

Stream & Location: Cuyahoga River Downstream of Tinkers Creek RM: 16.20 Date: 09/26/13

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

River Code: STORET #: Lat./ Long.: 41.3678 181.6139 Office verified location

1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present. Includes categories: BEST TYPES, OTHER TYPES, POOL RIFFLE, ORIGIN, and QUALITY. Includes a 'Substrate' score box with value 13.

2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts... Includes categories: UNDERCUT BANKS, OVERHANGING VEGETATION, SHALLOWS, ROOTMATS, POOLS, ROOTWADS, BOULDERS, OXBOWS, AQUATIC MACROPHYTES, LOGS OR WOODY DEBRIS. Includes a 'Cover Maximum' score box with value 15.

3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average). Includes categories: SINUOSITY, DEVELOPMENT, CHANNELIZATION, STABILITY. Includes a 'Channel Maximum' score box with value 15.

4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average). Includes categories: EROSION, RIPARIAN WIDTH, FLOOD PLAIN QUALITY. Includes a 'Riparian Maximum' score box with value 6.25.

5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH, CHANNEL WIDTH, CURRENT VELOCITY. Includes a 'Recreation Potential' box with 'Primary Contact' and 'Secondary Contact' options. Includes a 'Pool / Current Maximum' score box with value 12.

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). Includes categories: RIFFLE DEPTH, RUN DEPTH, RIFFLE / RUN SUBSTRATE, RIFFLE / RUN EMBEDDEDNESS. Includes a 'Riffle / Run Maximum' score box with value 6.5.

6] GRADIENT (3.15 ft/ml) DRAINAGE AREA (696 ml²). Includes categories: VERY LOW - LOW, MODERATE, HIGH - VERY HIGH. Includes a 'Gradient Maximum' score box with value 10.

AJ SAMPLED REACH
Check ALL that apply

- 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

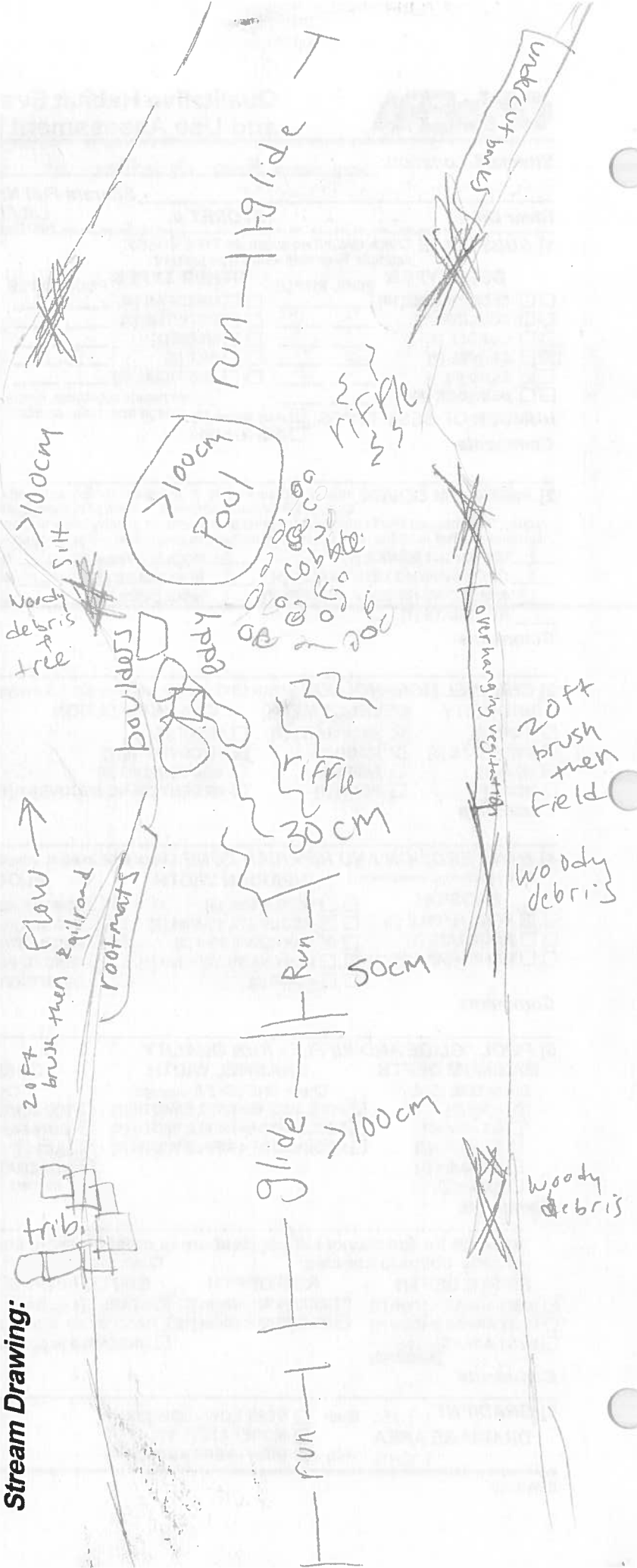
- CLARITY**
- 1st --sample pass-- 2nd
- < 20 cm
 - 20-40 cm
 - 40-70 cm
 - > 70 cm/CTB
 - SECCHI DEPTH
- 1st _____ cm
- 2nd _____ cm

- CANOPY**
- > 85% - OPEN
 - 55% - < 85%
 - 30% - < 55%
 - 10% - < 30%
 - < 10% - CLOSED
- CJ RECREATION**
- AREA DEPTH
- POOL: > 100ft² > 3ft

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

DJ MAINTENANCE	EJ ISSUES	FJ MEASUREMENTS
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 ARMOURD / SLUMPS ISLANDS / SCoured IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE	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 ₂ O / TILE / H ₂ O TABLE ACID / MINE / QUARRY / FLOW NATURAL / WETLAND / STAGNANT PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	x width x depth max. depth x bankfull width bankfull x depth W/D ratio bankfull max. depth floodprone x ² width entrench. ratio Legacy Tree:

Stream Drawing:





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 69.75

Stream & Location: Cuyahoga River Upstream of Mill Creek **RM:** 11.95 **Date:** 09/26/13

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

River Code: - - - **STORET #:** - - - **Lat./ Long.:** 41.410181.6346 (NAD 83 - decimal °) **Office verified location**

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

BEST TYPES	POOL RIFFLE	OTHER TYPES	POOL RIFFLE	ORIGIN	QUALITY
<input type="checkbox"/> BLDR/SLABS [10]	<input checked="" type="checkbox"/> <input checked="" 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 checked="" type="checkbox"/> <input checked="" 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 checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> MUCK [2]	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> WETLANDS [0]	<input type="checkbox"/> NORMAL [0]
<input checked="" type="checkbox"/> GRAVEL [7]	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> SILT [2]	<input checked="" type="checkbox"/> <input checked="" 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 type="checkbox"/> ARTIFICIAL [0]	<input type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> SANDSTONE [0]	<input checked="" type="checkbox"/> EXTENSIVE [-2]
<input type="checkbox"/> BEDROCK [5]	<input type="checkbox"/> <input type="checkbox"/>			<input type="checkbox"/> RIP/RAP [0]	<input checked="" type="checkbox"/> MODERATE [-1]

NUMBER OF BEST TYPES: 4 or more [2] 3 or less [0] (Score natural substrates; ignore sludge from point-sources)

Comments

Check ONE (Or 2 & average)

<input type="checkbox"/> SILT	<input type="checkbox"/> LACUSTURINE [0]	<input type="checkbox"/> MODERATE [-1]
<input type="checkbox"/> EMBEDDEDNESS	<input type="checkbox"/> SHALE [-1]	<input type="checkbox"/> NONE [1]
	<input type="checkbox"/> COAL FINES [-2]	

Substrate
13.5
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.

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

Comments

Cover
Maximum 20
12

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

Comments

Channel
Maximum 20
13

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
<input 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 checked="" type="checkbox"/> SHRUB OR OLD FIELD [2]
<input checked="" type="checkbox"/> HEAVY / SEVERE [1]	<input checked="" 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]

CONSERVATION TILLAGE [1]
 URBAN OR INDUSTRIAL [0]
 MINING / CONSTRUCTION [0]

Comments

Riparian
Maximum 10
4.25

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

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

Comments

Pool / Current
Maximum 12
12

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

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input checked="" type="checkbox"/> BEST AREAS > 10cm [2]	<input checked="" 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 checked="" 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 checked="" type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Comments

Riffle / Run
Maximum 8
5

6] GRADIENT (6.93 ft/ml) VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]

DRAINAGE AREA (709 mi²)

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

Gradient
Maximum 10
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

- < 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: >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

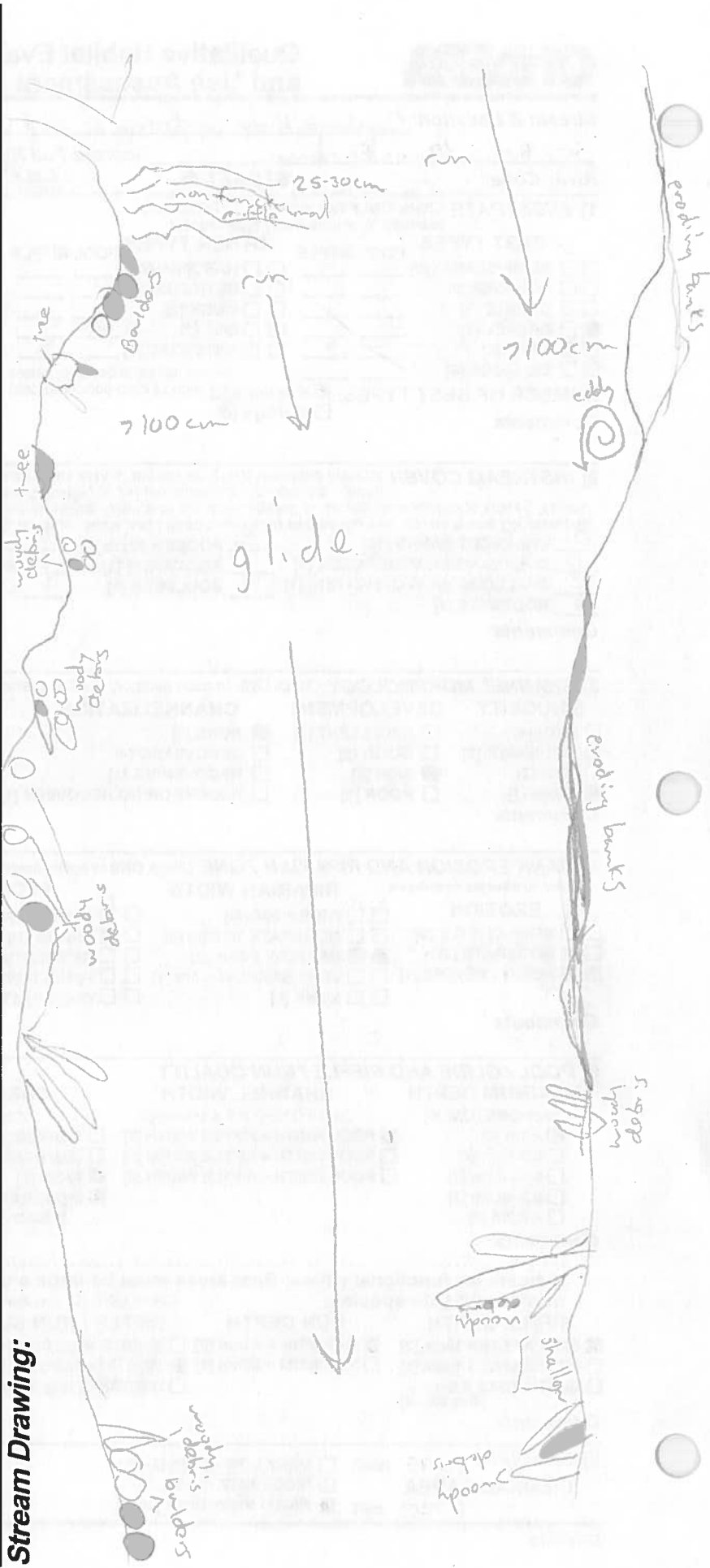
- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT&GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H₂O / TILE / H₂O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STAGNANT
- 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:





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 71.5

Stream & Location: Cuyahoga River Downstream of Mill Creek **RM:** 11.30 **Date:** 09/26/13

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

River Code: - **STORET #:** - **Lat./ Long.:** 41.4177 181.6426 **Office verified location**

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

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

NUMBER OF BEST TYPES: 4 or more [2] 3 or less [0] (Score natural substrates; ignore sludge from point-sources)

Comments

ORIGIN Check ONE (Or 2 & average)

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

QUALITY Check ONE (Or 2 & average)

NONE [1]

Substrate 12 **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 checked="" type="checkbox"/> POOLS > 70cm [2]	<input checked="" type="checkbox"/> OXBOWS, BACKWATERS [1]	AMOUNT
<input checked="" type="checkbox"/> OVERHANGING VEGETATION [1]	<input checked="" type="checkbox"/> ROOTWADS [1]	<input checked="" type="checkbox"/> AQUATIC MACROPHYTES [1]	Check ONE (Or 2 & average)
<input checked="" type="checkbox"/> SHALLOWS (IN SLOW WATER) [1]	<input checked="" type="checkbox"/> BOULDERS [1]	<input checked="" type="checkbox"/> LOGS OR WOODY DEBRIS [1]	<input type="checkbox"/> EXTENSIVE >75% [11]
<input checked="" type="checkbox"/> ROOTMATS [1]			<input checked="" type="checkbox"/> MODERATE 25-75% [7]
			<input type="checkbox"/> SPARSE 5-<25% [3]
			<input type="checkbox"/> NEARLY ABSENT <5% [1]

Comments

Cover 14 **Maximum** 20

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

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

Comments

Channel 14 **Maximum** 20

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
<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 type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]
<input type="checkbox"/> HEAVY / SEVERE [1]	<input checked="" 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"/> FENCED PASTURE [1]
	<input type="checkbox"/> NONE [0]	<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]

CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0]

Comments

Riparian 4.5 **Maximum** 10

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

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

Comments

Pool / Current 12 **Maximum** 12

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 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 checked="" 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 checked="" type="checkbox"/> EXTENSIVE [-1]

Comments

Riffle / Run 5 **Maximum** 8

6] GRADIENT (4.77 ft/ml) VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]

DRAINAGE AREA (730 mi²)

% POOL: **% GLIDE:**

% RUN: **% RIFFLE:**

Gradient 10 **Maximum** 10

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

1st -sample pass-- 2nd

- HIGH
- UP
- NORMAL
- LOW
- DRY

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: >100r2 >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 / 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 H₂O / TILE / H₂O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STAGNANT
- PARK / GOLF / LAWN / HOME
- ATMOSPHERE / DATA PAUCITY

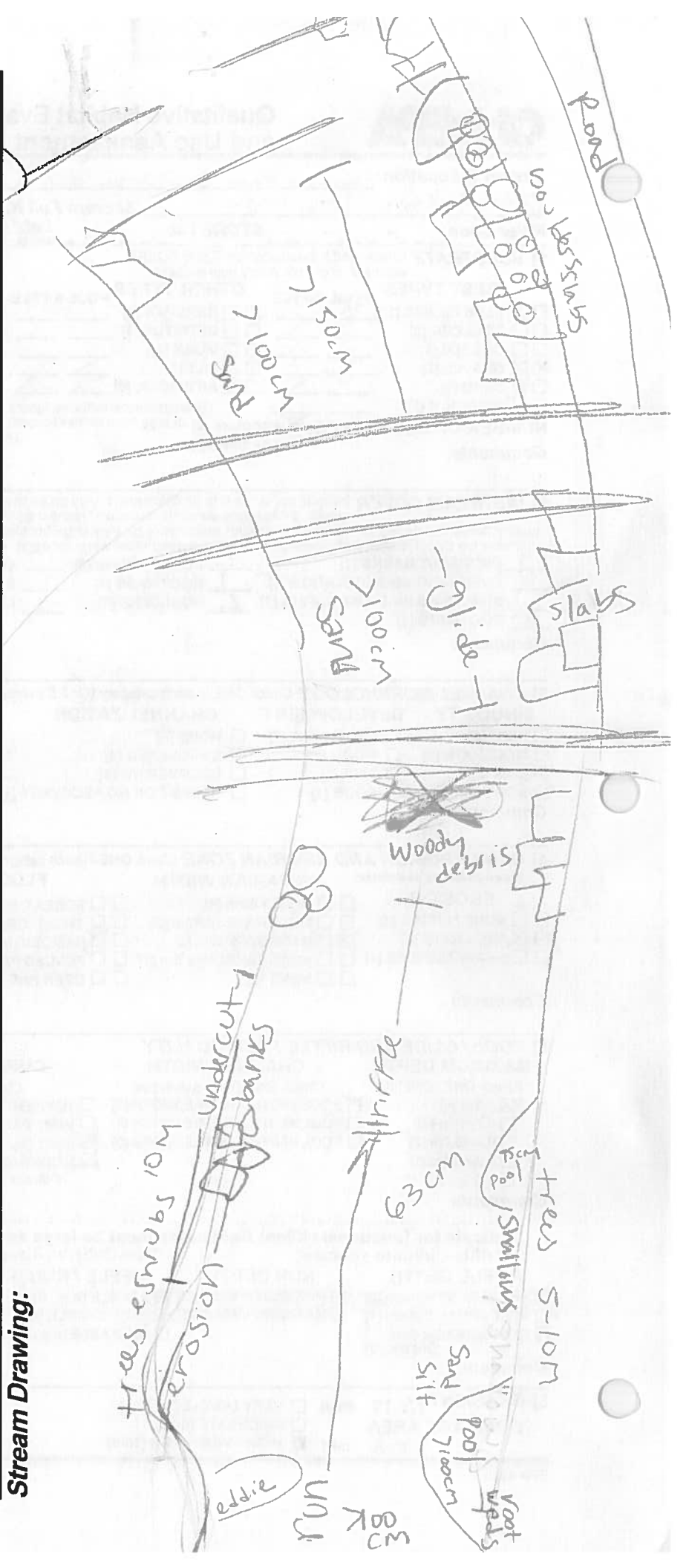
Circle some & COMMENT

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: Cuyahoga River Upstream of South Av TC RM: 10.25 Date: 09/26/13

Donna Friedman / Seth Hothon Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: - STORET #: Lat./ Long.: 41.4196 181.6542 Office verified location

1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present. Includes categories: BEST TYPES, OTHER TYPES, POOL RIFFLE, ORIGIN, QUALITY, and NUMBER OF BEST TYPES.

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: 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). Includes categories: SINUOSITY, DEVELOPMENT, CHANNELIZATION, STABILITY.

4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average). Includes categories: EROSION, RIPARIAN WIDTH, FLOOD PLAIN QUALITY, CONSERVATION TILLAGE, URBAN OR INDUSTRIAL, MINING / CONSTRUCTION.

5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH, CHANNEL WIDTH, CURRENT VELOCITY. Includes Recreation Potential Primary Contact and Secondary Contact.

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: RIFFLE DEPTH, RUN DEPTH, RIFFLE / RUN SUBSTRATE, RIFFLE / RUN EMBEDDEDNESS.

6] GRADIENT (1.75 ft/ml) DRAINAGE AREA (743 mi2). Includes categories: VERY LOW - LOW, MODERATE, HIGH - VERY HIGH. Includes % POOL, % GLIDE, % RUN, % RIFFLE.

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: >100ft² >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 H₂O / TILE / H₂O 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:





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 66.5

Stream & Location: Cuyahoga River Downstream of Southerly WWTC **RM:** 10.10 **Date:** 10/03/13
Francisco Rivera, Seth Hothem **Scorers Full Name & Affiliation:** Northeast Ohio Regional Sewer District
River Code: - **STORET #:** - **Lat./ Long.:** 41.4242 181.6638 (INAD 83 - decimal) **Office verified location**

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

BEST TYPES	POOL RIFFLE	OTHER TYPES	POOL RIFFLE	ORIGIN	QUALITY
<input type="checkbox"/> BLDR /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 checked="" type="checkbox"/> SILT	<input checked="" 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 checked="" type="checkbox"/> SAND [6]	<input checked="" type="checkbox"/>	<input type="checkbox"/> ARTIFICIAL [0]	<input type="checkbox"/>	<input type="checkbox"/> SANDSTONE [0]	<input type="checkbox"/> EXTENSIVE [-2]
<input type="checkbox"/> BEDROCK [5]	<input type="checkbox"/>			<input type="checkbox"/> RIP/RAP [0]	<input checked="" type="checkbox"/> MODERATE [-1]

NUMBER OF BEST TYPES: 4 or more [2] 3 or less [0] (Score natural substrates; ignore sludge from point-sources)

Comments

Substrate
14
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 type="checkbox"/> UNDERCUT BANKS [1]	<input checked="" type="checkbox"/> POOLS > 70cm [2]	<input type="checkbox"/> OXBOWS, BACKWATERS [1]	AMOUNT
<input type="checkbox"/> OVERHANGING VEGETATION [1]	<input type="checkbox"/> ROOTWADS [1]	<input type="checkbox"/> AQUATIC MACROPHYTES [1]	<input type="checkbox"/> EXTENSIVE >75% [11]
<input type="checkbox"/> SHALLOWS (IN SLOW WATER) [1]	<input type="checkbox"/> BOULDERS [1]	<input type="checkbox"/> LOGS OR WOODY DEBRIS [1]	<input checked="" 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

Cover
Maximum 20
12

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input checked="" 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]	

Comments

Channel
Maximum 20
12

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
<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 type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]
<input type="checkbox"/> HEAVY / SEVERE [1]	<input checked="" type="checkbox"/> NARROW 5-10m [2]	<input checked="" type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]
	<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
4.5

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

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

Comments

Pool / Current
Maximum 12
11

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

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input checked="" type="checkbox"/> BEST AREAS > 10cm [2]	<input checked="" 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 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 checked="" type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Comments

Riffle / Run
Maximum 8
5

6] GRADIENT (0.90 ft/ml) VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]

DRAINAGE AREA (744 ml²)

% POOL: 0 **% GLIDE:** 0

% RUN: 0 **% RIFFLE:** 0

Comments

Gradient
Maximum 10
8

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 >3ft

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

STAGE

- HIGH
- UP
- NORMAL
- LOW
- DRY

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

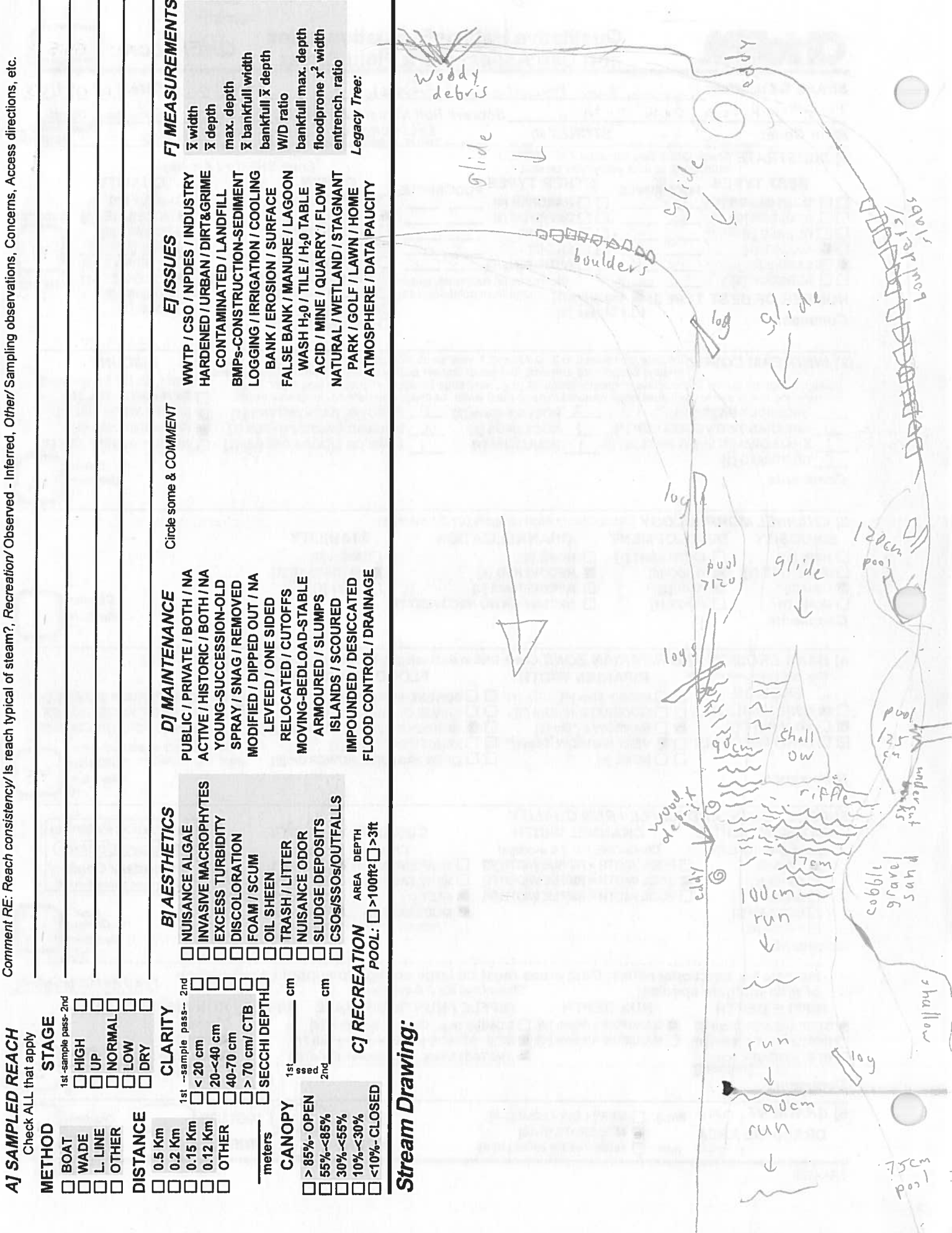
EJ ISSUES

- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT&GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H₂O / TILE / H₂O 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: Cuyahoga River Upstream of Big Creek RM: 8.60 Date: 10/03/13

Francisco Rivera, Seth Hotten Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: STORET #: Lat./ Long.: 41.4381 181.6680 Office verified location

1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present. Includes categories: BEST TYPES, OTHER TYPES, POOL RIFFLE, ORIGIN, QUALITY, and EMBEDDEDNESS.

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: UNDERCUT BANKS, OVERHANGING VEGETATION, SHALLOWS, ROOTMATS, POOLS, ROOTWADS, BOULDERS, OXBOWS, BACKWATERS, AQUATIC MACROPHYTES, LOGS OR WOODY DEBRIS.

3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average). Includes categories: SINUOSITY, DEVELOPMENT, CHANNELIZATION, STABILITY.

4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average). Includes categories: EROSION, RIPARIAN WIDTH, FLOOD PLAIN QUALITY, CONSERVATION TILLAGE, URBAN OR INDUSTRIAL, MINING / CONSTRUCTION.

5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH, CHANNEL WIDTH, CURRENT VELOCITY. Includes Recreation Potential box and Pool / Current Maximum score of 11.

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). Includes categories: RIFFLE DEPTH, RUN DEPTH, RIFFLE / RUN SUBSTRATE, RIFFLE / RUN EMBEDDEDNESS.

6] GRADIENT (2.03 ft/ml) DRAINAGE AREA (745 ml2). Includes categories: VERY LOW - LOW, MODERATE, HIGH - VERY HIGH, %POOL, %GLIDE, %RUN, %RIFFLE.

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

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/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

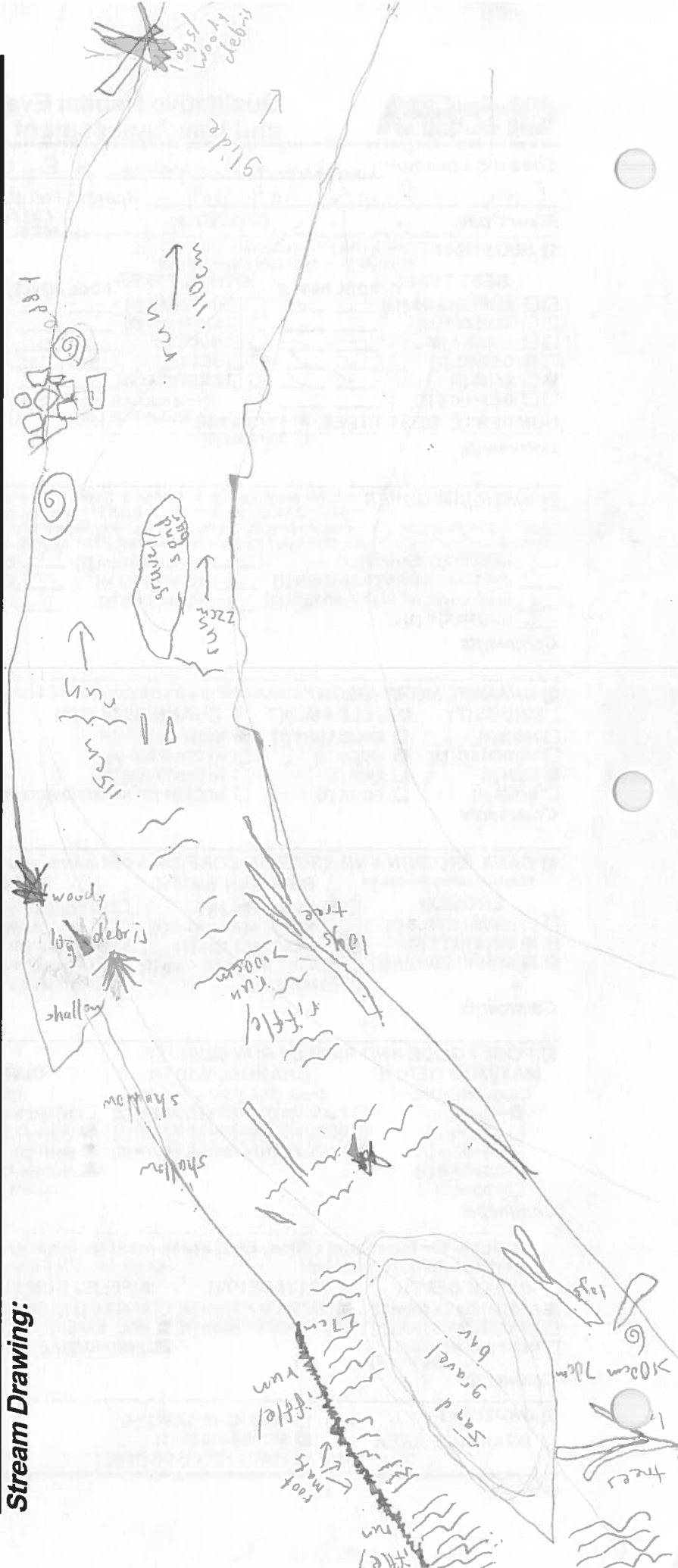
- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT&GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H₂O / TILE / H₂O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STAGNANT
- 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:



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

Stream & Location: Cuyahoga River Downstream of Big Creek RM: 2.00 Date: 10/03/13

Francisco Rivera, Seth Hothorn Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: - STORET #: Lat./ Long.: 41.4497181.6815 Office verified location

1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present. Includes categories: BEST TYPES, OTHER TYPES, ORIGIN, and QUALITY. Includes a 'Substrate' score box with value 13.

2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts... Includes categories: UNDERCUT BANKS, OVERHANGING VEGETATION, SHALLOWS, ROOTMATS, POOLS, ROOTWADS, BOULDERS, OXBOWS, AQUATIC MACROPHYTES, LOGS OR WOODY DEBRIS. Includes a 'Cover' score box with value 9.

3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average). Includes categories: SINUOSITY, DEVELOPMENT, CHANNELIZATION, STABILITY. Includes a 'Channel' score box with value 11.

4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average). Includes categories: EROSION, RIPARIAN WIDTH, FLOOD PLAIN QUALITY, CONSERVATION TILLAGE, URBAN OR INDUSTRIAL, MINING / CONSTRUCTION. Includes a 'Riparian' score box with value 5.

5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH, CHANNEL WIDTH, CURRENT VELOCITY. Includes a 'Recreation Potential' box with 'Primary Contact' and 'Secondary Contact' options. Includes a 'Pool / Current' score box with value 12.

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). Includes categories: RIFFLE DEPTH, RUN DEPTH, RIFFLE / RUN SUBSTRATE, RIFFLE / RUN EMBEDDEDNESS. Includes a 'Riffle / Run' score box with value 4.5.

6] GRADIENT (2.03 ft/ml) DRAINAGE AREA (786 mi2). Includes categories: VERY LOW - LOW, MODERATE, HIGH - VERY HIGH. Includes a 'Gradient' score box with value 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

- < 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
- ARMOURD / SLUMPS
- ISLANDS / SCOURED
- IMPOUNDED / DESICCATED
- FLOOD CONTROL / DRAINAGE

EJ ISSUES

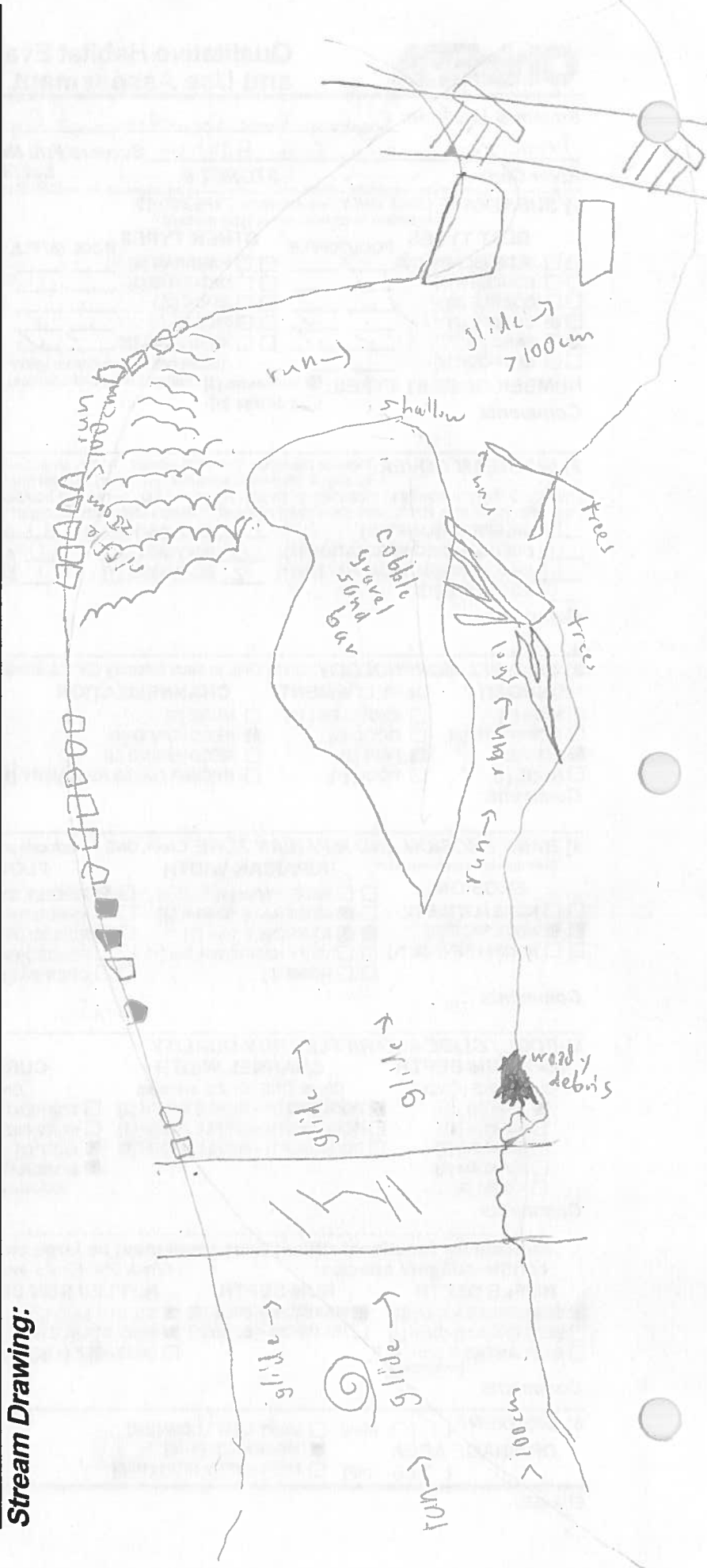
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- PARK / GOLF / LAWN / HOME
- ATMOSPHERE / DATA PAUCITY

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: **20.5**

RIVERCODE _____ RIVERMILE 5.90 WATERBODY Cuyahoga Rvr DISTANCE ASSESSED (m): 500
 DATE 09/26/13 LOCATION Head of Navigation Channel
 SCORER Seth Hothorn LAT. 41.4642 LONG. -81.6788 COMMENT _____

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

LAKE: _____ LACUSTRARY:

TYPE	SHORE		BOTTOM		SUBSTRATE ORIGIN Check ONE (or 2 & AVERAGE)	SILT	SUBSTRATE QUALITY Check ONE (or 2 & AVERAGE)
	SHORE	BOTTOM	SHORE	BOTTOM			
<input type="checkbox"/> BLDR/SLABS [7]			<input type="checkbox"/> HARDPAN [4]		<input type="checkbox"/> LIMESTONE [1]	<input checked="" type="checkbox"/> SILT	<input checked="" type="checkbox"/> SILT HEAVY [-2]
<input type="checkbox"/> BOULDER [10]			<input type="checkbox"/> BEDROCK [3]		<input checked="" type="checkbox"/> TILLS [1]		<input type="checkbox"/> SILT MODERATE [-1]
<input type="checkbox"/> COBBLE [8]			<input type="checkbox"/> DETRITUS [3]		<input type="checkbox"/> WETLANDS [1]	<input type="checkbox"/> SILT	<input type="checkbox"/> SILT NORMAL [0]
<input type="checkbox"/> GRAVEL [7]			<input type="checkbox"/> SILT [2]		<input type="checkbox"/> LACUSTRARINE [1]		<input type="checkbox"/> SILT FREE [1]
<input type="checkbox"/> SAND [6]			<input checked="" type="checkbox"/> MUCK [2]		<input type="checkbox"/> SANDSTONE [1]	<input type="checkbox"/> SILT ORIGIN:	<input checked="" type="checkbox"/> CLAY [-2]
					<input type="checkbox"/> RIPRAP [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"/> COALORE [-2]		

Substrate
 1.5
 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 [1]

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

Cover
 9
 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	MODIFICATIONS OF SAMPLED SHORELINE
<input type="checkbox"/> HIGH [2] <input type="checkbox"/> MODERATE [4] <input checked="" type="checkbox"/> LOW [3] <input type="checkbox"/> NONE [1]	<input type="checkbox"/> EXCELLENT [6] <input type="checkbox"/> GOOD [5] <input type="checkbox"/> FAIR [3] <input checked="" type="checkbox"/> POOR [1]	<input type="checkbox"/> NONE [7] <input type="checkbox"/> RECOVERED [5] <input type="checkbox"/> RECOVERING [3] <input checked="" type="checkbox"/> RECENT OR NO RECOVERY [1]	<input checked="" type="checkbox"/> HIGH [3] <input type="checkbox"/> MODERATE [2] <input type="checkbox"/> LOW [1]	<input checked="" type="checkbox"/> CEMENTED [-1] <input checked="" type="checkbox"/> RIP RAPPED [1] <input type="checkbox"/> RAILROAD TIES [-1] <input type="checkbox"/> DREDGED [-1] <input checked="" type="checkbox"/> TWO SIDE CHANNEL MODIFICATIONS [-1] <input type="checkbox"/> SHIP CHANNEL [-2]
SHORE to BOTTOM SLOPE MORPHOLOGIES <input type="checkbox"/> SLOPE < 15 deg. [0] <input checked="" type="checkbox"/> SLOPE > 45 deg. [2] <input type="checkbox"/> SLOPE < 25 deg. [1] <input type="checkbox"/> SLOPE 90 deg. [0] <input type="checkbox"/> SLOPE > 25 deg. [3]				
AVERAGE DEPTH (of 5 measures) <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 type="checkbox"/> ≥ 100 - 200 cm [2] <input type="checkbox"/> > 900 cm [1] <input checked="" type="checkbox"/> > 200 - 400 cm [3]				
<input checked="" 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 PILINGS [1]				

ShoreLine
 10
 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	L R (Per Bank)
<input type="checkbox"/> WIDE > 50 m [4] <input type="checkbox"/> MODERATE 10-50 m [3] <input checked="" type="checkbox"/> NARROW 5-10 m [2] <input type="checkbox"/> VERY NARROW < 5 m [1] <input checked="" type="checkbox"/> NONE [0]	<input type="checkbox"/> FOREST, WETLAND, LAKE [3] <input type="checkbox"/> SHRUB OR OLD FIELD [2] <input type="checkbox"/> VINEYARD, ORCHARD [2] <input type="checkbox"/> FENCED PASTURE [1] <input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> CONSERVATION TILLIAGE [1] <input checked="" type="checkbox"/> URBAN OR INDUSTRIAL [0] <input type="checkbox"/> OPEN PASTURE, ROWCROP [0] <input type="checkbox"/> MINING CONSTRUCTION [0] <input type="checkbox"/> DIKED WETLAND [0]	<input type="checkbox"/> NONELITTLE [3] <input checked="" type="checkbox"/> MODERATE [-1] <input type="checkbox"/> HEAVY/SEVERE [-3]

Riparian
 0
 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

<input type="checkbox"/> Pond Lilies (NYMPHAEA)	<input type="checkbox"/> Sedge (CYPERACEAE)	<input type="checkbox"/> Wild Celery (VALLISNERIA)	<input type="checkbox"/> Wild Rice (ZIZANIA)
<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 checked="" type="checkbox"/> Reed Grass <input type="checkbox"/> Eurasian Milfoil <input type="checkbox"/> Cattails <input type="checkbox"/> Algae (mats) <input type="checkbox"/> Algae (planktonic)			

Vegetation
 0
 Max 30

COMMENTS: _____

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

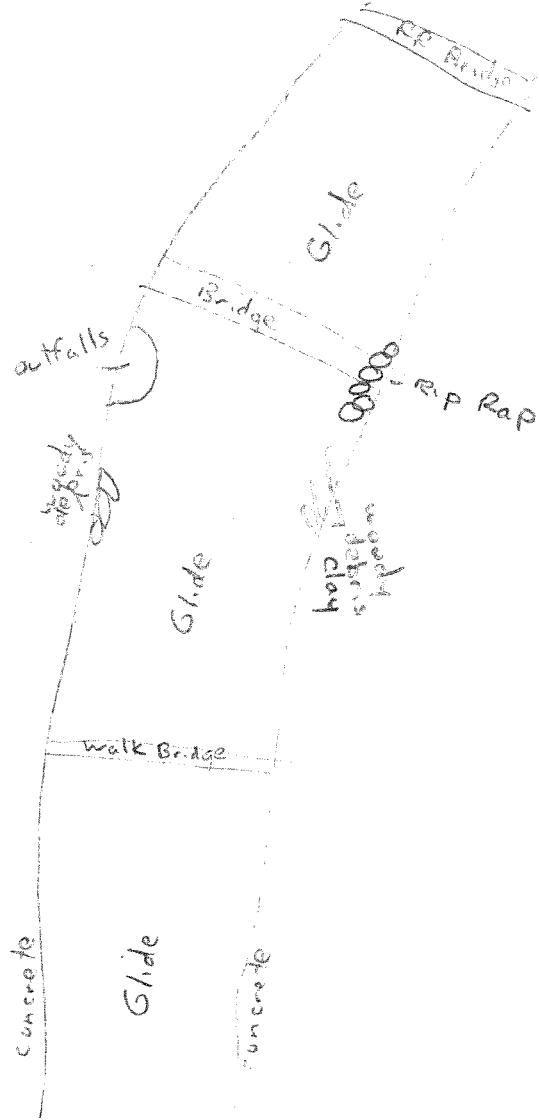
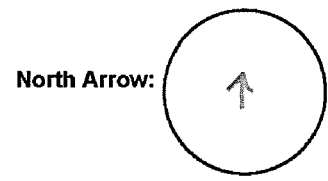
Depth measures: _____
Zebra Mussel/Quagga Mussel Coverage >60% 60->25% 25->10% <10->1% 1-0%

	Gear	Distance	Water Clarity	Wave Height	Subjective Rating (1-10)	Aesthetic Rating (1-10)
First Sampling Pass:	14' boat	500m	_____	_____	2	1
Second Sampling Pass:	14' boat	500m	_____	_____		
Third Sampling Pass:	_____	_____	_____	_____		

Photos: _____

WATERBODY MEASUREMENTS: AVERAGE WIDTH: _____ AVERAGE DEPTH: _____ Maximum Depth: _____

DRAWING OF SITE:



Lake / Lacustrine (Lentic) QHEI Field Sheet



Environmental Protection Agency

QHEI Score:

19

RIVERCODE _____ RIVERMILE 2.75 WATERBODY Cuyahoga River DISTANCE ASSESSED (m): 500
 DATE 10/04/13 LOCATION Restoration site / Former marina
 SCORER Seth Hathorn LAT. 41.4881 LONG. -81.6938 COMMENT _____

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

LAKE: _____ LACUSTRARY:

TYPE		SHORE	BOTTOM	SHORE		BOTTOM	SUBSTRATE ORIGIN		SUBSTRATE QUALITY		Substrate <input type="text" value="1"/> Max 20
							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]	SILT:	<input checked="" type="checkbox"/> SILT HEAVY [-2]	SILT ORIGIN:	<input type="checkbox"/> INDUSTRIAL [-1] <input type="checkbox"/> ORGANIC [1] <input type="checkbox"/> NONE [1]
<input type="checkbox"/> BOULDER [10]			<input checked="" type="checkbox"/>	<input type="checkbox"/> BEDROCK [3]			<input checked="" type="checkbox"/> TILLS [1]		<input type="checkbox"/> SILT MODERATE [-1]		
<input type="checkbox"/> COBBLE [8]				<input type="checkbox"/> DETRITUS [3]			<input type="checkbox"/> WETLANDS [1]	SILT ORIGIN:	<input type="checkbox"/> SILT FREE [1]		
<input type="checkbox"/> GRAVEL [7]				<input type="checkbox"/> SILT [2]			<input type="checkbox"/> LACUSTRARINE [1]		<input checked="" type="checkbox"/> CLAY [-2]		
<input type="checkbox"/> SAND [6]			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> MUCK [2]			<input type="checkbox"/> SANDSTONE [1]				
							<input type="checkbox"/> RIPRAP [1]				
							<input type="checkbox"/> HARDPAN [0]				
							<input type="checkbox"/> SHALE [-1]				
							<input type="checkbox"/> COAL/ORE [-2]				

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 checked="" type="checkbox"/> DEEPWATER > 1 M [1]	<input type="checkbox"/> WETLAND POOLS [1]	Cover <input type="text" value="7"/> Max 20
<input type="checkbox"/> OVERHANGING VEGETATION [1]	<input type="checkbox"/> ROOTWADS [1]	<input checked="" type="checkbox"/> SUBMERGED AQUATIC VEG. [4]	
<input type="checkbox"/> SHALLOWS (ON BEACH) [1]	<input checked="" type="checkbox"/> BOULDERS [1]	<input type="checkbox"/> LOGS OR WOODY DEBRIS [1]	
<input type="checkbox"/> ROOTMATS [1]	<input type="checkbox"/> SAND BEACH [1]	<input type="checkbox"/> GRAVEL BEACH [1]	
		<input type="checkbox"/> EXTENSIVE > 75% [9]	
		<input type="checkbox"/> MODERATE 25-75% [7]	
		<input type="checkbox"/> SPARSE 5-25% [3]	
		<input checked="" type="checkbox"/> NEARLY ABSENT < 5% [1]	

COMMENTS: _____

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

MODIFICATIONS OF SAMPLED SHORELINE

SHORE SINUOSITY	DEVELOPMENT	MODIFICATION	STABILITY	MODIFICATIONS OF SAMPLED SHORELINE		Shore Line <input type="text" value="6"/> Max 20
<input type="checkbox"/> HIGH [2] <input type="checkbox"/> MODERATE [4] <input checked="" type="checkbox"/> LOW [3] <input type="checkbox"/> NONE [1]	<input type="checkbox"/> EXCELLENT [6] <input type="checkbox"/> GOOD [5] <input type="checkbox"/> FAIR [3] <input checked="" type="checkbox"/> POOR [1]	<input type="checkbox"/> NONE [7] <input type="checkbox"/> RECOVERED [5] <input type="checkbox"/> RECOVERING [3] <input checked="" type="checkbox"/> RECENT OR NO RECOVERY [1]	<input checked="" type="checkbox"/> HIGH [3] <input type="checkbox"/> MODERATE [2] <input type="checkbox"/> LOW [1]	<input type="checkbox"/> CEMENTED [-1] <input checked="" type="checkbox"/> RIP RAPPED [1] <input type="checkbox"/> RAILROAD TIES [-1] <input type="checkbox"/> DREDGED [-1] <input checked="" type="checkbox"/> TWO SIDE CHANNEL MODIFICATIONS [-1] <input checked="" type="checkbox"/> SHIP CHANNEL [-2]	<input checked="" type="checkbox"/> STEEL BULKHEADS [-2] <input type="checkbox"/> ISLANDS [1] <input type="checkbox"/> DIKES [-1] <input checked="" type="checkbox"/> BANK SHAPING [-1] <input type="checkbox"/> WOOD PILING [1]	
SHORE to BOTTOM SLOPE MORPHOLOGIES		AVERAGE DEPTH (of 5 measures)				
<input type="checkbox"/> SLOPE < 15 deg. [0]	<input checked="" type="checkbox"/> SLOPE > 45 deg. [2]	<input type="checkbox"/> < 50 cm [0]	<input type="checkbox"/> > 400 - 500 cm [4]			
<input type="checkbox"/> SLOPE < 25 deg. [1]	<input checked="" type="checkbox"/> SLOPE 90 deg. [0]	<input type="checkbox"/> 50 - < 100 cm [1]	<input checked="" 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]			
		<input type="checkbox"/> > 200 - 4.00 cm [3]				

COMMENTS: Restoration site on river left

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 <input type="text" value="3"/> Max 10
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]	<input checked="" type="checkbox"/> NONELITTLE [3]	
<input type="checkbox"/> MODERATE 10-50 m [3]		<input type="checkbox"/> SHRUB OR OLD FIELD [2]		<input checked="" type="checkbox"/> URBAN OR INDUSTRIAL [0]	<input type="checkbox"/> MODERATE [-1]	
<input type="checkbox"/> NARROW 5-10 m [2]		<input type="checkbox"/> VINEYARD, ORCHARD [2]		<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]	<input type="checkbox"/> HEAVY/SEVERE [-3]	
<input type="checkbox"/> VERY NARROW < 5 m [1]		<input type="checkbox"/> FENCED PASTURE [1]		<input type="checkbox"/> MINING CONSTRUCTION [0]		
<input checked="" type="checkbox"/> NONE [0]		<input 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)	Vegetation <input type="text" value="2"/> Max 30
<input type="checkbox"/> Pond Weed (POTAMOGETON)	<input type="checkbox"/> Bulrush (SCIRPUS)	<input type="checkbox"/> Waterweed (ELODEA)	
<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) X If Not, Explain: _____

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

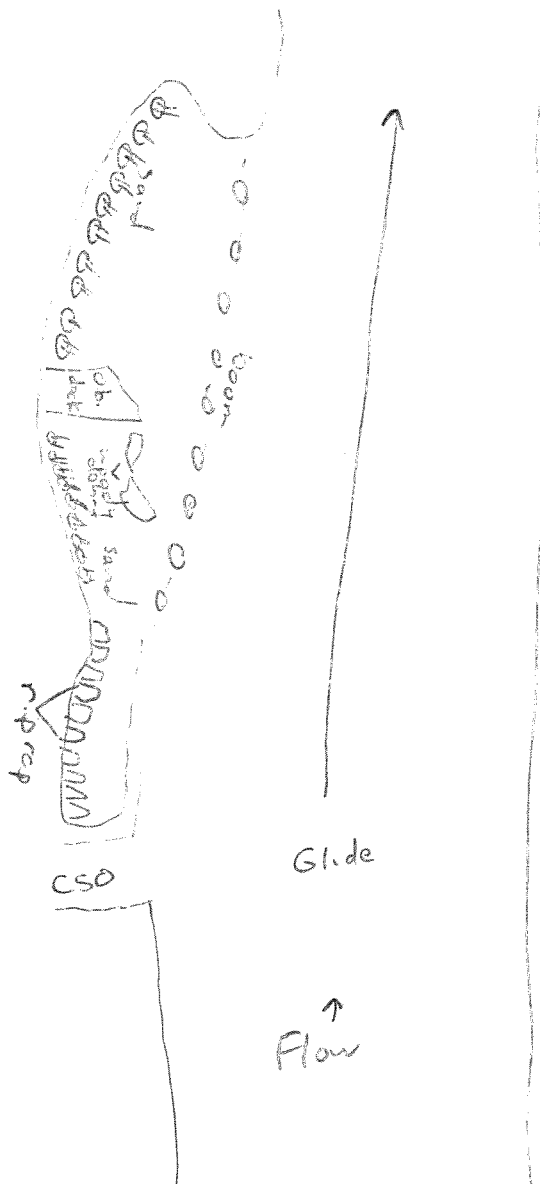
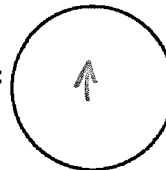
	Gear	Distance	Water Clarity	Wave Height		
First Sampling Pass:	_____	_____	_____	_____		
Second Sampling Pass:	_____	_____	_____	_____	2	3
Third Sampling Pass:	_____	_____	_____	_____	Subjective Rating (1-10)	Aesthetic Rating (1-10)

Photos: _____

WATERBODY MEASUREMENTS: AVERAGE WIDTH: _____ AVERAGE DEPTH: _____ Maximum Depth: _____

DRAWING OF SITE:

North Arrow:



Lake / Lacustrary (Lentic) QHEI Field Sheet

Ohio

Environmental Protection Agency

QHEI Score:

14

RIVERCODE _____ RIVERMILE 0.20 WATERBODY Cuyahoga River DISTANCE ASSESSED (m): 500
 DATE 09/26/13 LOCATION Near mouth of river
 SCORER Seth Hothorn LAT. 41.5008 LONG. -81.7098 COMMENT _____

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

LAKE: _____ LACUSTRARY:

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

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

COMMENTS: _____

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

MODIFICATIONS OF SAMPLED SHORELINE

SHORE SINUOSITY	DEVELOPMENT	MODIFICATION	STABILITY	MODIFICATIONS OF SAMPLED SHORELINE
<input type="checkbox"/> HIGH [2]	<input type="checkbox"/> EXCELLENT [6]	<input type="checkbox"/> NONE [7]	<input checked="" type="checkbox"/> HIGH [3]	<input type="checkbox"/> CEMENTED [-1]
<input type="checkbox"/> MODERATE [4]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [5]	<input type="checkbox"/> MODERATE [2]	<input type="checkbox"/> RIP RAPPED [1]
<input 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 checked="" type="checkbox"/> NONE [1]	<input checked="" type="checkbox"/> POOR [1]	<input checked="" type="checkbox"/> RECENT OR NO RECOVERY [1]		<input checked="" type="checkbox"/> DREDGED [-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 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 checked="" 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]

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 > 50m [4]	<input type="checkbox"/> FOREST, WETLAND, LAKE [3]	<input checked="" type="checkbox"/> NONE/LITTLE [3]
<input type="checkbox"/> MODERATE 10-50 m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> MODERATE [-1]
<input type="checkbox"/> NARROW 5-10 m [2]	<input type="checkbox"/> VINEYARD, ORCHARD [2]	<input type="checkbox"/> HEAVY/SEVERE [-3]
<input type="checkbox"/> VERY NARROW < 5 m [1]	<input type="checkbox"/> FENCED PASTURE [1]	
<input checked="" type="checkbox"/> NONE [0]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	
	<input type="checkbox"/> CONSERVATION TILLIAGE [1]	
	<input checked="" type="checkbox"/> URBAN OR INDUSTRIAL [0]	
	<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]	
	<input type="checkbox"/> MINING/CONSTRUCTION [0]	
	<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"/> Wild Rice (ZIZANIA)

<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: _____

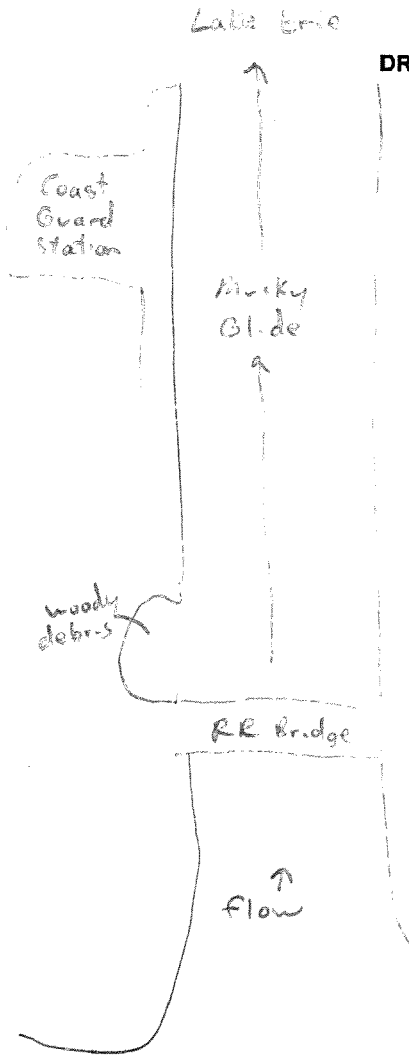
Is the Sampling Reach Representative of Area Habitat? (Y/N) If Not, Explain: _____

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

	Gear	Distance	Water Clarity	Wave Height	Subjective Rating (1-10)	Aesthetic Rating (1-10)
First Sampling Pass:	14' boat	500m	_____	_____	2	1
Second Sampling Pass:	14' boat	500m	_____	_____		
Third Sampling Pass:	_____	_____	_____	_____		

Photos: _____

WATERBODY MEASUREMENTS: AVERAGE WIDTH: _____ AVERAGE DEPTH: _____ Maximum Depth: _____



DRAWING OF SITE:

