

***U.S. ARMY CORPS OF ENGINEERS, BUFFALO DISTRICT
FRENCH CREEK WATERSHED SURVEY***

FIELD NOTES AND PHOTOS

Stream Name and River Mile: Kline Ditch 2.15

Stream Segment Location: At Detroit Road

QHEI Score: 51.5

HHEI Score: 74

FIELD NOTES:

This site is located to the southwest of Detroit Road and includes a portion of Kline Ditch that was not flowing. Several pools were present although apparently contaminated. The banks and gradient were fairly steep. The banks were 15' +/- high. Several PVC pipes were discharging water from adjacent properties (possibly effluent). The channel was 8-12' wide with a substrate of cobbles, boulders, gravel and sand with some silt. The east side was 20' +/- wide before encountering residential lawn. The west riparian area is 50-100' wide. The dominant species noted include silver maple, Norway maple, multiflora rose and staghorn sumac. Small areas of spotted touch-me-not were noted in the channel. There is a great potential for restoration at this site by cleaning up the effluent and repairing the septic systems.

PHOTOS:



1) Kline Ditch 2.15 – Facing upstream (southeast) from Detroit Road



2) Kline Ditch 2.15 – Facing downstream toward Detroit Road



3) Kline Ditch 2.15 – Pool of contamination (possibly raw sewage?)



Qualitative Habitat Evaluation Index Field Sheet QHEI Score: **5 1/2**

River Code: RM: 2.15 Stream: KLINE DITCH
Date: 8-22-02 Location: AT DETROIT ROAD
Scorers Full Name: JAY MILLER Affiliation: USACE - BUFFALO

1) SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present)

TYPE	POOL RIFFLE	POOL RIFFLE	SUBSTRATE ORIGIN	SUBSTRATE QUALITY
<input type="checkbox"/> -BLDR /SLBS[10]	<input checked="" type="checkbox"/> -GRAVEL [7] 30	Check ONE (OR 2 & AVERAGE)		Check ONE (OR 2 & AVERAGE)
<input checked="" type="checkbox"/> -BOULDER [9] 30	<input type="checkbox"/> -SAND [6]	<input type="checkbox"/> -LIMESTONE [1]	SILT:	<input type="checkbox"/> -SILT HEAVY [-2]
<input type="checkbox"/> -COBBLE [8] 20	<input type="checkbox"/> -BEDROCK[5]	<input checked="" type="checkbox"/> -TILLS [1]		<input checked="" type="checkbox"/> -SILT MODERATE [-1]
<input type="checkbox"/> -HARDPAN [4]	<input type="checkbox"/> -DETRITUS[3]	<input type="checkbox"/> -WETLANDS[0]		<input type="checkbox"/> -SILT NORMAL [0]
<input type="checkbox"/> -MUCK [2]	<input type="checkbox"/> -ARTIFICIAL[0]	<input type="checkbox"/> -HARDPAN [0]		<input type="checkbox"/> -SILT FREE [1]
<input type="checkbox"/> -SILT [2] 20	NOTE: Ignore Sludge Originating From Point Sources	<input type="checkbox"/> -SANDSTONE [0] EMBEDDED		<input type="checkbox"/> -EXTENSIVE [-2]
NUMBER OF SUBSTRATE TYPES: <input type="checkbox"/> 4 or More [2]		<input type="checkbox"/> -RIP/RAP [0] NESS:		<input checked="" type="checkbox"/> -MODERATE [-1]
(High Quality Only, Score 5 or >) <input checked="" type="checkbox"/> 3 or Less [0]		<input type="checkbox"/> -LACUSTRINE [0]		<input type="checkbox"/> -NORMAL [0]
COMMENTS <u>NO RIFFLE</u>		<input type="checkbox"/> -SHALE [-1]		<input type="checkbox"/> -NONE [1]
		<input type="checkbox"/> -COAL FINES [-2]		

Substrate
15
Max 20

2) INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure)	TYPE: Score All That Occur
<u>0</u> UNDERCUT BANKS [1]	<u>0</u> POOLS > 70 cm [2]
<u>2</u> OVERHANGING VEGETATION [1]	<u>0</u> ROOTWADS [1]
<u>2</u> SHALLOWS (IN SLOW WATER) [1]	<u>3</u> BOULDERS [1]
<u>0</u> ROOTMATS [1]	COMMENTS:

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
<input type="checkbox"/> - EXTENSIVE > 75% [11]
<input type="checkbox"/> - MODERATE 25-75% [7]
<input type="checkbox"/> - SPARSE 5-25% [3]
<input type="checkbox"/> - NEARLY ABSENT < 5% [1]

Cover
9
Max 20

3) CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER
<input type="checkbox"/> - HIGH [4]	<input type="checkbox"/> - EXCELLENT [7]	<input checked="" type="checkbox"/> - NONE [6]	<input checked="" type="checkbox"/> - HIGH [3]	<input type="checkbox"/> - SNAGGING
<input checked="" type="checkbox"/> - MODERATE [3]	<input type="checkbox"/> - GOOD [5]	<input type="checkbox"/> - RECOVERED [4]	<input type="checkbox"/> - MODERATE [2]	<input type="checkbox"/> - RELOCATION
<input type="checkbox"/> - LOW [2]	<input type="checkbox"/> - FAIR [3]	<input type="checkbox"/> - RECOVERING [3]	<input type="checkbox"/> - LOW [1]	<input type="checkbox"/> - CANOPY REMOVAL
<input type="checkbox"/> - NONE [1]	<input checked="" type="checkbox"/> - POOR [1]	<input type="checkbox"/> - RECENT OR NO RECOVERY [1]		<input type="checkbox"/> - LEVEED
				<input type="checkbox"/> - DREDGING
				<input type="checkbox"/> - BANK SHAPING
				<input type="checkbox"/> - ONE SIDE CHANNEL MODIFICATIONS

Channel
13
Max 20

COMMENTS:

4) RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH	FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN)	BANK EROSION
L R (Per Bank)	L R (Most Predominant Per Bank)	L R (Per Bank)
<input type="checkbox"/> - WIDE > 50m [4]	<input type="checkbox"/> - FOREST, SWAMP [3]	<input type="checkbox"/> - NONE/LITTLE [3]
<input type="checkbox"/> - MODERATE 10-50m [3]	<input type="checkbox"/> - SHRUB OR OLD FIELD [2]	<input checked="" type="checkbox"/> - MODERATE [2]
<input checked="" type="checkbox"/> - NARROW 5-10 m [2]	<input checked="" type="checkbox"/> - RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> - HEAVY/SEVERE [1]
<input checked="" type="checkbox"/> - VERY NARROW <5 m [1]	<input type="checkbox"/> - FENCED PASTURE [1]	<input type="checkbox"/> - MINING/CONSTRUCTION [0]
<input type="checkbox"/> - NONE [0]		

Riparian
4 1/2
Max 10

COMMENTS:

5.) POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)	MORPHOLOGY (Check 1 or 2 & AVERAGE)	CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
<input type="checkbox"/> - >1m [6]	<input type="checkbox"/> - POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> - EDDIES [1]
<input type="checkbox"/> - 0.7-1m [4]	<input type="checkbox"/> - POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> - TORRENTIAL [-1]
<input type="checkbox"/> - 0.4-0.7m [2]	<input type="checkbox"/> - POOL WIDTH < RIFFLE W. [0]	<input type="checkbox"/> - INTERSTITIAL [-1]
<input type="checkbox"/> - 0.2- 0.4m [1]		<input type="checkbox"/> - INTERMITTENT [-2]
<input checked="" type="checkbox"/> - < 0.2m [POOL=0]	COMMENTS:	<input type="checkbox"/> - SLOW [1]
		<input type="checkbox"/> - VERY FAST [1]

Pool/Current
0
Max 12

CHECK ONE OR CHECK 2 AND AVERAGE

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

Riffle/Run
0
Max 8

COMMENTS:

- NO RIFFLE [Metric=0]

Gradient
10
Max 10

6) GRADIENT (ft/mi): 16.7 DRAINAGE AREA (sq.mi.): 0.1

%POOL: %GLIDE:
%RIFFLE: %RUN:

* Best areas must be large enough to support a population of riffle-obligate species

NO FLOW
ISOLATED POOLS

Is Sampling Reach Representative of the Stream (Y/N) ___ If Not, Explain:

- Major Suspected Sources of Impacts (Check All That Apply):
- None
 - Industrial
 - WWTP
 - Ag
 - Livestock
 - Silviculture
 - Construction
 - Urban Runoff
 - CSOs
 - Suburban Impacts
 - Mining
 - Channelization
 - Riparian Removal
 - Landfills
 - Natural
 - Dams
 - Other Flow Alteration
 - Other: _____

Subjective Rating (1-10)

Aesthetic Rating (1-10)

Gradient:

- Low, - Moderate, - High

Gear: _____ Distance: _____ Water Clarity: _____ Water Stage: _____ Canopy -% Open _____

First Sampling Pass _____

Stream Measurements:									
Average Width	Average Depth	Maximum Depth	Av. Bankfull Width	Bankfull Depth	Mean W/D Ratio	Bankfull Max Depth	Floodprone Area	Width	Entrench. Ratio

Stream Drawing:

SEE HHEI SHOOT

Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

Yes/No

- Is Stream Ephemeral (no pools, totally dry or only damp spots)?
- Is there water upstream? How Far: _____
- Is There Water Close Downstream? How Far: _____
- Is Dry Channel Mostly Natural?



Primary Headwater Habitat Evaluation Form

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

74

SITE NAME/LOCATION KLING DITCH AT DETROIT ROAD (RT. 254)
 SITE NUMBER _____ RIVER BASIN BLACK RIVER DRAINAGE AREA (mi²) 0.1
 LENGTH OF STREAM REACH (ft) 200 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE 2.15
 DATE 9-22-02 SCORER JAY MILLER COMMENTS _____

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

STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY
 MODIFICATIONS:

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="checkbox"/> SILT [3 pt]	<u>20</u>
<input checked="" type="checkbox"/> BOULDER (>256 mm) [16 pts]	<u>30</u>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<u>20</u>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>30</u>	<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2 mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 50 (A) 25 (B) 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40

29

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

COMMENTS NO FLOW - ISOLATED POOLS MAXIMUM POOL DEPTH (centimeters): 15cm

Pool Depth Max = 30

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 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) 2.1

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		FLOODPLAIN QUALITY			
L	R	L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/> (Per Bank)	<input type="checkbox"/>	<input type="checkbox"/> (Most Predominant per Bank)	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Wide >10m	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	Narrow <5m	<input checked="" type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	None	<input type="checkbox"/>	Fenced Pasture	<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 type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input checked="" 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)

AVINS DITCH NOTES

***U.S. ARMY CORPS OF ENGINEERS, BUFFALO DISTRICT
FRENCH CREEK WATERSHED SURVEY***

FIELD NOTES AND PHOTOS

Stream Name and River Mile: Avins Ditch 0.0
Stream Segment Location: Mouth of Ditch (French Creek RM 4.0)
QHEI Score: NA HHEI Score: 31

FIELD NOTES:

This section of Avins Ditch includes the stretch from the mouth at French Creek to Colorado Ave. in Avon. The entire stretch is a concrete channel with a thin deposit of silt and muck. The banks contain riprap. The channel supported an emergent community dominated by cattails, purple loosestrife, and soft-stemmed bulrush. A narrow 10-Foot vegetated buffer separates the creek channel from the maintained residential lawn on the northwest bank. Vegetation in this buffer includes eastern cottonwood and green ash saplings. There was no flow (<1cm.). The southeast bank is disturbed (old field) and appears to be proposed for development.

PHOTOS:



1) Avins Ditch 0.0 – Facing downstream from road



2) Avins Ditch 0.0 – Mouth of ditch, facing upstream from French Creek



Primary Headwater Habitat Evaluation Form

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

31

SITE NAME/LOCATION AVINS DITCH AT MOUTH (NEAR COLORADO AVE) - FRENCH CREEK RM 4.0
 SITE NUMBER _____ RIVER BASIN _____ DRAINAGE AREA (mi²) 0.4
 LENGTH OF STREAM REACH (ft) 200 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE 0.0
 DATE 21 AUG 02 SCORER JAY MILLER COMMENTS _____

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

STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY
 MODIFICATIONS:

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="checkbox"/> SILT [3 pt]	<u>5</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> MUCK [0 pts]	<u>5</u>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<u>90</u>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0

(A)

3

(B)

3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40

6

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 checked="" 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 CONCRETE CHANNEL

MAXIMUM POOL DEPTH (centimeters):

2

Pool Depth Max = 30

5

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 checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS _____

AVERAGE BANKFULL WIDTH (meters)

2

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		FLOODPLAIN QUALITY	
L R (Per Bank)		L R (Most Predominant per Bank)	
<input type="checkbox"/> Wide >10m		<input type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/> Conservation Tillage
<input type="checkbox"/> Moderate 5-10m		<input type="checkbox"/> Immature Forest, Shrub or Old Field	<input type="checkbox"/> Urban or Industrial
<input checked="" type="checkbox"/> Narrow <5m		<input checked="" type="checkbox"/> Residential, Park, New Field	<input type="checkbox"/> Open Pasture, Row Crop
<input type="checkbox"/> None		<input type="checkbox"/> Fenced Pasture	<input checked="" type="checkbox"/> Mining or Construction

COMMENTS RESIDENTIAL ON RIGHT, CONSTRUCTION SITE ON LEFT

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: FRENCH CROOK Distance from Evaluated Stream 0.0
 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: AVON, OH NRCS Soil Map Page: 7 NRCS Soil Map Stream Order _____
County: LORAIN Township / City: AVON

MISCELLANEOUS

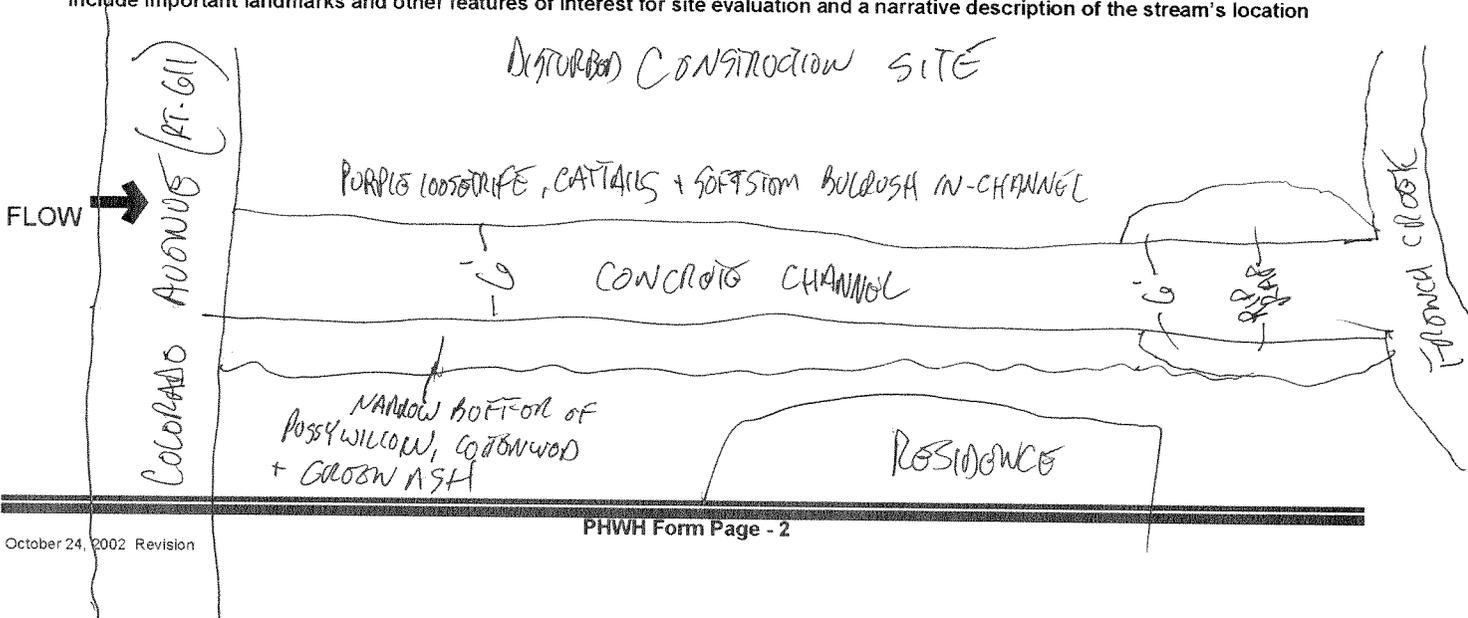
Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/19 Quantity: _____
Photograph Information: _____
Elevated Turbidity? (Y/N): N Canopy (% open): 75
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____
Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____
Is the sampling reach representative of the stream (Y/N) N If not, please explain: THIS PORTION OF THE CROOK HAS A CONCRETE CHANNEL
Additional comments/description of pollution impacts: ADJACENT TO RESIDENCE, CONSTRUCTION SITE AND A LARGE TRUCK STOP.

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) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____
Comments Regarding Biology: NO AQUATIC LIFE NOTED

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



***U.S. ARMY CORPS OF ENGINEERS, BUFFALO DISTRICT
FRENCH CREEK WATERSHED SURVEY***

FIELD NOTES AND PHOTOS

Stream Name and River Mile: Avins Ditch 0.47
Stream Segment Location: At Chester Industrial Parkway
QHEI Score: NA HHEI Score: 27

FIELD NOTES: 21 AUG 2002

This stretch of Avins Ditch is located on the east side of Chester Industrial Parkway. The ditch has been channelized and dredged, apparently in association with the construction of the industrial park. The ditch had a moist surface, but no flow. Two 60" culverts carry the water under the road. The banks contain riprap and narrow buffers. Industrial development is located on both sides with maintained lawns. The north bank has a 15-20' wide buffer containing gray-stemmed dogwood, staghorn sumac, and pin oak. The south bank is mostly lawn and disturbed old-field. The channel (10'+/- wide) is vegetated with emergent species including cattails, purple loosestrife, bladder sedge and soft-stem bulrush. There is little opportunity for restoration.

PHOTOS:



1) Avins Ditch 0.47 – Facing upstream from Chester Parkway



Primary Headwater Habitat Evaluation Form

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

27

SITE NAME/LOCATION AVINS DITCH AT CHESTER INDUSTRIAL PARKWAY
 SITE NUMBER _____ RIVER BASIN BLACK RIVER DRAINAGE AREA (mi²) 0.3
 LENGTH OF STREAM REACH (ft) 200 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE 0.47
 DATE 8/21/02 SCORER SAY MILLER COMMENTS ADJACENT TO SMALL RETENTION POND

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

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) 3 (B) 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40

7

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 DRY/MOIST CHANNEL - NO STANDING WATER 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) 2.7

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		FLOODPLAIN QUALITY	
L/R (Per Bank)		L R (Most Predominant per Bank)	L R
<input checked="" type="checkbox"/> <input type="checkbox"/> Wide >10m		<input type="checkbox"/> <input type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/> <input type="checkbox"/> Conservation Tillage
<input type="checkbox"/> <input type="checkbox"/> Moderate 5-10m		<input type="checkbox"/> <input type="checkbox"/> Immature Forest, Shrub or Old Field	<input checked="" type="checkbox"/> <input type="checkbox"/> Urban or Industrial
<input type="checkbox"/> <input checked="" type="checkbox"/> Narrow <5m		<input checked="" type="checkbox"/> <input type="checkbox"/> Residential, Park, New Field	<input type="checkbox"/> <input type="checkbox"/> Open Pasture, Row Crop
<input type="checkbox"/> <input type="checkbox"/> None		<input type="checkbox"/> <input type="checkbox"/> Fenced Pasture	<input type="checkbox"/> <input type="checkbox"/> Mining or Construction

COMMENTS _____

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)

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 No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

WWH Name: FRENCH CREEK Distance from Evaluated Stream 0.47mi
 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: AVON, OH NRCS Soil Map Page: 7 NRCS Soil Map Stream Order _____
County: LOBAIN Township / City: AVON

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/19 Quantity: _____

Photograph Information: _____

Elevated Turbidity? (Y/N): NA Canopy (% open): 70%

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: RUNS THROUGH INDUSTRIAL PARK, GOES THROUGH CULVERTS; LITTLE OR NON-VALUABLE BUFFERS

BIOTIC EVALUATION

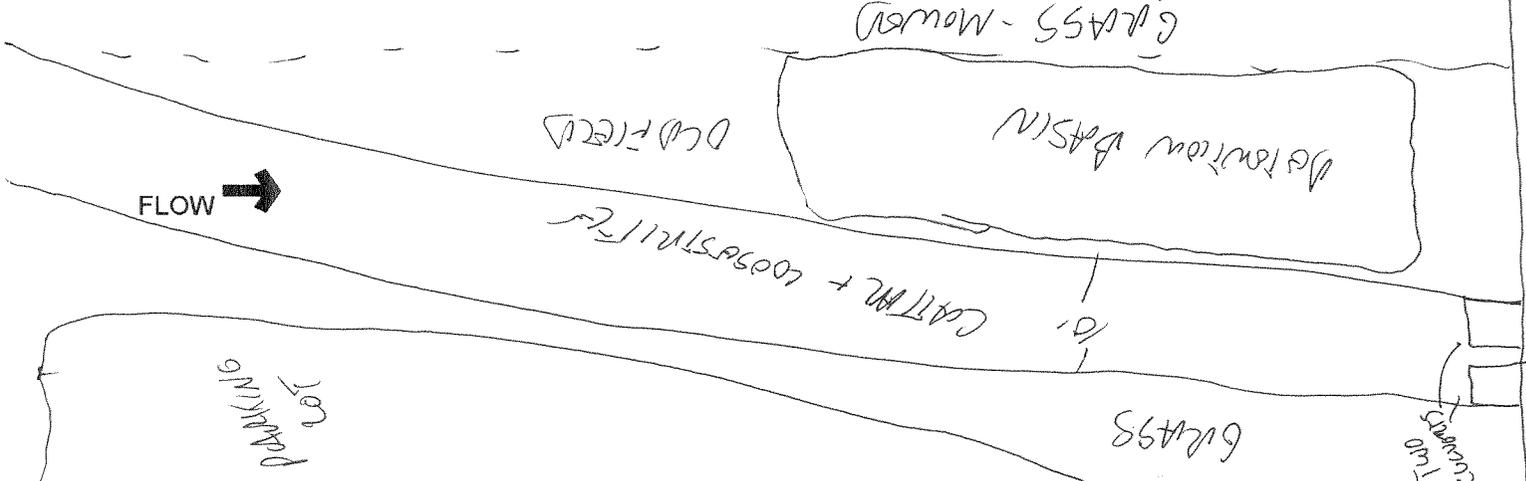
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: COMPLETELY VEGETATED CHANNEL - MOIST BUT NO STANDING AND/OR FLOWING WATER

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



SCHWARTZ DITCH NOTES

***U.S. ARMY CORPS OF ENGINEERS, BUFFALO DISTRICT
FRENCH CREEK WATERSHED SURVEY***

FIELD NOTES AND PHOTOS

Stream Name and River Mile: Schwartz Ditch 0.0
Stream Segment Location: Mouth of Ditch at Jaycox Road (RM FC-8.9)
QHEI Score: 29 HHEI Score: NA

FIELD NOTES:

This portion of Schwartz Ditch includes the mouth upstream (under Jaycox Road). The ditch water quality appears to be low. This straight, channelized portion is 10' wide and 30-50 cm deep. A 20'+/- wide buffer separates it from the adjoining residential development on either side. Dominant species in the riparian area include: silver maple, boxelder, pussy willow, reed canary grass, green ash, eastern cottonwood, quaking aspen and American basswood. The substrate is dominated by silt and muck with lesser amounts of gravel, sand and detritus. Although water quality is low, no sources of pollution were noted. Frogs and macroinvertebrates were noted. The height of the culvert at Jaycox Road and presence of extraneous stones adjacent to the box culvert appears to have a damming effect that raises water levels upstream.

PHOTOS:



1) Schwartz Ditch 0.0 – Mouth of ditch facing upstream



2) Schwartz Ditch 0.0 – Facing downstream towards mouth of ditch



Qualitative Habitat Evaluation Index Field Sheet QHEI Score:

29

River Code: RM: 0.0 Stream: SCHWARTZ DITCH
Date: 9/10/02 Location: AT MOUTH (NEAR SAYCOX ROAD) - FRENCH CREEK RM 8.9
Scorers Full Name: JAY MILLER Affiliation: USACE - BUFFALO

1) SUBSTRATE (Check ONLY Two Substrate TYPE BOXES; Estimate % present)

TYPE POOL RIFFLE POOL RIFFLE SUBSTRATE ORIGIN SUBSTRATE QUALITY
-BLDR /SLBS [10] -GRAVEL [7] 5 Check ONE (OR 2 & AVERAGE) Check ONE (OR 2 & AVERAGE)
-BOULDER [9] -SAND [6] 5 -LIMESTONE [1] SILT:
-COBBLE [8] -BEDROCK [5] -TILLS [1] -SILT HEAVY [-2]
-HARDPAN [4] -DETRITUS [3] 20 -WETLANDS [0] -SILT MODERATE [-1]
-MUCK [2] 40 -ARTIFICIAL [0] -HARDPAN [0] -SILT NORMAL [0]
-SILT [2] 30 NOTE: Ignore Sludge Originating From Point Sources -SANDSTONE [0] EMBEDDED -SILT FREE [1]
-RIP/RAP [0] NESS: -EXTENSIVE [-2]
-LACUSTRINE [0] -MODERATE [-1]
-SHALE [-1] -NORMAL [0]
-COAL FINES [-2] -NONE [1]

Substrate
0
Max 20

2) INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)
(Structure) TYPE: Score All That Occur

2 UNDERCUT BANKS [1] 0 POOLS > 70 cm [2] 0 OXBOWS, BACKWATERS [1]
2 OVERHANGING VEGETATION [1] 0 ROOTWADS [1] 0 AQUATIC MACROPHYTES [1]
2 SHALLOWS (IN SLOW WATER) [1] 0 BOULDERS [1] 2 LOGS OR WOODY DEBRIS [1]
1 ROOTMATS [1] COMMENTS:

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
- EXTENSIVE > 75% [11]
- MODERATE 25-75% [7]
- SPARSE 5-25% [3]
- NEARLY ABSENT < 5% [1]

Cover
9
Max 20

3) CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY MODIFICATIONS/OTHER
- HIGH [4] - EXCELLENT [7] - NONE [6] - HIGH [3] - SNAGGING - IMPOUND.
- MODERATE [3] - GOOD [5] - RECOVERED [4] - MODERATE [2] - RELOCATION - ISLANDS
- LOW [2] - FAIR [3] - RECOVERING [3] - LOW [1] - CANOPY REMOVAL - LEVEED
- NONE [1] - POOR [1] - RECENT OR NO RECOVERY [1] - DREDGING - BANK SHAPING
- ONE SIDE CHANNEL MODIFICATIONS

Channel
5
Max 20

COMMENTS:

4) RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) BANK EROSION
L R (Per Bank) L R (Most Predominant Per Bank) L R L R (Per Bank)
- WIDE > 50m [4] - FOREST, SWAMP [3] - CONSERVATION TILLAGE [1] - NONE/LITTLE [3]
- MODERATE 10-50m [3] - SHRUB OR OLD FIELD [2] - URBAN OR INDUSTRIAL [0] - MODERATE [2]
- NARROW 5-10 m [2] - RESIDENTIAL, PARK, NEW FIELD [1] - OPEN PASTURE, ROWCROP [0] - HEAVY/SEVERE [1]
- VERY NARROW < 5 m [1] - FENCED PASTURE [1] - MINING/CONSTRUCTION [0]

Riparian
4
Max 10

COMMENTS:

5) POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH MORPHOLOGY CURRENT VELOCITY (POOLS & RIFFLES!)
(Check 1 ONLY!) (Check 1 or 2 & AVERAGE) (Check All That Apply)
- > 1m [6] - POOL WIDTH > RIFFLE WIDTH [2] - EDDIES [1] - TORRENTIAL [-1]
- 0.7-1m [4] - POOL WIDTH = RIFFLE WIDTH [1] - FAST [1] - INTERSTITIAL [-1]
- 0.4-0.7m [2] - POOL WIDTH < RIFFLE W. [0] - MODERATE [1] - INTERMITTENT [-2]
- 0.2-0.4m [1] - SLOW [1] - VERY FAST [1]
- < 0.2m [POOL=0] COMMENTS:

Pool/Current
5
Max 12

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH RUN DEPTH RIFFLE/RUN SUBSTRATE RIFFLE/RUN EMBEDDEDNESS
- Best Areas > 10 cm [2] - MAX > 50 [2] - STABLE (e.g., Cobble, Boulder) [2] - NONE [2]
- Best Areas 5-10 cm [1] - MAX < 50 [1] - MOD. STABLE (e.g., Large Gravel) [1] - LOW [1]
- Best Areas < 5 cm [RIFFLE=0] - UNSTABLE (Fine Gravel, Sand) [0] - MODERATE [0]
- EXTENSIVE [-1]

Riffle/Run
0
Max 8

COMMENTS: - NO RIFFLE [Metric=0]

Gradient
6
Max 10

6) GRADIENT (ft/mi): 10 DRAINAGE AREA (sq.mi.): 4.1
%POOL: %GLIDE: 100
%RIFFLE: %RUN:

* Best areas must be large enough to support a population of riffle-obligate species

Is Sampling Reach Representative of the Stream (Y/N) ___ If Not, Explain:

- Major Suspected Sources of Impacts (Check All That Apply):
- None
 - Industrial
 - WWTP
 - Ag
 - Livestock
 - Silviculture
 - Construction
 - Urban Runoff
 - CSOs
 - Suburban Impacts
 - Mining
 - Channelization
 - Riparian Removal
 - Landfills
 - Natural
 - Dams
 - Other Flow Alteration
 - Other: _____

Subjective Rating (1-10)

Aesthetic Rating (1-10)

Gradient:

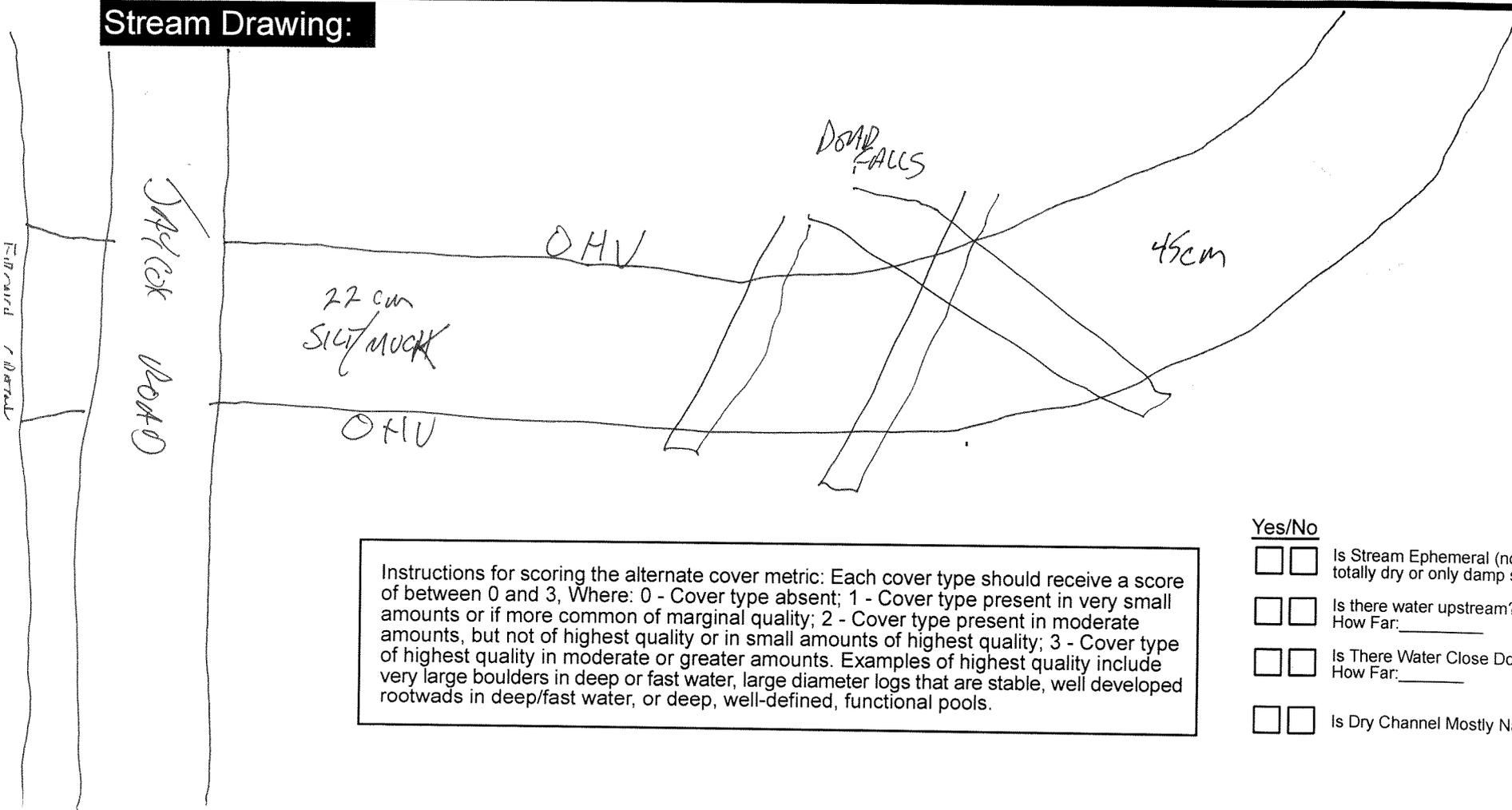
- Low, - Moderate, - High

Gear: _____ Distance: _____ Water Clarity: _____ Water Stage: _____ Canopy -% Open: _____

First Sampling Pass _____

Stream Measurements:									
Average Width	Average Depth	Maximum Depth	Av. Bankfull Width	Bankfull Depth	Mean W/D Ratio	Bankfull Max Depth	Floodprone Area	Bankfull Width	Entrench. Ratio

Stream Drawing:



Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

Yes/No

- Is Stream Ephemeral (no pools, totally dry or only damp spots)?
- Is there water upstream? How Far: _____
- Is There Water Close Downstream? How Far: _____
- Is Dry Channel Mostly Natural?

***U.S. ARMY CORPS OF ENGINEERS, BUFFALO DISTRICT
FRENCH CREEK WATERSHED SURVEY***

FIELD NOTES AND PHOTOS

Stream Name and River Mile: Schwartz Ditch 0.3

Stream Segment Location: At Schwartz Park

QHEI Score: 35

HHEI Score: NA

FIELD NOTES: 10 SEP 2002

This stretch of Schwartz Ditch is located behind Schwartz Road Park. Macroinvertebrates, including crayfish, as well as frogs and minnows were noted. The substrate is mostly clay and silt. The incised ditch is 10' +/- wide and 20 cm +/- deep. A narrow riparian buffer is located on the north side, separating the ditch from the ball fields in the park. A wide (100'+) buffer was noted to the south. The forested buffer is dominated by American elm, green ash, northern arrowwood, silky dogwood, gray-stemmed dogwood, multiflora rose and boxelder.

PHOTOS:



1) Schwartz Ditch 0.3 – Facing upstream at Schwartz Park site



2) Schwartz Ditch 0.3 – Facing downstream at Schwartz Park site



Qualitative Habitat Evaluation Index Field Sheet QHEI Score: **35**

River Code: RM: D.3 Stream: SCHWARTZ DITCH
 Date: 9/10/02 Location: WITHIN SCHWARTZ ROAD PARK - NEAR FOOTBRIDGE
 Scorers Full Name: JAY MILLER Affiliation: USACE - BUFFALO

1) SUBSTRATE (Check ONLY Two Substrate TYPE BOXES; Estimate % present)

TYPE	POOL RIFFLE	POOL RIFFLE	SUBSTRATE ORIGIN	SUBSTRATE QUALITY	
<input type="checkbox"/> -BLDR /SLBS[10]	_____	<input type="checkbox"/> -GRAVEL [7]	<u>5</u> <u>15</u> Check ONE (OR 2 & AVERAGE)	Check ONE (OR 2 & AVERAGE)	
<input type="checkbox"/> -BOULDER [9]	_____	<input type="checkbox"/> -SAND [6]	<u>5</u> <u>5</u>	<input type="checkbox"/> -LIMESTONE [1] SILT:	<input checked="" type="checkbox"/> -SILT HEAVY [-2]
<input type="checkbox"/> -COBBLE [8]	<u>5</u> <u>15</u>	<input type="checkbox"/> -BEDROCK[5]	_____	<input checked="" type="checkbox"/> -TILLS [1]	<input type="checkbox"/> -SILT MODERATE [-1]
<input checked="" type="checkbox"/> -HARDPAN [4]	<u>40</u> <u>30</u>	<input type="checkbox"/> -DETRITUS[3]	_____	<input type="checkbox"/> -WETLANDS[0]	<input type="checkbox"/> -SILT NORMAL [0]
<input type="checkbox"/> -MUCK [2]	_____	<input type="checkbox"/> -ARTIFICIAL[0]	_____	<input checked="" type="checkbox"/> -HARDPAN [0]	<input type="checkbox"/> -SILT FREE [1]
<input checked="" type="checkbox"/> -SILT [2]	<u>45</u> <u>35</u>	NOTE: Ignore Sludge Originating From Point Sources		<input type="checkbox"/> -SANDSTONE [0] EMBEDDED	<input checked="" type="checkbox"/> -EXTENSIVE [-2]
				<input type="checkbox"/> -RIP/RAP [0] NESS:	<input type="checkbox"/> -MODERATE [-1]
				<input type="checkbox"/> -LACUSTRINE [0]	<input type="checkbox"/> -NORMAL [0]
				<input type="checkbox"/> -SHALE [-1]	<input type="checkbox"/> -NONE [1]
				<input type="checkbox"/> -COAL FINES [-2]	

NUMBER OF SUBSTRATE TYPES: 4 or More [2] 3 or Less [0]

COMMENTS: _____

Substrate
4 1/2
Max 20

2) INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure)	TYPE: Score All That Occur	AMOUNT: (Check ONLY One or check 2 and AVERAGE)	Cover
<u>0</u> UNDERCUT BANKS [1]	<u>0</u> POOLS > 70 cm [2]	<input type="checkbox"/> - EXTENSIVE > 75% [11]	9
<u>2</u> OVERHANGING VEGETATION [1]	<u>0</u> ROOTWADS [1]	<input type="checkbox"/> - MODERATE 25-75% [7]	Max 20
<u>2</u> SHALLOWS (IN SLOW WATER) [1]	<u>1</u> BOULDERS [1]	<input type="checkbox"/> - SPARSE 5-25% [3]	
<u>2</u> ROOTMATS [1]	COMMENTS: _____	<input type="checkbox"/> - NEARLY ABSENT < 5%[1]	

3) CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	Channel
<input type="checkbox"/> - HIGH [4]	<input type="checkbox"/> - EXCELLENT [7]	<input type="checkbox"/> - NONE [6]	<input type="checkbox"/> - HIGH [3]	<input type="checkbox"/> - SNAGGING	7
<input type="checkbox"/> - MODERATE [3]	<input type="checkbox"/> - GOOD [5]	<input type="checkbox"/> - RECOVERED [4]	<input type="checkbox"/> - MODERATE [2]	<input checked="" type="checkbox"/> - RELOCATION	Max 20
<input checked="" type="checkbox"/> - LOW [2]	<input type="checkbox"/> - FAIR [3]	<input checked="" type="checkbox"/> - RECOVERING [3]	<input checked="" type="checkbox"/> - LOW [1]	<input type="checkbox"/> - CANOPY REMOVAL	
<input type="checkbox"/> - NONE [1]	<input checked="" type="checkbox"/> - POOR [1]	<input type="checkbox"/> - RECENT OR NO RECOVERY [1]		<input type="checkbox"/> - DREDGING	
				<input checked="" type="checkbox"/> - ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

4) RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH	FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN)	BANK EROSION	Riparian
L R (Per Bank)	L R (Most Predominant Per Bank)	L R (Per Bank)	6 1/2
<input checked="" type="checkbox"/> - WIDE > 50m [4]	<input checked="" type="checkbox"/> -FOREST, SWAMP [3]	<input type="checkbox"/> -CONSERVATION TILLAGE [1]	Max 10
<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"/> - NARROW 5-10 m [2]	<input checked="" type="checkbox"/> -RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> -OPEN PASTURE, ROWCROP [0]	
<input checked="" type="checkbox"/> - VERY NARROW <5 m[1]	<input type="checkbox"/> -FENCED PASTURE [1]	<input type="checkbox"/> -MINING/CONSTRUCTION [0]	
<input type="checkbox"/> - NONE [0]			

COMMENTS: _____

5) POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)	MORPHOLOGY (Check 1 or 2 & AVERAGE)	CURRENT VELOCITY (Check All That Apply)	Pool/Current
<input type="checkbox"/> - >1m [6]	<input type="checkbox"/> -POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> -EDDIES[1]	3
<input type="checkbox"/> - 0.7-1m [4]	<input checked="" type="checkbox"/> -POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> -FAST[1]	Max 12
<input type="checkbox"/> - 0.4-0.7m [2]	<input type="checkbox"/> -POOL WIDTH < RIFFLE W. [0]	<input type="checkbox"/> -MODERATE [1]	
<input checked="" type="checkbox"/> - 0.2- 0.4m [1]		<input checked="" type="checkbox"/> -SLOW [1]	
<input type="checkbox"/> - < 0.2m [POOL=0]	COMMENTS: _____	<input type="checkbox"/> -VERY FAST[1]	

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS	Riffle/Run
<input type="checkbox"/> - Best Areas >10 cm [2]	<input type="checkbox"/> - MAX > 50 [2]	<input type="checkbox"/> -STABLE (e.g.,Cobble, Boulder) [2]	<input type="checkbox"/> - NONE [2]	1
<input checked="" type="checkbox"/> - Best Areas 5-10 cm[1]	<input checked="" type="checkbox"/> - MAX < 50[1]	<input type="checkbox"/> -MOD. STABLE (e.g.,Large Gravel) [1]	<input type="checkbox"/> - LOW [1]	Max 8
<input type="checkbox"/> - Best Areas < 5 cm [RIFFLE=0]		<input checked="" type="checkbox"/> -UNSTABLE (Fine Gravel,Sand) [0]	<input type="checkbox"/> - MODERATE [0]	Gradient
COMMENTS: _____		<input type="checkbox"/> - NO RIFFLE [Metric=0]	<input checked="" type="checkbox"/> - EXTENSIVE [-1]	4

6) GRADIENT (ft/mi): 3.7 DRAINAGE AREA (sq.mi.): 3.9

%POOL: 20 %GLIDE: 55
 %RIFFLE: 15 %RUN: 10

Is Sampling Reach Representative of the Stream (Y/N) ___ If Not, Explain:

- Major Suspected Sources of Impacts (Check All That Apply):
- None
 - Industrial
 - WWTP
 - Ag
 - Livestock
 - Silviculture
 - Construction
 - Urban Runoff
 - CSOs
 - Suburban Impacts
 - Mining
 - Channelization
 - Riparian Removal
 - Landfills
 - Natural
 - Dams
 - Other Flow Alteration
 - Other: _____

		Gear: _____	Distance: _____	Water Clarity: _____	Water Stage: _____	Canopy -% Open _____
First Sampling Pass	_____	_____	_____	_____	_____	_____

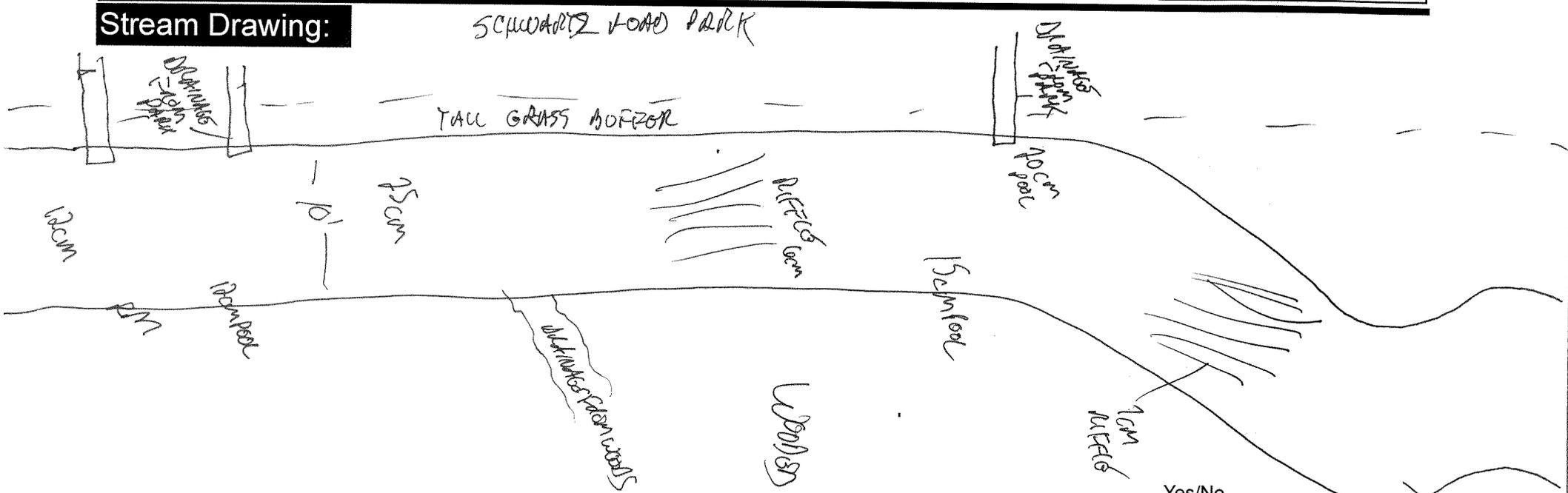
Stream Measurements:									
Average Width	Average Depth	Maximum Depth	Av. Bankfull Width	Bankfull Depth	Mean W/D Ratio	Bankfull Max Depth	Floodprone Area	Entrench. Width	Entrench. Ratio

Subjective Rating (1-10) - Low, - Moderate, - High

Aesthetic Rating (1-10) - Low, - Moderate, - High

Gradient: _____

Stream Drawing:



Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

- Yes/No
- Is Stream Ephemeral (no pools, totally dry or only damp spots)? 15cm pool
 - Is there water upstream? How Far: _____
 - Is There Water Close Downstream? How Far: _____
 - Is Dry Channel Mostly Natural?

***U.S. ARMY CORPS OF ENGINEERS, BUFFALO DISTRICT
FRENCH CREEK WATERSHED SURVEY***

FIELD NOTES AND PHOTOS

Stream Name and River Mile: Schwartz Ditch 0.52

Stream Segment Location: At Sandy Lane

QHEI Score: 40.5

HHEI Score: NA

FIELD NOTES: 10 SEP 2002

This stretch of Schwartz Ditch is located upstream (east) of Sandy Lane. The wide (>100') buffers are dominated by a green ash/red maple forest. The 12' wide 10-25 cm. deep creek channel has a mostly hardpan and silt substrate with lesser amounts of gravel, sand and cobbles. Several (3-4) PVC discharges are coming from nearby homes. A containment boom was noted floating in the ditch.

PHOTOS:



1) Schwartz Ditch 0.52 – Facing upstream from Sandy Lane Bridge



2) Schwartz Ditch 0.52 – Facing downstream towards bridge



Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 40.5

River Code: RM: 0.52 Stream: SCHWARTZ DITCH

Date: 9/10/07 Location: AT SANDY CREEK

Scorers Full Name: SAY MILLOR Affiliation: USACO - BUFFALO

1) SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present)

TYPE	POOL RIFFLE	POOL RIFFLE	SUBSTRATE ORIGIN	SUBSTRATE QUALITY
<input type="checkbox"/> -BLDR /SLBS[10] _____	<input type="checkbox"/> -GRAVEL [7] <u>10</u>	Check ONE (OR 2 & AVERAGE)		Check ONE (OR 2 & AVERAGE)
<input type="checkbox"/> -BOULDER [9] _____	<input type="checkbox"/> -SAND [6] <u>20</u>	<input type="checkbox"/> -LIMESTONE [1] _____	SILT:	<input checked="" type="checkbox"/> - SILT HEAVY [-2]
<input type="checkbox"/> -COBBLE [8] <u>10</u>	<input type="checkbox"/> -BEDROCK[5] _____	<input type="checkbox"/> -TILLS [1] _____	<input type="checkbox"/> -WETLANDS[0]	<input type="checkbox"/> -SILT MODERATE [-1]
<input checked="" type="checkbox"/> -HARDPAN [4] <u>30</u>	<input type="checkbox"/> -DETRITUS[3] _____	<input type="checkbox"/> -WETLANDS[0]	<input checked="" type="checkbox"/> -HARDPAN [0]	<input type="checkbox"/> -SILT NORMAL [0]
<input type="checkbox"/> -MUCK [2] _____	<input type="checkbox"/> -ARTIFICIAL[0] _____	<input checked="" type="checkbox"/> -SANDSTONE [0] EMBEDDED	<input checked="" type="checkbox"/> -SILT FREE [1] _____	<input checked="" type="checkbox"/> -EXTENSIVE [-2]
<input checked="" type="checkbox"/> -SILT [2] <u>30</u>	NOTE: Ignore Sludge Originating From Point Sources	<input type="checkbox"/> -RIP/RAP [0] _____	NESS:	<input type="checkbox"/> -MODERATE [-1]
NUMBER OF SUBSTRATE TYPES: <u>4 or More [2]</u>		<input type="checkbox"/> -LACUSTRINE [0] _____	<input type="checkbox"/> -SHALE [-1] _____	<input type="checkbox"/> -NONE [1] _____
(High Quality Only, Score 5 or >)		<input type="checkbox"/> -3 or Less [0] _____	<input type="checkbox"/> -COAL FINES [-2] _____	

4
 Substrate
 Max 20

2) INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure)	TYPE: Score All That Occur	AMOUNT: (Check ONLY One or check 2 and AVERAGE)
<u>1</u> UNDERCUT BANKS [1]	<u>1</u> POOLS > 70 cm [2]	<input type="checkbox"/> - EXTENSIVE > 75% [11]
<u>2</u> OVERHANGING VEGETATION [1]	<u>1</u> ROOTWADS [1]	<input type="checkbox"/> - MODERATE 25-75% [7]
<u>2</u> SHALLOWS (IN SLOW WATER) [1]	<u>0</u> BOULDERS [1]	<input type="checkbox"/> - SPARSE 5-25% [3]
<u>2</u> ROOTMATS [1]	COMMENTS: _____	<input type="checkbox"/> - NEARLY ABSENT < 5%[1]

11
 Cover
 Max 20

3) CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER
<input type="checkbox"/> - HIGH [4]	<input type="checkbox"/> - EXCELLENT [7]	<input type="checkbox"/> - NONE [6]	<input type="checkbox"/> - HIGH [3]	<input type="checkbox"/> - SNAGGING <input type="checkbox"/> - IMPOUND.
<input type="checkbox"/> - MODERATE [3]	<input type="checkbox"/> - GOOD [5]	<input type="checkbox"/> - RECOVERED [4]	<input type="checkbox"/> - MODERATE [2]	<input checked="" type="checkbox"/> -RELOCATION <input type="checkbox"/> - ISLANDS
<input checked="" type="checkbox"/> - LOW [2]	<input type="checkbox"/> - FAIR [3]	<input checked="" type="checkbox"/> -RECOVERING [3]	<input checked="" type="checkbox"/> - LOW [1]	<input type="checkbox"/> - CANOPY REMOVAL <input type="checkbox"/> - LEVEED
<input type="checkbox"/> - NONE [1]	<input checked="" type="checkbox"/> - POOR [1]	<input type="checkbox"/> - RECENT OR NO RECOVERY [1]		<input type="checkbox"/> - DREDGING <input type="checkbox"/> - BANK SHAPING
				<input checked="" type="checkbox"/> - ONE SIDE CHANNEL MODIFICATIONS

7
 Channel
 Max 20

COMMENTS: _____

4) RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH		FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN)		BANK EROSION	
L R (Per Bank)	L R (Most Predominant Per Bank)	L R	L R	L R (Per Bank)	L R (Per Bank)
<input checked="" type="checkbox"/> - WIDE > 50m [4]	<input checked="" type="checkbox"/> - FOREST, SWAMP [3]	<input type="checkbox"/> - CONSERVATION TILLAGE [1]	<input type="checkbox"/> - URBAN OR INDUSTRIAL [0]	<input type="checkbox"/> - NONE /LITTLE [3]	<input checked="" type="checkbox"/> - MODERATE [2]
<input type="checkbox"/> - MODERATE 10-50m [3]	<input type="checkbox"/> - SHRUB OR OLD FIELD [2]	<input type="checkbox"/> - OPEN PASTURE, ROWCROP [0]	<input type="checkbox"/> - MINING/CONSTRUCTION [0]	<input type="checkbox"/> - HEAVY/SEVERE [1]	
<input checked="" type="checkbox"/> - NARROW 5-10 m [2]	<input checked="" type="checkbox"/> - RESIDENTIAL, PARK, NEW FIELD [1]				
<input type="checkbox"/> - VERY NARROW <5 m[1]	<input type="checkbox"/> - FENCED PASTURE [1]				
<input type="checkbox"/> - NONE [0]					

7 1/2
 Riparian
 Max 10

COMMENTS: _____

5.) POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)	MORPHOLOGY (Check 1 or 2 & AVERAGE)	CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
<input type="checkbox"/> - >1m [6]	<input checked="" type="checkbox"/> - POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> - EDDIES [1] <input type="checkbox"/> - TORRENTIAL [-1]
<input checked="" type="checkbox"/> - 0.7-1m [4]	<input type="checkbox"/> - POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> - FAST [1] <input type="checkbox"/> - INTERSTITIAL [-1]
<input type="checkbox"/> - 0.4-0.7m [2]	<input type="checkbox"/> - POOL WIDTH < RIFFLE W. [0]	<input type="checkbox"/> - MODERATE [1] <input type="checkbox"/> - INTERMITTENT [-2]
<input type="checkbox"/> - 0.2- 0.4m [1]		<input checked="" type="checkbox"/> - SLOW [1] <input type="checkbox"/> - VERY FAST [1]
<input type="checkbox"/> - < 0.2m [POOL=0]	COMMENTS: _____	

7
 Pool/
 Current
 Max 12

6) GRADIENT (ft/mi): 3.7 DRAINAGE AREA (sq.mi.): 3.8

CHECK ONE OR CHECK 2 AND AVERAGE			
RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
<input type="checkbox"/> - Best Areas >10 cm [2]	<input type="checkbox"/> - MAX > 50 [2]	<input type="checkbox"/> - STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> - NONE [2]
<input type="checkbox"/> - Best Areas 5-10 cm [1]	<input type="checkbox"/> - MAX < 50 [1]	<input type="checkbox"/> - MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> - LOW [1]
<input type="checkbox"/> - Best Areas < 5 cm [RIFFLE=0]		<input type="checkbox"/> - UNSTABLE (Fine Gravel, Sand) [0]	<input type="checkbox"/> - MODERATE [0]
			<input type="checkbox"/> - EXTENSIVE [-1]

0
 Riffle/Run
 Max 8
4
 Gradient
 Max 10

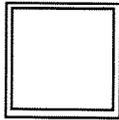
COMMENTS: _____

<input checked="" type="checkbox"/> - NO RIFFLE [Metric=0]	% POOL: 25	% GLIDE: 40
	% RIFFLE: -	% RUN: 35

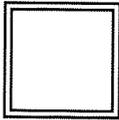
* Best areas must be large enough to support a population of riffle-obligate species

Is Sampling Reach Representative of the Stream (Y/N) ___ If Not, Explain: _____

- Major Suspected Sources of Impacts (Check All That Apply):
- None
 - Industrial
 - WWTP
 - Ag
 - Livestock
 - Silviculture
 - Construction
 - Urban Runoff
 - CSOs
 - Suburban Impacts
 - Mining
 - Channelization
 - Riparian Removal
 - Landfills
 - Natural
 - Dams
 - Other Flow Alteration
 - Other: _____



Subjective Rating (1-10)



Aesthetic Rating (1-10)

Gradient:

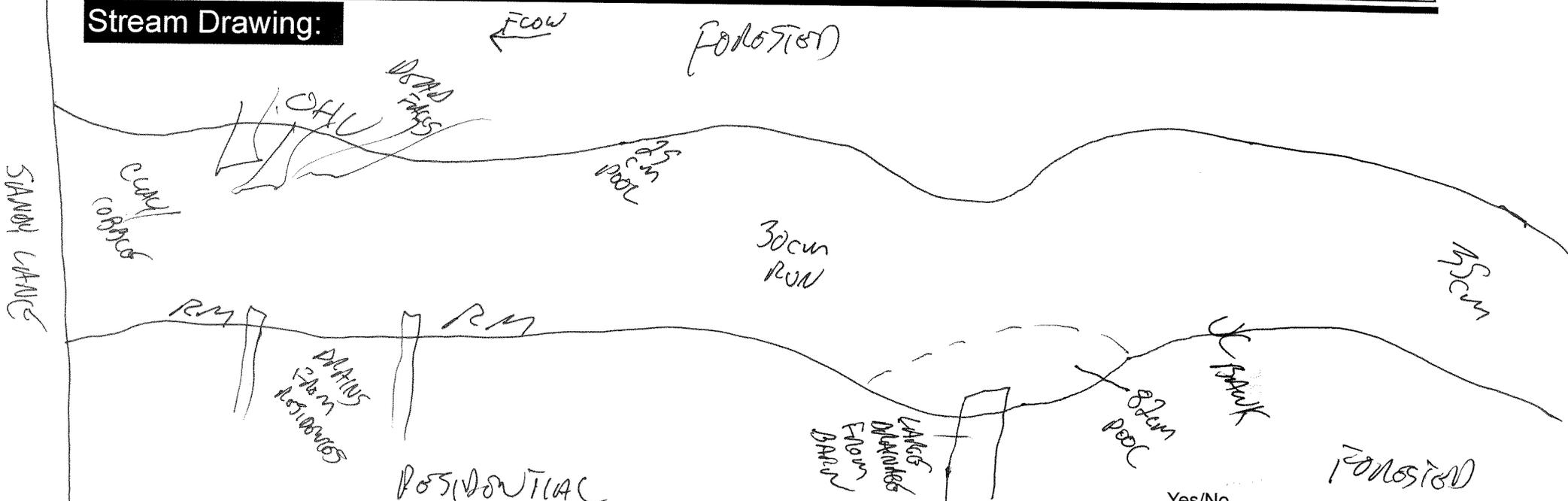
- Low, - Moderate, - High

Gear: _____ Distance: _____ Water Clarity: _____ Water Stage: _____ Canopy -% Open _____

First Sampling Pass _____

Stream Measurements:									
Average Width	Average Depth	Maximum Depth	Av. Bankfull Width	Bankfull Depth	Mean W/D Ratio	Bankfull Max Depth	Floodprone Area	Entrench. Width	Entrench. Ratio

Stream Drawing:



Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

- Yes/No
- Is Stream Ephemeral (no pools, totally dry or only damp spots)?
 - Is there water upstream? How Far: _____
 - Is There Water Close Downstream? How Far: _____
 - Is Dry Channel Mostly Natural?

***U.S. ARMY CORPS OF ENGINEERS, BUFFALO DISTRICT
FRENCH CREEK WATERSHED SURVEY***

FIELD NOTES AND PHOTOS

Stream Name and River Mile: Schwartz Ditch 0.71
Stream Segment Location: At Nagle Road
QHEI Score: 21.5 HHEI Score: NA

FIELD NOTES: 10 SEP 2002

This stretch of Schwartz Ditch is located upstream (east) of Nagle Road and is surrounded by new home construction. The Shaffer development [(440) 934-1119] is located to the south. The first 50' upstream of the bridge has been recently disturbed with some filling-in of the creek channel and a great potential for erosion (no silt curtains). This disturbance is the result of utility installations and the construction of a detention pond on the south side of the ditch. Several discharge pipes have been recently installed. Narrow vegetated buffers (5-10' wide) further upstream are dominated by hawthorn, green ash, gray-stemmed dogwood, silky dogwood, pin oak, red maple, and American basswood. A few macroinvertebrates as well as minnows and tadpoles were noted.

PHOTOS:



1) Schwartz Ditch 0.71 - Facing upstream from Nagle Road



2) Schwartz Ditch 0.71 – Facing downstream from end of sample



3) Schwartz Ditch 0.71 – Facing southeast along Nagle Road

River Code: RM: 0.71 Stream: SCHWARTZ DITCH
 Date: 9/10/02 Location: AT NAGEL ROAD
 Scorers Full Name: JAY MILLER Affiliation: USACE - BUFFALO

1] SUBSTRATE (Check ONLY Two Substrate TYPE BOXES; Estimate % present)

TYPE	POOL RIFFLE	POOL RIFFLE	SUBSTRATE ORIGIN	SUBSTRATE QUALITY
<input type="checkbox"/> -BLDR /SLBS [10]		<input type="checkbox"/> -GRAVEL [7]	Check ONE (OR 2 & AVERAGE)	
<input type="checkbox"/> -BOULDER [9] <u>5 5</u>		<input type="checkbox"/> -SAND [6] <u>10 10</u>	<input type="checkbox"/> -LIMESTONE [1]	SILT: <input checked="" type="checkbox"/> -SILT HEAVY [-2]
<input type="checkbox"/> -COBBLE [8] <u>5 5</u>		<input type="checkbox"/> -BEDROCK [5]	<input type="checkbox"/> -TILLS [1]	<input type="checkbox"/> -SILT MODERATE [-1]
<input checked="" type="checkbox"/> -HARDPAN [4] <u>30 30</u>		<input type="checkbox"/> -DETRITUS [3]	<input type="checkbox"/> -WETLANDS [0]	<input type="checkbox"/> -SILT NORMAL [0]
<input type="checkbox"/> -MUCK [2]		<input type="checkbox"/> -ARTIFICIAL [0]	<input checked="" type="checkbox"/> -HARDPAN [0]	<input type="checkbox"/> -SILT FREE [1]
<input checked="" type="checkbox"/> -SILT [2] <u>50 50</u>		NOTE: Ignore Sludge Originating From Point Sources		<input checked="" type="checkbox"/> -EXTENSIVE [-2]
			<input type="checkbox"/> -SANDSTONE [0] EMBEDDED	<input type="checkbox"/> -MODERATE [-1]
			<input type="checkbox"/> -RIP/RAP [0] NESS:	<input type="checkbox"/> -NORMAL [0]
			<input type="checkbox"/> -LACUSTRINE [0]	<input type="checkbox"/> -NONE [1]
			<input type="checkbox"/> -SHALE [-1]	
			<input type="checkbox"/> -COAL FINES [-2]	

NUMBER OF SUBSTRATE TYPES: 4 or More [2] 3 or Less [0]

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure)	TYPE: Score All That Occur	AMOUNT: (Check ONLY One or check 2 and AVERAGE)	Cover
<u>0</u> UNDERCUT BANKS [1]	<u>0</u> POOLS > 70 cm [2]	<u>0</u> OXBOWS, BACKWATERS [1]	8 Max 20
<u>2</u> OVERHANGING VEGETATION [1]	<u>0</u> ROOTWADS [1]	<u>0</u> AQUATIC MACROPHYTES [1]	
<u>2</u> SHALLOWS (IN SLOW WATER) [1]	<u>1</u> BOULDERS [1]	<u>1</u> LOGS OR WOODY DEBRIS [1]	
<u>2</u> ROOTMATS [1]	COMMENTS: _____		
		<input type="checkbox"/> - EXTENSIVE > 75% [11] <input type="checkbox"/> - MODERATE 25-75% [7] <input type="checkbox"/> - SPARSE 5-25% [3] <input type="checkbox"/> - NEARLY ABSENT < 5% [1]	

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	Channel
<input type="checkbox"/> - HIGH [4]	<input type="checkbox"/> - EXCELLENT [7]	<input type="checkbox"/> - NONE [6]	<input type="checkbox"/> - HIGH [3]	<input type="checkbox"/> - SNAGGING <input type="checkbox"/> - IMPOUND.	4 Max 20
<input type="checkbox"/> - MODERATE [3]	<input type="checkbox"/> - GOOD [5]	<input type="checkbox"/> - RECOVERED [4]	<input type="checkbox"/> - MODERATE [2]	<input checked="" type="checkbox"/> - RELOCATION <input type="checkbox"/> - ISLANDS	
<input type="checkbox"/> - LOW [2]	<input type="checkbox"/> - FAIR [3]	<input type="checkbox"/> - RECOVERING [3]	<input checked="" type="checkbox"/> - LOW [1]	<input checked="" type="checkbox"/> - CANOPY REMOVAL <input type="checkbox"/> - LEVEED	
<input checked="" type="checkbox"/> - NONE [1]	<input checked="" type="checkbox"/> - POOR [1]	<input checked="" type="checkbox"/> - RECENT OR NO RECOVERY [1]		<input type="checkbox"/> - DREDGING <input checked="" type="checkbox"/> - BANK SHAPING	
				<input checked="" type="checkbox"/> - ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

4] RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH		FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN)		BANK EROSION	Riparian
L R (Per Bank)	L R (Most Predominant Per Bank)	L R	L R	L R (Per Bank)	
<input type="checkbox"/> - WIDE > 50m [4]	<input type="checkbox"/> - FOREST, SWAMP [3]	<input type="checkbox"/> - CONSERVATION TILLAGE [1]	<input type="checkbox"/> - URBAN OR INDUSTRIAL [0]	<input type="checkbox"/> - NONE/LITTLE [3]	3 1/2 Max 10
<input type="checkbox"/> - MODERATE 10-50m [3]	<input type="checkbox"/> - SHRUB OR OLD FIELD [2]	<input type="checkbox"/> - OPEN PASTURE, ROWCROP [0]	<input checked="" type="checkbox"/> - MINING/CONSTRUCTION [0]	<input checked="" type="checkbox"/> - MODERATE [2]	
<input type="checkbox"/> - NARROW 5-10 m [2]	<input checked="" type="checkbox"/> - RESIDENTIAL, PARK, NEW FIELD [1]			<input type="checkbox"/> - HEAVY/SEVERE [1]	
<input checked="" type="checkbox"/> - VERY NARROW < 5m [1]	<input type="checkbox"/> - FENCED PASTURE [1]				
<input type="checkbox"/> - NONE [0]					

COMMENTS: _____

5.] POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH	MORPHOLOGY	CURRENT VELOCITY [POOLS & RIFFLES!]	Pool/Current
(Check 1 ONLY!)	(Check 1 or 2 & AVERAGE)	(Check All That Apply)	
<input type="checkbox"/> - >1m [6]	<input type="checkbox"/> - POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> - EDDIES [1] <input type="checkbox"/> - TORRENTIAL [-1]	0 Max 12
<input type="checkbox"/> - 0.7-1m [4]	<input type="checkbox"/> - POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> - FAST [1] <input type="checkbox"/> - INTERSTITIAL [-1]	
<input type="checkbox"/> - 0.4-0.7m [2]	<input type="checkbox"/> - POOL WIDTH < RIFFLE W. [0]	<input type="checkbox"/> - MODERATE [1] <input type="checkbox"/> - INTERMITTENT [-2]	
<input type="checkbox"/> - 0.2-0.4m [1]		<input type="checkbox"/> - SLOW [1] <input type="checkbox"/> - VERY FAST [1]	
<input checked="" type="checkbox"/> - < 0.2m [POOL=0]	COMMENTS: _____		

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS	Riffle/Run
<input type="checkbox"/> - Best Areas >10 cm [2]	<input type="checkbox"/> - MAX > 50 [2]	<input type="checkbox"/> - STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> - NONE [2]	0 Max 8
<input type="checkbox"/> - Best Areas 5-10 cm [1]	<input type="checkbox"/> - MAX < 50 [1]	<input type="checkbox"/> - MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> - LOW [1]	
<input checked="" type="checkbox"/> - Best Areas < 5 cm [RIFFLE=0]		<input type="checkbox"/> - UNSTABLE (Fine Gravel, Sand) [0]	<input type="checkbox"/> - MODERATE [0]	4 Max 10
COMMENTS: _____		<input type="checkbox"/> - NO RIFFLE [Metric=0]	<input type="checkbox"/> - EXTENSIVE [-1]	

6] GRADIENT (ft/mi): 3.7 DRAINAGE AREA (sq.mi.): 3.7

%POOL: 20 %GLIDE: 50
 %RIFFLE: 10 %RUN: 20

* Best areas must be large enough to support a population of riffle-obligate species

Is Sampling Reach Representative of the Stream (Y/N) ___ If Not, Explain:

- Major Suspected Sources of Impacts (Check All That Apply):
- None
 - Industrial
 - WWTP
 - Ag
 - Livestock
 - Silviculture
 - Construction
 - Urban Runoff
 - CSOs
 - Suburban Impacts
 - Mining
 - Channelization
 - Riparian Removal
 - Landfills
 - Natural
 - Dams
 - Other Flow Alteration
 - Other: _____

Subjective Rating (1-10)

Aesthetic Rating (1-10)

Gradient:

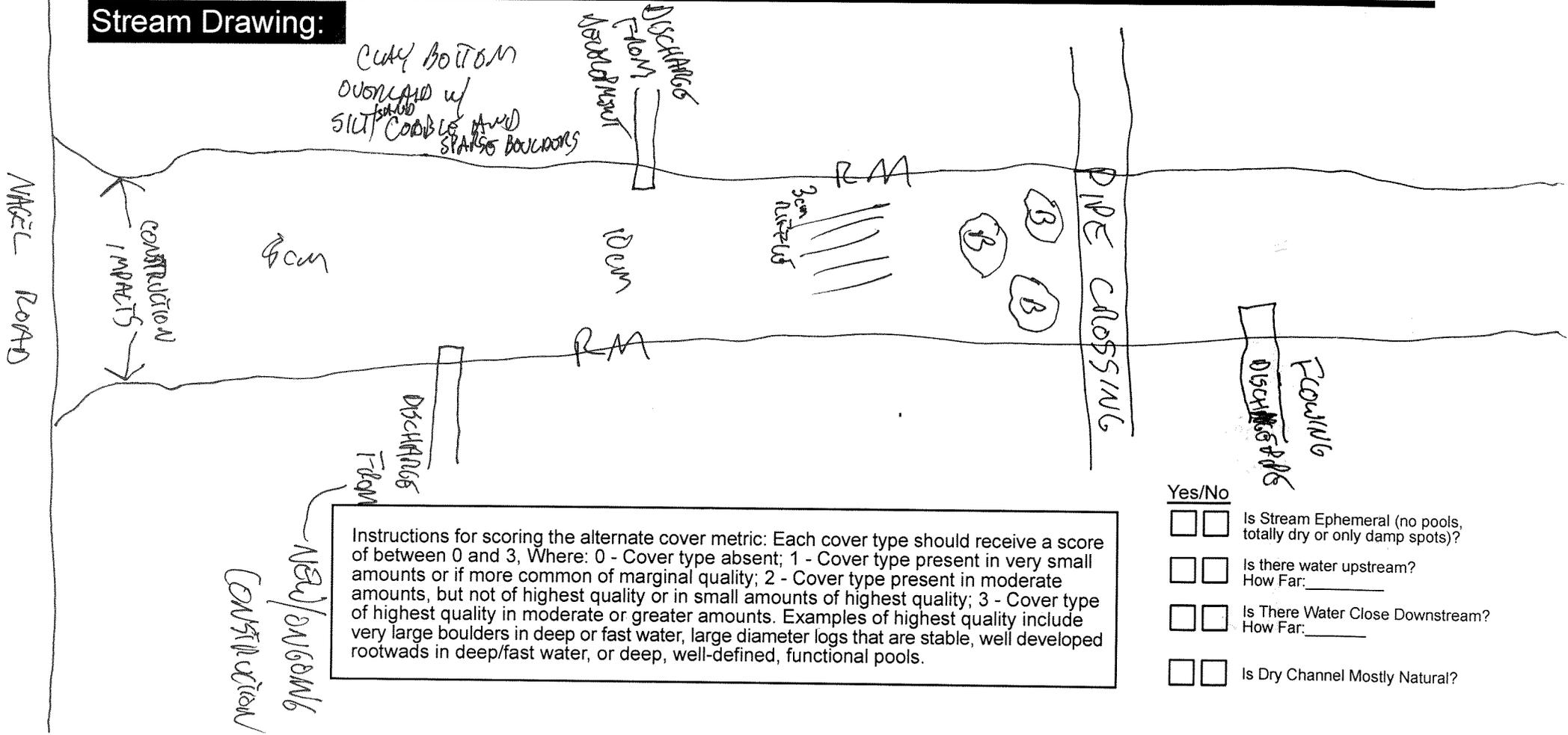
- Low, - Moderate, - High

Gear: _____ Distance: _____ Water Clarity: _____ Water Stage: _____ Canopy -% Open _____

First Sampling Pass _____

Stream Measurements:										
Average Width	Average Depth	Maximum Depth	Av. Bankfull Width	Bankfull Depth	Mean W/D Ratio	Bankfull Max Depth	Floodprone Area	Entrench. Ratio		

Stream Drawing:



Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

- Yes/No
- Is Stream Ephemeral (no pools, totally dry or only damp spots)?
 - Is there water upstream? How Far: _____
 - Is There Water Close Downstream? How Far: _____
 - Is Dry Channel Mostly Natural?