OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 55

Stream & Location: Nine-Mile Creek Site #9 (Nela Park) **RM:** 2.1 **Date:** 10/12/11

Scorers Full Name & Affiliation: J. Novak K. Granlund, Northeast Ohio Regional Sewer District

River Code: ___-___-___ **STORET #:** _____ **Lat./Long.:** (NAD 83 - decimal °) 41.5429 / 81.5552 ☐ 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
☐ ☐ BLDR/SLABS [10]			☐ ☐ HARDPAN [4]		
☐ ☐ BOULDER [9]			☐ ☐ DETRITUS [3]		
☐ ☐ COBBLE [8]	✓	✓	☐ ☐ MUCK [2]		
☐ ☐ GRAVEL [7]	✓	✓	☐ ☐ SILT [2]		
☐ ☐ SAND [6]	✓	✓	☐ ☐ ARTIFICIAL [0]		✓
☐ ☐ BEDROCK [5]	✓	✓	(Score natural substrates; ignore sludge from point-sources)		

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

Check ONE (Or 2 & average)

ORIGIN	SILT / EMBEDDEDNESS	QUALITY
☐ LIMESTONE [1]		☐ HEAVY [-2]
☐ TILLS [1]		☐ MODERATE [-1]
☐ WETLANDS [0]		☐ NORMAL [0]
☐ HARDPAN [0]		☐ FREE [1]
☐ SANDSTONE [0]		☐ EXTENSIVE [-2]
☐ RIP/RAP [0]		☐ MODERATE [-1]
☐ LACUSTURINE [0]		☐ NORMAL [0]
☐ SHALE [-1]		☐ NONE [1]
☐ COAL FINES [-2]		

Substrate 18 *Maximum 20*

Comments
Hard to determine silt due to sewage contamination of creek

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.

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

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

Comments

Cover Maximum 20: 8

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☐ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☐ GOOD [5]	☒ RECOVERED [4]	☐ MODERATE [2]
☒ LOW [2]	☐ FAIR [3]	☐ RECOVERING [3]	☒ LOW [1]
☐ NONE [1]	☒ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments

Channel Maximum 20: 8

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

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

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

Comments

Riparian Maximum 10: 9

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)

Comments

Pool / Current Maximum 12: 5

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
☐ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☒ BEST AREAS 5-10cm [1]	☒ MAXIMUM < 50cm [1]	☒ MOD. STABLE (e.g., Large Gravel) [1]	☐ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☒ MODERATE [0]
			☐ EXTENSIVE [-1]

Comments

Riffle / Run Maximum 8: 3

6] GRADIENT
(47.1 ft/mi) ☐ VERY LOW - LOW [2-4] ☐ MODERATE [6-10] ☒ HIGH - VERY HIGH [10-6]

DRAINAGE AREA (3.1 mi²)

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

Gradient Maximum 10: 4

A] SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT
- ☐ WADE
- ☐ L. LINE
- ☐ OTHER

STAGE

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

DISTANCE

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

_____ meters

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

1st pass _____ cm

2nd _____ cm

C] RECREATION AREA DEPTH

POOL: ☐ >100ft² ☐ >3ft

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

Flow slightly elevated. Bridle Creek was contaminated w/ sewage due to smell & black color seen in creek. Investigation found sanitary & storm sewers working as intended.

B] AESTHETICS

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

D] MAINTENANCE

Circle some & *COMMENT*

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

E] ISSUES

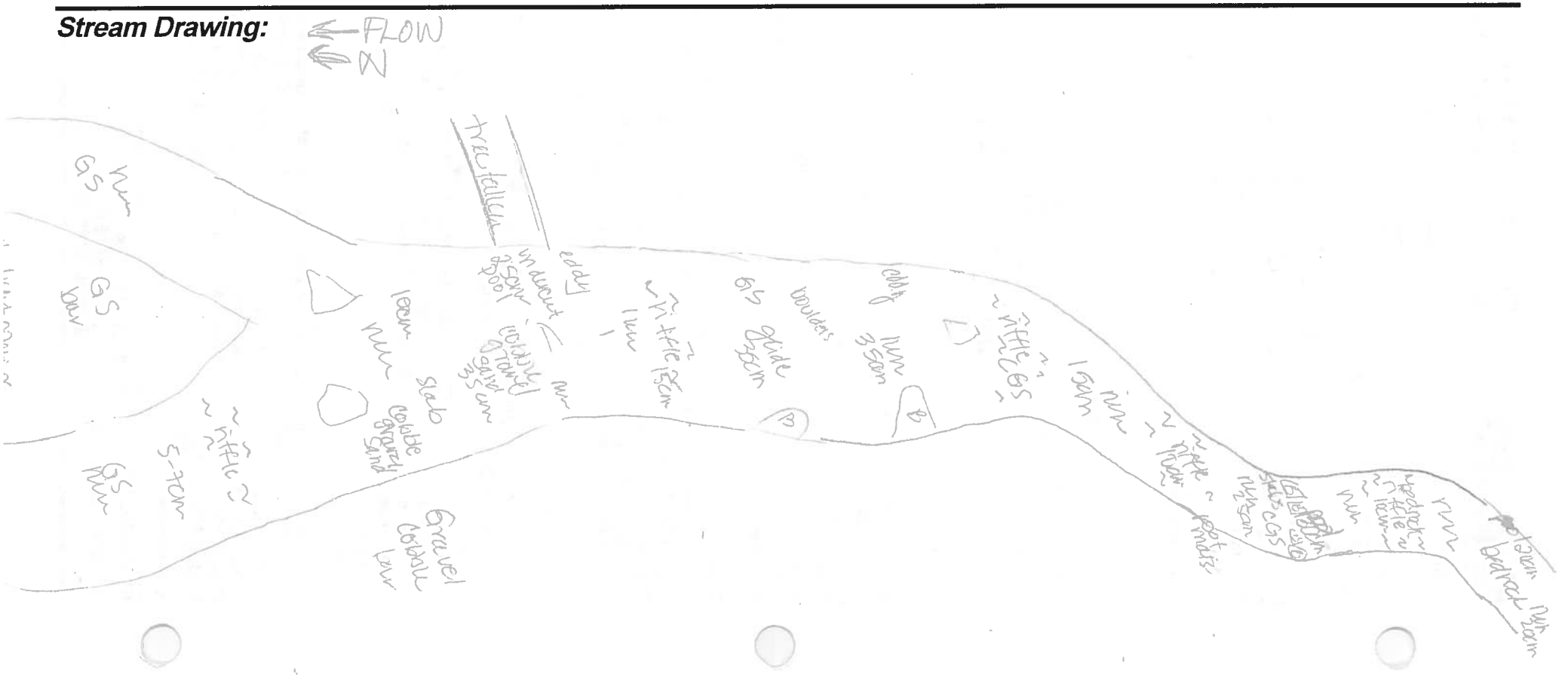
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

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

Legacy Tree:

Stream Drawing:



OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 61.25

Stream & Location: Nine-Mile Creek Site #10 **RM:** _._ **Date:** 10/12/11

Scorers Full Name & Affiliation: J. Novak, K. Granlund, Northeast Ohio Regional Sewer District

River Code: _ _ _ - _ _ _ - _ _ _ **STORET #:** _ _ _ _ _ _ **Lat./Long.:** (NAD 83 - decimal °) 41.5457 / 81.5523 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
☐☐ BLDR /SLABS [10]	✓	✓	☐☐ HARDPAN [4]		
☐☐ BOULDER [9]		✓	☐☐ DETRITUS [3]		
☐☐ COBBLE [8]	✓	✓	☐☐ MUCK [2]		
☐☒ GRAVEL [7]	✓	✓	☐☐ SILT [2]		
☐☐ SAND [6]	✓	✓	☐☐ ARTIFICIAL [0]	✓	✓
☒☐ BEDROCK [5]	✓	✓			

(Score natural substrates; ignore sludge from point-sources)

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

Check ONE (*Or 2 & average*)

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

QUALITY

SILT 0.5

- ☐ HEAVY [-2]
- ☐ MODERATE [-1]
- ☒ NORMAL [0]
- ☒ FREE [1]

EMBEDDEDNESS 0

- ☐ EXTENSIVE [-2]
- ☐ MODERATE [-1]
- ☒ NORMAL [0]
- ☐ NONE [1]

Substrate 15.5 *Maxim 20*

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.

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

AMOUNT

Check ONE (*Or 2 & average*)

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

Comments

Cover Maximum 20 9

3] CHANNEL MORPHOLOGY

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

SINUOSITY
- ☐ HIGH [4]
- ☐ MODERATE [3]
- ☒ LOW [2]
- ☐ NONE [1]

DEVELOPMENT
- ☐ EXCELLENT [7]
- ☐ GOOD [5]
- ☒ FAIR [3]
- ☒ POOR [1]

CHANNELIZATION
- ☒ NONE [6]
- ☐ RECOVERED [4]
- ☐ RECOVERING [3]
- ☐ RECENT OR NO RECOVERY [1]

STABILITY
- ☐ HIGH [3]
- ☒ MODERATE [2]
- ☒ LOW [1]

1.5

Comments

Channel Maximum 20 11.5

4] BANK EROSION AND RIPARIAN ZONE

Check **ONE** in each category for *EACH BANK* (*Or 2 per bank & average*)

River right looking downstream

EROSION

L	R	
☐	☐	NONE / LITTLE [3]
☒	☒	MODERATE [2]
☒	☐	HEAVY / SEVERE [1]

1.75

RIPARIAN WIDTH

L	R	
☐	☒	WIDE > 50m [4]
☒	☐	MODERATE 10-50m [3]
☐	☐	NARROW 5-10m [2]
☐	☐	VERY NARROW < 5m [1]
☐	☐	NONE [0]

3.5

FLOOD PLAIN QUALITY

L	R		L	R	
☒	☒	FOREST, SWAMP [3]	☐	☐	CONSERVATION TILLAGE [1]
☐	☐	SHRUB OR OLD FIELD [2]	☐	☐	URBAN OR INDUSTRIAL [0]
☒	☒	RESIDENTIAL, PARK, NEW FIELD [1]	☐	☐	MINING / CONSTRUCTION [0]
☐	☐	FENCED PASTURE [1]			
☐	☐	OPEN PASTURE, ROWCROP [0]			

2

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

Comments

Riparian Maximum 10 7.25

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

Indicate for reach - pools and riffles.

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

Comments

Pool / Current Maximum 12 9

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=

RIFFLE DEPTH
- ☒ BEST AREAS > 10cm [2]
- ☐ BEST AREAS 5-10cm [1]
- ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ☐ MAXIMUM > 50cm [2]
- ☒ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
- ☒ STABLE (e.g., Cobble, Boulder) [2]
- ☒ MOD. STABLE (e.g., Large Gravel) [1]
- ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
- ☐ NONE [2]
- ☒ LOW [1]
- ☒ MODERATE [0]
- ☐ EXTENSIVE [-1]

Comments

Riffle / Run Maximum 8 5

6] GRADIENT

(66.7 ft/mi) **DRAINAGE AREA** (0.7 mi²)
- ☐ VERY LOW - LOW [2-4]
- ☐ MODERATE [6-10]
- ☒ HIGH - VERY HIGH [10-6]

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

Gradient Maximum 10 4

A] SAMPLED REACH
Check ALL that apply

METHOD
☐ BOAT
☐ WADE
☐ L. LINE
☐ OTHER

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

DISTANCE
☐ 0.5 Km
☐ 0.2 Km
☐ 0.15 Km
☐ 0.12 Km
☐ OTHER
_____ meters

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

pass 1st_________ cm
2nd_________ cm

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

Flow slightly elevated

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

C] RECREATION AREA DEPTH
POOL: ☐ >100ft² ☐ >3ft

D] MAINTENANCE Circle some & *COMMENT*
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

E] ISSUES
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_2O / TILE / H_2O TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

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

Stream Drawing:

OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 75

Stream & Location: Nine Mile Creek - Upstream of Lakeshore Blvd **RM:** 0.40 **Date:** 06/30/11

Scorers Full Name & Affiliation: K. Granlund + C. Musial, Northeast Ohio Regional Sewer District

River Code: ___-___-___ **STORET #:** _____ **Lat./Long.:** 41.5575 / 81.5991 (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
☐☐ BLDR /SLABS [10]	✓		☐☐ HARDPAN [4]	✓	
☐☐ BOULDER [9]	✓		☐☐ DETRITUS [3]		
☐☐ COBBLE [8]	✓	✓	☐☐ MUCK [2]		
☐☒ GRAVEL [7]	✓	✓	☐☐ SILT [2]	✓	✓
☒☐ SAND [6]	✓	✓	☐☐ ARTIFICIAL [0]	✓	
☐☐ BEDROCK [5]			(Score natural substrates; ignore sludge from point-sources)		

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

Check ONE (*Or 2 & average*)

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

QUALITY

SILT
- ☒ HEAVY [-2]
- ☒ MODERATE [-1]
- ☐ NORMAL [0]
- ☐ FREE [1]

EMBEDDEDNESS
- ☒ EXTENSIVE [-2]
- ☒ MODERATE [-1]
- ☐ NORMAL [0]
- ☐ NONE [1]

Substrate 13 *Maximum 20*

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.

1 UNDERCUT BANKS [1]	3 POOLS > 70cm [2]	0 OXBOWS, BACKWATERS [1]	
1 OVERHANGING VEGETATION [1]	0 ROOTWADS [1]	0 AQUATIC MACROPHYTES [1]	
2 SHALLOWS (IN SLOW WATER) [1]	1 BOULDERS [1]	1 LOGS OR WOODY DEBRIS [1]	
1 ROOTMATS [1]			

AMOUNT

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

Cover *Maximum 20* 15

Comments

3] CHANNEL MORPHOLOGY

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

SINUOSITY
- ☐ HIGH [4]
- ☐ MODERATE [3]
- ☒ LOW [2]
- ☐ NONE [1]

DEVELOPMENT
- ☐ EXCELLENT [7]
- ☒ GOOD [5]
- ☒ FAIR [3]
- ☐ POOR [1]

CHANNELIZATION
- ☒ NONE [6]
- ☐ RECOVERED [4]
- ☐ RECOVERING [3]
- ☐ RECENT OR NO RECOVERY [1]

STABILITY
- ☐ HIGH [3]
- ☒ MODERATE [2]
- ☐ LOW [1]

Channel *Maximum 20* 14

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

L	R	
☐	☐	NONE / LITTLE [3]
☒	☒	MODERATE [2]
☐	☐	HEAVY / SEVERE [1]

RIPARIAN WIDTH

L	R	
☐	☒	WIDE > 50m [4]
☐	☐	MODERATE 10-50m [3]
☒	☐	NARROW 5-10m [2]
☐	☐	VERY NARROW < 5m [1]
☐	☐	NONE [0]

FLOOD PLAIN QUALITY

L	R		L	R	
☐	☒	FOREST, SWAMP [3]	☐	☐	CONSERVATION TILLAGE [1]
☐	☐	SHRUB OR OLD FIELD [2]	☐	☐	URBAN OR INDUSTRIAL [0]
☒	☐	RESIDENTIAL, PARK, NEW FIELD [1]	☐	☐	MINING / CONSTRUCTION [0]
☐	☐	FENCED PASTURE [1]			
☐	☐	OPEN PASTURE, ROWCROP [0]			

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

Riparian *Maximum 10* 7

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

Indicate for reach - pools and riffles.

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

Pool / Current *Maximum 12* 12

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
- ☒ BEST AREAS > 10cm [2]
- ☐ BEST AREAS 5-10cm [1]
- ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ☐ MAXIMUM > 50cm [2]
- ☒ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
- ☐ STABLE (e.g., Cobble, Boulder) [2]
- ☒ MOD. STABLE (e.g., Large Gravel) [1]
- ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
- ☐ NONE [2]
- ☐ LOW [1]
- ☒ MODERATE [0]
- ☐ EXTENSIVE [-1]

Riffle / Run *Maximum 8* 4

Comments

6] GRADIENT

(10.46 ft/mi) **DRAINAGE AREA** (11.8 mi²)

- ☐ VERY LOW - LOW [2-4]
- ☒ MODERATE [6-10]
- ☐ HIGH - VERY HIGH [10-6]

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

Gradient *Maximum 10* 10

A] SAMPLED REACH
Check ALL that apply

Comment RE: *Reach consistency/* Is reach typical of steam?, *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

_____ meters

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

1st pass ________ cm
2nd pass ________ cm

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

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

C] RECREATION
AREA DEPTH
POOL: ☐ >100ft^2 ☐ >3ft

D] MAINTENANCE
Circle some & *COMMENT*

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

E] ISSUES
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_2O / TILE / H_2O TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

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

Legacy Tree:

Stream Drawing: