

Stream & Location: Euclid Creek - DS of Mayfield Road

RM: 6.90 Date: 09/25/14

Knithe, Zamborsky, Anusdon Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: STORET #: Lat./ Long.: 41.5196 181.5115 Office verified location

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

Substrate assessment table with categories: BEST TYPES, OTHER TYPES, POOL RIFFLE, ORIGIN, QUALITY. Includes checkboxes for BLDR/SLABS, BOULDER, COBBLE, GRAVEL, SAND, BEDROCK, etc. and a score of 16.5.

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.

Instream Cover assessment table with categories: UNDERCUT BANKS, OVERHANGING VEGETATION, SHALLOWS, ROOTMATS, POOLS > 70cm, ROOTWADS, BOULDERS, OXBOWS, BACKWATERS, AQUATIC MACROPHYTES, LOGS OR WOODY DEBRIS. Includes checkboxes and a score of 11.

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

Channel Morphology assessment table with categories: SINUOSITY, DEVELOPMENT, CHANNELIZATION, STABILITY. Includes checkboxes for HIGH, MODERATE, LOW, NONE and a score of 12.

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

Bank Erosion and Riparian Zone assessment table with categories: EROSION, RIPARIAN WIDTH, FLOOD PLAIN QUALITY. Includes checkboxes for NONE, MODERATE, HEAVY/SEVERE and a score of 7.5.

5) POOL / GLIDE AND RIFFLE / RUN QUALITY

Pool / Glide and Riffle / Run Quality assessment table with categories: MAXIMUM DEPTH, CHANNEL WIDTH, CURRENT VELOCITY. Includes checkboxes for depth and velocity and a score of 6.

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

Riffle / Run Quality assessment table with categories: RIFFLE DEPTH, RUN DEPTH, RIFFLE / RUN SUBSTRATE, RIFFLE / RUN EMBEDDEDNESS. Includes checkboxes for riffle characteristics and a score of 4.

6) GRADIENT (19.6 ft/mi)

Gradient assessment table with categories: DRAINAGE AREA (3.90 mi^2), GRADIENT (VERY LOW, MODERATE, HIGH), POOL, GLIDE, RUN, RIFFLE percentages. Includes a score of 10.

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

### AJ 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

- < 20 cm
- 20-40 cm
- 40-70 cm
- > 70 cm/CTB
- SECCHI DEPTH

meters

#### CANOPY

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

#### CJ RECREATION

- AREA DEPTH
- POOL:  >100ft?  >3ft

#### BJAESTHETICS

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/SSOs/OUTFALLS

#### DJ 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

#### EJ 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

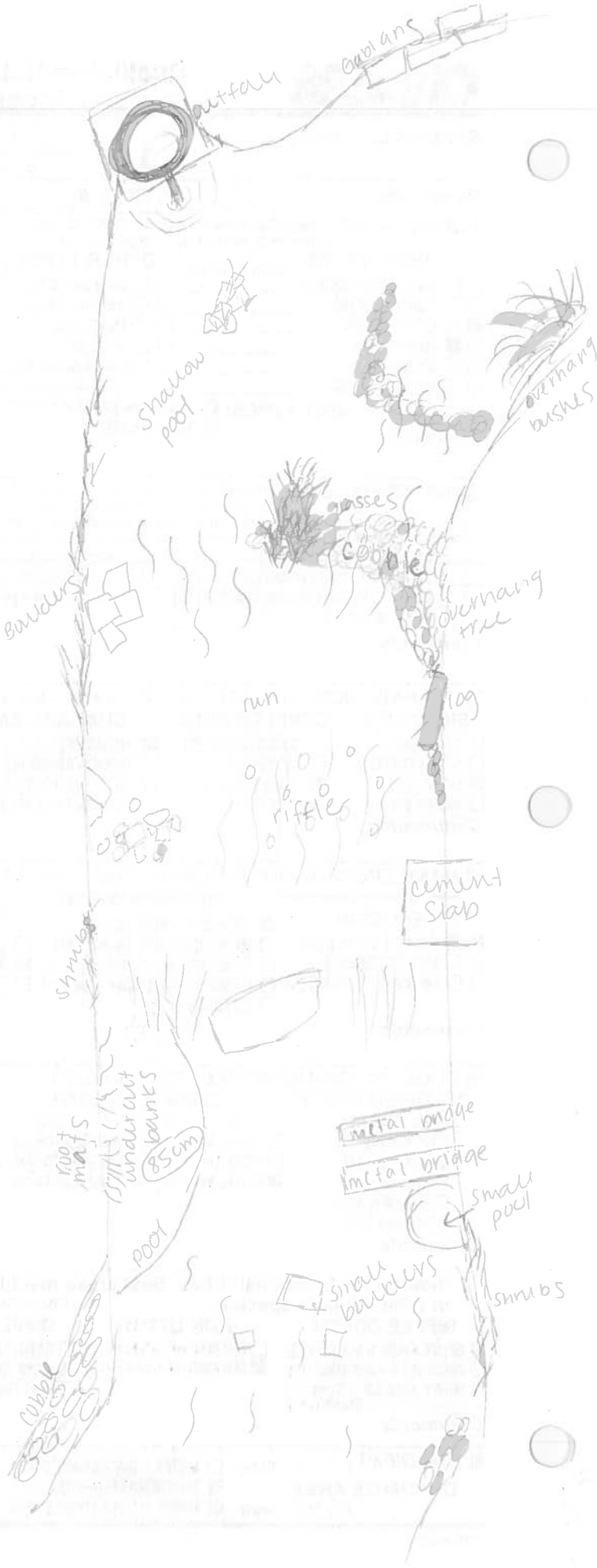
#### FJ MEASUREMENTS

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

Legacy Tree:

### Stream Drawing:

FLOW





# Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 64.5

GOOD

Stream & Location: Eucled Creek - US rd on the left a Branch RM: 3.30 Date: 01/15/14

Whittle / Fiedman Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: - - - STORET #: - - - Lat./ Long.: 41.5612 181.5315 Office verified location

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

<b>BEST TYPES</b>		<b>POOL RIFFLE</b>	<b>OTHER TYPES</b>		<b>POOL RIFFLE</b>	<b>ORIGIN</b>		<b>QUALITY</b>	
<input type="checkbox"/> BLD / SLABS [10]	<input type="checkbox"/> BOULDER [9]	<input type="checkbox"/>	<input type="checkbox"/> HARDPAN [4]	<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/>	<input type="checkbox"/> LIMESTONE [1]	<input type="checkbox"/> TILLS [1]	<input type="checkbox"/> HEAVY [-2]	<input type="checkbox"/> MODERATE [-1]
<input type="checkbox"/> COBBLE [8]	<input type="checkbox"/> GRAVEL [7]	<input checked="" type="checkbox"/>	<input type="checkbox"/> MUCK [2]	<input type="checkbox"/> SILT [2]	<input type="checkbox"/>	<input type="checkbox"/> WETLANDS [0]	<input type="checkbox"/> HARDPAN [0]	<input checked="" type="checkbox"/> NORMAL [0]	<input type="checkbox"/> FREE [1]
<input type="checkbox"/> SAND [6]	<input type="checkbox"/> BEDROCK [5]	<input checked="" type="checkbox"/>	<input type="checkbox"/> ARTIFICIAL [0]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> SANDSTONE [0]	<input type="checkbox"/> RIP/RAP [0]	<input type="checkbox"/> EXTENSIVE [-2]	<input type="checkbox"/> MODERATE [-1]
<b>NUMBER OF BEST TYPES:</b> <input checked="" type="checkbox"/> 4 or more [2] <input type="checkbox"/> 3 or less [0]									

Comments: 3 or less [0]

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.

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

Comments: 1

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

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

Comments: 1

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

<b>EROSION</b>		<b>RIPARIAN WIDTH</b>		<b>FLOOD PLAIN QUALITY</b>		<b>CONSERVATION TILLAGE</b>	
<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"/> NARROW 5-10m [2]	<input type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> NONE [0]	<input type="checkbox"/> FOREST, SWAMP [3]
<input type="checkbox"/> MODERATE [2]	<input type="checkbox"/> HEAVY / SEVERE [1]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input checked="" type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> FENCED PASTURE [1]	<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]	<input type="checkbox"/> CONSERVATION TILLAGE [1]	<input type="checkbox"/> URBAN OR INDUSTRIAL [0]

Comments: 2.79

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

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

Comments: 10

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average).

<b>RIFFLE DEPTH</b>	<b>RUN DEPTH</b>	<b>RIFFLE / RUN SUBSTRATE</b>	<b>RIFFLE / RUN EMBEDDEDNESS</b>
<input checked="" type="checkbox"/> BEST AREAS > 10cm [2]	<input checked="" type="checkbox"/> MAXIMUM > 50cm [2]	<input checked="" 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 checked="" 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]

Comments: 7

6) **GRADIENT** 47.60 ft/mi)  VERY LOW - LOW [2-4]  MODERATE [6-10]  HIGH - VERY HIGH [10-6]

**DRAINAGE AREA** (9.10) mi<sup>2</sup>

%POOL:  %GLIDE:

%RUN:  %RIFFLE:

**Gradient** Maximum 10 4

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

**AJ SAMPLED REACH**

Check ALL that apply

**METHOD**

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

**CLARITY**

- 0.5 Km
  - 0.2 Km
  - 0.15 Km
  - 0.12 Km
  - OTHER
- 1st --sample pass-- 2nd
- < 20 cm
  - 20-<40 cm
  - 40-70 cm
  - > 70 cm/ CTB
  - SECCHI DEPTH

meters

**CANOPY**

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

**CJ RECREATION**

AREA DEPTH

POOL:  >100ft<sup>2</sup>  >3ft

**BJ AESTHETICS**

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/SSOs/OUTFALLS

**DJ 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

**EJ 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

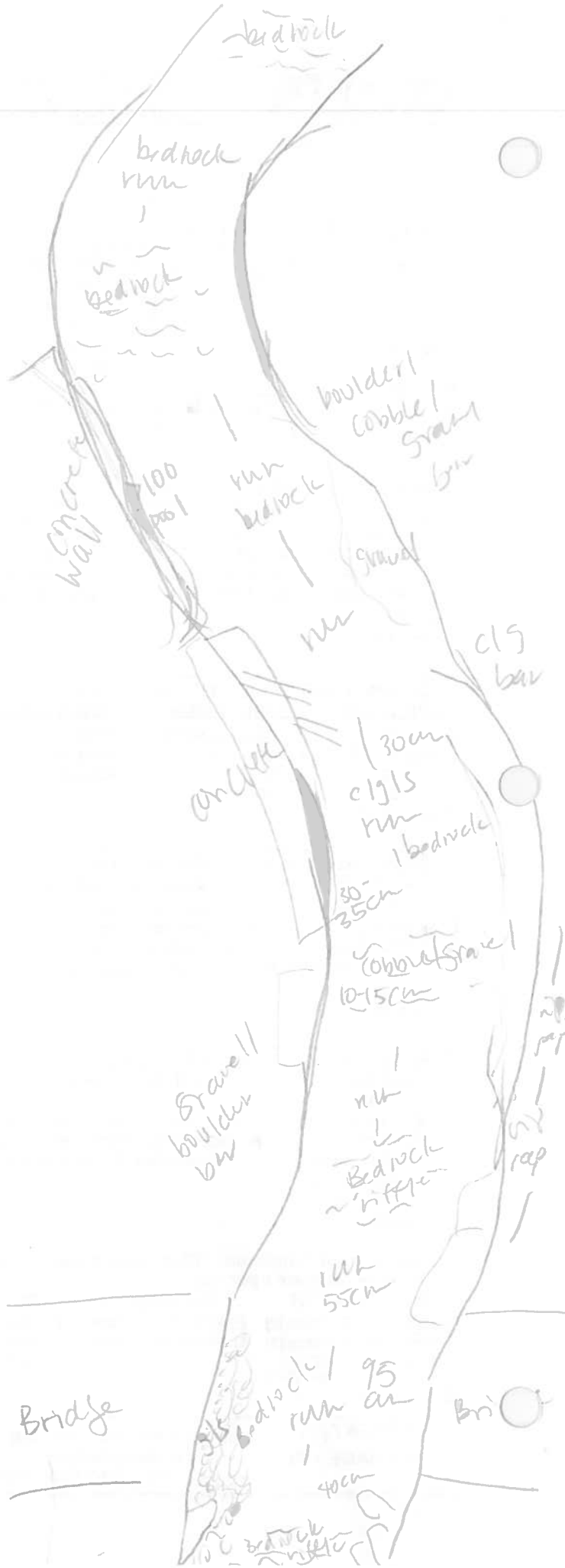
**FJ MEASUREMENTS**

- $\bar{x}$  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:**

← FLOW



**Stream & Location:** Euclid Creek East Branch - Ds. Richmond Rd. **RM:** 2.80 **Date:** 09/15/14  
 (Knittle) Friedman

**River Code:** - - - **STORET #:** - - - **Lat./Long.:** 41.5743 181.4948 **Office verified location**

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

<b>BEST TYPES</b>		<b>POOL RIFFLE</b>		<b>OTHER TYPES</b>		<b>POOL RIFFLE</b>		<b>ORIGIN</b>		<b>QUALITY</b>	
<input type="checkbox"/> BLDR / SLABS [10]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> HARDPAN [4]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> LIMESTONE [1]	<input type="checkbox"/>	<input type="checkbox"/> HEAVY [-2]	13 Maximum 20
<input type="checkbox"/> BOULDER [9]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> SILT	<input type="checkbox"/> MODERATE [-1]	13 Maximum 20	
<input type="checkbox"/> COBBLE [8]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> MUCK [2]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> WETLANDS [0]	<input checked="" type="checkbox"/> NORMAL [0]		
<input type="checkbox"/> GRAVEL [7]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> SILT [2]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> HARDPAN [0]	<input type="checkbox"/> FREE [1]		
<input type="checkbox"/> SAND [6]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> ARTIFICIAL [0]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> SANDSTONE [0]	<input type="checkbox"/> EXTENSIVE [-2]		
<input checked="" type="checkbox"/> BEDROCK [5]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	(Score natural substrates; ignore sludge from point-sources)				<input type="checkbox"/> RIP/RAP [0]	<input type="checkbox"/> MODERATE [-1]		
<b>NUMBER OF BEST TYPES:</b> <input checked="" type="checkbox"/> 4 or more <input type="checkbox"/> 3 or less <input type="checkbox"/> 0								<input type="checkbox"/> LACUSTURINE [0]	<input checked="" type="checkbox"/> NORMAL [0]		

