



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 70.75

Stream & Location: Rocky River (upstream of Mastick Road) **RM:** 8.30 **Date:** 06/22/17

Seth Hothem* Mario Meaney **Scorers Full Name & Affiliation:** Northeast Ohio Regional Sewer District
River Code: **STORET #:** **Lat./ Long.:** 41.4354 / 81.8132 (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		15 <small>Maximum 20</small>												
<input type="checkbox"/> BLDR / SLABS [10]	<input checked="" type="checkbox"/> BOULDER [9]	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> HARDPAN [4]	<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/> MUCK [2]	<input type="checkbox"/> SILT [2]	<input type="checkbox"/> LIMESTONE [1]	<input checked="" type="checkbox"/> TILLS [1]	<input type="checkbox"/> WETLANDS [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]	<input type="checkbox"/> HEAVY [-2]	<input type="checkbox"/> MODERATE [-1]	<input type="checkbox"/> NORMAL [0]	<input type="checkbox"/> FREE [1]	<input type="checkbox"/> EXTENSIVE [-2]	<input type="checkbox"/> MODERATE [-1]	<input type="checkbox"/> NORMAL [0]

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

Comments: Cobble almost as much as boulder

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

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 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 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:

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

EROSION	RIPARIAN WIDTH	FLOOD PLAIN QUALITY
<input checked="" type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]
<input type="checkbox"/> 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]

Comments:

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

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

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 checked="" type="checkbox"/> BEST AREAS > 10cm [2]	<input 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 checked="" 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 (6.2) ft/mi VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]
DRAINAGE AREA (282.0) mi²

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

- HIGH
- UP
- NORMAL
- LOW
- DRY

CLARITY

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

DISTANCE

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

CANOPY

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

CJ RECREATION

AREA DEPTH POOL: >100ft: >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
- ARMORED / SLUMPS
- ISLANDS / SCoured
- IMPOUNDED / DESICCATED
- FLOOD CONTROL / DRAINAGE

EJ ISSUES

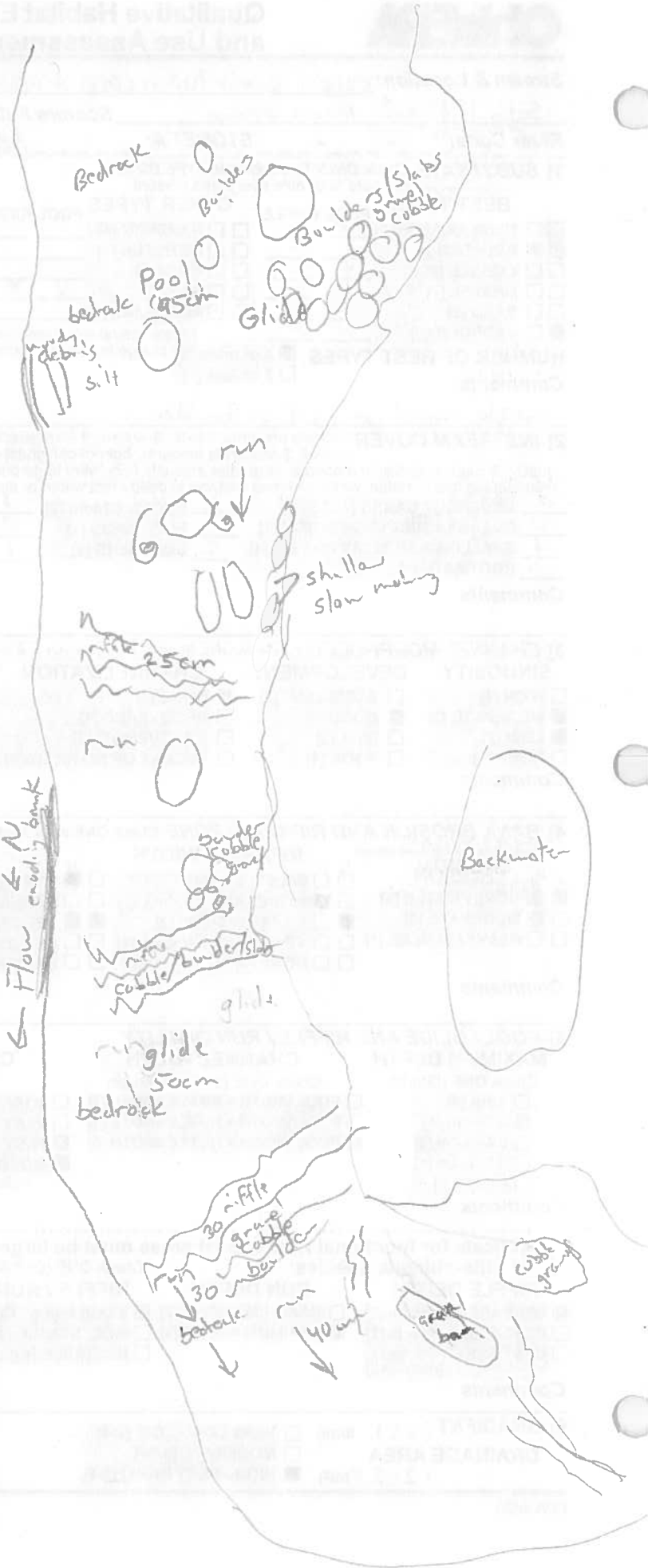
- WWTP / CSO / NPDES / INDUSTRY HARDENED / URBAN / DIRT&GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H₂O / TILE / H₂O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STAGNANT
- PARK / 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}^2 width
- entrench. ratio

Legacy Tree:

Stream Drawing:



Stream & Location: Rocky River Upstream of Hilliard Road **RM:** 2.50 **Date:** 06/22/17

Scorers Full Name & Affiliation: D. Friedman M. Meany Northeast Ohio Regional Sewer District

River Code: - **STORET #:** - **Lat./ Long.:** 41.4698 181.8233 (NAD 83 - decimal °) **Office verified location**

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

<p>BEST TYPES</p> <p><input type="checkbox"/> BLDR / SLABS [10]</p> <p><input checked="" type="checkbox"/> BOULDER [9]</p> <p><input type="checkbox"/> COBBLE [8]</p> <p><input type="checkbox"/> GRAVEL [7]</p> <p><input type="checkbox"/> SAND [6]</p> <p><input type="checkbox"/> BEDROCK [5]</p>	<p>POOL RIFFLE</p> <p><input checked="" type="checkbox"/> <input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/> <input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/> <input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>OTHER TYPES</p> <p><input type="checkbox"/> HARDPAN [4]</p> <p><input type="checkbox"/> DETRITUS [3]</p> <p><input type="checkbox"/> MUCK [2]</p> <p><input type="checkbox"/> SILT [2]</p> <p><input type="checkbox"/> ARTIFICIAL [0]</p>	<p>POOL RIFFLE</p> <p><input type="checkbox"/> <input type="checkbox"/></p> <p><input type="checkbox"/> <input type="checkbox"/></p> <p><input checked="" type="checkbox"/> <input checked="" type="checkbox"/></p> <p><input type="checkbox"/> <input type="checkbox"/></p>	<p>ORIGIN</p> <p><input type="checkbox"/> LIMESTONE [1]</p> <p><input checked="" type="checkbox"/> TILLS [1]</p> <p><input type="checkbox"/> WETLANDS [0]</p> <p><input type="checkbox"/> HARDPAN [0]</p> <p><input type="checkbox"/> SANDSTONE [0]</p> <p><input type="checkbox"/> RIP/RAP [0]</p> <p><input type="checkbox"/> LACUSTURINE [0]</p> <p><input checked="" type="checkbox"/> SHALE [-1]</p> <p><input type="checkbox"/> COAL FINES [-2]</p>	<p>QUALITY</p> <p><input type="checkbox"/> HEAVY [-2]</p> <p><input checked="" type="checkbox"/> MODERATE [-1]</p> <p><input checked="" type="checkbox"/> NORMAL [0]</p> <p><input type="checkbox"/> FREE [1]</p> <p><input type="checkbox"/> EXTENSIVE [-2]</p> <p><input checked="" type="checkbox"/> MODERATE [-1]</p> <p><input type="checkbox"/> NORMAL [0]</p> <p><input type="checkbox"/> NONE [1]</p>
--	---	---	---	--	--

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

Comments: 9+8+2+1+1-0.5-1 = 17.5

Substrate

17.5

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.

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

Comments: 2+7

Cover

14

Maximum 20

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

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

Comments: 2+4+6+2.5

Channel

14.5

Maximum 20

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

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

Comments: 2.5 + 3.5 + 2 =

Riparian

8

Maximum 10

5) POOL / GLIDE AND RIFFLE / RUN QUALITY

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

Comments: 6+0+3=

Recreation Potential

Primary Contact

Secondary Contact

(circle one and comment on back)

9

Pool / Current Maximum 12

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

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

Comments: 2+2+2+1

Riffle / Run

7

Maximum 8

6) GRADIENT (3.72 ft/mi) VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]

DRAINAGE AREA (292 mi²)

% POOL: 10 **% GLIDE:** 20

% RUN: 40 **% RIFFLE:** 30

Gradient

8

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: > 100ft² > 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
- ARMOURD / 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}^2 width
- entrench. ratio

Legacy Tree:

Stream Drawing:

