

# A) SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of stream?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

## METHOD

- ☐ BOAT  
☐ WADE  
☐ L. LINE  
☐ OTHER

## STAGE

- ☐ HIGH  
☐ UP  
☐ NORMAL  
☐ LOW  
☐ DRY

## DISTANCE

- ☐ 0.5 Km  
☐ 0.2 Km  
☐ 0.15 Km  
☐ 0.12 Km  
☐ OTHER

## CLARITY

- 1st --sample pass-- 2nd  
☐ < 20 cm  
☐ 20-40 cm  
☐ 40-70 cm  
☐ > 70 cm/ CTB  
☐ SECCHI DEPTH

## CANOPY

- ☐ > 85% - OPEN  
☐ 55%-<85%  
☒ 30%-<55%  
☐ 10%-<30%  
☐ <10% - CLOSED

## C) RECREATION

- AREA DEPTH  
POOL: ☐ >100ft<sup>2</sup> ☐ >3ft

## B) AESTHETICS

- ☐ NUISANCE ALGAE  
☐ INVASIVE MACROPHYTES  
☐ EXCESS TURBIDITY  
☐ DISCOLORATION  
☐ FOAM / SCUM  
☐ OIL SHEEN  
☐ TRASH / LITTER  
☐ NUISANCE ODOR  
☐ SLUDGE DEPOSITS  
☐ CSOS/SSOS/OUTFALLS

## D) MAINTENANCE

- ☐ PUBLIC / PRIVATE / BOTH / NA  
☐ ACTIVE / HISTORIC / BOTH / NA  
☐ YOUNG-SUCCESSION-OLD  
☐ SPRAY / SNAG / REMOVED  
☐ MODIFIED / DIPPED OUT / NA  
☐ LEVEED / ONE SIDED  
☐ RELOCATED / CUTOFFS  
☐ MOVING-BEDLOAD-STABLE  
☐ ARMOURRED / SLUMPS  
☐ ISLANDS / SCAURED  
☐ IMPOUNDED / DESICCATED  
☐ FLOOD CONTROL / DRAINAGE

## Circle some & COMMENT

## E) ISSUES

- WWTP / CSO / NPDES / INDUSTRY  
HARDENED / URBAN / DIRT&GRIME  
CONTAMINATED / LANDFILL  
BMPs-CONSTRUCTION-SEDIMENT  
LOGGING / IRRIGATION / COOLING  
BANK / EROSION / SURFACE  
FALSE BANK / MANURE / LAGOON  
WASH H<sub>2</sub>O / TILE / H<sub>2</sub>O TABLE  
ACID / MINE / QUARRY / FLOW  
NATURAL / WETLAND / STAGNANT  
PARK / GOLF / LAWN / HOME  
ATMOSPHERE / DATA PAUCITY

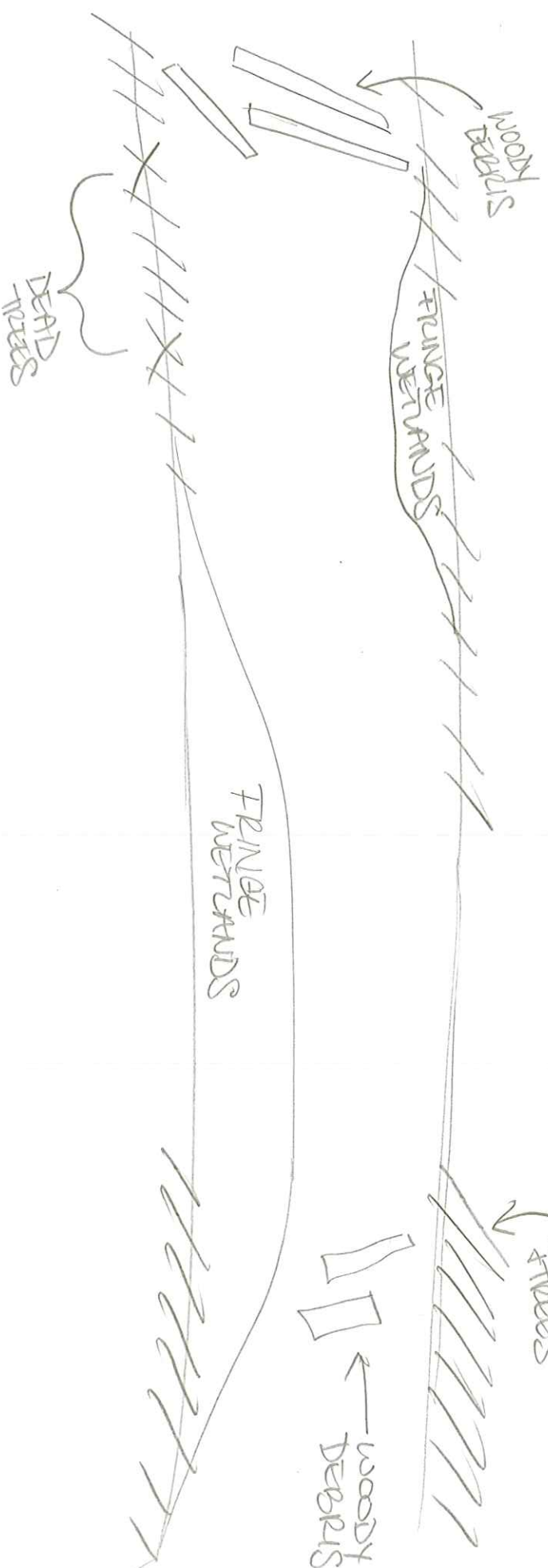
## F) MEASUREMENTS

- ☐ width  
☐ depth  
☐ max. depth  
☐ bankfull width  
☐ bankfull x depth  
☐ W/D ratio  
☐ bankfull max. depth  
☐ floodprone x<sup>2</sup> width  
☐ entrench. ratio

Legacy Tree:

## Stream Drawing:

Flow





## Primary Headwater Habitat Evaluation Form

30

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

SITE NAME/LOCATION **Stream Crossing 5**

SITE NUMBER **A3000001** RIVER BASIN **04100010** DRAINAGE AREA (mi<sup>2</sup>)

LENGTH OF STREAM REACH (ft) **200** LAT. **41.56929** LONG. **-83.54901** RIVER CODE RIVER MILE

DATE **08/07/14** SCORER **K. SIMON** COMMENTS

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

## STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="80%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="10%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **5.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**TOTAL NUMBER OF SUBSTRATE TYPES: **4**

## HHEI Metric Points

Substrate Max = 40

**10**

A + B

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters): **0**

Pool Depth Max = 30

**0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS

AVERAGE BANKFULL WIDTH (meters): **2.50**

Bankfull Width Max=30

**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)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

## STREAM GRADIENT ESTIMATE

<input checked="" type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
--	---	---	---	--



**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)**

☐ VWH Name:  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: **Wood** Township / City:

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ N Date of last precipitation:  Quantity:  **0.00**  
Photograph Information:   
Elevated Turbidity? (Y/N): ☒ N Canopy (% open):  **10%**  
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:

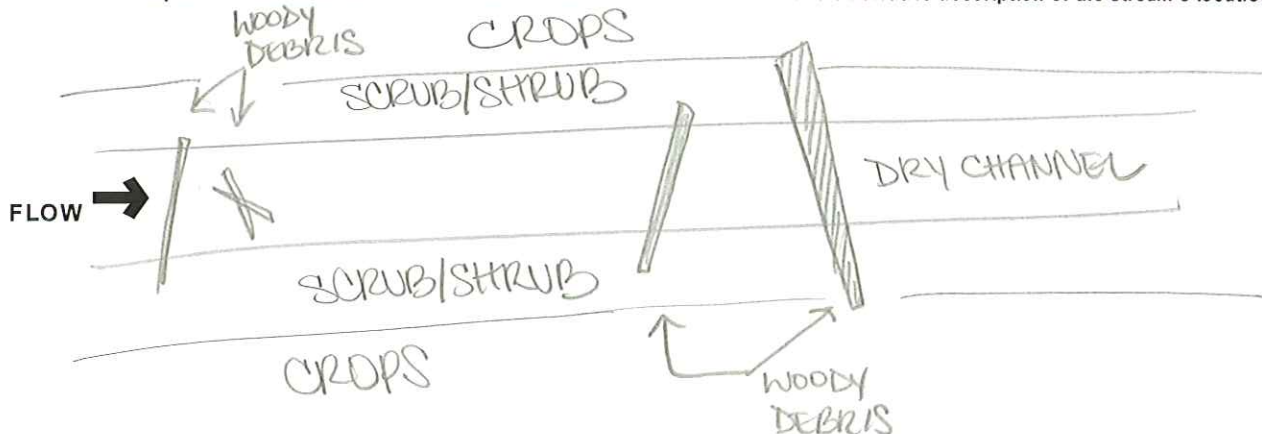
Additional comments/description of pollution impacts:

**BIOTIC EVALUATION**

Performed? (Y/N): ☒ 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 Primary Headwater Habitat Assessment Manual)  
Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N  
Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N  
Comments Regarding Biology:

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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



Stream &amp; Location: Stream Crossing 6

RM: \_\_\_\_\_ Date: 8/7/14

Scorers Full Name & Affiliation: K. SIMON (MSG)  
River Code: \_\_\_\_\_ STORET #: \_\_\_\_\_ Lat./ Long.: 41.5523 -83.5621 (NAD 83 - decimal) Office verified location ☐1) SUBSTRATE Check ONLY Two substrate TYPE BOXES;  
estimate % or note every type present

BEST TYPES		OTHER TYPES		ORIGIN		QUALITY	
	POOL RIFFLE		POOL RIFFLE				
<input type="checkbox"/> BLDR /SLABS [10]	_____	<input type="checkbox"/> HARDPAN [4]	_____	<input type="checkbox"/> LIMESTONE [1]		<input checked="" type="checkbox"/> HEAVY [-2]	<b>Substrate</b> <div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; text-align: center; line-height: 40px; margin: 10px auto;">1</div> Maximum 20
<input type="checkbox"/> BOULDER [9]	_____	<input type="checkbox"/> DETRITUS [3]	_____	<input checked="" type="checkbox"/> TILLS [1]		<input type="checkbox"/> MODERATE [-1]	
<input type="checkbox"/> COBBLE [8]	_____	<input type="checkbox"/> MUCK [2]	_____	<input type="checkbox"/> WETLANDS [0]		<input type="checkbox"/> NORMAL [0]	
<input type="checkbox"/> GRAVEL [7]	_____	<input checked="" type="checkbox"/> SILT [2]	100%	<input type="checkbox"/> HARDPAN [0]		<input type="checkbox"/> FREE [1]	
<input type="checkbox"/> SAND [6]	_____	<input type="checkbox"/> ARTIFICIAL [0]	_____	<input type="checkbox"/> SANDSTONE [0]		<input checked="" type="checkbox"/> EXTENSIVE [-2]	
<input type="checkbox"/> BEDROCK [5]	_____			<input type="checkbox"/> RIP/RAP [0]		<input type="checkbox"/> MODERATE [-1]	
NUMBER OF BEST TYPES: <input type="checkbox"/> 4 or more [2] <input checked="" type="checkbox"/> 3 or less [0]				Check ONE (Or 2 & average)		<input type="checkbox"/> NORMAL [0]	
Comments				<input type="checkbox"/> SHALE [-1]		<input type="checkbox"/> NONE [1]	
				<input type="checkbox"/> COAL FINES [-2]			

## 2) INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

AMOUNT		
Check ONE (Or 2 & average)		
<input type="checkbox"/> UNDERCUT BANKS [1]	<input type="checkbox"/> POOLS > 70cm [2]	<input type="checkbox"/> OXBOWS, BACKWATERS [1]
<input type="checkbox"/> OVERHANGING VEGETATION [1]	<input type="checkbox"/> ROOTWADS [1]	<input type="checkbox"/> AQUATIC MACROPHYTES [1]
<input type="checkbox"/> SHALLOWS (IN SLOW WATER) [1]	<input type="checkbox"/> BOULDERS [1]	<input type="checkbox"/> LOGS OR WOODY DEBRIS [1]
<input type="checkbox"/> ROOTMATS [1]		
Comments		
Cover Maximum 20 <b>7</b>		

## 3) CHANNEL MORPHOLOGY Check ONE in each category (Or 2 &amp; average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input checked="" type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input checked="" type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input checked="" type="checkbox"/> NONE [1]	<input checked="" type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	
Comments			
Channel Maximum 20 <b>8</b>			

## 4) BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank &amp; average)

EROSION		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE	
L	R	L	R	L	R	L	R
<input checked="" type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> MODERATE [2]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> CONSERVATION TILLAGE [1]	<input checked="" type="checkbox"/> URBAN OR INDUSTRIAL [0]
<input type="checkbox"/> MODERATE [2]	<input type="checkbox"/> HEAVY / SEVERE [1]	<input checked="" type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> FENCED PASTURE [1]	<input type="checkbox"/> MINING / CONSTRUCTION [0]	
<input type="checkbox"/> HEAVY / SEVERE [1]		<input type="checkbox"/> NONE [0]		<input checked="" type="checkbox"/> OPEN PASTURE, ROWCROP [0]			
Comments							
Indicate predominant land use(s) past 100m riparian. Riparian Maximum 10 <b>4.5</b>							

## 5) POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH		CHANNEL WIDTH		CURRENT VELOCITY		Recreation Potential Primary Contact Secondary Contact (circle one and comment on back)
Check ONE (ONLY)		Check ONE (Or 2 & average)		Check ALL that apply		
<input type="checkbox"/> > 1m [6]	<input type="checkbox"/> 0.7-1m [4]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input checked="" type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> TORRENTIAL [-1]	<input checked="" type="checkbox"/> SLOW [1]	<b>Pool / Current Maximum 12</b> <b>2</b>
<input type="checkbox"/> 0.4-0.7m [2]	<input type="checkbox"/> 0.2-0.4m [1]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]		<input type="checkbox"/> VERY FAST [1]	<input type="checkbox"/> INTERSTITIAL [-1]	
<input checked="" type="checkbox"/> < 0.2m [0]				<input type="checkbox"/> FAST [1]	<input type="checkbox"/> INTERMITTENT [-2]	
				<input type="checkbox"/> MODERATE [1]	<input type="checkbox"/> EDDIES [1]	
Comments						

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

RIFFLE DEPTH		RUN DEPTH		RIFFLE / RUN SUBSTRATE		RIFFLE / RUN EMBEDDEDNESS	
Check ONE (Or 2 & average)		Check ONE (Or 2 & average)		Check ONE (Or 2 & average)		Check ONE (Or 2 & average)	
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> BEST AREAS 5-10cm [1]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input checked="" type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> NONE [2]	<b>Riffle / Run Maximum 8</b> <b>0</b>
<input checked="" type="checkbox"/> BEST AREAS < 5cm [metric=0]				<input checked="" type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]		<input type="checkbox"/> LOW [1]	
						<input type="checkbox"/> MODERATE [0]	
Comments						<input checked="" type="checkbox"/> EXTENSIVE [-1]	

6) GRADIENT ( 4.67 ft/mi)		DRAINAGE AREA ( 5.04 mi <sup>2</sup> )		%POOL: 100		%GLIDE: 0		<b>Gradient Maximum 10</b> <b>4</b>
				%RUN: 0		%RIFFLE: 0		



A) SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT ☐ WADE ☐ L. LINE ☐ OTHER

STAGE

- 1st-sample pass--2nd  
☐ HIGH ☐ UP ☐ NORMAL ☐ LOW ☐ DRY

DISTANCE

- ☐ 0.5 Km ☐ 0.2 Km ☐ 0.15 Km ☐ 0.12 Km ☐ OTHER

CLARITY

- 1st-sample pass--2nd  
☐ < 20 cm ☐ 20-40 cm ☐ 40-70 cm ☐ > 70 cm/CTB ☐ SECCHI DEPTH

B) AESTHETICS

- ☐ NUISANCE ALGAE ☐ INVASIVE MACROPHYTES ☐ EXCESS TURBIDITY ☐ DISCOLORATION ☐ FOAM / SCUM ☐ OIL SHEEN ☐ TRASH / LITTER ☐ NUISANCE ODOR ☐ SLUDGE DEPOSITS ☐ CSOS/SSOS/OUTFALLS

D) MAINTENANCE

- ☐ PUBLIC / PRIVATE / BOTH / NA ☐ ACTIVE / HISTORIC / 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

Circle some & COMMENT

E) ISSUES

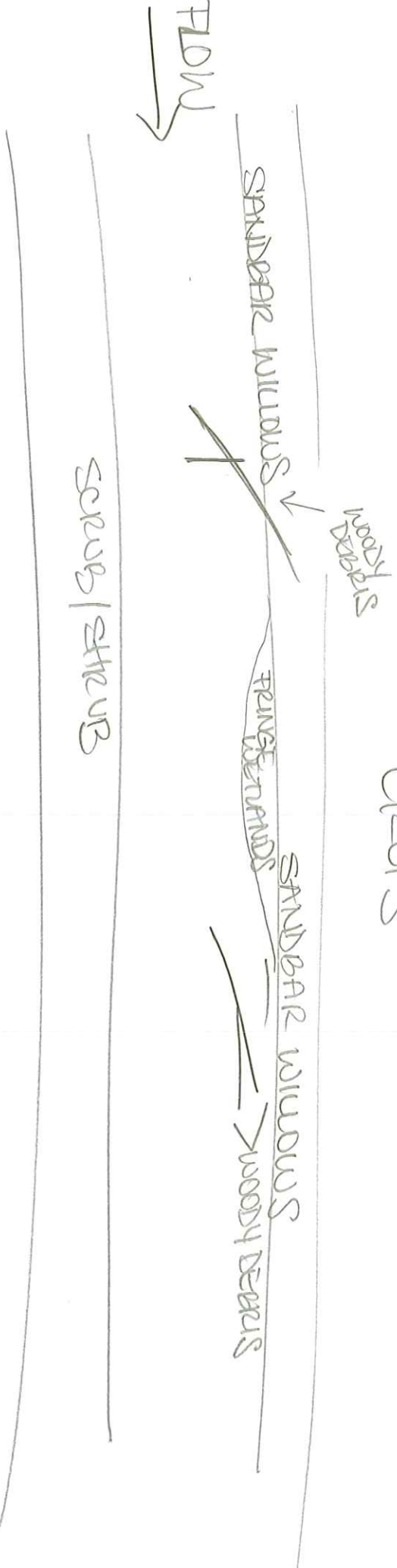
- ☐ WWTP / CSO / NPDES / INDUSTRY ☐ HARDENED / URBAN / DIRT&GRIME ☐ CONTAMINATED / LANDFILL ☐ BMPs-CONSTRUCTION-SEDIMENT ☐ LOGGING / IRRIGATION / COOLING ☐ BANK / EROSION / SURFACE ☐ FALSE BANK / MANURE / LAGOON ☐ WASH H<sub>2</sub>O / TILE / H<sub>2</sub>O TABLE ☐ ACID / MINE / QUARRY / FLOW ☐ NATURAL / WETLAND / STAGNANT ☐ PARK / GOLF / LAWN / HOME ☐ ATMOSPHERE / DATA PAUCITY

F) MEASUREMENTS

- ☐  $\bar{x}$  width ☐  $\bar{x}$  depth ☐ max. depth ☐  $\bar{x}$  bankfull width ☐ bankfull  $\bar{x}$  depth ☐ W/D ratio ☐ bankfull max. depth ☐ floodprone  $\bar{x}^2$  width ☐ entrench. ratio

Legacy Tree:

Stream Drawing:



Stream &amp; Location: Stream Crossing 7

RM: \_\_\_\_\_ Date: 8/6/14

Scorers Full Name &amp; Affiliation: Katie Simon (MSG)

River Code: \_\_\_\_\_ STORET #: \_\_\_\_\_ Lat./ Long.: 41.5590 -83.5559 Office verified location ☐1] **SUBSTRATE** Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

BEST TYPES		OTHER TYPES		ORIGIN		QUALITY	
<input type="checkbox"/> BLDR /SLABS [10]	<input type="checkbox"/> POOL RIFFLE	<input type="checkbox"/> HARDPAN [4]	<input type="checkbox"/> POOL RIFFLE	<input type="checkbox"/> LIMESTONE [1]	<input type="checkbox"/> SILT	<input type="checkbox"/> HEAVY [-2]	<b>Substrate</b> <b>3</b> Maximum 20
<input type="checkbox"/> BOULDER [9]	<input type="checkbox"/>	<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/>	<input checked="" type="checkbox"/> TILLS [1]	<input type="checkbox"/>	<input checked="" type="checkbox"/> MODERATE [-1]	
<input type="checkbox"/> COBBLE [8]	<input type="checkbox"/>	<input checked="" type="checkbox"/> MUCK [2]	30%	<input type="checkbox"/> WETLANDS [0]	<input type="checkbox"/>	<input type="checkbox"/> NORMAL [0]	
<input type="checkbox"/> GRAVEL [7]	<input type="checkbox"/>	<input checked="" type="checkbox"/> SILT [2]	60%	<input type="checkbox"/> HARDPAN [0]	<input type="checkbox"/>	<input type="checkbox"/> FREE [1]	
<input type="checkbox"/> SAND [6]	10%	<input type="checkbox"/> ARTIFICIAL [0]		<input type="checkbox"/> SANDSTONE [0]	<input type="checkbox"/>	<input checked="" type="checkbox"/> EXTENSIVE [-2]	
<input type="checkbox"/> BEDROCK [5]				<input type="checkbox"/> RIP/RAP [0]	<input type="checkbox"/>	<input checked="" type="checkbox"/> MODERATE [-1]	
(Score natural substrates; ignore sludge from point-sources)				<input type="checkbox"/> LACUSTURINE [0]	<input type="checkbox"/> EMBEDDEDNESS	<input type="checkbox"/> NORMAL [0]	
NUMBER OF BEST TYPES: <input type="checkbox"/> 4 or more [2] <input checked="" type="checkbox"/> 3 or less [0]				<input type="checkbox"/> SHALE [-1]		<input type="checkbox"/> NONE [1]	
Comments				<input type="checkbox"/> COAL FINES [-2]			

2] **INSTREAM COVER** Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools. Check ONE (Or 2 & average)

0 UNDERCUT BANKS [1]	0 POOLS > 70cm [2]	0 OXBOWS, BACKWATERS [1]	<input checked="" type="checkbox"/> EXTENSIVE >75% [11]
1 OVERHANGING VEGETATION [1]	0 ROOTWADS [1]	2 AQUATIC MACROPHYTES [1]	<input checked="" type="checkbox"/> MODERATE 25-75% [7]
0 SHALLOWS (IN SLOW WATER) [1]	0 BOULDERS [1]	1 LOGS OR WOODY DEBRIS [1]	<input type="checkbox"/> SPARSE 5-<25% [3]
0 ROOTMATS [1]			<input type="checkbox"/> NEARLY ABSENT <5% [1]
Comments			<b>Cover</b> Maximum 20 <b>11</b>

3] **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input checked="" type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input checked="" type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	
Comments			<b>Channel</b> Maximum 20 <b>10</b>

4] **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

EROSION		RIPARIAN WIDTH		FLOOD PLAIN QUALITY	
<input checked="" type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/> CONSERVATION TILLAGE [1]		
<input type="checkbox"/> MODERATE [2]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> URBAN OR INDUSTRIAL [0]		
<input type="checkbox"/> HEAVY / SEVERE [1]	<input type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> MINING / CONSTRUCTION [0]		
	<input checked="" type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]			
	<input type="checkbox"/> NONE [0]	<input checked="" type="checkbox"/> OPEN PASTURE, ROWCROP [0]			
Comments			Indicate predominant land use(s) past 100m riparian. <b>Riparian</b> Maximum 10 <b>4</b>		

5] **POOL / GLIDE AND RIFFLE / RUN QUALITY**

MAXIMUM DEPTH		CHANNEL WIDTH		CURRENT VELOCITY		<b>Recreation Potential</b> <b>Primary Contact</b> <b>Secondary Contact</b> (circle one and comment on back)
Check ONE (ONLY)	Check ONE (Or 2 & average)	Check ALL that apply				
<input type="checkbox"/> > 1m [6]	<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	<input type="checkbox"/> SLOW [1]			
<input type="checkbox"/> 0.7-<1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> VERY FAST [1]	<input type="checkbox"/> INTERSTITIAL [-1]			
<input type="checkbox"/> 0.4-<0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> FAST [1]	<input type="checkbox"/> INTERMITTENT [-2]			
<input checked="" type="checkbox"/> 0.2-<0.4m [1]		<input checked="" type="checkbox"/> MODERATE [1]	<input type="checkbox"/> EDDIES [1]			
<input type="checkbox"/> < 0.2m [0]		Indicate for reach - pools and riffles.				
Comments			<b>Pool / Current</b> Maximum 12 <b>4</b>			

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

RIFFLE DEPTH		RUN DEPTH		RIFFLE / RUN SUBSTRATE		RIFFLE / RUN EMBEDDEDNESS	
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]				
<input checked="" type="checkbox"/> BEST AREAS 5-10cm [1]	<input checked="" type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]				
<input type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input checked="" type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input checked="" type="checkbox"/> MODERATE [0]				
Comments			<input type="checkbox"/> EXTENSIVE [-1]				
			<b>Riffle / Run</b> Maximum 8 <b>1</b>				

6] **GRADIENT** ( 2.37 ft/mi) ☐ VERY LOW - LOW [2-4]  
**DRAINAGE AREA** ( 7.21 mi<sup>2</sup>) ☐ MODERATE [6-10]  
☐ HIGH - VERY HIGH [10-6]%POOL: 70 %GLIDE: 10  
%RUN: 10 %RIFFLE: 10**Gradient**  
Maximum 10



# A) SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of stream?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

## METHOD

- ☐ BOAT  
☐ WADE  
☐ L. LINE  
☐ OTHER

## STAGE

- 1st-sample pass- 2nd  
☐ HIGH  
☐ UP  
☐ NORMAL  
☐ LOW  
☐ DRY

## DISTANCE

- ☐ 0.5 Km  
☐ 0.2 Km  
☐ 0.15 Km  
☐ 0.12 Km  
☐ OTHER

## CLARITY

- 1st-sample pass- 2nd  
☐ < 20 cm  
☐ 20-40 cm  
☐ 40-70 cm  
☐ > 70 cm/ CTB  
☐ SECCHI DEPTH

## B) AESTHETICS

- ☐ NUISANCE ALGAE  
☐ INVASIVE MACROPHYTES  
☐ EXCESS TURBIDITY  
☐ DISCOLORATION  
☐ FOAM / SCUM  
☐ OIL SHEEN  
☐ TRASH / LITTER  
☐ NUISANCE ODOR  
☐ SLUDGE DEPOSITS  
☐ CSOS/SSOS/OUTFALLS

## D) MAINTENANCE

- ☐ PUBLIC / PRIVATE / BOTH / NA  
☐ ACTIVE / HISTORIC / BOTH / NA  
☐ YOUNG-SUCCESSION-OLD  
☐ SPRAY / SNAG / REMOVED  
☐ MODIFIED / DIPPED OUT / NA  
☐ LEVEED / ONE SIDED  
☐ RELOCATED / CUTOFFS  
☐ MOVING-BEDLOAD-STABLE  
☐ ARMoured / SLUMPS  
☐ ISLANDS / SCURED  
☐ IMPOUNDED / DESICCATED  
☐ FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

## E) ISSUES

- ☐ WWTP / CSO / NPDES / INDUSTRY  
☐ HARDENED / URBAN / DIRT&GRIME  
☐ CONTAMINATED / LANDFILL  
☐ BMPs-CONSTRUCTION-SEDIMENT  
☐ LOGGING / IRRIGATION / COOLING  
☐ BANK / EROSION / SURFACE  
☐ FALSE BANK / MANURE / LAGOON  
☐ WASH H<sub>2</sub>O / TILE / H<sub>2</sub>O TABLE  
☐ ACID / MINE / QUARRY / FLOW  
☐ NATURAL / WETLAND / STAGNANT  
☐ PARK / GOLF / LAWN / HOME  
☐ ATMOSPHERE / DATA PAUCITY

## F) MEASUREMENTS

- ☐ width  
☐ depth  
☐ max. depth  
☐ bankfull width  
☐ bankfull x depth  
☐ W/D ratio  
☐ bankfull max. depth  
☐ floodprone x<sup>2</sup> width  
☐ entrench. ratio

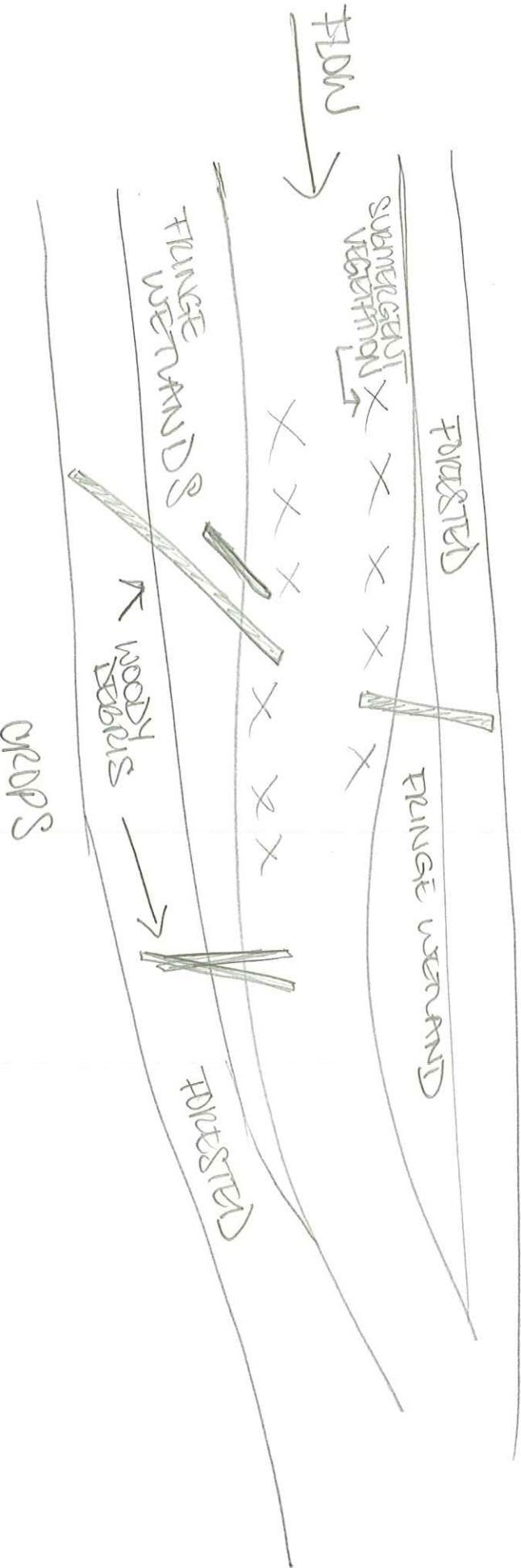
Legacy Tree:

- ☐ > 85% - OPEN  
☐ 55%-<85%  
☒ 30%-<55%  
☐ 10%-<30%  
☐ <10% - CLOSED

## C) RECREATION

- AREA DEPTH  
POOL: ☐ >100ft<sup>2</sup> ☐ >3ft

## Stream Drawing:



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

SITE NAME/LOCATION **Stream Crossing 8**SITE NUMBER **A3000001**RIVER BASIN **04100010**DRAINAGE AREA (mi<sup>2</sup>) **0.26**LENGTH OF STREAM REACH (ft) **200**LAT. **41.58540**LONG. **-83.50010**

RIVER CODE

RIVER MILE

DATE **08/14/14**SCORER **K. Simon**

COMMENTS

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

## STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL
 ☐ RECOVERED
 ☒ RECOVERING
 ☐ RECENT OR NO RECOVERY

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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="10%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="50%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="40%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

 Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

**6**

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input checked="" type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

**25**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input checked="" type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS

AVERAGE BANKFULL WIDTH (meters):

**3.50**

## HHEI Metric Points

Substrate Max = 40

**9**

A + B

Pool Depth Max = 30

**30**

Bankfull Width Max=30

**25**

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)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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 ☒ No QHEI Score  (If Yes, Attach Completed QHEI Form)

**DOWNSTREAM DESIGNATED USE(S)**

☐ WWH Name:  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: Wood Township / City:

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation:  Quantity: 0.00  
Photograph Information:   
Elevated Turbidity? (Y/N): N Canopy (% open): 50%  
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:

**BIOTIC EVALUATION**

Performed? (Y/N): 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 Primary Headwater Habitat Assessment Manual)  
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N  
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N  
Comments Regarding Biology:

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

DOGWOODS  
X X X X  
FLOW →  
PHRAGMITES  
SANDBAR  
WILLOW

Stream & Location: Stream Crossing 9

RM: \_\_\_\_\_ Date: 8/14/14

Scorers Full Name & Affiliation: Jessica Stratigakos (MSG)

River Code: \_\_\_\_\_ STORET #: \_\_\_\_\_ Lat./ Long.: 41.5908 -83.5060 Office verified location ☐

1] **SUBSTRATE** Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

BEST TYPES		OTHER TYPES		ORIGIN		QUALITY	
POOL	RIFFLE	POOL	RIFFLE				
<input type="checkbox"/> BLDR /SLABS [10]		<input type="checkbox"/> HARDPAN [4]		<input type="checkbox"/> LIMESTONE [1]		<input type="checkbox"/> HEAVY [-2]	<div style="border: 1px solid black; border-radius: 10px; padding: 5px; text-align: center;"> <b>3</b> Maximum 20         </div>
<input type="checkbox"/> BOULDER [9]		<input type="checkbox"/> DETRITUS [3]		<input checked="" type="checkbox"/> SILT [1]		<input checked="" type="checkbox"/> MODERATE [-1]	
<input type="checkbox"/> COBBLE [8]		<input type="checkbox"/> MUCK [2]		<input type="checkbox"/> WETLANDS [0]		<input type="checkbox"/> NORMAL [0]	
<input type="checkbox"/> GRAVEL [7]		<input checked="" type="checkbox"/> SILT [2]	100	<input type="checkbox"/> HARDPAN [0]		<input type="checkbox"/> FREE [1]	
<input type="checkbox"/> SAND [6]		<input type="checkbox"/> ARTIFICIAL [0]		<input type="checkbox"/> SANDSTONE [0]		<input checked="" type="checkbox"/> EXTENSIVE [-2]	
<input type="checkbox"/> BEDROCK [5]				<input type="checkbox"/> RIP/RAP [0]		<input checked="" type="checkbox"/> MODERATE [-1]	
NUMBER OF BEST TYPES: <input type="checkbox"/> 4 or more [2] <input type="checkbox"/> 3 or less [0]				Check ONE (Or 2 & average)		<input type="checkbox"/> NORMAL [0] <input type="checkbox"/> NONE [1]	

Comments \_\_\_\_\_

2] **INSTREAM COVER** Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

			AMOUNT		
			Check ONE (Or 2 & average)		
<u>1</u> UNDERCUT BANKS [1]	<u>0</u> POOLS > 70cm [2]	<u>0</u> OXBOWS, BACKWATERS [1]	<input type="checkbox"/> EXTENSIVE >75% [11]		
<u>2</u> OVERHANGING VEGETATION [1]	<u>1</u> ROOTWADS [1]	<u>0</u> AQUATIC MACROPHYTES [1]	<input checked="" type="checkbox"/> MODERATE 25-75% [7]		
<u>0</u> SHALLOWS (IN SLOW WATER) [1]	<u>0</u> BOULDERS [1]	<u>1</u> LOGS OR WOODY DEBRIS [1]	<input type="checkbox"/> SPARSE 5-<25% [3]		
<u>0</u> ROOTMATS [1]			<input type="checkbox"/> NEARLY ABSENT <5% [1]		

Comments \_\_\_\_\_

**11**  
Maximum 20

3] **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input checked="" type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input checked="" type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments \_\_\_\_\_

**9**  
Maximum 20

4] **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

EROSION		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE	
<input type="checkbox"/> NONE / LITTLE [3]	<input checked="" type="checkbox"/> MODERATE [2]	<input checked="" type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> MODERATE 10-50m [3]	<input checked="" type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> URBAN OR INDUSTRIAL [0]	<input type="checkbox"/> MINING / CONSTRUCTION [0]
<input type="checkbox"/> HEAVY / SEVERE [1]		<input type="checkbox"/> NARROW 5-10m [2]	<input checked="" type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> FENCED PASTURE [1]	Indicate predominant land use(s) past 100m riparian.	
		<input type="checkbox"/> NONE [0]		<input checked="" type="checkbox"/> OPEN PASTURE, ROWCROP [0]		<div style="border: 1px solid black; border-radius: 10px; padding: 5px; text-align: center;"> <b>6</b> Maximum 10         </div>	

Comments \_\_\_\_\_

5] **POOL / GLIDE AND RIFFLE / RUN QUALITY**

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	Primary Contact
<input checked="" type="checkbox"/> > 1m [6]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	Secondary Contact
<input type="checkbox"/> 0.7-<1m [4]	<input checked="" type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> VERY FAST [1]	(circle one and comment on back)
<input type="checkbox"/> 0.4-<0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> FAST [1]	
<input type="checkbox"/> 0.2-<0.4m [1]		<input type="checkbox"/> MODERATE [1]	
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> INTERSTITIAL [-1]	
		<input type="checkbox"/> INTERMITTENT [-2]	
		<input type="checkbox"/> EDDIES [1]	

Comments \_\_\_\_\_

**8**  
Maximum 12

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5-10cm [1]	<input type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Comments \_\_\_\_\_

**0**  
Maximum 8

6] <b>GRADIENT</b> ( 2.1 ft/mi)	<input checked="" type="checkbox"/> VERY LOW - LOW [2-4]	%POOL: <span style="border: 1px solid black; border-radius: 10px; padding: 2px 10px;">100</span>	%GLIDE: <span style="border: 1px solid black; border-radius: 10px; padding: 2px 10px;">0</span>	<div style="border: 1px solid black; border-radius: 10px; padding: 5px; text-align: center;"> <b>4</b> Maximum 10         </div>
<b>DRAINAGE AREA</b> ( 8.54 mi <sup>2</sup> )	<input type="checkbox"/> MODERATE [6-10] <input type="checkbox"/> HIGH - VERY HIGH [10-6]	%RUN: <span style="border: 1px solid black; border-radius: 10px; padding: 2px 10px;">0</span>	%RIFFLE: <span style="border: 1px solid black; border-radius: 10px; padding: 2px 10px;">0</span>	



# A) SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of stream?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

## METHOD STAGE

- ☐ BOAT ☐ 1st-sample pass-2nd
- ☐ WADE ☐ HIGH ☐ UP ☐
- ☐ L. LINE ☐ NORMAL ☐
- ☐ OTHER ☐ LOW ☐
- ☐ DRY ☐

## DISTANCE

- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☐ 0.12 Km
- ☐ OTHER

## CLARITY

- 1st-sample pass-2nd
- ☐ < 20 cm
- ☐ 20-40 cm
- ☐ 40-70 cm
- ☐ > 70 cm/ CTB
- ☐ SECCHI DEPTH

## CANOPY

- ☐ > 85% - OPEN
- ☐ 55%-<85%
- ☐ 30%-<55%
- ☐ 10%-<30%
- ☐ <10%- CLOSED

## B) AESTHETICS

- ☐ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☐ TRASH / LITTER
- ☐ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOS/ISSOS/OUTFALLS

## D) MAINTENANCE

- ☐ PUBLIC / PRIVATE / BOTH / NA
- ☐ ACTIVE / HISTORIC / 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

Circle some & COMMENT

## E) ISSUES

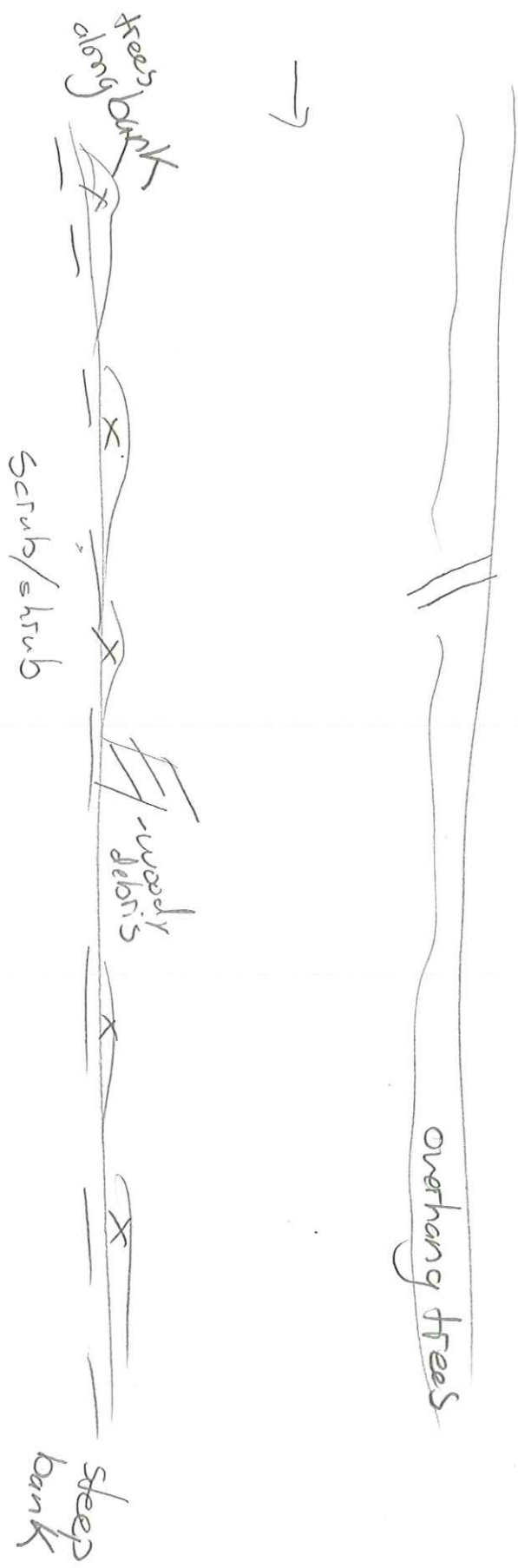
- ☐ WWTP / CSO / NPDES / INDUSTRY
- ☐ HARDENED / URBAN / DIRT&GRIME
- ☐ CONTAMINATED / LANDFILL
- ☐ BMPs-CONSTRUCTION-SEDIMENT
- ☐ LOGGING / IRRIGATION / COOLING
- ☐ BANK / EROSION / SURFACE
- ☐ FALSE BANK / MANURE / LAGOON
- ☐ WASH H<sub>2</sub>O / TILE / H<sub>2</sub>O TABLE
- ☐ ACID / MINE / QUARRY / FLOW
- ☐ NATURAL / WETLAND / STAGNANT
- ☐ PARK / GOLF / LAWN / HOME
- ☐ ATMOSPHERE / DATA PAUCITY

## F) MEASUREMENTS

- ☐  $\bar{x}$  width
- ☐  $\bar{x}$  depth
- ☐ max. depth
- ☐  $\bar{x}$  bankfull width
- ☐ bankfull  $\bar{x}$  depth
- ☐ W/D ratio
- ☐ bankfull max. depth
- ☐ floodprone  $\bar{x}^2$  width
- ☐ entrench. ratio

Legacy Tree:

## Stream Drawing:



**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

**10/7/2014 3:31:58 PM**

**in**

**Case No(s). 14-1754-GA-BLN**

Summary: Letter of Notification -- Exhibit G (Part 20 of 29) electronically filed by Mrs. Gretchen L. Petrucci on behalf of North Coast Gas Transmission LLC