level studies in wetland ecology, stream ecology, hydrology, wetland/stream restoration methods, geology, and environmental impact assessments.

#### RELEVANT EXPERIENCE

Environmental Scientist IV; Transcontinental Gas Pipe Line Company, LLC; Permitting and Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects. Conducts wetland delineations for various proposed natural gas pipeline projects. Responsible for state and federal agency threatened and endangered species coordination.

Environmental Scientist IV; NextEra Energy Resources, LLC; Permitting and Wetland Delineation for Muskingum OH Solar Project; Ohio, June 2017. Conducted wetland delineation and prepared report for proposed 1400-acre solar farm.

Environmental Scientist IV; EQT; Permitting and Wetland Delineation for Mountain Valley Pipeline Project; West Virginia, April 2015 to December 2017. Collaborated with team in preparing Nationwide and State 401 permit packages. Conducted wetland delineation field surveys, stream assessments and, and macroinvertebrate surveys.

Environmental Scientist IV; Kinder Morgan; Trailside Rapid Assessment for 300 Line Project; New Jersey, July 2016. Led field team in conducting trailside rapid assessments. Specific tasks included identifying all dominant vegetation at predetermined plots throughout the Bearfort Mountain Natural Area.

Environmental Scientist IV; Sunoco Logistics; Wetland Delineation and Engendered Species Survey for Pennsylvania Pipeline Project; Pennsylvania, January 2014 to December 2016. Conducted wetland delineations and endangered species survey along pipeline right-of-way. Specific tasks included field survey and report preparation.

Environmental Scientist IV; MarkWest Liberty Midstream & Resources, LLC; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Pennsylvania. Conducts wetland delineations for various proposed natural gas pipeline projects in southwestern Pennsylvania. Specific tasks included field survey, report preparation, and wetland functional assessments.

Environmental Scientist IV; Dominion Transmission Inc.; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; West Virginia. Conducts wetland delineations for various existing and proposed natural gas pipeline and facility projects in West Virginia. Specific tasks included field survey and report preparation.

Environmental Scientist III; Sunoco Logistics; Wetland Delineation and Engendered Species Survey for Ohio Pipeline Project; Ohio, West Virginia, Pennsylvania, January 2014 to December 2014. Conducted wetland delineations and endangered species survey along pipeline right-of-way. Specific tasks included field survey, report preparation, and permitting activities.

#### **EDUCATION**

B.A., Anthropology, 2007, State University College at Buffalo

#### **AREA OF EXPERTISE**

Wetland Science

#### TRAINING/CERTIFICATIONS

38 Hour ACOE Wetland Delineation Training Program, November 2009

Demystifying Grasses, 2018

Advanced Hydric Soils, May 2016

Running Buffalo Clover, Virginia Spirea, and Small Whorled Pogonia Federal RTE Identification Workshop, May 2015

Winter Woody Plant Identification, April 2015

Identifying Grasses, Sedges, and Rushes, June 2014

Ohio Rapid Assessment Method for Wetlands Training Course, May 2013

American Red Cross Adult CPR/AED, February 2018

16 Hour Wilderness First Aid, February 2018

40 hours EPA 165.5 HAZWOPER Health and Safety Worker 2012

#### **OFFICE**

Pittsburgh, PA

#### YEARS OF EXPERIENCE

10+

#### **YEARS WITHIN FIRM**

10+

#### **CONTACT**

Codie.Vileno@TetraTech.com

Résumé 1

Résumé Codie Vileno

Environmental Scientist III; Environmental and Restoration Services Contract for Site 73, Site 178, and Site 20. Army Corps of Engineers Louisville District. Savanna, Illinois; November 2014. Conducted wetland delineation and threatened and endangered species review in support of remedial activities. Responsible for field effort and report deliverables.

Environmental Scientist III; Rice Energy; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Pennsylvania and Ohio. Conducts wetland delineations and permitting activities for various proposed natural gas pipeline projects in eastern Ohio. Specific tasks include field survey, report preparation, completion of Ohio EPA specific wetland/stream assessments, agency consultation, and compiling of PCN.

Environmental Scientist III; MarkWest Ohio Gathering Company, LLC; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Ohio. Conducts wetland delineations for various proposed natural gas pipeline projects in eastern Ohio. Specific tasks included field survey, report preparation, and completion of Ohio EPA specific wetland and stream assessments.

Environmental Scientist III; Gulfport Energy Corporation; Wetland Delineations for Miscellaneous Natural Gas Well Pad Projects; Ohio. Responsible for performing and assisting with wetland delineations for various proposed natural well pads southeastern Ohio. Specific tasks included field survey, report preparation, PCN preparation, and completion of Ohio EPA specific wetland and stream assessments.

Environmental Scientist III; MarkWest Liberty Midstream & Resources, LLC; Wetland Delineation and Engendered Species Survey (Ranunculus flabellaris and Alopecurus aequalis) for Vanport to Butler Gas Pipeline; Butler County, Pennsylvania. Responsible for performing and assisting with wetland delineation and endangered species survey along pipeline right-of-way. Specific tasks included field survey and report preparation.

Environmental Scientist III; Antero Resources Appalachian Corp.; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Ritchie and Doddridge Counties, West Virginia. Responsible for performing and assisting with wetland delineations for various proposed natural gas well pads and access roads in northern West Virginia. Specific tasks included field survey and report preparation.

Environmental Scientist III; Stone Energy; Wetland Delineation for Mercer 1 Well Pad; Sisterville, Tyler County, West Virginia; September 2012. Performed wetland delineation for proposed natural gas well pad and associated access road. Specific tasks included field survey and report preparation.

Environmental Scientist III; Laurel Mountain Midstream Operating, LLC; Endangered Species Survey (Yellow Passionflower) for Miller to Headlee Pipeline Project; Greene and Cumberland Townships, Greene County, Pennsylvania; September 2012. Assisted with botanical survey for yellow passionflower along the proposed Miller to Headlee natural gas pipeline right-of-way and access roads. Tasks included pre-survey research, field survey, and report preparation.

Environmental Scientist III; Laurel Mountain Midstream Operating, LLC; Endangered Species Survey (Drooping Bluegrass) for Nickelville Pipeline Project; Nickelville, Venango County, Pennsylvania; July 2012. Assisted with botanical survey for drooping bluegrass along the proposed Nickelville natural gas pipeline right-of-way. Specific tasks included field survey and report preparation.

Environmental Scientist III; Laurel Mountain Midstream Operating, LLC; Endangered Species Survey (Tall Larkspur) for Dunlap Creek Pipeline Project; Luzerne and Redstone Townships, Fayette County, Pennsylvania; June 2012. Assisted with botanical survey for tall larkspur along the proposed Dunlap Creek natural gas pipeline right-of-way and access roads. Specific tasks included field survey and report preparation.

Environmental Scientist III; Laurel Mountain Midstream Operating, LLC; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Pennsylvania. Responsible for performing and assisting with wetland delineations for various proposed natural gas pipeline projects in southwestern Pennsylvania. Specific tasks included field survey and report preparation.

Environmental Scientist III; Enervest Operating, LLC; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Ohio. Responsible for performing and assisting with wetland delineations for various proposed natural gas pipeline projects in southeastern Ohio. Specific tasks included field survey, report preparation, and completion of Ohio EPA specific wetland and stream assessments.

Environmental Scientist III; NAVFAC Washington; Marine Corps Base Quantico Wetland Functional Analysis; Quantico, Virginia; April 2012. Assisted with wetland functional assessments in support of remedial activities.

Environmental Scientist III; NASA; Wallops Flight Facility Remedial Action Contract; Wallops Island, Virginia; March 2012. Assisted with wetland delineation and wetland functional assessments in support of remedial activities.



Résumé Codie Vileno

Environmental Scientist III; Burnett Oil Company, Inc.; New Salem, Pennsylvania; December 2011 to February 2012. Responsible for performing and assisting with wetland delineations for various proposed natural gas pipeline projects in southwestern Pennsylvania. Specific tasks included field survey and report preparation.

Scientist I; Army Corps of Engineers; South Park Lake Dredge Project; Buffalo, New York; October 2011. Supervised Phase 1 archaeological survey in preparation of dredging activities.

Scientist I; Dominion East Ohio; Monroe County Gas Pipeline Project; Indiana Bat Habitat Assessment and Wetland Delineation; Woodsfield, Ohio; July 2011 to September 2011. Assisted with Indiana Bat habitat assessment and wetland delineation along a proposed natural gas pipeline right-of-way. Specific tasks included field survey and completion of Ohio EPA specific wetland and stream assessments. Other responsibilities included Phase 1A archaeological assessment

Archaeological Technician; National Grid; Lockport to Mortimer; Rochester, New York; May 2011 to October 2011. Performed Phase 1 archaeological survey in support of transmission line replacement. Assisted with report preparation.

Scientist I; National Fuel Gas Company; Tioga Pipeline Expansion; Tioga County, Pennsylvania; June 2011 to September 2011. Assisted with wetland delineation along proposed natural gas pipeline right-of-way. Other responsibilities included performing a Phase 1A archaeological assessment and supervising a Phase 1 archaeological survey.

Archaeological Technician; National Fuel Gas Company; Allegheny National Forest Pipeline Project; Warren, Pennsylvania; September 2009 to October 2009. Performed Phase 1 archaeological survey along proposed natural gas pipeline right-of-way.

Archaeological Technician; Dominion East Ohio; Pipeline Replacement; Wooster, Ohio; June 2008 to July 2009. Performed Phase 1 archaeological survey along proposed natural gas pipeline right-of-way.

Archaeological Technician; Haley & Aldrich, Inc.; AES Sparrows Point LNG; Cecil County, Maryland; June 2008 to July 2008. Performed Phase 1 archaeological survey along proposed natural gas pipeline right-of-way.

Archaeological Technician; Horizon Wind Energy, LLC; Arkwright Wind Farm; Arkwright, New York; September 2008 to March 2009. Performed Phase 1 archaeological survey on proposed turbine pads and transmission lines.

Archaeological Technician; National Fuel Gas Supply Company.; Galbraith Storage Field Expansion Project; Allegheny National Forest, Marienville, Pennsylvania; August 2008 to October 2008. Performed Phase 1 archaeological survey along proposed natural gas pipeline right-of-way.

#### **CHRONOLOGICAL HISTORY**

Environmental Scientist IV; Tetra Tech, Inc.; Pittsburgh, Pennsylvania; 2011 - Present

Scientist I; Tetra Tech, Inc.; Buffalo, New York; June 2007 - November 2011

Research Assistant; State University of New York Research Foundation; Buffalo, New York; October 2009 – January 2010

On-Call Research Assistant; State University of New York Research Foundation; Buffalo, New York; May 2009 – August 2009

Report Writer; Test America Laboratories; Amherst, New York; November 2007 - June 2008

#### **MEMBERSHIPS**

· Society of Wetland Scientists





### Kevin Pulver Environmental Scientist III

#### **EXPERIENCE SUMMARY**

Mr. Kevin Pulver has 3 years of professional experience in wetland delineation and stream assessment and classification throughout Pennsylvania, Ohio, Virginia, and West Virginia. As an Environmental Scientist III, Mr. Pulver had the opportunity to perform numerous wetland delineations under the supervision of seasoned professionals within the Wetlands and Ecological Services Department at Tetra Tech's Pittsburgh office. Delineations were primarily performed for natural gas pipeline projects as well as various other energy related sectors. Mr. Pulver has also participated in bat habitat/roosting surveys. Mr. Pulver's educational background includes watershed management/stream restoration and environmental science. He is also versed in GIS and AutoCAD software application.

#### RELEVANT EXPERIENCE

#### **Oil/Gas/Energy Sectors**

Environmental Scientist III; Equitrans, LP; Field Operations Coordinator; Mountain Valley Pipeline Project; West Virginia & Virginia – 2015 to Present.

Responsible for the management and oversight of all wetland and stream delineation operations for the proposed 303-Mile Mountain Valley Pipeline Project (MVP) throughout West Virginia and Virginia.

# Environmental Scientist III; Equitrans, LP; Wetland Delineations for Mountain Valley Pipeline Project; West Virginia & Virginia – 2016 to Present.

Responsible for performing and assisting with wetland delineations and stream assessments for the proposed 303-Mile Mountain Valley Pipeline project. Other responsibilities included report preparation, wetland functional assessments and pre-construction wetland and stream monitoring.

# Environmental Scientist III; Sunoco Logistics; Wetland Delineations for the Mariner East II Pipeline Project; Pennsylvania – 2014 to Present.

Responsible for performing and assisting with wetland delineations and stream assessments for the proposed 350-Mile Mariner East II Project. Other responsibilities included report preparation, wetland functional assessments and pre-construction wetland, stream and riparian forest buffer monitoring.