**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.

<b>UNDERCUT BANKS</b> [1]	<b>POOLS &gt; 70cm</b> [2]	<b>OXBOWS, BACKWATERS</b> [1]	13 Cover Maximum 20
<b>OVERHANGING VEGETATION</b> [1]	<b>ROOTWADS</b> [1]	<b>AQUATIC MACROPHYTES</b> [1]	
<b>SHALLOWS (IN SLOW WATER)</b> [1]	<b>BOULDERS</b> [1]	<b>LOGS OR WOODY DEBRIS</b> [1]	
<b>ROOTMATS</b> [1]			

**Comments**

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

<b>SINUOSITY</b>	<b>DEVELOPMENT</b>	<b>CHANNELIZATION</b>	<b>STABILITY</b>	15 Channel Maximum 20
<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"/> MODERATE [3]	<input checked="" type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input type="checkbox"/> MODERATE [2]	
<input checked="" type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]	

**Comments**

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

<b>EROSION</b>	<b>RIPARIAN WIDTH</b>	<b>FLOOD PLAIN QUALITY</b>	7.25 Riparian Maximum 10
<input checked="" type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]	
<input type="checkbox"/> MODERATE [2]	<input checked="" type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	
<input type="checkbox"/> HEAVY / SEVERE [1]	<input type="checkbox"/> NARROW 5-10m [2]	<input checked="" type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	

**Comments**

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

<b>MAXIMUM DEPTH</b>	<b>CHANNEL WIDTH</b>	<b>CURRENT VELOCITY</b>	10 Pool / Current Maximum 12
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	
<input checked="" type="checkbox"/> > 1m [6]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	
<input type="checkbox"/> 0.7-<1m [4]	<input checked="" type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input checked="" type="checkbox"/> SLOW [1]	

**Comments**

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average).  NO RIFFLE [metric=0]

<b>RIFFLE DEPTH</b>	<b>RUN DEPTH</b>	<b>RIFFLE / RUN SUBSTRATE</b>	<b>RIFFLE / RUN EMBEDDEDNESS</b>	7 Riffle / Run Maximum 8
<input checked="" type="checkbox"/> BEST AREAS > 10cm [2]	<input checked="" type="checkbox"/> MAXIMUM > 50cm [2]	<input checked="" 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 checked="" 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]	

**Comments**

**6) GRADIENT** (166.70 ft/mi)  VERY LOW - LOW [2-4] **%POOL:**  **%GLIDE:**   
**DRAINAGE AREA** (7.05 mi<sup>2</sup>)  MODERATE [6-10] **%RUN:**  **%RIFFLE:**   
 HIGH - VERY HIGH [10-6] **Gradient Maximum** 10

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

**AJ SAMPLED REACH**

Check ALL that apply

**METHOD**

- BOAT
- WADE
- L. LINE
- OTHER
- DISTANCE**
- 0.5 Km
- 0.2 Km
- 0.15 Km
- 0.12 Km
- OTHER

**STAGE**

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

**CLARITY**

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

meters

**CANOPY**

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

**CJ RECREATION**

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

**BJ AESTHETICS**

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/SSOs/OUTFALLS

**DJ 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
- IMPOUND / DESICCATED
- FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

**EJ ISSUES**

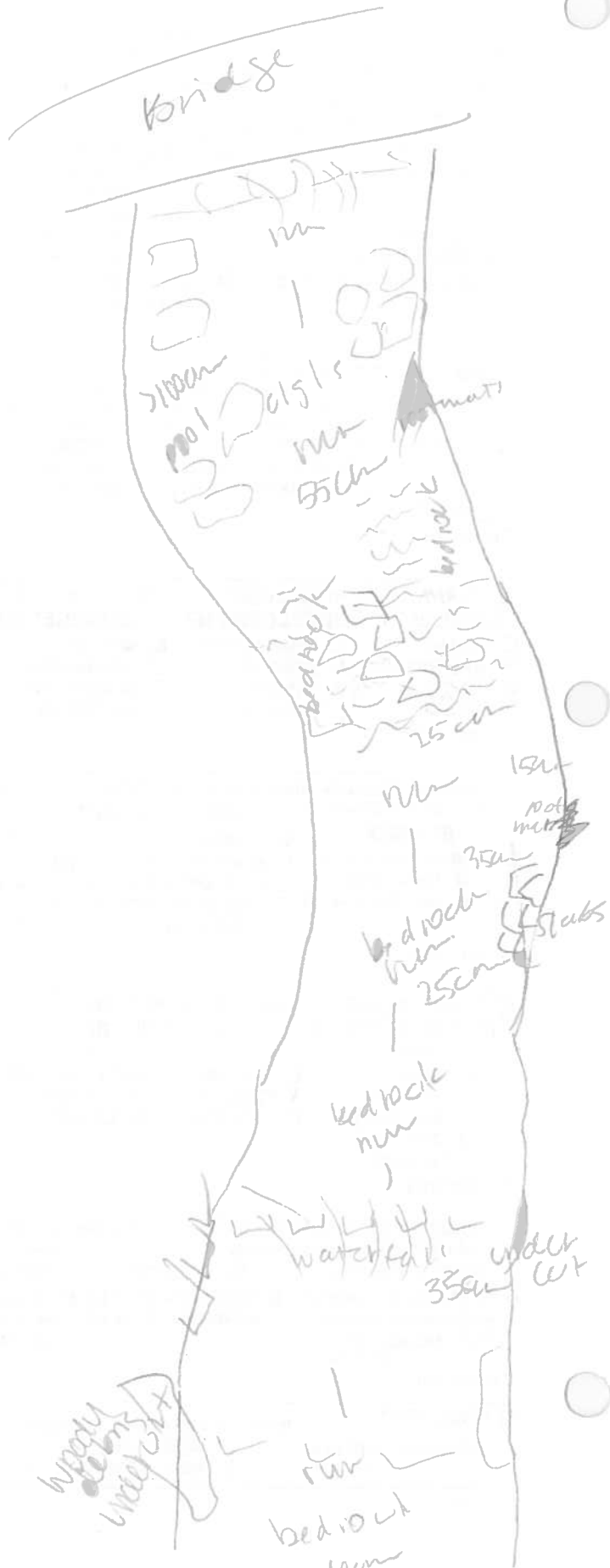
- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT&GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H<sub>2</sub>O / TILE / H<sub>2</sub>O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL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

**FJ 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:**

← FLOW





**Stream & Location:** Eucled Creek upstre Highland Rd **RM:** 2.70 **Date:** 8/28/14  
**Scorers Full Name & Affiliation:** Zablotny Tom Northeast Ohio Regional Sewer District  
**River Code:** \_\_\_\_\_ **STORET #:** \_\_\_\_\_ **Lat./ Long.:** 41.5458 78.5358 (NAD 83 - declm) **Office verified location**

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

<p><b>BEST TYPES</b></p> <input type="checkbox"/> BLDR / SLABS [10] <input type="checkbox"/> BOULDER [9] <input type="checkbox"/> COBBLE [8] <input checked="" type="checkbox"/> GRAVEL [7] <input type="checkbox"/> SAND [6] <input checked="" type="checkbox"/> BEDROCK [5]	<p><b>POOL RIFFLE</b></p> <input checked="" type="checkbox"/> POOL <input checked="" type="checkbox"/> RIFFLE	<p><b>OTHER TYPES</b></p> <input type="checkbox"/> HARDPAN [4] <input type="checkbox"/> DETRITUS [3] <input type="checkbox"/> MUCK [2] <input type="checkbox"/> SILT [2] <input type="checkbox"/> ARTIFICIAL [0]	<p><b>POOL RIFFLE</b></p> <input type="checkbox"/> POOL <input type="checkbox"/> RIFFLE	<p><b>ORIGIN</b></p> <input type="checkbox"/> LIMESTONE [1] <input checked="" type="checkbox"/> TILLS [1] <input type="checkbox"/> WETLANDS [0] <input type="checkbox"/> HARDPAN [0] <input type="checkbox"/> SANDSTONE [0] <input type="checkbox"/> RIP/RAP [0] <input type="checkbox"/> LACUSTURINE [0] <input type="checkbox"/> SHALE [-1] <input type="checkbox"/> COAL FINES [-2]	<p><b>QUALITY</b></p> <input type="checkbox"/> HEAVY [-2] <input type="checkbox"/> MODERATE [-1] <input checked="" type="checkbox"/> NORMAL [0] <input type="checkbox"/> FREE [1] <input type="checkbox"/> EXTENSIVE [-2] <input type="checkbox"/> MODERATE [-1] <input checked="" type="checkbox"/> NORMAL [0] <input type="checkbox"/> NONE [1]	<p><b>Substrate</b></p> <div style="border: 1px solid black; border-radius: 10px; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 10px;"> <span style="font-size: 24px; font-weight: bold;">15</span> </div> <p>Maximum 20</p>
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**NUMBER OF BEST TYPES:**  4 or more [2]  3 or less [0] (Score natural substrates; ignore sludge from point-sources)

**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.

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

**Comments**

**Cover** 10 Maximum 20

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

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

**Channel** 13 Maximum 20

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

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

**Riparian** 7 Maximum 10

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

<p><b>MAXIMUM DEPTH</b></p> <p>Check ONE (ONLY!)</p> <input type="checkbox"/> > 1m [6] <input checked="" type="checkbox"/> 0.7-1m [4] <input type="checkbox"/> 0.4-0.7m [2] <input type="checkbox"/> 0.2-0.4m [1] <input type="checkbox"/> < 0.2m [0]	<p><b>CHANNEL WIDTH</b></p> <p>Check ONE (Or 2 &amp; average)</p> <input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2] <input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1] <input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<p><b>CURRENT VELOCITY</b></p> <p>Check ALL that apply</p> <input type="checkbox"/> TORRENTIAL [-1] <input type="checkbox"/> VERY FAST [1] <input checked="" type="checkbox"/> FAST [1] <input checked="" type="checkbox"/> MODERATE [1]	<p><b>Recreation Potential</b></p> <p><b>Primary Contact</b></p> <p><b>Secondary Contact</b></p> <p><small>(circle one and comment on back)</small></p>
		<p><input checked="" type="checkbox"/> SLOW [1]  <input type="checkbox"/> INTERSTITIAL [-1]  <input type="checkbox"/> INTERMITTENT [-2]  <input type="checkbox"/> EDDIES [1]</p> <p><small>Indicate for reach - pools and riffles.</small></p>	<p><b>Pool / Current</b></p> <div style="border: 1px solid black; border-radius: 10px; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 10px;"> <span style="font-size: 24px; font-weight: bold;">9</span> </div> <p>Maximum 12</p>

**Comments**

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:  NO RIFFLE [metric=0]

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

**Riffle / Run** 5 Maximum 8

**6) GRADIENT** (69.2 ft/ml)  VERY LOW - LOW [2-4]  
 DRAINAGE AREA (21,40 ml<sup>2</sup>)  MODERATE [6-10]  
 HIGH - VERY HIGH [10-6]

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

**Gradient** 4 Maximum 10

**AJ 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

**BJ AESTHETICS**

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/SSOs/OUTFALLS

**DJ 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

**EJ 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

**FJ MEASUREMENTS**

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

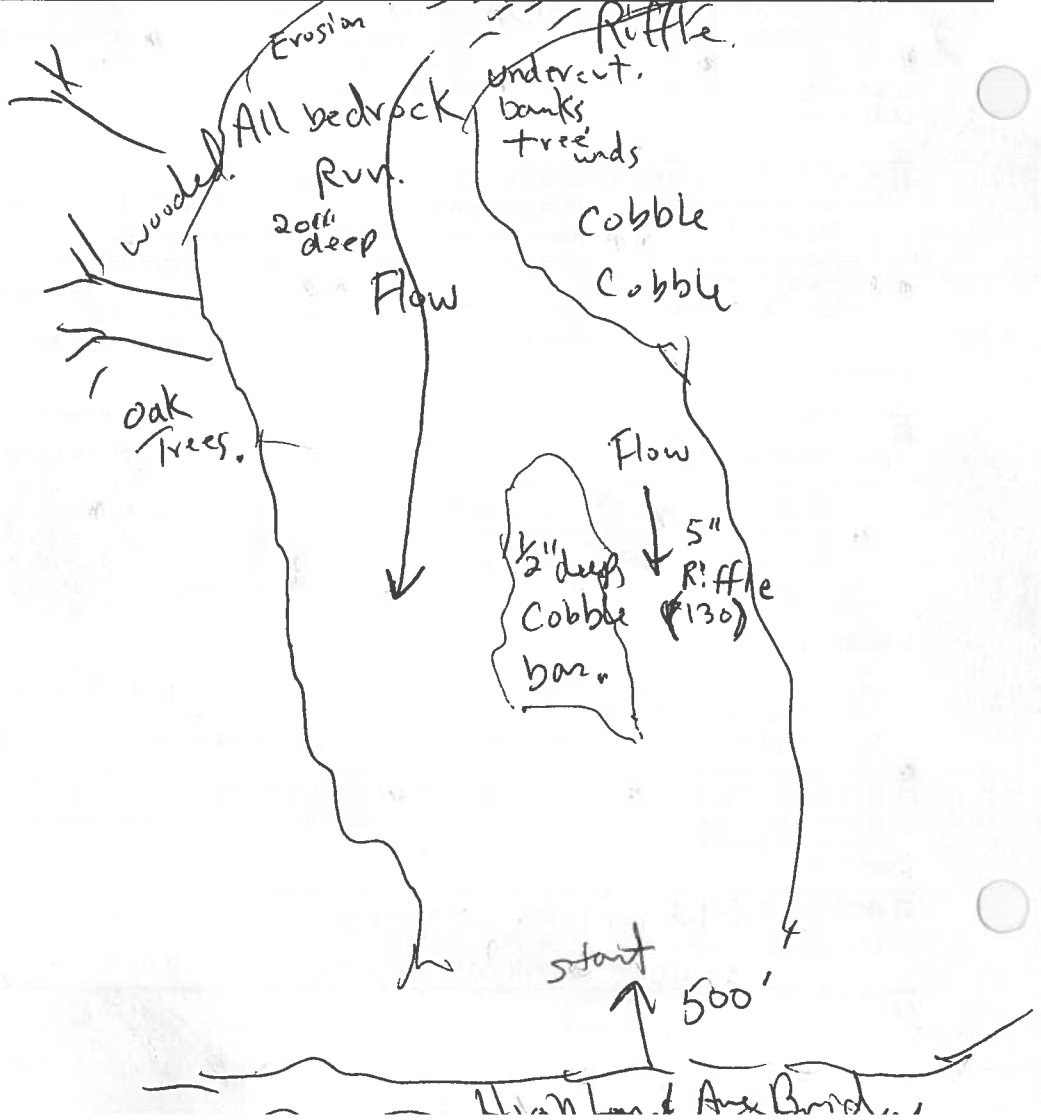
**CANOPY**

- > 85% - OPEN
- 65% - 85%
- 30% - 65%
- 10% - 30%
- < 10% - CLOSED

**CJ RECREATION**

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

**Stream Drawing:**





Stream & Location: Euclid Creek, St. Clair Ave RM: 1.65 Date: 8/28/14

Zablotny Tom Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: STORET #: Lat./ Long.: 41.5741 78.5467 Office verified location

1) SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present. Check ONE (Or 2 & average) ORIGIN QUALITY. Includes categories like BLDR/SLABS, BOULDER, COBBLE, GRAVEL, SAND, BEDROCK, LESTONE, TILLS, WETLANDS, etc.

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. Includes categories like UNDERCUT BANKS, OVERHANGING VEGETATION, SHALLOWS, ROOTMATS, POOLS, ROOTWADS, BOULDERS, OXBOWS, AQUATIC MACROPHYTES, LOGS OR WOODY DEBRIS.

3) CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY. Includes categories like HIGH, MODERATE, LOW, NONE, EXCELLENT, GOOD, FAIR, POOR, NONE, RECOVERED, RECOVERING, RECENT OR NO RECOVERY, HIGH, MODERATE, LOW.

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. Includes categories like NONE/LITTLE, MODERATE, HEAVY/SEVERE, WIDE, MODERATE, NARROW, VERY NARROW, NONE, FOREST, SHRUB, RESIDENTIAL, FENCED PASTURE, OPEN PASTURE, CONSERVATION TILLAGE, URBAN OR INDUSTRIAL, MINING/CONSTRUCTION.

5) POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH CHANNEL WIDTH CURRENT VELOCITY Recreation Potential Primary Contact Secondary Contact. Includes categories like > 1m, 0.7-1m, 0.4-0.7m, 0.2-0.4m, < 0.2m, POOL WIDTH > RIFFLE WIDTH, POOL WIDTH = RIFFLE WIDTH, POOL WIDTH < RIFFLE WIDTH, TORRENTIAL, VERY FAST, FAST, MODERATE, SLOW, INTERSTITIAL, INTERMITTENT, EDDIES.

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). NO RIFFLE [metric=0]. RIFFLE DEPTH RUN DEPTH RIFFLE / RUN SUBSTRATE RIFFLE / RUN EMBEDDEDNESS. Includes categories like BEST AREAS > 10cm, BEST AREAS 5-10cm, BEST AREAS < 5cm, MAXIMUM > 50cm, MAXIMUM < 50cm, STABLE, MOD. STABLE, UNSTABLE, NONE, LOW, MODERATE, EXTENSIVE.

6) GRADIENT (6.20 ft/mi) DRAINAGE AREA (21.8 mi^2) VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6] %POOL: %GLIDE: %RUN: %RIFFLE: Gradient Maximum 10

**AJ 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

**CANOPY**

- 1st pass \_\_\_\_\_ cm
- 2nd pass \_\_\_\_\_ cm
- > 85% - OPEN
  - 55% - < 85%
  - 30% - < 55%
  - 10% - < 30%
  - < 10% - CLOSED

**CJ RECREATION**

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

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

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**BJ AESTHETICS**

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/SSOs/OUTFALLS

**DJ 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
- ARMORED / SLUMPS
- ISLANDS / SCOURED
- IMPOUNDED / DESICCATED
- FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

**EJ ISSUES**

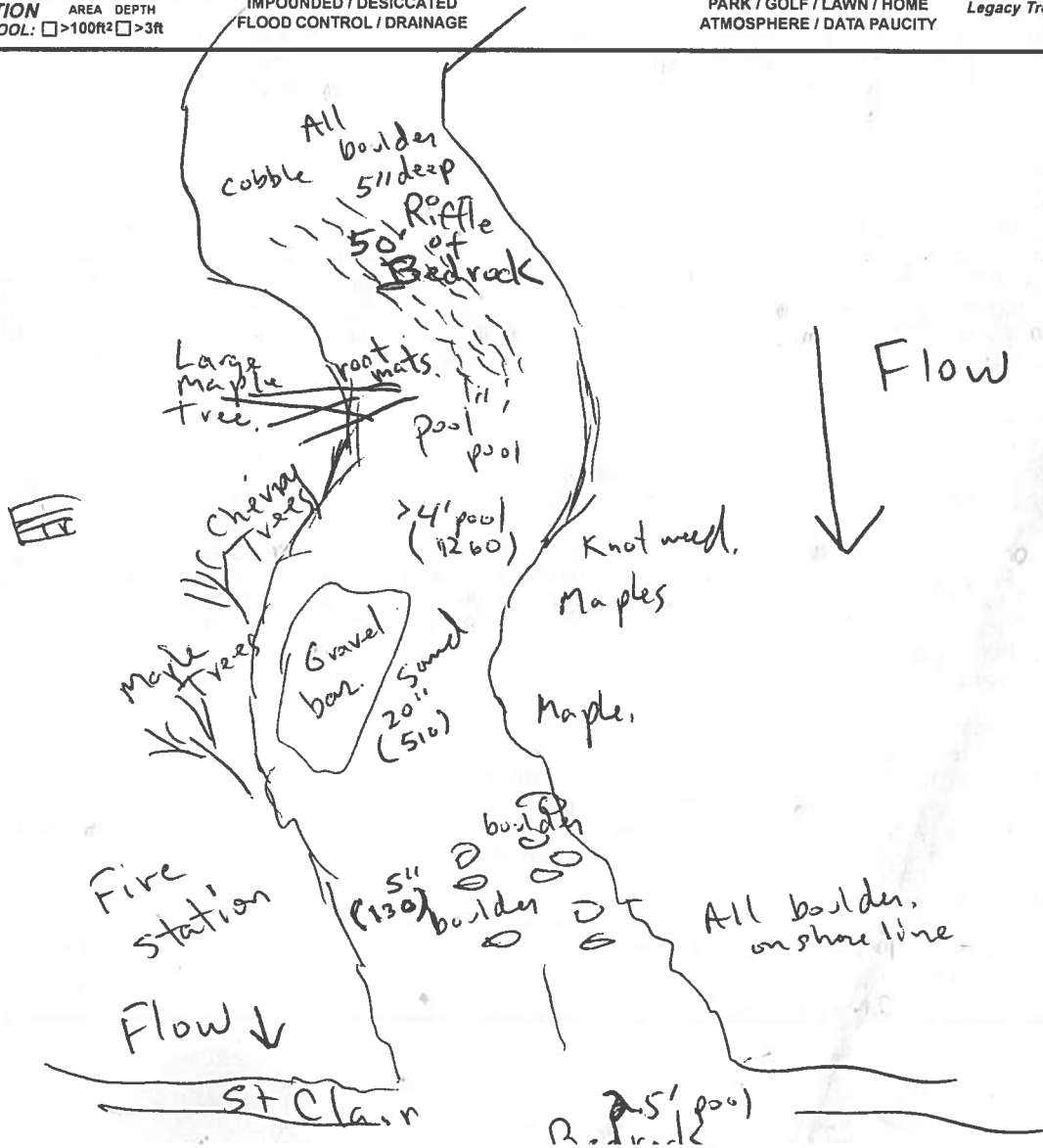
- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT&GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H<sub>2</sub>O / TILE / H<sub>2</sub>O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL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

**FJ MEASUREMENTS**

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

Legacy Tree:

**Stream Drawing:**



Stream & Location: Unimmed Tributary to Euclid Creek - US Richmond Rd RM: 1.50 Date: 09/25/14

Knittle / Zumborsky / Amador

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: STORET #: Lat./ Long.: 41.5320 81.4970 Office verified location

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

Check ONE (Or 2 & average)

Substrate assessment grid with categories: BEST TYPES, OTHER TYPES, POOL RIFFLE, ORIGIN, QUALITY. Includes checkboxes for BLDR/SLABS, BOULDER, COBBLE, GRAVEL, SAND, BEDROCK, etc.

NUMBER OF BEST TYPES: 4 or more [2] 3 or less [0]

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

AMOUNT

Check ONE (Or 2 & average)

Instream Cover assessment grid with categories: UNDERCUT BANKS, OVERHANGING VEGETATION, SHALLOWS, ROOTMATS, POOLS > 70cm, ROOTWADS, BOULDERS, OXBOWS, BACKWATERS, AQUATIC MACROPHYTES, LOGS OR WOODY DEBRIS.

Cover Maximum 20 8

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

Channel Morphology assessment grid with categories: SINUOSITY, DEVELOPMENT, CHANNELIZATION, STABILITY. Includes checkboxes for HIGH, MODERATE, LOW, NONE.

Channel Maximum 20 8

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

Bank Erosion and Riparian Zone assessment grid with categories: EROSION, RIPARIAN WIDTH, FLOOD PLAIN QUALITY. Includes checkboxes for NONE, MODERATE, HEAVY/SEVERE.

Riparian Maximum 10 5.5

5) POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

CHANNEL WIDTH

CURRENT VELOCITY

Recreation Potential Primary Contact Secondary Contact

Maximum Depth checkboxes: > 1m, 0.7-1m, 0.4-0.7m, 0.2-0.4m, < 0.2m

Channel Width checkboxes: POOL WIDTH > RIFFLE WIDTH, POOL WIDTH = RIFFLE WIDTH, POOL WIDTH < RIFFLE WIDTH

Current Velocity checkboxes: TORRENTIAL, VERY FAST, FAST, MODERATE, SLOW, INTERSTITIAL, INTERMITTENT, EDDIES

Pool / Current Maximum 12 10

Comments

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

NO RIFFLE [metric=0]

Riffle assessment grid with categories: RIFFLE DEPTH, RUN DEPTH, RIFFLE / RUN SUBSTRATE, RIFFLE / RUN EMBEDDEDNESS. Includes checkboxes for BEST AREAS, MAXIMUM, STABLE, UNSTABLE.

Riffle / Run Maximum 8 5

Comments

6) GRADIENT (38.50 ft/ml) DRAINAGE AREA (1.20 m^2)

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

Gradient Maximum 10 8





Stream & Location: Euclid Creek, upstream Lakeshore RM: 100 Date: 8/28/14

Zabotny Tom Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: - STORET #: Lat./ Long.: 41.5828 781.5552 Office verified location

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

Substrate assessment grid with categories: BEST TYPES, OTHER TYPES, POOL RIFFLE, ORIGIN, QUALITY. Includes checkboxes for BLDR/SLABS, BOULDER, COBBLE, GRAVEL, SAND, BEDROCK, etc.

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

Instream cover assessment grid with categories: UNDERCUT BANKS, OVERHANGING VEGETATION, SHALLOWS, ROOTMATS, POOLS, ROOTWADS, BOULDERS, OXBOWS, AQUATIC MACROPHYTES, LOGS OR WOODY DEBRIS.

Comments

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

Channel morphology assessment grid with categories: SINUOSITY, DEVELOPMENT, CHANNELIZATION, STABILITY. Includes checkboxes for HIGH, MODERATE, LOW, NONE.

Comments

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

Bank erosion and riparian zone assessment grid with categories: EROSION, RIPARIAN WIDTH, FLOOD PLAIN QUALITY. Includes checkboxes for NONE, MODERATE, HEAVY, etc.

Comments

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

Pool/glide and riffle/run quality assessment grid with categories: MAXIMUM DEPTH, CHANNEL WIDTH, CURRENT VELOCITY. Includes checkboxes for >1m, 0.7-1m, etc.

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average)

Functional riffles assessment grid with categories: RIFFLE DEPTH, RUN DEPTH, RIFFLE / RUN SUBSTRATE, RIFFLE / RUN EMBEDDEDNESS.

Comments

6] GRADIENT (5.90 ft/ml) DRAINAGE AREA (53.10 ml2) VERY LOW - LOW, MODERATE, HIGH - VERY HIGH. %POOL, %GLIDE, %RUN, %RIFFLE.

Comments

**AJ 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**
- 1st pass \_\_\_\_\_ cm
- 2nd pass \_\_\_\_\_ cm
- > 85% - OPEN
  - 55% - < 85%
  - 30% - < 55%
  - 10% - < 30%
  - < 10% - CLOSED

- BJ AESTHETICS**
- NUISANCE ALGAE
  - INVASIVE MACROPHYTES
  - EXCESS TURBIDITY
  - DISCOLORATION
  - FOAM / SCUM
  - OIL SHEEN
  - TRASH / LITTER
  - NUISANCE ODOR
  - SLUDGE DEPOSITS
  - CSOs/SSOs/OUTFALLS

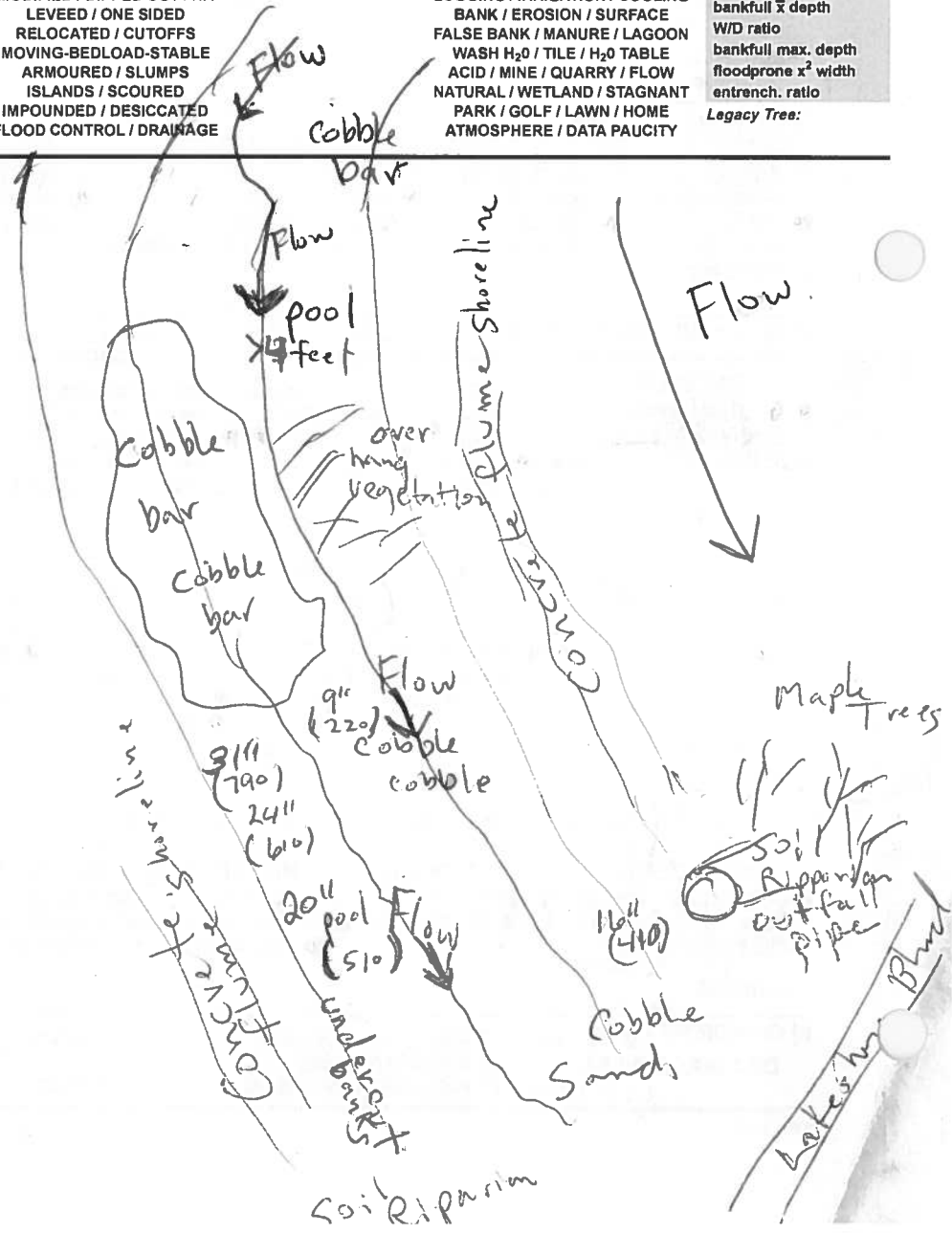
- DJ MAINTENANCE**
- PUBLIC / PRIVATE / BOTH / NA
  - ACTIVE / HISTORIC / BOTH / NA
  - YOUNG-SUCCESSION-OLD
  - SPRAY / SNAG / REMOVED
  - MODIFIED / DIPPED OUT / NA
  - LEVEED / ONE SIDED
  - RELOCATED / CUTOFFS
  - MOVING-BEDLOAD-STABLE
  - ARMoured / SLUMPS
  - ISLANDS / SCOURED
  - IMPOUNDED / DESICCATED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

Circle some & COMMENT

- EJ 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

- FJ MEASUREMENTS**
- $\bar{x}$  width
  - $\bar{x}$  depth
  - max. depth
  - $\bar{x}$  bankfull width
  - bankfull  $\bar{x}$  depth
  - W/D ratio
  - bankfull max. depth
  - floodprone  $x^2$  width
  - entrench. ratio
- Legacy Tree:

**Stream Drawing:**



Stream & Location: Euclid Creek - DS Lakeshore Blvd  
Knittle, Soehnen

RM: 0.95 Date: 09/05/14

River Code: - - - STORET #: - - - Lat./ Long.: 41.5833 / 81.5594  
(NAD 83 - decimal °) Office verified location

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

<b>BEST TYPES</b>	<b>POOL RIFFLE</b>	<b>OTHER TYPES</b>	<b>POOL RIFFLE</b>	<b>ORIGIN</b>	<b>QUALITY</b>
<input type="checkbox"/> BLDR / SLABS [10]	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> HARDPAN [4]	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> LIMESTONE [1]	<input type="checkbox"/> HEAVY [-2]
<input type="checkbox"/> BOULDER [9]	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> TILLS [1]	<input checked="" type="checkbox"/> MODERATE [-1]
<input type="checkbox"/> COBBLE [8]	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> MUCK [2]	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> WETLANDS [0]	<input type="checkbox"/> NORMAL [0]
<input type="checkbox"/> GRAVEL [7]	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> SILT [2]	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> HARDPAN [0]	<input type="checkbox"/> FREE [1]
<input checked="" type="checkbox"/> SAND [6]	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> ARTIFICIAL [0]	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> SANDSTONE [0]	<input type="checkbox"/> EXTENSIVE [-2]
<input type="checkbox"/> BEDROCK [5]	<input type="checkbox"/> <input type="checkbox"/>	(Score natural substrates; ignore)		<input type="checkbox"/> RIP/RAP [0]	<input type="checkbox"/> MODERATE [-1]

NUMBER OF BEST TYPES:  4 or more [2] sludge from point-sources)  3 or less [0]

Check ONE (Or 2 & average)

SILT  **EMBEDDEDNESS**

LACUSTURINE [0]  SHALE [-1]  COAL FINES [-2]

Substrate Maximum 20 **13**

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.

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

Check ONE (Or 2 & average)

Cover Maximum 20 **15**

Comments

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

<b>SINUOSITY</b>	<b>DEVELOPMENT</b>	<b>CHANNELIZATION</b>	<b>STABILITY</b>
<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 checked="" type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input checked="" type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input 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]	

Channel Maximum 20 **11**

Comments

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

<b>EROSION</b>	<b>RIPARIAN WIDTH</b>	<b>FLOOD PLAIN QUALITY</b>
<input type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]
<input checked="" type="checkbox"/> MODERATE [2]	<input checked="" type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]
<input checked="" type="checkbox"/> HEAVY / SEVERE [1]	<input type="checkbox"/> NARROW 5-10m [2]	<input checked="" type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]
	<input type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> MINING / CONSTRUCTION [0]
	<input type="checkbox"/> NONE [0]	<input type="checkbox"/> FENCED PASTURE [1]
		<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]

Indicate predominant land use(s) past 100m riparian.

Riparian Maximum 10 **4.75**

Comments

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

<b>MAXIMUM DEPTH</b>	<b>CHANNEL WIDTH</b>	<b>CURRENT VELOCITY</b>	<b>Recreation Potential</b> Primary Contact Secondary Contact (circle one and comment on back)
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	
<input checked="" type="checkbox"/> > 1m [6]	<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	Pool / Current Maximum 12 <b>10</b>
<input type="checkbox"/> 0.7-<1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input checked="" type="checkbox"/> SLOW [1]	
<input type="checkbox"/> 0.4-<0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> VERY FAST [1]	
<input type="checkbox"/> 0.2-<0.4m [1]		<input type="checkbox"/> INTERSTITIAL [-1]	
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> FAST [1]	

Indicate for reach - pools and riffles.

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average).  NO RIFFLE [metric=0]

<b>RIFFLE DEPTH</b>	<b>RUN DEPTH</b>	<b>RIFFLE / RUN SUBSTRATE</b>	<b>RIFFLE / RUN EMBEDDEDNESS</b>
<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]

Riffle / Run Maximum 8 **0**

Comments

6) **GRADIENT** (5.90 ft/mi)  VERY LOW - LOW [2-4] %POOL:  %GLIDE:

**DRAINAGE AREA** (23.00 mi<sup>2</sup>)  MODERATE [6-10] %RUN:  %RIFFLE:

HIGH - VERY HIGH [10-6] Gradient Maximum 10 **6**



**AJ SAMPLED REACH**

Check ALL that apply

**METHOD**

- BOAT
- WADE
- L. LINE
- OTHER
- DISTANCE**
- 0.5 Km
- 0.2 Km
- 0.15 Km
- 0.12 Km
- OTHER

**STAGE**

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

**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

**BJ AESTHETICS**

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM/ SCUM
- OIL SHEEN
- TRASH/ LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/SSOs/OUTFALLS

**CJ RECREATION**

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

**DJ 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 / DRAINAGE
- FLOOD CONTROL / DRAINAGE

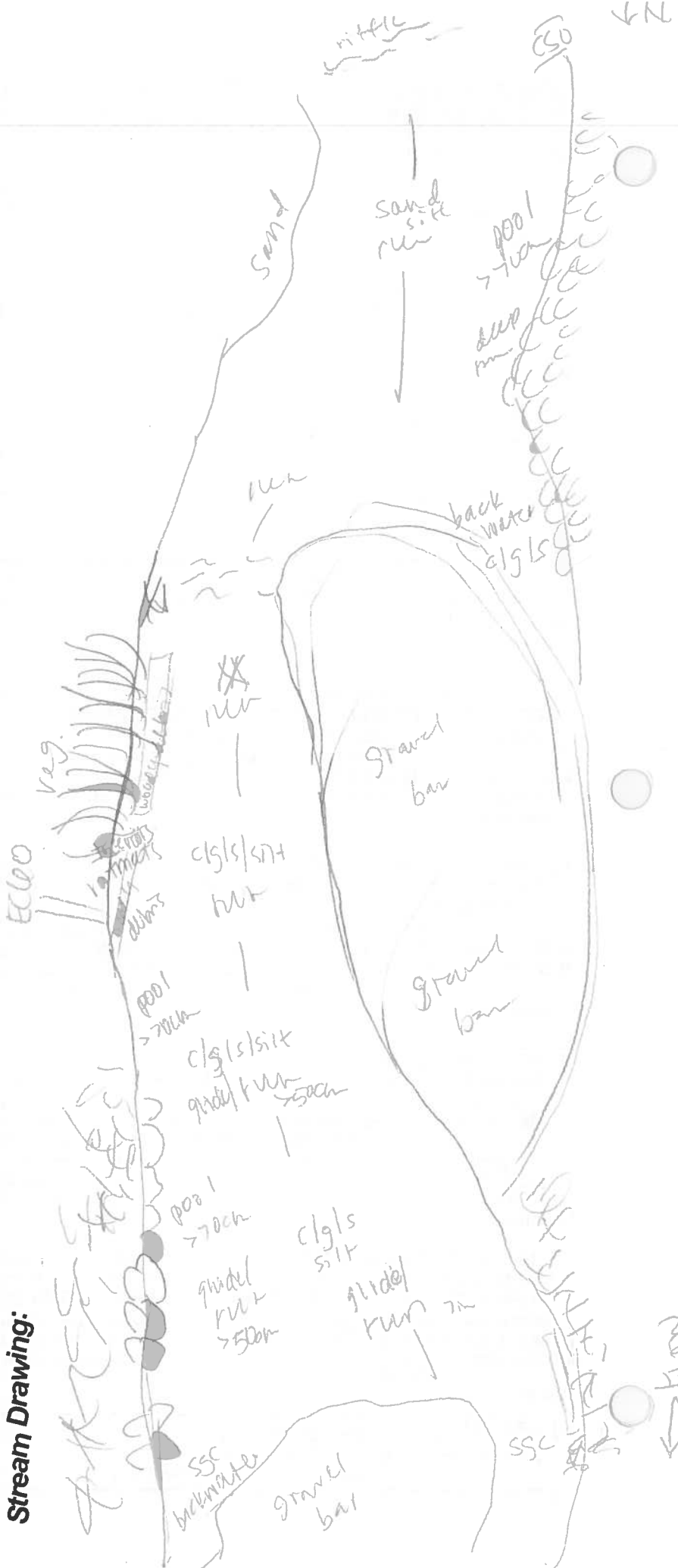
**EJ ISSUES**

- 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

**FJ 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 & Location: Euclid Creek at Restoration Area RM: 0.40 Date: 5/8/14  
Zablotny Mearny  
 Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District  
 River Code: - STORET #: - Lat./Long.: 41.5855 181.5604 Office verified location