#### **EDUCATION**

B.S. Geography: Watershed Management; Environmental Science, 2013, Mansfield University of Pennsylvania

B.A. Environmental Studies, 2011, Penn State University – Altoona

#### REGISTRATIONS/ AFFILIATIONS

PADCNR Wild Plant Management, Permit No. 16-673 (2016)

#### TRAINING/CERTIFICATIONS

40 Hour HAZWOPER Training (2017)

Certified Wetland Botanist Training, Swamp School (2017)

40 Hour Army Corps of Engineers Wetland Delineation Training (2013)

CPR / First Aid / AED (2018)

#### **OFFICE**

Pittsburgh, PA

#### YEARS OF EXPERIENCE

3

#### YEARS WITH TETRA TECH

3

#### **CONTACT**

Email: kevin.pulver@tetratech.com

Direct: 412.920.7024 Cell: 412.735.0110

## Environmental Scientist II; Clean Energy Future, LLC; Wetland Delineations on a 60-acre Study Area; Trumbull County, Ohio – 2016.

Responsible for performing and assisting with wetland delineations and stream assessments for a proposed 60-acre study area in Trumbull County, OH. Other responsibilities included report preparation.

## Environmental Scientist II, NextEra Energy Resources, LLC; Wetland Delineations for Proposed Solar Farm Project; Muskingum County, Ohio – 2016.

Responsible for performing and assisting with wetland delineations and stream assessments on a 1,244-acre study area for a proposed solar farm project in Muskingum County, OH. Other responsibilities included report preparation.

### Environmental Scientist II; Dawn Inc.; Bat Roost Tree Assessment for Proposed Commercial Building; Trumbull County, Ohio – 2016.

Responsible for assessing and determining the quality and quantity of potential suitable Myotid bat habitat present on a 0.5-acre study area.

## Environmental Scientist II; Seahorse Oilfield Services, LLC; Wetland Delineations on a 16-acre Study Area; Monroe County, West Virginia – 2016.

Responsible for performing and assisting with wetland delineations and stream assessments on a 16-acre study area in Monroe County, WV.

Environmental Scientist II; MarkWest Liberty Midstream & Resources, LLC; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Pennsylvania – 2014 to 2016. Responsible for performing and assisting with wetland delineations for various proposed natural gas pipeline projects in southwestern Pennsylvania. Specific tasks included field survey, report preparation, and wetland functional assessments.

Environmental Scientist II; MarkWest Ohio Gathering Company, LLC; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; Ohio – 2014 to 2016. Responsible for performing and assisting with wetland delineations for various proposed natural gas pipeline projects in eastern Ohio. Specific tasks included field survey, report preparation, and completion of Ohio EPA specific wetland and stream assessments.

# Environmental Scientist II; Travis Peak Resources, LLC; Wetland Delineations for a Proposed Water Withdrawal on Pine Creek and a Proposed Tank Farm Location in Tioga County, PA; Pennsylvania – 2016.

Responsible for performing and assisting with wetland delineations on a proposed water withdrawal and tank farm area in Tioga County, PA. Specific tasks included field survey and report preparation.

## Environmental Scientist I; Range Resources; Wetland Delineations for Miscellaneous Natural Gas Pipeline Projects; 2014 – 2015.

Assisted with wetland delineations, stream assessments, and report preparation for various proposed water withdrawal locations in Southwestern PA.

#### **EMPLOYEMENT HISTORY**

- Wetland/Environmental Scientist III, Tetra Tech, Inc., November, 2014 Present, Pittsburgh, PA
- AutoCAD Drafter, Land Services Group, November 2013-July 2014, Wellsboro, PA
- Cartographer, Intelligent Direct, Inc., May 2013 November 2013, Wellsboro, PA
- Biological Scientist Intern, United States Geologic Survey Northern Appalachian Research Laboratory, Summer 2012, Wellsboro, PA

#### **MEMBERSHIPS**

Society of Wetland Scientists



# Jennifer Bittner Environmental Scientist I

#### **EXPERIENCE SUMMARY**

Jennifer Bittner has six years of experience in the environmental field. Her experience includes wetland delineation and stream assessments, wetland and stream mitigation monitoring, rare plant species surveys, and report preparation for longwall mining and natural gas pipeline, water withdrawal, and facility projects in Pennsylvania, West Virginia, and Ohio. She also has experience inspecting and recommending corrective actions for erosion and sedimentation issues on post-construction pipeline right-of-ways and facilities in PA and WV.

#### **RELEVANT EXPERIENCE**

#### **ENERGY**

- Environmental Scientist I; Seneca Wind, LLC; Seneca Wind Project. Assisted
  with wetland delineations and stream assessments for proposed installation of a
  wind turbine generators, access roads, electrical collector cables, a substation,
  laydown yards, an operation and maintenance facility, permanent meteorological
  towers for the Seneca Wind Project in Seneca County, OH.
- Environmental Scientist I; EQM Gathering OPCO, LLC; La Nina to Riffle Pipeline Project. Assisted with botanical surveys for proposed installation of a natural gas pipeline for the La Nina to Riffle Pipeline Project in Greene County, PA.
- Environmental Scientist I; Dallis Dawson & Associates; City of East
  Liverpool Raw Water Intake Improvements Project. Assisted with wetland
  delineations and stream assessments for proposed removal and replacement of
  an existing raw water intake structure for City of East Liverpool Raw Water Intake
  Improvements Project in Greene County, PA.
- Environmental Scientist I; EQM Gathering OPCO, LLC; NITM005 Pipeline Project. Assisted with wetland delineations and stream assessments for proposed installation of two natural gas pipelines, a waterline, and a permanent valve yard for the NITM005 Pipeline Project in Greene County, PA.
- Environmental Scientist I; EQM Gathering OPCO, LLC; NIPIS001, NIPIS002, & NIPIS003 Pipeline Project. Assisted with wetland delineations and stream assessments for proposed installation of a natural gas pipeline and waterline for the NIPIS001, NIPIS002, and NIPIS003 Pipeline Project in Washington County and Greene County, PA.
- Environmental Scientist I; Transcontinental Gas Pipe Line Company; D-13
   Anomaly Project. Assisted with wetland delineations and stream assessments for proposed modifications and replacements to portions of an existing natural gas pipeline within the D-13 Anomaly Project in Fairfax County, VA.
- Environmental Scientist I; Transcontinental Gas Pipe Line Company; 2018
   VA LMP Project Station 180. Assisted with wetland delineations and stream assessments for a new access road at the Station 180 site in Orange County, VA.

#### **EDUCATION**

M.S. Environmental Science and Management, Duquesne University

B.S. Marine Biology, Waynesburg University

#### TRAINING/CERTIFICATIONS

40 Hour Army Corps of Engineers Wetland Delineation Training, Richard Chinn Environmental Training, Inc., 2015

CPR / First Aid / AED

#### REGISTRATIONS/ AFFILIATIONS

Environmental Professional Intern Institute of Environmental Professional Practice License 00210713

#### **AREA OF EXPERTISE**

**Environmental Science** 

#### **OFFICE**

Pittsburgh, PA

#### YEARS OF EXPERIENCE

6

#### **YEARS WITHIN FIRM**

4

Résumé 1

- Environmental Scientist I; Sunoco Logistics; Black Hollow Ridge Project. Conducted a wetland delineation and stream assessments for the Black Hollow Bridge Repair Project in Perry County, PA.
- Environmental Scientist I; NextEra Solar; Muskingham OH Solar Project. Assisted with wetland delineations and stream assessments for a proposed 150-megawatt commercial solar energy facility in Muskingum County, OH.
- Environmental Scientist I; Equitrans, LP; Mountain Valley Pipeline Project; May 2015 to Present. Assisted with wetland delineations, stream assessments, macroinvertebrate surveys, report preparation for the proposed 300 mile pipeline stations beginning in Wetzel County, WV to Pittsylvania County, VA.
- Environmental Scientist I; Sunoco Logistics; Pennsylvania Pipeline Project; December 2014 Present. Assisted with wetland delineations, stream assessments, report preparation, and pre-construction monitoring for the proposed 300 mile pipeline beginning in Washington County, PA to Delaware County, PA.
- Environmental Scientist I; MarkWest Liberty Midstream & Resources, LLC; January 2014 to Present. Assisted with
  wetland delineations, stream assessments, and report preparation for multiple pipeline proposed pipeline projects and reroutes in Washington County, PA.
- Environmental Scientist I; Range Resources; January 2014 to December 2015. Assisted with wetland delineations, stream assessments, and report preparation for various proposed water withdrawal locations in Southwestern PA.
- Environmental Scientist I; PADEP; December 2015. Assisted with wetland delineations and stream assessments for a proposed pipeline in Indiana County.
- Environmental Scientist I; Peoples TWP, LLC; September 2014 to October 2015. Assisted with wetland delineations and stream assessments for a proposed distribution line in Cambria County.
- Environmental Scientist I; Sunoco; Ohio Pipeline Project; December 2014 –April 2015. Assisted with report preparation for wetland and stream delineations.
- Environmental Scientist I; Rice Energy Inc.; December 2014. Assisted with stream field surveys in Belmont County, OH.
- Compliance Monitor; Hunt, Gulliot & Associates, April 2014 November 2014. Inspected post-construction pipeline and facility right-of-ways for erosion and sedimentation issues for Williams Companies, Inc. Tasks included documenting issues and recommending corrective actions, coordinating with other compliance monitors on how to effectively inspect all assigned pipeline and facilities each week, and completing weekly E&S Inspection reports.
- Staff Scientist; CONSOL Energy, Inc. May 2013 December 2013. Assisted with wetland and stream mitigation monitoring for longwall mining restoration projects. Tasks included conducting vegetation surveys, water sampling, soil surveys, and report preparation.
- Staff Scientist; CONSOL Energy, Inc. May 2013. Assisted with rare plant surveys for power line project. Tasks included making plots and documenting the rare plant observed.
- Staff Scientist CONSOL Energy, Inc. October 2012 December 2012. Assisted with stream mitigation surveys for longwall mining projects. Tasks included conducting vegetation surveys, water sampling, and report preparation.

#### **SAMPLING**

- Environmental Scientist I; American Electric Power; John Amos Power Plant Water Sampling Events; August 2016 to December 2016. Assisted with packaging and organizing water samples during three sampling events at the John Amos Power Plant facility in Putnam, WV.
- Water Quality Intern; Clearwater Marine Aquarium, May 2010 August 2010. Maintained water quality and
  appearance for all exhibits. Tasks included daily water testing using an YSI meter, recordkeeping, backwashing pumps,
  and feeding fish, sharks, and stingrays.

**Résumé** Jennifer Bittner

#### **CHRONOLOGICAL HISTORY**

- Environmental Scientist I; Tetra Tech, Pittsburgh, PA; December 2014 Present
- Compliance Monitor; Hunt, Guillot & Associates, LLC; Pittsburgh, PA; April 2014 November 2014
- Staff Scientist; Civil & Environmental Consultants, Inc.; Pittsburgh, PA; October 2012 April 2014
- Teaching Assistant; Duquesne University; Pittsburgh, PA; January 2012 April 2012



### Rebekah I. Aber Environmental Technician

#### **EXPERIENCE SUMMARY**

Rebekah Aber assists with the completion of environmental, water and wastewater projects as well as conducting wetland delineations from Tetra Tech's Pittsburgh, Pennsylvania Office. Ms. Aber specializes in water and wastewater sampling, testing and follow-up. Rebekah has completed sampling tasks associated with municipal, power generation, oil & gas, and mining industries. She has had experience in environmental permitting including NPDES and Erosion and Sedimentation Control. Rebekah is responsible for data management and quality control of field and laboratory data associated with NPDES and Solid Waste regulatory reporting projects. Ms. Aber's educational background includes graduate level studies in wetland and stream ecology.

#### **RELEVANT EXPERIENCE**

**Pre-** and **Post- Construction Water Sampling; Rice Energy; Southeastern OH.** Assisted pre- and post-construction hydrologic survey activities for multiple water wells primarily located in Southeastern Ohio. Responsible for tracking of purchase orders, coordinating with laboratory, quality control and contacting landowners.

**Peoples Natural Gas Company – TP-7215 Pipeline Replacement Project; Westmoreland County, PA.** Performed pre-construction water quality assessments for three water wells located adjacent to the project to establish pre-construction conditions. Responsible for completing weekly Erosion and Sedimentation Inspections to confirm compliance with permits issued by PADEP and Westmoreland County.

Waste Management National Services – Seward Seep Project Peer Review; Seward Power Station, Indiana County, PA. Responsible for performing weekly water sampling and documentation of the wastewater treatment area during commissioning activities for a newly constructed groundwater treatment system.

Design and Construction for Proposed Solid Waste (MSW) Treatment Facility to Generate Biogas; Confidential Client; Northeastern U.S. Tetra Tech managed the integration of a multi-disciplined engineering team to plan, permit, design, and construct a municipal solid waste (MSW) treatment facility to generate compost material and energy through the utilization of dry anaerobic system also known as high solids digestion system. Responsible for completing cost estimates regarding take-offs and quantity calculations using R.S. Means and vendor quotes to develop Opinions of Probable Construction Cost (OPCC).

Columbia Borough CHP Conversion Project Grant Funding. Lancaster County, Pennsylvania. Assisted with grant applications for the Borough of Columbia to procure funding to assist the community with conversion of the existing sanitary wastewater treatment facility to provide a waste to energy

#### **EDUCATION**

B.S. Ecology, Susquehanna University, 2013

#### **AREA OF EXPERTISE**

Water & Wastewater Sampling

Data Management

#### TRAINING/ CERTIFICATIONS

40 Hour HAZWOPER

29 CFR 1910.120 HAZWOPER

Wetland Delineation and Regional Supplement Updates

24 Hour MSHA Training

#### **OFFICE**

Pittsburgh, Pennsylvania

#### YEARS OF EXPERIENCE

5 Years

#### **CONTACT**

Direct: 412-921-4003

Rebekah.Aber@tetratech.com

Résumé Rebekah I. Aber

service to the residential, commercial, industrial and institutional customers of the greater Lancaster/York area. Responsible for completing cost estimates regarding take-offs and quantity calculations using R.S. Means and vendor quotes to develop Opinions of Probable Construction Cost (OPCC). Also assisted with development of Grant Applications for the ACE Grant and PPL Custom Incentives.

**Dominion Transmission, Inc. (DTI), Lebanon West II Pipeline Replacement Project.** Assisted with FERC filing associated with the Lebanon West II pipeline replacement project. Researched and prepared documentation of environmental conditions that could potentially impact construction and revegetation.

**Reaxis, Inc., Phase I TRE Reporting, McDonald, Pennsylvania.** Performed water sampling and documentation for constituents of concern associated with industrial discharges at a chemical manufacturing facility. Summarized and evaluated analytical results in order to develop a Phase I Toxics Reduction Evaluation (TRE) report as requested by the PADEP in the facility's NPDES Permit.

**National Fuel – Northern Access; Olean, NY;** Responsible for completing infiltration tests as well as removing the monitoring pipe.

American Electric Power (AEP); John E. Amos Power Plant; Winfield, WV. Assisted in a series of large-scale sampling events at the John E. Amos Power Plant. Sampling activities were being conducted to develop models and plant water balances to be used in developing a compliance strategy for the Effluent Limitation Guidelines (ELGs) and Standards for the Steam Electric Power Generating Point Source Category. Primary responsibilities included labeling and organizing empty and filled bottle sets, preparation of samples for shipment to multiple labs and document control.

American Electric Power (AEP); Clifty Creek Power Plant; Madison, IN. Assisted in a series of large-scale sampling events at the Clifty Creek Power Plant. Sampling activities were being conducted to develop models and plant water balances to be used in developing a compliance strategy for the Effluent Limitation Guidelines (ELGs) and Standards for the Steam Electric Power Generating Point Source Category. Primary responsibilities included labeling and organizing empty and filled bottle sets, preparation of samples for shipment to multiple labs and document control.

Homer City Generation, LP; Coal Combustion Residual Rule Compliance Project; Pennsylvania. Assisting a large power generation facility in the northeast meet the requirements of the CCR Rule and compliance with the Station's groundwater monitoring requirements under the State's Waste Management and Coal Refuse Disposal regulations. Assisted with sampling events to collect groundwater from monitoring wells, greenhouse ponds and surface water. Field work includes quarterly groundwater sampling of monitoring wells and NPDES monitoring points. Office support includes coordination of laboratory analysis of all samples in compliance with state and federal regulations, data management, quality control and preparation of state groundwater reports.

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Summary: Correspondence of Seneca Wind, LLC Submitting Aquatic Resource Report, Part 12 of 12 electronically filed by Teresa Orahood on behalf of Dylan F. Borchers