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

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

**Substrate**  
8.5  
 Maximum 20

**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.

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

**Comments**

**Amount**  
 Check ONE (Or 2 & average)  
12  
 Cover Maximum 20

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

<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input checked="" type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input checked="" 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 checked="" type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input checked="" type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

**Comments**

**Channel**  
 Maximum 20  
14

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

River right looking downstream

<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 checked="" 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 type="checkbox"/> OPEN PASTURE, ROWCROP [0]	

**Comments**

**Riparian**  
 Maximum 10  
4.75

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

<b>MAXIMUM DEPTH</b> Check ONE (ONLY!)	<b>CHANNEL WIDTH</b> Check ONE (Or 2 & average)	<b>CURRENT VELOCITY</b> Check ALL that apply	<b>Recreation Potential</b> Primary Contact Secondary Contact <small>(circle one and comment on back)</small>
<input checked="" type="checkbox"/> > 1m [6]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	
<input type="checkbox"/> 0.7-<1m [4]	<input checked="" type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> VERY FAST [1]	<b>Pool / Current</b> Maximum 12 8
<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]	

*Indicate for reach - pools and riffles.*

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

<b>RIFFLE DEPTH</b>	<b>RUN DEPTH</b>	<b>RIFFLE / RUN SUBSTRATE</b>	<b>RIFFLE / RUN EMBEDDEDNESS</b>
<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**

**Riffle / Run**  
 Maximum 8  
0

**6] GRADIENT** ( 0.2 ft/mi)  VERY LOW - LOW [2-4] % POOL:  % GLIDE:   
**DRAINAGE AREA** ( 23.2 mi<sup>2</sup>)  MODERATE [6-10] % RUN:  % RIFFLE:   
 HIGH - VERY HIGH [10-6] **Gradient** Maximum 10  
2

**AJ SAMPLED REACH**  
Check ALL that apply

**METHOD**

- BOAT
- WADE
- L. LINE
- OTHER

**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

**CJ RECREATION**

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

**BJ AESTHETICS**

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/ISSOs/OUTFALLS

**DJ 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
- ARMORED / SLUMPS
- ISLANDS / SCoured
- IMPOUNDED / DESICCATED
- FLOOD CONTROL / DRAINAGE

**EJ ISSUES**

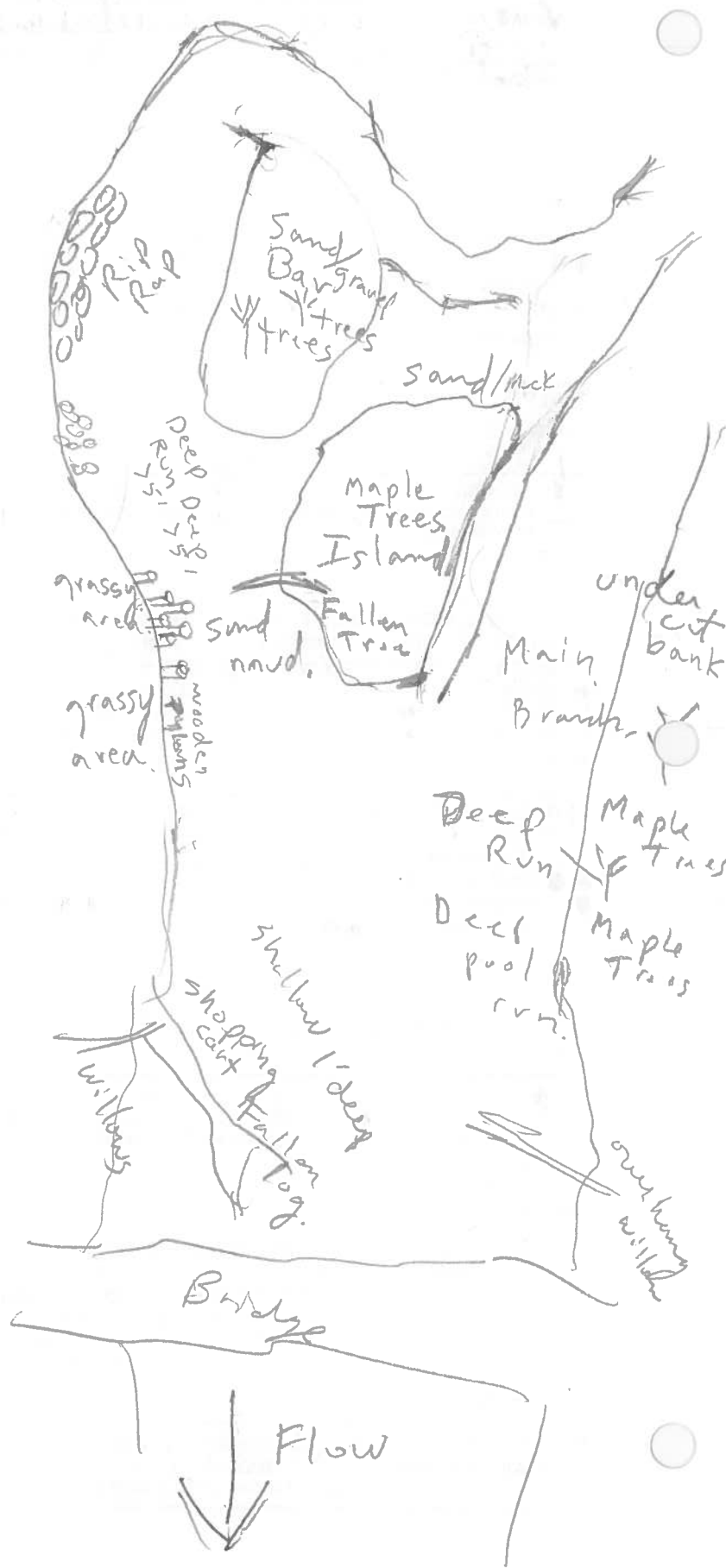
- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT&GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H<sub>2</sub>O / TILE / H<sub>2</sub>O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL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

**FJ MEASUREMENTS**

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

Legacy Tree:

**Stream Drawing:**



Stream & Location: Knittel Creek East Branch - US Highland Rd.

RM: 0.25 Date: 09/15/14

Knittel Fieldman

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: - - - STORET #: - - -

Lat./ Long.: 41.5618 / 81.5277

Office verified location

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

Check ONE (Or 2 & average)

- | BEST TYPES                                      |                                      | OTHER TYPES                             |                                      |
|---|--------------------------------------|---|--------------------------------------|
| <input type="checkbox"/> BLDR /SLABS [10]       | <input type="checkbox"/> POOL RIFFLE | <input type="checkbox"/> HARDPAN [4]    | <input type="checkbox"/> POOL RIFFLE |
| <input type="checkbox"/> BOULDER [9]            | <input checked="" type="checkbox"/>  | <input type="checkbox"/> DETRITUS [3]   | <input checked="" type="checkbox"/>  |
| <input type="checkbox"/> COBBLE [8]             | <input checked="" type="checkbox"/>  | <input type="checkbox"/> MUCK [2]       | <input checked="" type="checkbox"/>  |
| <input checked="" type="checkbox"/> GRAVEL [7]  | <input checked="" type="checkbox"/>  | <input type="checkbox"/> SILT [2]       | <input checked="" type="checkbox"/>  |
| <input type="checkbox"/> SAND [6]               | <input checked="" type="checkbox"/>  | <input type="checkbox"/> ARTIFICIAL [0] | <input checked="" type="checkbox"/>  |
| <input checked="" type="checkbox"/> BEDROCK [5] | <input checked="" type="checkbox"/>  |   |                                      |

- ORIGIN
- LIMESTONE [1]
- TILLS [1]
- WETLANDS [0]
- HARDPAN [0]
- SANDSTONE [0]
- RIP/RAP [0]
- LACUSTURINE [0]
- SHALE [-1]
- COAL FINES [-2]

- QUALITY
- HEAVY [-2]
- MODERATE [-1]
- NORMAL [0]
- FREE [1]
- EXTENSIVE [-2]
- MODERATE [-1]
- NORMAL [0]
- NONE [1]

Substrate  
15  
Maximum 20

NUMBER OF BEST TYPES:  4 or more [2]  3 or less [0]

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)

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> UNDERCUT BANKS [1]                    | <input type="checkbox"/> POOLS > 70cm [2] | <input type="checkbox"/> OXBOWS, BACKWATERS [1]   |
| <input checked="" 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]                          |   |   |

- EXTENSIVE >75% [11]
- MODERATE 25-75% [7]
- SPARSE 5-<25% [3]
- NEARLY ABSENT <5% [1]

Cover  
Maximum 20  
9

Comments

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 checked="" 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 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] |  |

Channel  
Maximum 20  
8

Comments

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

River right looking downstream

- | EROSION  | RIPARIAN WIDTH                                     | FLOOD PLAIN QUALITY  | CONSERVATION TILLAGE                               |
|--|--|--|--|
| <input type="checkbox"/> NONE / LITTLE [3]       | <input checked="" type="checkbox"/> WIDE > 50m [4] | <input checked="" type="checkbox"/> FOREST, SWAMP [3]                | <input type="checkbox"/> CONSERVATION TILLAGE [1]  |
| <input checked="" 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 checked="" type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1] | <input type="checkbox"/> MINING / CONSTRUCTION [0] |
|  | <input type="checkbox"/> VERY NARROW < 5m [1]      | <input type="checkbox"/> FENCED PASTURE [1]                          |  |
|  | <input type="checkbox"/> NONE [0]                  | <input type="checkbox"/> OPEN PASTURE, ROWCROP [0]                   |  |

Indicate predominant land use(s) past 100m riparian.

Riparian  
Maximum 10  
8.5

Comments

5) POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

Check ONE (ONLY!)

- > 1m [6]
- 0.7-<1m [4]
- 0.4-<0.7m [2]
- 0.2-<0.4m [1]
- < 0.2m [0]

CHANNEL WIDTH

Check ONE (Or 2 & average)

- POOL WIDTH > RIFFLE WIDTH [2]
- POOL WIDTH = RIFFLE WIDTH [1]
- POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply

- TORRENTIAL [-1]
- SLOW [1]
- VERY FAST [1]
- INTERSTITIAL [-1]
- FAST [1]
- INTERMITTENT [-2]
- MODERATE [1]
- EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential  
Primary Contact  
Secondary Contact  
(circle one and comment on back)

Pool / Current  
Maximum 12  
8

Comments

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

Check ONE (Or 2 & average).

NO RIFFLE [metric=0]

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

Riffle / Run  
Maximum 8  
5

Comments

6) GRADIENT (83.33 ft/mi)  VERY LOW - LOW [2-4]  MODERATE [6-10]  HIGH - VERY HIGH [10-6]  
DRAINAGE AREA (12.50 mi<sup>2</sup>)

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

Gradient  
Maximum 10  
4

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

**AJ SAMPLED REACH**

Check ALL that apply

**METHOD**

- BOAT
  - WADE
  - L. LINE
  - OTHER
- DISTANCE**
- 0.5 Km
  - 0.2 Km
  - 0.15 Km
  - 0.12 Km
  - OTHER

**STAGE**

- HIGH
- UP
- NORMAL
- LOW
- DRY

**CLARITY**

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

meters

**CANOPY**

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

**CJ RECREATION**

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

**BJAESTHETICS**

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/SSOs/OUTFALLS

**DJ 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

**EJ 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

**FJ 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:**

← FLOW



**Stream & Location:** Euclid Creek at Wildwood Bridge **RM:** 0.20 **Date:** 05/08/14

Soth Hothem / Donna Friedman **Scorers Full Name & Affiliation:** Northeast Ohio Regional Sewer District

**River Code:** - - **STORET #:** - - - - **Lat./ Long.:** 18 Office verified location

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

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

**Substrate** 7  
Maximum 20

**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.

<input checked="" 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**

**AMOUNT** Check ONE (Or 2 & average)  
 EXTENSIVE >75% [11]  
 MODERATE 25-75% [7]  
 SPARSE 5-<25% [3]  
 NEARLY ABSENT <5% [1]

**Channel** 9  
Maximum 20

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

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

**Comments**

**Channel** 11  
Maximum 20

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

<b>EROSION</b>	<b>RIPARIAN WIDTH</b>	<b>FLOOD PLAIN QUALITY</b>
<input type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]
<input type="checkbox"/> MODERATE [2]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]
<input type="checkbox"/> HEAVY / SEVERE [1]	<input type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]
	<input type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]
	<input type="checkbox"/> NONE [0]	<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]
		<input type="checkbox"/> CONSERVATION TILLAGE [1]
		<input type="checkbox"/> URBAN OR INDUSTRIAL [0]
		<input type="checkbox"/> MINING / CONSTRUCTION [0]

**Comments**

**Riparian** 4.5  
Maximum 10

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

<b>MAXIMUM DEPTH</b>	<b>CHANNEL WIDTH</b>	<b>CURRENT VELOCITY</b>
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply
<input checked="" type="checkbox"/> > 1m [6]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]
<input type="checkbox"/> 0.7-<1m [4]	<input checked="" type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input checked="" type="checkbox"/> SLOW [1]
<input type="checkbox"/> 0.4-<0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> VERY FAST [1]
<input type="checkbox"/> 0.2-<0.4m [1]		<input type="checkbox"/> FAST [1]
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> INTERSTITIAL [-1]
		<input type="checkbox"/> INTERMITTENT [-2]
		<input type="checkbox"/> MODERATE [1]
		<input type="checkbox"/> EDDIES [1]

**Comments**

**Pool / Current** 8  
Maximum 12

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:  NO RIFFLE [metric=0]

<b>RIFFLE DEPTH</b>	<b>RUN DEPTH</b>	<b>RIFFLE / RUN SUBSTRATE</b>	<b>RIFFLE / RUN EMBEDDEDNESS</b>
<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**

**Riffle / Run** 0  
Maximum 8

**6] GRADIENT** (0.2 ft/mi)  VERY LOW - LOW [2-4]  MODERATE [6-10]  HIGH - VERY HIGH [10-6]

**DRAINAGE AREA** (24 mi<sup>2</sup>)

**%POOL:**   **%GLIDE:**  

**%RUN:**   **%RIFFLE:**  

**Gradient** 2  
Maximum 10

**AJ 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

meters

**CANOPY**

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

**CJ RECREATION**

AREA DEPTH  
POOL:  >100r  >3ft

**BJ AESTHETICS**

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/ISSOs/OUTFALLS

**DJ 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

**EJ ISSUES**

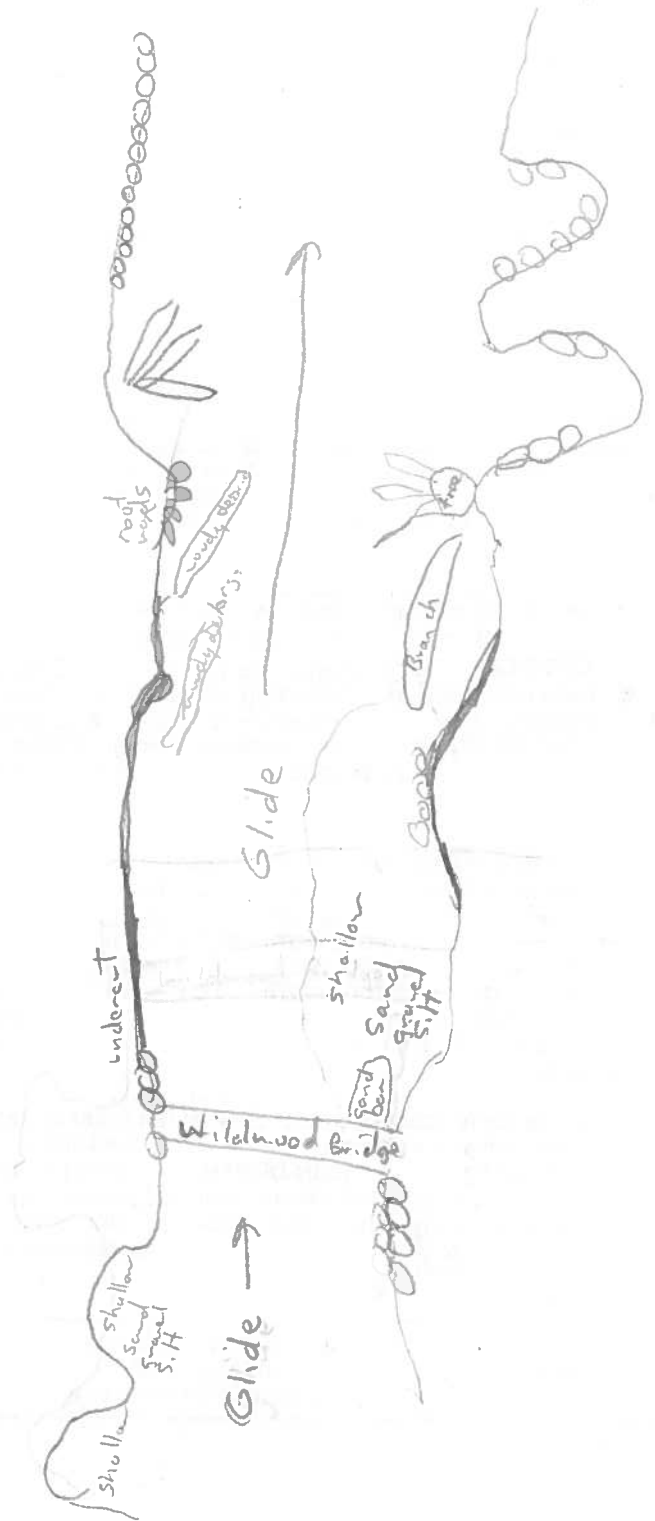
- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT&GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H<sub>2</sub>O / TILE / H<sub>2</sub>O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL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

**FJ 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:**





# Lake / Lacustrary (Lentic) QHEI Field Sheet

Environmental Protection Agency

QHEI Score: 4

RIVERCODE 15100 RIVERMILE 0.40 WATERBODY Euclid Creek DISTANCE ASSESSED (m): 400  
 DATE 5/8/14 LOCATION Restoration Area  
 SCORER Hothem LAT. 41.5855 LONG. -81.5604 COMMENT \_\_\_\_\_

## 1] SUBSTRATE (Check ONLY Two Substrate TYPE BOXES; Estimate % or note every type present);

LAKE: \_\_\_\_\_ LACUSTRARY: \_\_\_\_\_

TYPE		SHORE		BOTTOM		SUBSTRATE ORIGIN		SUBSTRATE QUALITY	
						Check ONE (or 2 & AVERAGE)		Check ONE (or 2 & AVERAGE)	
<input type="checkbox"/> BLDR/SLABS [7]				<input type="checkbox"/> HARDPAN [4]		<input type="checkbox"/> LIMESTONE [1]		<input type="checkbox"/> SILT HEAVY [-2]	
<input type="checkbox"/> BOULDER [10]	X	X		<input type="checkbox"/> BEDROCK [3]		<input checked="" type="checkbox"/> SILT [1]		<input type="checkbox"/> SILT MODERATE [-1]	
<input type="checkbox"/> COBBLE [8]	X	X		<input type="checkbox"/> DETRITUS [3]		<input type="checkbox"/> WETLANDS [1]		<input type="checkbox"/> SILT NORMAL [0]	
<input type="checkbox"/> GRAVEL [7]	X	X		<input type="checkbox"/> SILT [2]		<input type="checkbox"/> LACUSTRARINE [1]		<input type="checkbox"/> SILT FREE [1]	
<input type="checkbox"/> SAND [6]	X	X		<input type="checkbox"/> MUCK [2]	X	<input type="checkbox"/> SANDSTONE [1]		<input type="checkbox"/> CLAY [-2]	
						<input type="checkbox"/> RIP/RAP [1]		<input type="checkbox"/> INDUSTRIAL [-1]	
						<input type="checkbox"/> HARDPAN [0]		<input type="checkbox"/> ORGANIC [1]	
						<input type="checkbox"/> SHALE [-1]		<input type="checkbox"/> NONE [1]	
						<input type="checkbox"/> COAL/ORE [-2]			

Substrate  
9.5  
 Max 20

NOTE: Ignore sludge that originates from point-sources, score on natural substrates  
 NUMBER OF SUBSTRATE TYPES 5 or More [2]  
4 or Less [0]

COMMENTS: \_\_\_\_\_

## 2] COVER TYPES

TYPE: (Check All That Apply)

AMOUNT: (Check ONLY One or check 2 and AVERAGE)

<input type="checkbox"/> OFF-SHORE SAND BARS [4]	<input type="checkbox"/> DEEPWATER > 1 M [1]	<input type="checkbox"/> WETLAND POOLS [1]	<input type="checkbox"/> EXTENSIVE > 75% [9]
<input type="checkbox"/> OVERHANGING VEGETATION [1]	<input type="checkbox"/> ROOTWADS [1]	<input type="checkbox"/> SUBMERGED AQUATIC VEG. [4]	<input type="checkbox"/> MODERATE 25-75% [7]
<input type="checkbox"/> SHALLOWS (ON BEACH) [1]	<input type="checkbox"/> BOULDERS [1]	<input type="checkbox"/> LOGS OR WOODY DEBRIS [1]	<input checked="" type="checkbox"/> SPARSE 5-25% [3]
<input type="checkbox"/> ROOTMATS [1]	<input type="checkbox"/> SAND BEACH [1]	<input type="checkbox"/> GRAVEL BEACH [1]	<input type="checkbox"/> NEARLY ABSENT < 5% [1]

Cover  
12  
 Max 20

COMMENTS: \_\_\_\_\_

## 3] SHORELINE MORPHOLOGY (Check ONLY one PER category or check 2 and AVERAGE)

MODIFICATIONS OF SAMPLED SHORELINE

SHORE SINUOSITY	DEVELOPMENT	MODIFICATION	STABILITY
<input type="checkbox"/> HIGH [2]	<input type="checkbox"/> EXCELLENT [6]	<input type="checkbox"/> NONE [7]	<input type="checkbox"/> HIGH [3]
<input checked="" type="checkbox"/> MODERATE [4]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [5]	<input checked="" type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [3]	<input type="checkbox"/> FAIR [3]	<input 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]	

SHORE to BOTTOM SLOPE MORPHOLOGIES	AVERAGE DEPTH (of 5 measures)
<input type="checkbox"/> SLOPE < 15 deg. [0]	<input type="checkbox"/> < 50 cm [0]
<input checked="" type="checkbox"/> SLOPE < 25 deg. [1]	<input type="checkbox"/> 50 - < 100 cm [1]
<input type="checkbox"/> SLOPE > 25 deg. [3]	<input type="checkbox"/> ≥ 100 - 200 cm [2]
<input type="checkbox"/> SLOPE > 45 deg. [2]	<input type="checkbox"/> > 200 - 400 cm [3]
<input type="checkbox"/> SLOPE 90 deg. [0]	<input type="checkbox"/> > 400 - 500 cm [4]
	<input type="checkbox"/> > 500 - 900 cm [2]
	<input type="checkbox"/> > 900 cm [1]

<input type="checkbox"/> CEMENTED [-1]	<input type="checkbox"/> STEEL BULKHEADS [-2]
<input checked="" type="checkbox"/> RIP RAPPED [1]	<input type="checkbox"/> ISLANDS [1]
<input type="checkbox"/> RAILROAD TIES [-1]	<input type="checkbox"/> DIKES [-1]
<input type="checkbox"/> DREDGED [-1]	<input type="checkbox"/> BANK SHAPING [-1]
<input type="checkbox"/> TWO SIDE CHANNEL	<input type="checkbox"/> WOOD PILING [1]
<input type="checkbox"/> MODIFICATIONS [-1]	
<input type="checkbox"/> SHIP CHANNEL [-2]	

Shore Line  
16.5  
 Max 20

COMMENTS: \_\_\_\_\_

## 4] RIPARIAN ZONE AND BANK EROSION (Check ONE box PER bank or 2 and AVERAGE)

★ Shore Right Looking East or South on Lake  
 ★ Shore Right Looking Toward Lake in Lacustrary

RIPARIAN WIDTH		SHORE LINE QUALITY (PAST 100 FOOT RIPARIAN)		BANK EROSION	
L R (Per Bank)		L R (Most Predominant Per Bank)		L R (Per Bank)	
<input type="checkbox"/> WIDE > 50 m [4]		<input type="checkbox"/> FOREST, WETLAND, LAKE [3]		<input type="checkbox"/> CONSERVATION TILLAGE [1]	
<input type="checkbox"/> MODERATE 10-50 m [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 type="checkbox"/> VINEYARD, ORCHARD [2]		<input type="checkbox"/> OPEN PASTURE, ROW CROP [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]		<input type="checkbox"/> RESIDENTIAL PARK, NEW FIELD [1]		<input type="checkbox"/> DIKED WETLAND [0]	
				<input type="checkbox"/> NONE/LITTLE [3]	
				<input type="checkbox"/> MODERATE [-1]	
				<input type="checkbox"/> HEAVY/SEVERE [-3]	

Riparian  
5  
 Max 10

COMMENTS: \_\_\_\_\_

## 5] AQUATIC VEGETATION QUALITY: PLANT SPECIES OBSERVED (Sum All Scores)

(Score all for observed abundance ABUNDANT = [3], COMMON = [5], FEW = [1], UNCOMMON = [0]) \_\_\_\_\_ NO AQUATIC VEGETATION = 0

1 -Pond Lilies (NYMPHAEA) \_\_\_\_\_ -Sedge (CYPERACEAE) \_\_\_\_\_ -Wild Celery (VALLISNERIA)  
 \_\_\_\_\_ -Pond Weed (POTAMOGETON) \_\_\_\_\_ -Bulrush (SCIRPUS) \_\_\_\_\_ -Waterweed (ELODEA) \_\_\_\_\_ -Wild Rice (ZIZANIA)

Vegetation  
1  
 Max 30

(Score all for observed abundance ABUNDANT = [-2], COMMON = [-1], FEW = [0])  
\_\_\_\_\_ -Purple Loosestrife \_\_\_\_\_ -Reed Grass \_\_\_\_\_ -Eurasian Milfoil \_\_\_\_\_ -Cattails \_\_\_\_\_ -Algae (mats) \_\_\_\_\_ -Algae (planktonic)

COMMENTS: \_\_\_\_\_

Is the Sampling Reach Representative of Area Habitat? (Y/N) \_\_\_\_\_ If Not, Explain: \_\_\_\_\_

Depth measures: \_\_\_\_\_  
 Zebra Mussel/Quagga Mussel Coverage  >60%  60->25%  25->10%  <10->1%  1-0%

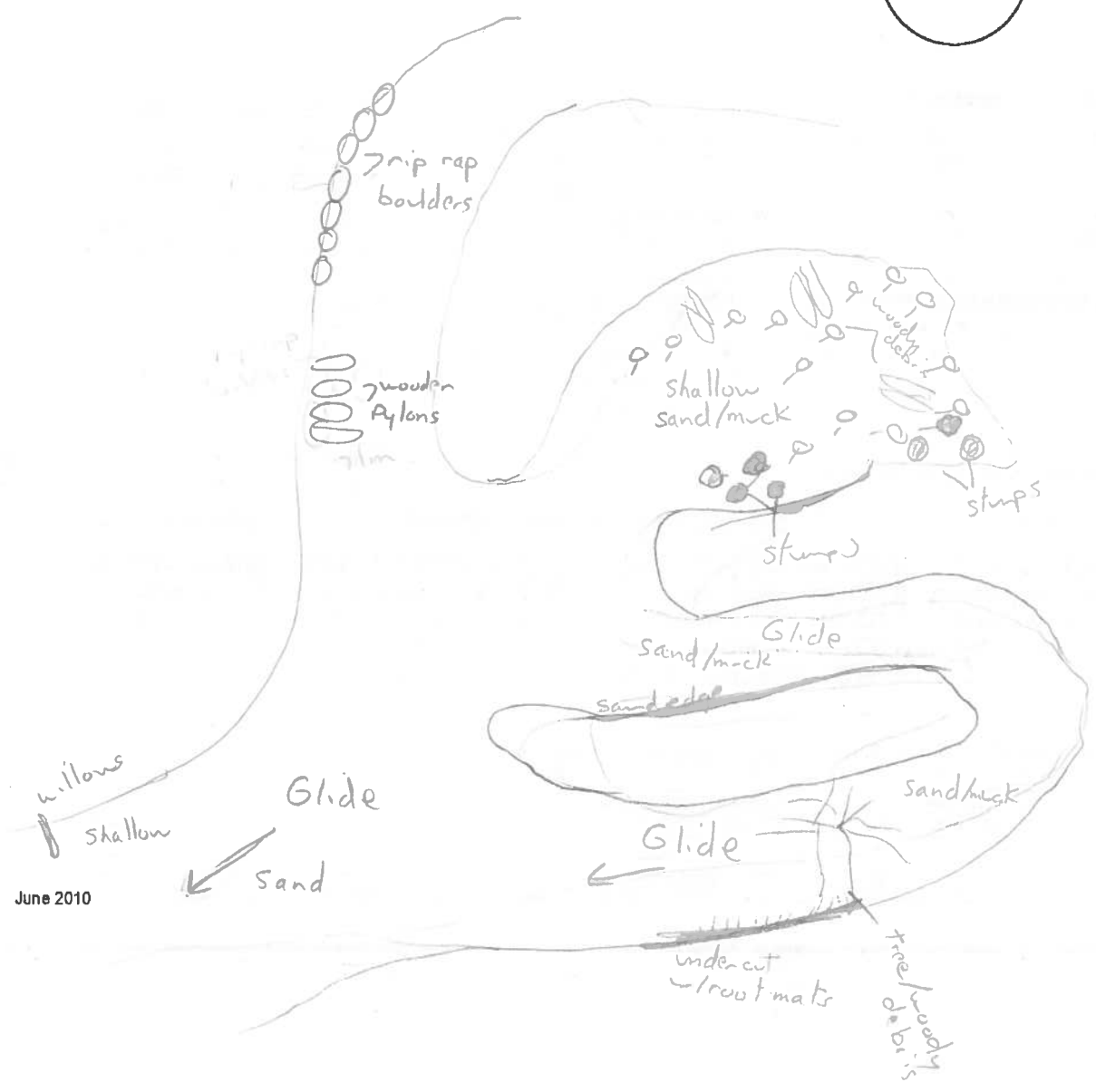
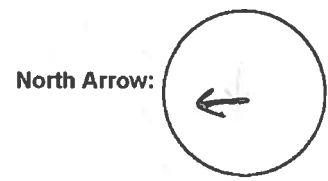
	Gear	Distance	Water Clarity	Wave Height		
First Sampling Pass:	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
Second Sampling Pass:	_____	_____	_____	_____		
Third Sampling Pass:	_____	_____	_____	_____		

Subjective Rating (1-10)      Aesthetic Rating (1-10)

Photos: \_\_\_\_\_

WATERBODY MEASUREMENTS:      AVERAGE WIDTH: \_\_\_\_\_      AVERAGE DEPTH: \_\_\_\_\_      Maximum Depth: \_\_\_\_\_

**DRAWING OF SITE:**



June 2010

# Lake / Lacustrary (Lentic) QHEI Field Sheet

Environmental Protection Agency QHEI Score: 47

RIVERCODE \_\_\_\_\_ RIVERMILE 0.40 WATERBODY Fuch Creek DISTANCE ASSESSED (m): 775  
 DATE 9/5/14 LOCATION US Villa Angela Dr bridge  
 SCORER \_\_\_\_\_ LAT. 41.5855 LONG. -81.5184 COMMENT \_\_\_\_\_

## 1] SUBSTRATE (Check ONLY Two Substrate TYPE BOXES; Estimate % or note every type present);

LAKE: \_\_\_\_\_ LACUSTUARY: \_\_\_\_\_

TYPE	SHORE		BOTTOM		SUBSTRATE ORIGIN	SILT	SUBSTRATE QUALITY	Substrate
	SHORE	BOTTOM	SHORE	BOTTOM				
<input type="checkbox"/> BLDR/SLABS [7]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> LIMESTONE [1]	SILT	<input type="checkbox"/> SILT HEAVY [-2]	<div style="border: 1px solid black; border-radius: 10px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">17</div> Max 20
<input type="checkbox"/> BOULDER [10]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> TILLS [1]		<input type="checkbox"/> SILT MODERATE [-1]	
<input type="checkbox"/> COBBLE [8]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> WETLANDS [1]	<input type="checkbox"/> SILT NORMAL [0]	<input type="checkbox"/> SILT FREE [1]	
<input type="checkbox"/> GRAVEL [7]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> LACUSTUARINE [1]	<input type="checkbox"/> CLAY [-2]	<input type="checkbox"/> INDUSTRIAL [-1]	
<input type="checkbox"/> SAND [6]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> SANDSTONE [1]	SILT ORIGIN:	<input type="checkbox"/> ORGANIC [1]	
<input type="checkbox"/> HARDPAN [4]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> RIPRAP [1]		<input type="checkbox"/> NONE [1]	
<input type="checkbox"/> BEDROCK [3]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> HARDPAN [0]			
<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> SHALE [-1]			
<input type="checkbox"/> SILT [2]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> COALORE [-2]			
<input type="checkbox"/> MUCK [2]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

NOTE: Ignore sludge that originates from point-sources; score on natural substrates  
 NUMBER OF SUBSTRATE TYPES:  - 5 or More [2]  - 4 or Less [0]

COMMENTS: \_\_\_\_\_

## 2] COVER TYPES

TYPE: (Check All That Apply)

AMOUNT (Check ONLY One or check 2 and AVERAGE)

<input type="checkbox"/> OFF-SHORE SAND BARS [4]	<input type="checkbox"/> DEEPWATER > 1 M [1]	<input type="checkbox"/> WETLAND POOLS [1]	<input type="checkbox"/> EXTENSIVE > 75% [9]	<div style="border: 1px solid black; border-radius: 10px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">12</div> Max 20
<input type="checkbox"/> OVERHANGING VEGETATION [1]	<input type="checkbox"/> ROOTWADS [1]	<input type="checkbox"/> SUBMERGED AQUATIC VEG. [4]	<input type="checkbox"/> MODERATE 25-75% [7]	
<input type="checkbox"/> SHALLOWS (ON BEACH) [1]	<input type="checkbox"/> BOULDERS [1]	<input type="checkbox"/> LOGS OR WOODY DEBRIS [1]	<input type="checkbox"/> SPARSE 5-25% [3]	
<input type="checkbox"/> ROOTMATS [1]	<input type="checkbox"/> SAND BEACH [1]	<input type="checkbox"/> GRAVEL BEACH [1]	<input type="checkbox"/> NEARLY ABSENT < 5% [1]	

COMMENTS: \_\_\_\_\_

## 3] SHORELINE MORPHOLOGY (Check ONLY one PER category or check 2 and AVERAGE)

SHORE SINUOSITY	DEVELOPMENT	MODIFICATION	STABILITY	MODIFICATIONS OF SAMPLED SHORELINE	Shore Line
<input type="checkbox"/> HIGH [2]	<input type="checkbox"/> EXCELLENT [6]	<input type="checkbox"/> NONE [7]	<input type="checkbox"/> HIGH [3]	<input type="checkbox"/> CEMENTED [-1]	<div style="border: 1px solid black; border-radius: 10px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">11.5</div> Max 20
<input type="checkbox"/> MODERATE [4]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [5]	<input checked="" type="checkbox"/> MODERATE [2]	<input checked="" type="checkbox"/> RIP RAPPED [1]	
<input checked="" type="checkbox"/> LOW [3]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]	<input type="checkbox"/> RAILROAD TIES [-1]	
<input type="checkbox"/> NONE [1]	<input checked="" type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]		<input type="checkbox"/> DREDGED [-1]	
<b>SHORE to BOTTOM SLOPE MORPHOLOGIES</b> <input type="checkbox"/> SLOPE < 15 deg. [0] <input type="checkbox"/> SLOPE > 45 deg. [2] <input type="checkbox"/> SLOPE < 25 deg. [1] <input type="checkbox"/> SLOPE 90 deg. [0] <input checked="" type="checkbox"/> SLOPE > 25 deg. [3]		<b>AVERAGE DEPTH (of 5 measures)</b> <input type="checkbox"/> < 50 cm [0] <input type="checkbox"/> > 400 - 500 cm [4] <input type="checkbox"/> 50 - < 100 cm [1] <input type="checkbox"/> > 500 - 900 cm [2] <input checked="" type="checkbox"/> ≥ 100 - 200 cm [2] <input type="checkbox"/> > 900 cm [1] <input type="checkbox"/> > 200 - 400 cm [3]		<input type="checkbox"/> STEEL BULKHEADS [-2] <input type="checkbox"/> ISLANDS [1] <input type="checkbox"/> DIKES [-1] <input type="checkbox"/> BANK SHAPING [-1] <input type="checkbox"/> WOOD PILING [1] <input type="checkbox"/> SHIP CHANNEL [-2]	

COMMENTS: \_\_\_\_\_

## 4] RIPARIAN ZONE AND BANK EROSION (Check ONE box PER bank or 2 and AVERAGE)

★ Shore Right Looking East or South on Lake ★  
 ★ Shore Right Looking Toward Lake in Lacustrary ★

RIPARIAN WIDTH	SHORE LINE QUALITY (PAST 100 FOOT RIPARIAN)	BANK EROSION	Riparian
L R (Per Bank)	L R (Most Predominant Per Bank)	L R (Per Bank)	
<input type="checkbox"/> WIDE > 50 m [4]	<input type="checkbox"/> FOREST, WETLAND, LAKE [3]	<input type="checkbox"/> CONSERVATION TILLIAGE [1]	<div style="border: 1px solid black; border-radius: 10px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">7.5</div> Max 10
<input checked="" type="checkbox"/> MODERATE 10-50 m [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 type="checkbox"/> VINEYARD, ORCHARD [2]	<input type="checkbox"/> OPEN PASTURE, ROW CROP [0]	
<input type="checkbox"/> VERY NARROW < 5 m [1]	<input type="checkbox"/> FENCED PASTURE [1]	<input type="checkbox"/> MINING CONSTRUCTION [0]	
<input type="checkbox"/> NONE [0]	<input checked="" type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> DIKED WETLAND [0]	

COMMENTS: \_\_\_\_\_

## 5] AQUATIC VEGETATION QUALITY: PLANT SPECIES OBSERVED (Sum All Scores)

(Score all for observed abundance ABUNDANT = [3], COMMON = [5], FEW = [1]; UNCOMMON = [0]) \_\_\_\_\_ NO AQUATIC VEGETATION = 0

<input type="checkbox"/> -Pond Lilies (NYMPHAEA)	<input type="checkbox"/> -Sedge (CYPERACEAE)	<input type="checkbox"/> -Wild Celery (VALLISNERIA)	<input type="checkbox"/> -Wild Rice (ZIZANIA)	<div style="border: 1px solid black; border-radius: 10px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">-1</div> Max 30
<input type="checkbox"/> -Pond Weed (POTAMOGETON)	<input type="checkbox"/> -Bulrush (SCIRPUS)	<input type="checkbox"/> -Waterweed (ELODEA)		
(Score all for observed abundance ABUNDANT = [-2], COMMON = [-1], FEW = [0]) <input type="checkbox"/> -Purple Loosestrife <input type="checkbox"/> -Reed Grass <input type="checkbox"/> -Eurasian Milfoil <input type="checkbox"/> -Cattails <input type="checkbox"/> -Algae (mats) <input type="checkbox"/> -Algae (planktonic)				

COMMENTS: \_\_\_\_\_

Is the Sampling Reach Representative of Area Habitat? (Y/N) \_\_\_\_\_ If Not, Explain: \_\_\_\_\_

Depth measures: \_\_\_\_\_  
Zebra Mussel/Quagga Mussel Coverage  >60%  60->25%  25->10%  <10->1%  1-0%

	Gear	Distance	Water Clarity	Wave Height
First Sampling Pass:	_____	_____	_____	_____
Second Sampling Pass:	_____	_____	_____	_____
Third Sampling Pass:	_____	_____	_____	_____

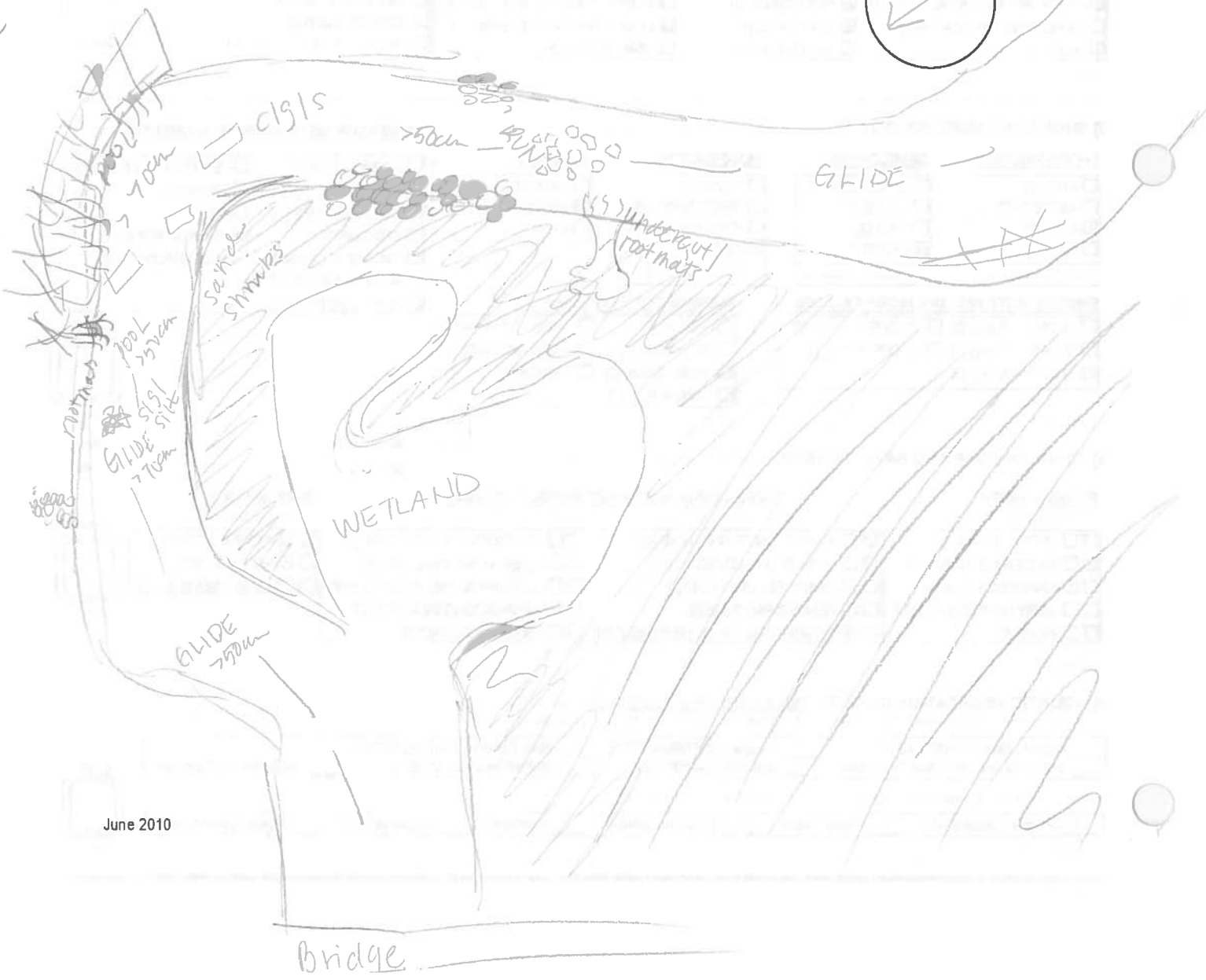
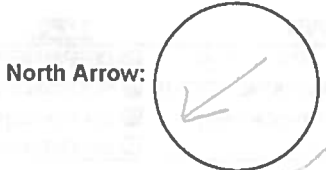
Subjective Rating (1-10)  Aesthetic Rating (1-10)

Photos: \_\_\_\_\_

WATERBODY MEASUREMENTS: AVERAGE WIDTH: \_\_\_\_\_ AVERAGE DEPTH: \_\_\_\_\_ Maximum Depth: \_\_\_\_\_

Flow  
↓

DRAWING OF SITE:



June 2010

# Lake / Lacustrary (Lentic) QHEI Field Sheet

Environmental Protection Agency QHEI Score:  

RIVERCODE \_\_\_\_\_ RIVERMILE 0.20 WATERBODY Evl DISTANCE ASSESSED (m): \_\_\_\_\_  
 DATE 5/8/14 LOCATION Near W. Wood Bridge  
 SCORER Hottel/Friedman LAT. 41.585152 LONG. -81.564070 COMMENT \_\_\_\_\_

1] SUBSTRATE (Check ONLY Two Substrate TYPE BOXES; Estimate % or note every type present); LAKE: \_\_\_\_\_ LACUSTUARY: \_\_\_\_\_

TYPE		SHORE   BOTTOM		SHORE   BOTTOM		SUBSTRATE ORIGIN		SUBSTRATE QUALITY	
<input type="checkbox"/> BLDR/SLABS [7]	<input type="checkbox"/> BOULDER [10]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> HARDPAN [4]	<input type="checkbox"/> BEDROCK [3]	<input type="checkbox"/> LIMESTONE [1]	<input type="checkbox"/> SILT	<input checked="" type="checkbox"/> SILT HEAVY [-2]	Substrate <div style="border: 1px solid black; border-radius: 10px; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 5px;">5.5</div> Max 20
<input type="checkbox"/> COBBLE [8]	<input type="checkbox"/> GRAVEL [7]	<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/> SILT [2]	<input type="checkbox"/> WETLANDS [1]	<input type="checkbox"/> LACUSTUARINE [1]	<input type="checkbox"/> SANDSTONE [1]	<input type="checkbox"/> SILT MODERATE [-1]	<input type="checkbox"/> SILT NORMAL [0]	
<input checked="" type="checkbox"/> SAND [6]	<input type="checkbox"/> MUCK [2]	<input type="checkbox"/> LOGS OR WOODY DEBRIS [1]	<input type="checkbox"/> RIP/RAP [1]	<input type="checkbox"/> SANDSTONE [1]	<input type="checkbox"/> RIP/RAP [1]	<input type="checkbox"/> SANDSTONE [1]	<input type="checkbox"/> SILT FREE [1]	<input type="checkbox"/> SILT MODERATE [-1]	
				<input type="checkbox"/> HARDPAN [0]	<input type="checkbox"/> SHALE [-1]	<input type="checkbox"/> HARDPAN [0]	<input type="checkbox"/> CLAY [-2]	<input type="checkbox"/> INDUSTRIAL [-1]	
				<input type="checkbox"/> COAL/ORE [-2]	<input type="checkbox"/> COAL/ORE [-2]	<input type="checkbox"/> COAL/ORE [-2]	<input type="checkbox"/> ORGANIC [1]	<input type="checkbox"/> NONE [1]	

NOTE: Ignore sludge that originates from point-sources, score on natural substrates  
 NUMBER OF SUBSTRATE TYPES  5 or More [2]  4 or Less [0]

COMMENTS \_\_\_\_\_

2] COVER TYPES TYPE: (Check All That Apply) AMOUNT (Check ONLY One or check 2 and AVERAGE)

<input type="checkbox"/> OFF-SHORE SAND BARS [4]	<input type="checkbox"/> DEEPWATER > 1M [1]	<input type="checkbox"/> WETLAND POOLS [1]	<input type="checkbox"/> EXTENSIVE > 75% [9]
<input checked="" type="checkbox"/> OVERHANGING VEGETATION [1]	<input type="checkbox"/> ROOTWADS [1]	<input type="checkbox"/> SUBMERGED AQUATIC VEG. [4]	<input type="checkbox"/> MODERATE 25-75% [7]
<input type="checkbox"/> SHALLOWS (ON BEACH) [1]	<input type="checkbox"/> BOULDERS [1]	<input type="checkbox"/> LOGS OR WOODY DEBRIS [1]	<input checked="" type="checkbox"/> SPARSE 5-25% [3]
<input type="checkbox"/> ROOTMATS [1]	<input type="checkbox"/> SAND BEACH [1]	<input type="checkbox"/> GRAVEL BEACH [1]	<input type="checkbox"/> NEARLY ABSENT < 5% [1]

Cover  

7

 Max 20

COMMENTS \_\_\_\_\_

3] SHORELINE MORPHOLOGY (Check ONLY one PER category or check 2 and AVERAGE)

SHORE SNUOSITY	DEVELOPMENT	MODIFICATION	STABILITY	MODIFICATIONS OF SAMPLED SHORELINE	
<input type="checkbox"/> HIGH [2]	<input type="checkbox"/> EXCELLENT [6]	<input type="checkbox"/> NONE [7]	<input type="checkbox"/> HIGH [3]	<input type="checkbox"/> CEMENTED [-1]	<input type="checkbox"/> STEEL BULKHEADS [-2]
<input checked="" type="checkbox"/> MODERATE [4]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [3]	<input checked="" type="checkbox"/> MODERATE [2]	<input type="checkbox"/> RIP RAPPED [1]	<input type="checkbox"/> ISLANDS [1]
<input type="checkbox"/> LOW [3]	<input checked="" type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input checked="" type="checkbox"/> LOW [1]	<input type="checkbox"/> RAILROAD TIES [-1]	<input type="checkbox"/> DIKES [-1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]		<input type="checkbox"/> DREDGED [-1]	<input type="checkbox"/> BANK SHAPING [-1]
SHORE to BOTTOM SLOPE MORPHOLOGIES		AVERAGE DEPTH (of 5 measures)		TWO SIDE CHANNEL MODIFICATIONS [-1] <input type="checkbox"/> SHIP CHANNEL [-2]	
<input type="checkbox"/> SLOPE < 15 deg. [0]	<input type="checkbox"/> SLOPE > 45 deg. [2]	<input type="checkbox"/> < 50 cm [0]	<input type="checkbox"/> > 400 - 500 cm [4]		
<input checked="" type="checkbox"/> SLOPE < 25 deg. [1]	<input type="checkbox"/> SLOPE 90 deg. [0]	<input checked="" type="checkbox"/> 50 - < 100 cm [1]	<input type="checkbox"/> > 500 - 900 cm [2]		
<input type="checkbox"/> SLOPE > 25 deg. [3]		<input type="checkbox"/> ≥ 100 - 200 cm [2]	<input type="checkbox"/> > 900 cm [1]	SHORELINE <div style="border: 1px solid black; border-radius: 10px; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 5px;">15</div> Max 20	
		<input type="checkbox"/> > 200 - 400 cm [3]			

COMMENTS \_\_\_\_\_

4] RIPARIAN ZONE AND BANK EROSION (Check ONE box PER bank or 2 and AVERAGE)

★ Shore Right Looking East or South on Lake ★  
 ★ Shore Right Looking Toward Lake in Lacustrary ★

RIPARIAN WIDTH		SHORE LINE QUALITY (PAST 100 FOOT RIPARIAN)		BANK EROSION	
L R (Per Bank)	L R (Most Predominant Per Bank)	L R	L R	L R (Per Bank)	Riparian
<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, WETLAND, LAKE [3]	<input type="checkbox"/> CONSERVATION TILLAGE [1]	<input type="checkbox"/> NONE/LITTLE [3]	<input type="checkbox"/> MODERATE [-1]	Riparian <div style="border: 1px solid black; border-radius: 10px; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 5px;">3</div> Max 10
<input checked="" type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> URBAN OR INDUSTRIAL [0]	<input type="checkbox"/> MODERATE [-1]	<input type="checkbox"/> HEAVY/SEVERE [-3]	
<input type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> VINEYARD, ORCHARD [2]	<input type="checkbox"/> OPEN PASTURE, ROW CROP [0]	<input type="checkbox"/> HEAVY/SEVERE [-3]		
<input type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]	<input type="checkbox"/> MINING/CONSTRUCTION [0]			
<input checked="" type="checkbox"/> NONE [0]	<input checked="" type="checkbox"/> RESIDENTIAL PARK, NEW FIELD [1]	<input type="checkbox"/> DIKED WETLAND [0]			

COMMENTS \_\_\_\_\_

5] AQUATIC VEGETATION QUALITY: PLANT SPECIES OBSERVED (Sum All Scores)

(Score all for observed abundance ABUNDANT = [3]; COMMON = [5]; FEW = [1]; UNCOMMON = [0]) NO AQUATIC VEGETATION = 0

<input type="checkbox"/> Pond Lilies (NYMPHAEA)	<input type="checkbox"/> Sedge (CYPERACEAE)	<input type="checkbox"/> Wild Celery (VALLISNERIA)
<input type="checkbox"/> Pond Weed (POTAMOGETON)	<input type="checkbox"/> Bulrush (SCIRPUS)	<input type="checkbox"/> Waterweed (ELODEA)
<input type="checkbox"/> Wild Rice (ZIZANIA)		

(Score all for observed abundance ABUNDANT = [-2]; COMMON = [-1]; FEW = [0])

<input type="checkbox"/> Purple Loosestrife	<input type="checkbox"/> Reed Grass	<input type="checkbox"/> Eurasian Milfoil	<input type="checkbox"/> Cattails	<input type="checkbox"/> Algae (mats)	<input type="checkbox"/> Algae (planktonic)
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Vegetation  

0

 Max 30

COMMENTS \_\_\_\_\_

Is the Sampling Reach Representative of Area Habitat? (Y/N) \_\_\_\_\_ If Not, Explain: \_\_\_\_\_

Depth measures: \_\_\_\_\_  
Zebra Mussel/Quagga Mussel Coverage  >60%  60->25%  25->10%  <10->1%  1-0%

	Gear	Distance	Water Clarity	Wave Height	Subjective Rating (1-10)	Aesthetic Rating (1-10)
First Sampling Pass:	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
Second Sampling Pass:	_____	_____	_____	_____		
Third Sampling Pass:	_____	_____	_____	_____		

Photos: \_\_\_\_\_

WATERBODY MEASUREMENTS: AVERAGE WIDTH: \_\_\_\_\_ AVERAGE DEPTH: \_\_\_\_\_ Maximum Depth: \_\_\_\_\_

**DRAWING OF SITE:**

North Arrow:

