

Rapid Bioassessment Protocol
Field Data Sheets

20157 : 40293 : SFTM 1 : 5

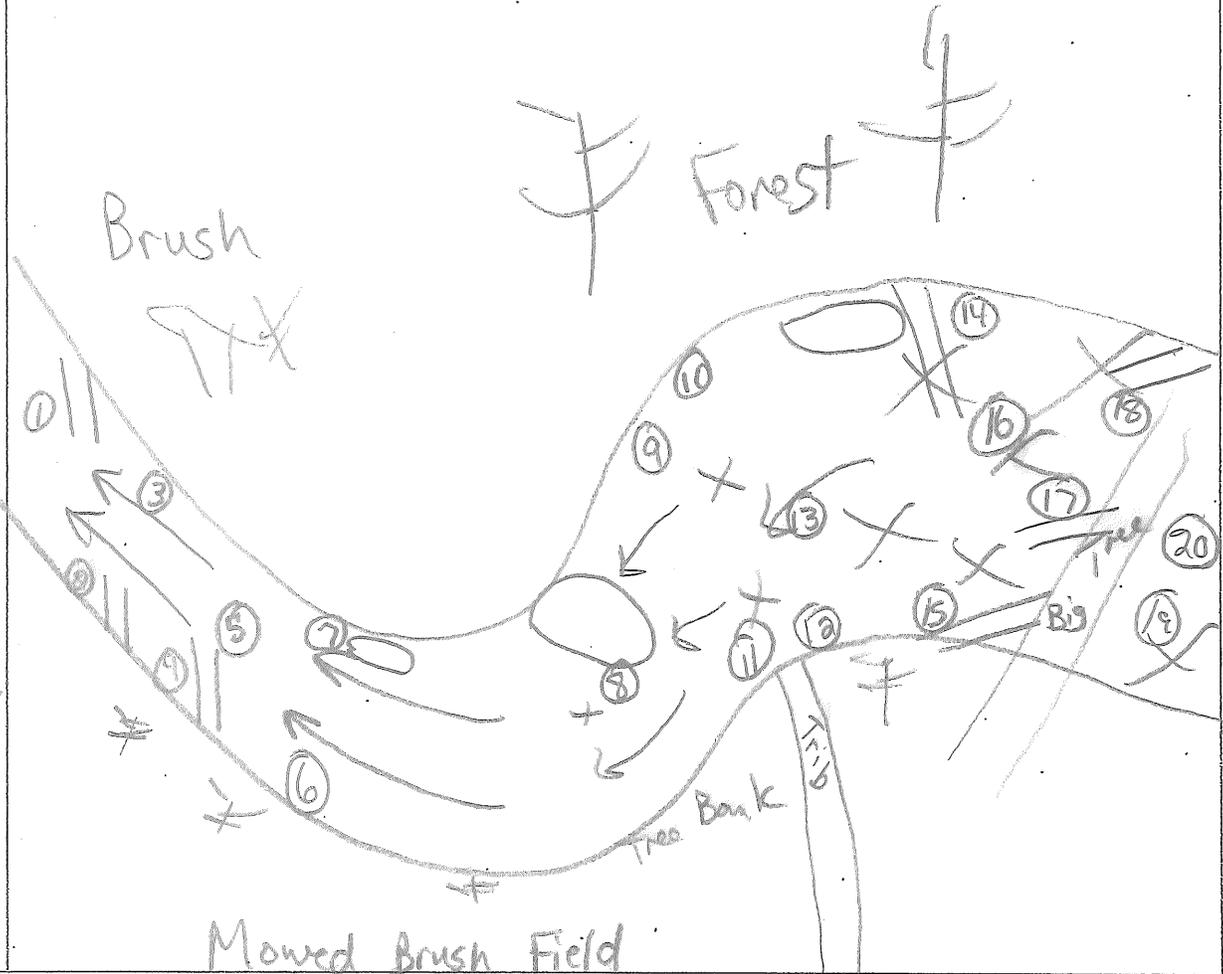
PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET
(FRONT)

STREAM NAME <u>South Fork of Tenmile Creek</u>		LOCATION <u>Foundation 404 Water Intake RBP</u>	
STATION # <u>201911402931527115</u>		RIVERMILE	
LAT <u>39° 52' 30.99" N</u>		LONG <u>90° 16' 57.87" W</u>	
STORET #		AGENCY <u>WPI</u>	
INVESTIGATORS <u>GM BW</u>		FORM COMPLETED BY <u>GM</u>	
DATE <u>01-05-11</u>		REASON FOR SURVEY <u>Baseline</u>	
TIME <u>2:25 PM</u>		Has there been a heavy rain in the last 7 days? <u>YES</u>	
WEATHER CONDITIONS		Air Temperature (degrees) <u>32°F</u>	
Now storm (heavy rain) rain (steady rain) showers (intermittent) % cloud cover <u>clear/sunny</u>		Past 24 Hours storm (heavy rain) rain (steady rain) showers (intermittent) % cloud cover <u>clear/sunny</u>	
Other		Other	

SITE LOCATION MAP

DRAW A MAP OF THE-SITE AND INDICATE THE AREAS SAMPLED (OR ATTACH A PHOTOGRAPH)

- - Pool
 - - Run
 - X - Ripple
 - // - Snag
- Kicks (20)
- ClG - III
 - Snag - IIII
 - SAV - II
 - SFS - IIII
 - CPOM - IIII



STREAM CHARACTERIZATION	Stream Subsystem	Stream Origin			Catchment Area sq km
	X Perennial Intermittent Tidal	Glacial Non-Glacial montane Swamp and bog	X	Spring Fed Mixture of Origins Other	
	Stream Type	Cold Water	X	Warm Water	

- 1 Snag
- 2 Snag
- 3 SAV
- 4 Snag
- 5 SFS
- 6 CPOM
- 7 CPOM
- 8 SFS
- 9 ClG
- 10 SAV
- 11 CPOM
- 12 SFS
- 13 CPOM
- 14 Snag
- 15 Snag
- 16 ClG
- 17 Snag
- 18 Snag
- 19 ClG
- 20 sand SFS



RBP Low Gradient Habitat Data Sheet

Waterbody Name: South Fork of Teanile Creek Str. Code: 40293
 Station ID: 20157: 40293: SFTN1: S Date: 01-05-11
 Investigators: GM BW Time: 2:20 PM
 Form Completed By: GM County: Greene
 Location: Foundation 401 Water Intake RBP

Habitat Parameter	Category			
	Optimal	Suboptimal	Marginal	Poor
1. Instream Cover (Fish)	Greater than 50% mix of snags, submerged logs, undercut banks, or other stable habitat; rubble, gravel may be present.	30-50% mix of boulder, cobble, or other stable habitat; adequate habitat.	10-30% mix of boulder, cobble, or other stable habitat; habitat availability less than desirable.	Less than 10% mix of boulder, cobble, or other stable habitat; lack of habitat is obvious.
Score: 13 13	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
2. Epifaunal Substrate	Preferred benthic substrate (to be sampled) abundant throughout stream site and at stage to allow full colonization potential (i.e., logs, snags that are <u>not</u> new fall and <u>not</u> transient).	Substrate common but not prevalent or well suited for full colonization potential.	Substrate frequently disturbed or removed.	Substrate unstable or lacking.
Score: 7 7	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
3. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
Score: 7 7	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
4. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
Score: 9 9	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
5. Channel Alteration	No channelization or dredging present.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (> past 20 yrs) may be present, but recent channelization is not present.	New embankments present on both banks; channelization may be extensive, usually in urban areas or drainage areas of agriculture lands; and >80% of stream reach channelized and disrupted.	Extensive channelization; banks shored with gabion or cement; heavily urbanized areas; instream habitat greatly altered or removed entirely.
Score: 18 18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
6. Sediment Deposition	<20% of bottom affected; minor accumulation of fine and coarse material at snags and submerged vegetation; little or no enlargement of islands or point bars.	20-50% affected; moderate accumulation; substantial sediment movement only during major storm event; some new increase in bar formation.	50-80% affected; major deposition; pools shallow, heavily silted; embankments may be present on both banks; frequent and substantial sediment movement during storm events.	Channelized; mud, silt, and/or sand in braided or non-braided channels; pools almost absent due to substantial sediment deposition.
Score: 7 7	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

7. Channel Sinuosity	The bends in the stream increase the stream length 3-4X longer than if it was in a straight line.	The bends in the stream increase the stream length 2-3X longer than if it was in a straight line.	The bends in the stream increase the stream length 1-2X longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score: 9 9	20 19 18 17 16	15 14 13 12 11	10 (9) 8 7 6	5 4 3 2 1
8. Channel Flow Status	Water reaches base of both lower banks and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel and or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score: 17 17	20 19 18 (17) 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
9. Condition of Banks (combined score)	Banks stable; no evidence of erosion or bank failure; side slopes generally <30%; little potential for future problems.	Moderately stable; infrequent, small areas of erosion mostly healed over; side slopes up to 40% on one bank; slight erosion potential in extreme floods.	Moderately unstable; moderate frequency and size of erosional areas; side slopes up to 60% on some banks; high erosion potential during extremely high flow.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; side slopes >60% common.
Score: 2 2	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 (2) 1
10. Bank Vegetative Protection (combined score)	>90% of the streambank surface covered by vegetation.	70-90% of the streambank surfaces covered by vegetation.	50-70% of the streambank surfaces covered by vegetation.	<50% of the streambank surfaces covered by vegetation.
Score: 10 10	20 19 18 17 16	15 14 13 12 11	(10) 9 8 7 6	5 4 3 2 1
11. Grazing/Other Disruptive Pressure	Vegetative disruption is minimal or not evident; almost all plants allowed to grow naturally.	Disruption is evident but not affecting full plant growth potential to any great extent; >1/2 of the potential plant stubble height remaining.	Disruption obvious; patches of bare soil or closely cropped vegetation common; <1/2 of the potential stubble height remaining.	Disruption of streambank vegetation is very high; vegetation has been removed to 2 in. or less in average stubble height.
Score: 14 14	20 19 18 17 16	15 (14) 13 12 11	10 9 8 7 6	5 4 3 2 1
12. Riparian Vegetative Zone Width (combined score)	Width of riparian zone >18 meters; human activities (i.e. parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.
Score: 12 12	20 19 18 17 16	15 14 13 (12) 11	10 9 8 7 6	5 4 3 2 1

Station ID 20157; 40293; SFTM1; 5
Habitat Score = 0% 125/240 52%

Page 2 of 2

Notes:

Few Macro Obs. Fish Obs.
Banks heavily Eroded
Silt is built up in Stream
Numerous Snags / CPOM Present
Ice on Edges
Mossy Run

Revised 6/09

GPM = 8893.08

20157:40293:SFTM2:5

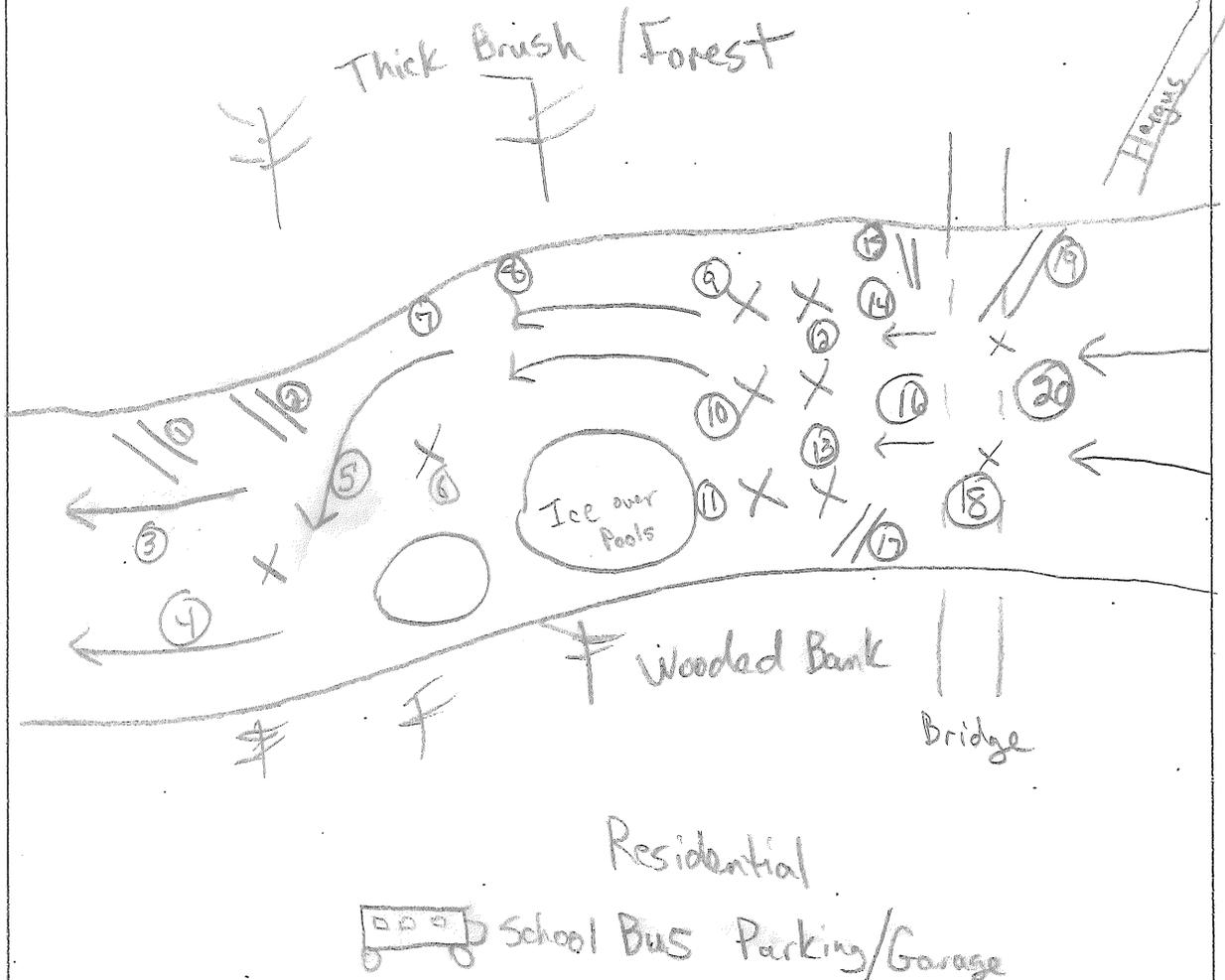
PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET
(FRONT)

STREAM NAME <i>South Fork of Tenmile Creek</i>		LOCATION <i>Foundation 404 Water Intake REP</i>									
STATION # <i>20157:40293:SFTM2:5</i> RIVERMILE		STREAM CLASS									
LAT <i>39° 52' 26.11" N</i> LONG <i>80° 16' 48.59" W</i>		RIVER BASIN									
STORET #		AGENCY <i>WPI</i>									
INVESTIGATORS <i>GM BW</i>		DATE <i>01-08-11</i>									
FORM COMPLETED BY <i>GM</i>		TIME <i>12:30 PM</i>									
WEATHER CONDITIONS		REASON FOR SURVEY <i>Baseline</i>									
<table border="1"> <tr> <td>Now</td> <td>Past 24 Hours</td> </tr> <tr> <td>storm (heavy rain)</td> <td>storm (heavy rain)</td> </tr> <tr> <td>rain (steady rain) showers (intermittent)</td> <td>rain (steady rain) showers (intermittent)</td> </tr> <tr> <td>% cloud cover <i>clear/sunny</i></td> <td>% cloud cover <i>clear/sunny</i></td> </tr> </table>		Now	Past 24 Hours	storm (heavy rain)	storm (heavy rain)	rain (steady rain) showers (intermittent)	rain (steady rain) showers (intermittent)	% cloud cover <i>clear/sunny</i>	% cloud cover <i>clear/sunny</i>	Has there been a heavy rain in the last 7 days? <input checked="" type="radio"/> YES <input type="radio"/> NO	
Now	Past 24 Hours										
storm (heavy rain)	storm (heavy rain)										
rain (steady rain) showers (intermittent)	rain (steady rain) showers (intermittent)										
% cloud cover <i>clear/sunny</i>	% cloud cover <i>clear/sunny</i>										
		Air Temperature (degrees C) <i>31°F</i>									
		Other									

SITE LOCATION MAP

DRAW A MAP OF THE SITE AND INDICATE THE AREAS SAMPLED (OR ATTACH A PHOTOGRAPH)

- - Run
- X - Riffle
- - Pool
- // - Snag



Kicks (20)

- C/G - IIII
- SFS - III
- CPOM - IIII
- Snag - IIII
- SAV - III

STREAM CHARACTERIZATION	Stream Subsystem		Stream Origin			Catchment Area sq km
	X	Perennial Intermittent Tidal	Glacial Non-Glacial montane Swamp and bog	X	Spring Fed Mixture of Origins Other	
	Stream Type		Cold Water	X	Warm Water	

1 Snag	5 CPOM	9 C/G	13 C/G	17 Snag
2 Snag	6 C/G	10 C/G	14 CPOM	18 SFS
3 SFS	7 SAV	11 SAV	15 Snag	19 Snag
4 SFS	8 SAV	12 C/G	16 CPOM	20 CPOM

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	Predominant Surrounding Landuse 60 Forest <input type="radio"/> Commercial 10 Field/Pasture <input type="radio"/> Industrial 0 Agricultural <input type="radio"/> Other 30 Residential	Local Watershed NPS Pollution <input checked="" type="radio"/> No Evidence Some Potential sources Obvious sources <hr/> Local Watershed Erosion None <input checked="" type="radio"/> Heavy Moderate	
RIPARIAN VEGETATION (18 meter buffer)	Indicate the dominant type and record the dominant species present <input checked="" type="radio"/> Trees <input type="radio"/> Shrubs <input checked="" type="radio"/> Grasses <input type="radio"/> Herbaceous Dominant species present: <u>Sycamore, Willow, Maple</u> <u>Grasses</u>		
INSTREAM FEATURES	Estimated Stream Width 30.0 ft Estimated Stream Depth 1.38 .ft Surface Velocity (at thalweg) 1.38 ft/sec Estimated Reach Length 328 ft	High Water Mark _____ ft Proportion of Reach Represented by Stream Morphology Types 20 Riffle 65 Run 15 Pool	
	% Canopy Cover 40	Channelized <input checked="" type="radio"/> YES <input checked="" type="radio"/> NO Dam Present <input checked="" type="radio"/> YES <input checked="" type="radio"/> NO	
AQUATIC VEGETATION	Indicate the dominant type and record the dominant species present Rooted Emergent Rooted Submerged Rooted Floating Floating Algae Attached Aglae Free Floating Dominant species present <u>N/A</u> Portion of the reach with aquatic vegetation <u>N/A</u>		
WATER QUALITY	Temperature 0.6 degrees C Specific Conductance 254 us Dissolved Oxygen 13.84 ppm pH 7.80	Water Odors <input checked="" type="radio"/> None Sewage <input type="radio"/> Petroleum Chemical <input type="radio"/> Fishy Other Water Surface Oils <input checked="" type="radio"/> Slick <input type="radio"/> Globbs <input checked="" type="radio"/> None <input type="radio"/> Flecks <input type="radio"/> Sheen <input type="radio"/> Other Turbidity <u>N/A</u> Turbidity (if not measured) <input checked="" type="radio"/> Clear <input type="radio"/> Opaque <input checked="" type="radio"/> Slightly turbid <input type="radio"/> Stained <input type="radio"/> Turbid <input type="radio"/> Other WQ Instrument Used	
SEDIMENT/SUBSTRATE	Odors <input checked="" type="radio"/> Normal Anaerobic <input type="radio"/> Chemical Petroleum <input type="radio"/> Sewage None <input type="radio"/> Other Oils <input checked="" type="radio"/> Absent Moderate <input type="radio"/> Slight Profuse	Deposits Sludge <input checked="" type="radio"/> Sand Sawdust Paper Fiber Relict shells <input checked="" type="radio"/> Other <u>Silt</u> Looking at stone that are not deeply embedded, are the undersides black in color? YES <input checked="" type="radio"/> NO	
INORGANIC SUBSTRATE COMPONENTS (Should add up to 100%)		ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)	
Substrate Type	Diameter	% Composition	Substrate Type Characteristic % Composition
Bedrock		15	Detritus sticks, wood, coarse plant materials (CPOM) 15
Boulder	>256 mm (10")	10	Muck-Mud black, very fine organics (FPOM) 0
Cobble	64-256 mm (2.5"-10")	25	Marl grey, shell fragments 0
Gravel	2-64 mm (0.1" -2.5")	25	
Sand	0.06-2 mm (gritty)	15	
Silt	0.004-0.06 mm	10	
Clay	<0.004 mm (slick)	0	

20157:40293: SFTM 2:5



RBP Low Gradient Habitat Data Sheet

Waterbody Name: South Fork of Tenmile Creek Str. Code: 40293
 Station ID: 20157:40293:SFPM 2 IS Date: 01-05-11
 Investigators: GM BW Time: 18:30 PM
 Form Completed By: GM County: Greene
 Location: Foundation 404 Water Intake RBP

Habitat Parameter	Category			
	Optimal	Suboptimal	Marginal	Poor
1. Instream Cover (Fish)	Greater than 50% mix of snags, submerged logs, undercut banks, or other stable habitat; rubble, gravel may be present.	30-50% mix of boulder, cobble, or other stable habitat; adequate habitat.	10-30% mix of boulder, cobble, or other stable habitat; habitat availability less than desirable.	Less than 10% mix of boulder, cobble, or other stable habitat; lack of habitat is obvious.
Score: <u>15</u>	20 19 18 17 16	<u>15</u> 14 13 12 11	10 9 8 7 6	5 4 3 2 1
2. Epifaunal Substrate	Preferred benthic substrate (to be sampled) abundant throughout stream site and at stage to allow full colonization potential (i.e., logs, snags that are <u>not</u> new fall and <u>not</u> transient).	Substrate common but not prevalent or well suited for full colonization potential.	Substrate frequently disturbed or removed.	Substrate unstable or lacking.
Score: <u>14</u>	20 19 18 17 16	15 <u>14</u> 13 12 11	10 9 8 7 6	5 4 3 2 1
3. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
Score: <u>11</u>	20 19 18 17 16	15 14 13 12 <u>11</u>	10 9 8 7 6	5 4 3 2 1
4. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
Score: <u>6</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 <u>6</u>	5 4 3 2 1
5. Channel Alteration	No channelization or dredging present.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (> past 20 yrs) may be present, but recent channelization is not present.	New embankments present on both banks; channelization may be extensive, usually in urban areas or drainage areas of agriculture lands; and >80% of stream reach channelized and disrupted.	Extensive channelization; banks shored with gabion or cement; heavily urbanized areas; instream habitat greatly altered or removed entirely.
Score: <u>15</u>	20 19 18 17 16	<u>15</u> 14 13 12 11	10 9 8 7 6	5 4 3 2 1
6. Sediment Deposition	<20% of bottom affected; minor accumulation of fine and coarse material at snags and submerged vegetation; little or no enlargement of islands or point bars.	20-50% affected; moderate accumulation; substantial sediment movement only during major storm event; some new increase in bar formation.	50-80% affected; major deposition; pools shallow, heavily silted; embankments may be present on both banks; frequent and substantial sediment movement during storm events.	Channelized; mud, silt, and/or sand in braided or non-braided channels; pools almost absent due to substantial sediment deposition.
Score: <u>11</u>	20 19 18 17 16	15 14 13 12 <u>11</u>	10 9 8 7 6	5 4 3 2 1

7. Channel Sinuosity	The bends in the stream increase the stream length 3-4X longer than if it was in a straight line.	The bends in the stream increase the stream length 2-3X longer than if it was in a straight line.	The bends in the stream increase the stream length 1-2X longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score: 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
8. Channel Flow Status	Water reaches base of both lower banks and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel and or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score: 18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
9. Condition of Banks (combined score)	Banks stable; no evidence of erosion or bank failure; side slopes generally <30%; little potential for future problems.	Moderately stable; infrequent, small areas of erosion mostly healed over; side slopes up to 40% on one bank; slight erosion potential in extreme floods.	Moderately unstable; moderate frequency and size of erosional areas; side slopes up to 60% on some banks; high erosion potential during extremely high flow.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; side slopes >60% common.
Score: 4	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
10. Bank Vegetative Protection (combined score)	>90% of the streambank surface covered by vegetation.	70-90% of the streambank surfaces covered by vegetation.	50-70% of the streambank surfaces covered by vegetation.	<50% of the streambank surfaces covered by vegetation.
Score: 11	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
11. Grazing/Other Disruptive Pressure	Vegetative disruption is minimal or not evident; almost all plants allowed to grow naturally.	Disruption is evident but not affecting full plant growth potential to any great extent; >1/2 of the potential plant stubble height remaining.	Disruption obvious; patches of bare soil or closely cropped vegetation common; <1/2 of the potential stubble height remaining.	Disruption of streambank vegetation is very high; vegetation has been removed to 2 in. or less in average stubble height.
Score: 13	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
12. Riparian Vegetative Zone Width (combined score)	Width of riparian zone >18 meters; human activities (i.e. parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.
Score: 11	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Station ID 20157: 40213: 5FTM 2: 5
Habitat Score = 0% 135/240 56%

Notes:

Few Macrobs Obs.
A Large Pool Teed Over Deep In spots hard to see substrate water is cold
Banks are eroded but have some vegetation protecting Slightly Turbid
walking Bridge Present In Upper Reach Bus Garage OFF of left bank
2 Green Sunfish Obs.
GPM = 22166.07

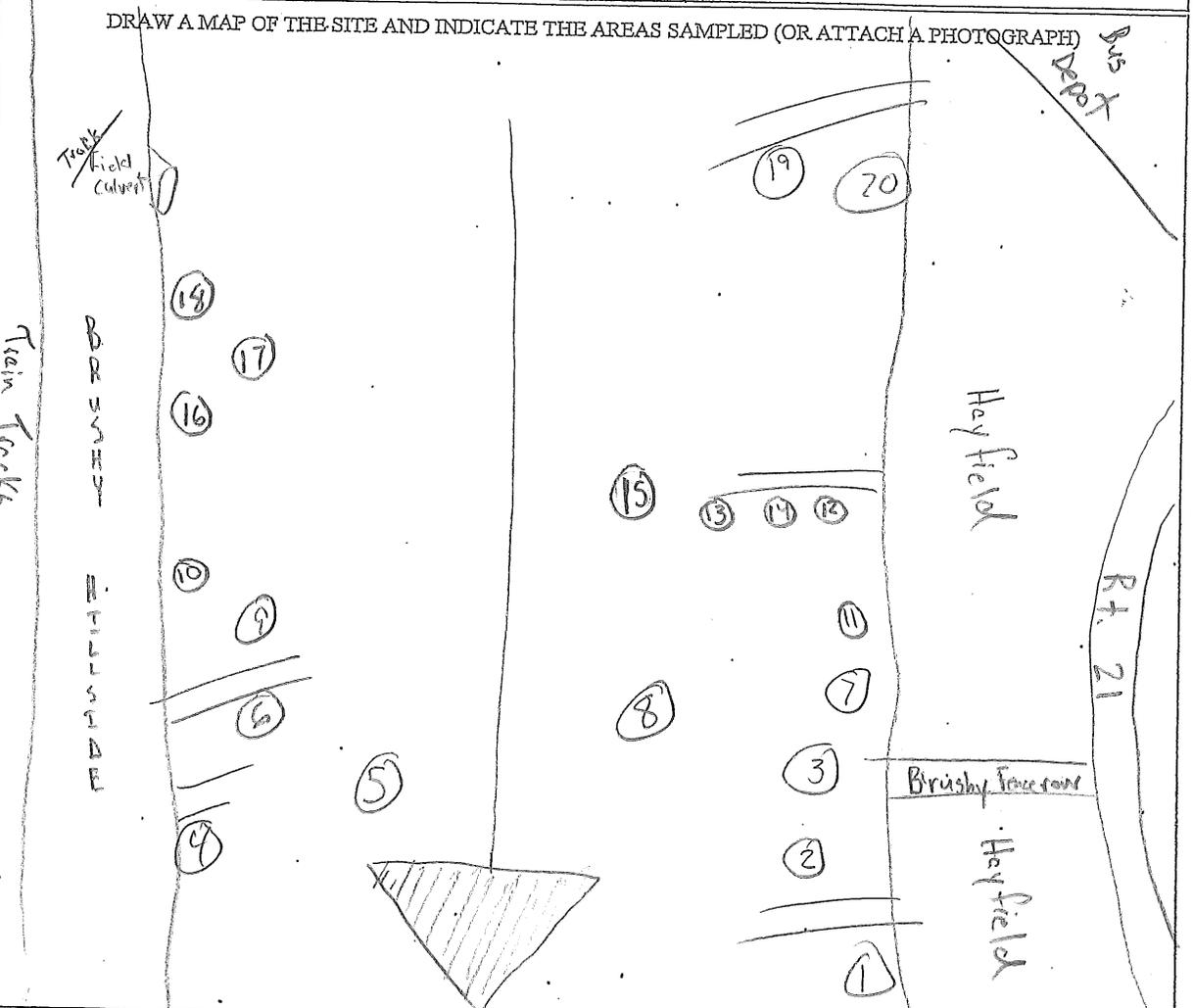
20157:40293:SFTM3:5 Rd.1

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET

(FRONT) Foundation 404: Water Intake.

STREAM NAME South Fork Ten Mile		LOCATION 20157:40293:SFTM3:5 Rd.1	
STATION # 40293: SFTM3 RIVERMILE		STREAM CLASS	
LAT 39° 52' 28.26" N LONG 90° 16' 42.72" W		RIVER BASIN	
STORET #		AGENCY WPI	
INVESTIGATORS M. Peuseat, M. Benson			
FORM COMPLETED BY M. Peuseat		DATE 4/1/11	REASON FOR SURVEY
		TIME 11:30	Baseline
WEATHER CONDITIONS	Now	Past 24 Hours	Has there been a heavy rain in the last 7 days? YES
	storm (heavy rain)	storm (heavy rain)	
	rain (steady rain) showers (intermittent)	SNOW / rain (steady rain) showers (intermittent)	Air Temperature (degrees) 35° F
	70% cloud cover clear/sunny	% cloud cover clear/sunny	Other

- SITE LOCATION MAP
- Flow ↓
- 1 SNAG 15. CPOM
 - 2 Sandstone 16. Cobble
 - 3 CPOM 17. Cobble
 - 4 SNAG 18. Sand
 - 5 Sand 19. SNAG
 - 6 SNAG 20. CPOM
 - 7 CPOM
 - 8 SAND
 - 9 CPOM
 - 10 Cobble
 - 11 Sand
 - 12 SNAG
 - 13 SNAG
 - 14 Sand
- ▲ = Run
// = Spring



STREAM CHARACTERIZATION	Stream Subsystem		Stream Origin		Catchment Area sq km	
	X	Perennial Intermittent Tidal	Glacial Non-Glacial montane Swamp and bog	X		Spring Fed Mixture of Origins Other
	Stream Type		Cold Water	X		Warm Water

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	Predominant Surrounding Landuse Forest <u>30%</u> Field/Pasture <u>40%</u> Agricultural Residential Commercial <u>30%</u> Industrial Other: <u>Bus Depot</u> <u>Railroad</u>	Local Watershed NPS Pollution No Evidence <u>Some Potential sources</u> Obvious sources Local Watershed Erosion None Moderate <u>Heavy</u>
RIPARIAN VEGETATION (18 meter buffer)	Indicate the dominant type and record the dominant species present Trees <u>Boxelder, Sycamore, Willow Sp.</u> Shrubs Grasses Herbaceous	
INSTREAM FEATURES	Estimated Stream Width <u>wetted 42.3</u> ft Estimated Stream Depth <u>1.85</u> ft Surface Velocity (at thalweg) <u>.37</u> ft/sec GPM = <u>12,838.86</u> Estimated Reach Length <u>328</u> ft	High Water Mark <u>15</u> ft Proportion of Reach Represented by Stream Morphology Types <input type="radio"/> Riffle <input type="radio"/> Pool <u>100% Run</u> Channelized <u>YES</u> Dam Present <u>YES</u> <u>NO</u>
AQUATIC VEGETATION	Indicate the dominant type and record the dominant species present Rooted Emergent Floating Algae Rooted Submerged Attached Algae Rooted Floating Free Floating Dominant species present <u>N/A</u> Portion of the reach with aquatic vegetation <u>N/A</u>	
WATER QUALITY	Temperature <u>3.9</u> degrees C Specific Conductance <u>267</u> us Dissolved Oxygen <u>15.5</u> ppm pH <u>8.61</u>	Water Odors None Petroleum Fishy Sewage Chemical Other <u>FPOM</u> Water Surface Oils Slick Sheen Globes Flecks Other Turbidity (if not measured) Clear Slightly turbid Turbid Opaque Stained Other
SEDIMENT/SUBSTRATE	Odors Normal Chemical Sewage Anaerobic Petroleum None Other Oils Absent Slight Moderate Profuse	Deposits Sludge Sawdust Relict shells Sand Paper Fiber Other Looking at stone that are not deeply embedded, are the undersides black in color? YES NO
INORGANIC SUBSTRATE COMPONENTS (Should add up to 100%)		
Substrate Type	Diameter	% Composition
Bedrock		0
Boulder	>256 mm (10")	5
Cobble	64-256 mm (2.5"-10")	5
Gravel	2-64 mm (0.1"-2.5")	15
Sand	0.06-2 mm (gritty)	25
Silt	0.004-0.06 mm	35
Clay	<0.004 mm (slick)	15
ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Characteristic	% Composition
Detritus	sticks, wood, coarse plant materials (CPOM)	15
Muck-Mud	black, very fine organics (FPOM)	5
Marl	grey, shell fragments	0

Station 0

20157:40293:5FTM3:5 Rd. 1



RBP Low Gradient Habitat Data Sheet

Waterbody Name: South Fork Ten Mile Str. Code: 40293
 Station ID: 20157; 40293; SPTM 31 S Rd. Date: 4/1/11
 Investigators: M. Peugeot, M. Benson Time: 11:40
 Form Completed By: M. Peugeot County: Greene Co. PA.
 Location: Greene Co., PA. ±200yds downstream of Rt. 21/Golden Oaks Split next to Bus Depot

Habitat Parameter	Category			
	Optimal	Suboptimal	Marginal	Poor
1. Instream Cover (Fish)	Greater than 50% mix of snags, submerged logs, undercut banks, or other stable habitat; rubble, gravel may be present.	30-50% mix of boulder, cobble, or other stable habitat; adequate habitat.	10-30% mix of boulder, cobble, or other stable habitat; habitat availability less than desirable.	Less than 10% mix of boulder, cobble, or other stable habitat; lack of habitat is obvious.
Score: <u>6</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 <u>6</u>	5 4 3 2 1
2. Epifaunal Substrate	Preferred benthic substrate (to be sampled) abundant throughout stream site and at stage to allow full colonization potential (i.e., logs, snags that are <u>not</u> new fall and <u>not</u> transient).	Substrate common but not prevalent or well suited for full colonization potential.	Substrate frequently disturbed or removed.	Substrate unstable or lacking.
Score: <u>7</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 <u>7</u> 6	5 4 3 2 1
3. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
Score: <u>8</u>	20 19 18 17 16	15 14 13 12 11	10 9 <u>8</u> 7 6	5 4 3 2 1
4. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
Score: <u>7</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 <u>7</u> 6	5 4 3 2 1
5. Channel Alteration	No channelization or dredging present.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (> past 20 yrs) may be present, but recent channelization is not present.	New embankments present on both banks; channelization may be extensive, usually in urban areas or drainage areas of agriculture lands; and >80% of stream reach channelized and disrupted.	Extensive channelization; banks shored with gabion or cement; heavily urbanized areas; instream habitat greatly altered or removed entirely.
Score: <u>13</u>	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1
6. Sediment Deposition	<20% of bottom affected; minor accumulation of fine and coarse material at snags and submerged vegetation; little or no enlargement of islands or point bars.	20-50% affected; moderate accumulation; substantial sediment movement only during major storm event; some new increase in bar formation.	50-80% affected; major deposition; pools shallow, heavily silted; embankments may be present on both banks; frequent and substantial sediment movement during storm events.	Channelized; mud, silt, and/or sand in braided or non-braided channels; pools almost absent due to substantial sediment deposition.
Score: <u>5</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	<u>5</u> 4 3 2 1

7. Channel Sinuosity	The bends in the stream increase the stream length 3-4X longer than if it was in a straight line.	The bends in the stream increase the stream length 2-3X longer than if it was in a straight line.	The bends in the stream increase the stream length 1-2X longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score: 3	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 (3) 2 1
8. Channel Flow Status	Water reaches base of both lower banks and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel and or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score: 17	20 19 18 (17) 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
9. Condition of Banks (combined score)	Banks stable; no evidence of erosion or bank failure; side slopes generally <30%; little potential for future problems.	Moderately stable; infrequent, small areas of erosion mostly healed over; side slopes up to 40% on one bank; slight erosion potential in extreme floods.	Moderately unstable; moderate frequency and size of erosional areas; side slopes up to 60% on some banks; high erosion potential during extremely high flow.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; side slopes >60% common.
Score: 3	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 (3) 2 1
10. Bank Vegetative Protection (combined score)	>90% of the streambank surface covered by vegetation.	70-90% of the streambank surfaces covered by vegetation.	50-70% of the streambank surfaces covered by vegetation.	<50% of the streambank surfaces covered by vegetation.
Score: 3	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 (3) 2 1
11. Grazing/Other Disruptive Pressure	Vegetative disruption is minimal or not evident; almost all plants allowed to grow naturally.	Disruption is evident but not affecting full plant growth potential to any great extent; >1/2 of the potential plant stubble height remaining.	Disruption obvious; patches of bare soil or closely cropped vegetation common; <1/2 of the potential stubble height remaining.	Disruption of streambank vegetation is very high; vegetation has been removed to 2 in. or less in average stubble height.
Score: 15	20 19 18 17 16	(15) 14 13 12 11	10 9 8 7 6	5 4 3 2 1
12. Riparian Vegetative Zone Width (combined score)	Width of riparian zone >18 meters; human activities (i.e. parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.
Score: 15	20 19 18 17 16	(15) 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Station ID 20157: 40293: SFTM3: S Round 1
Habitat Score = 100/240 ~~000~~ 42%

Page 2 of 2

Notes:

Heavy Sedimentation. This sample site is a long, straight, slow moving run w/evidence of being channelized in the past century. Banks are very unstable sand/silt mixture. No aquatic veg is present. The stream bottom is composed of a muddy silty small sand, rarely interspersed w/some cobble and a rare boulder. Feet sink in the mixture 2-5 in during sample event. Does not seem to have the organic waste load as river has below Waynesburg as illustrated by the lack of excessive black/dark green algae. The Cobble Gravel kick were rock picks as there was a lack of this habitat.

20157 : 40627 : HARRIS

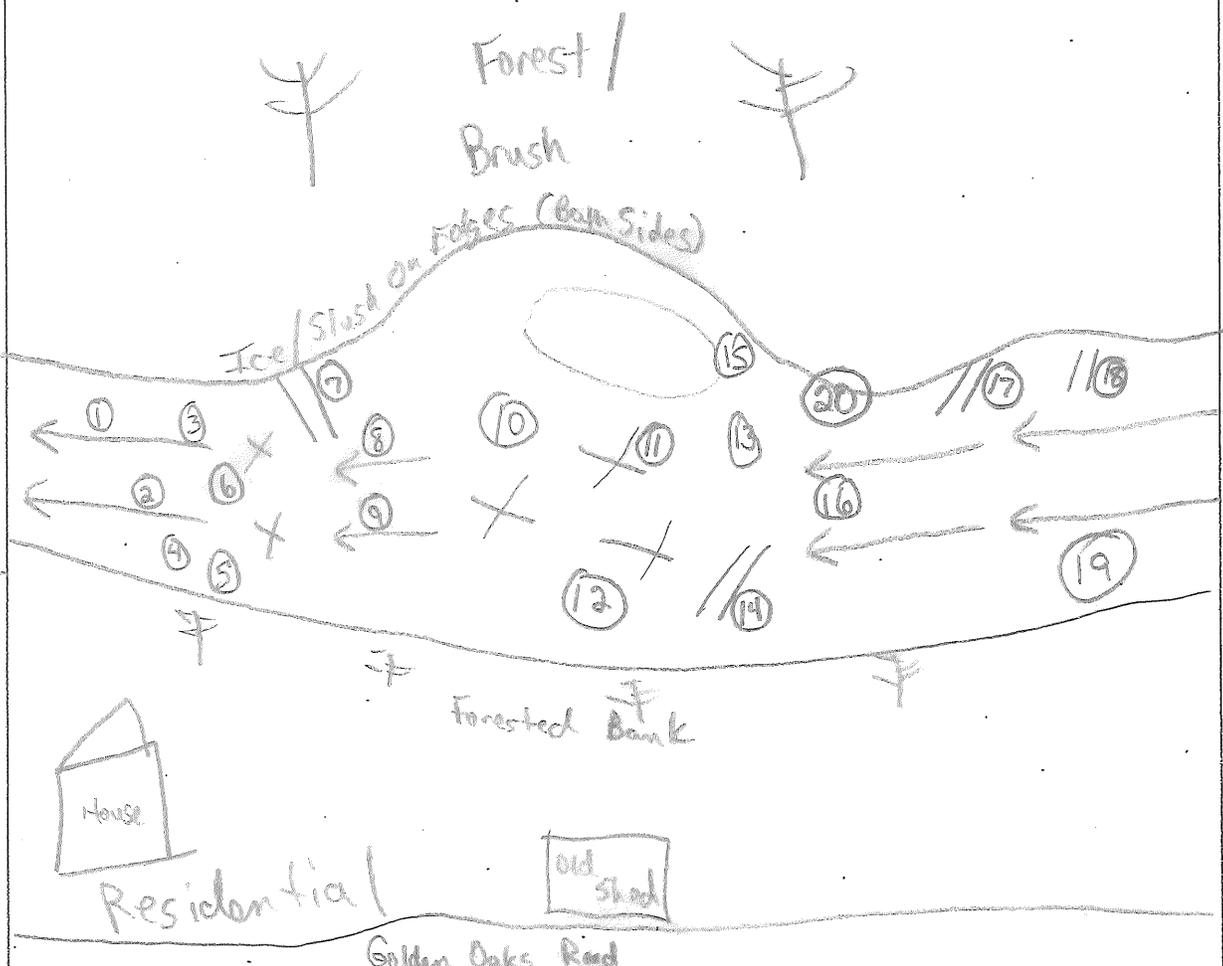
PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME HARGUS CREEK		LOCATION Foundation 404 Water Intake RBP	
STATION # 20157:40627:HARRIS	RIVERMILE	STREAM CLASS	
LAT 39° 52' 23.10" N	LONG 80° 16' 56.54" W	RIVER BASIN	
STORET #	AGENCY WPI		
INVESTIGATORS GM BW		REASON FOR SURVEY	
FORM COMPLETED BY GM		DATE 01-09-11	Baseline
		TIME 9:50 AM	
WEATHER CONDITIONS	Now	Past 24 Hours	Has there been a heavy rain in the last 7 days? YES
	storm (heavy rain)	storm (heavy rain)	
	rain (steady rain)	rain (steady rain)	Air Temperature (degrees C) 21° F
	showers (intermittent)	showers (intermittent)	Other
	% cloud cover clear/sunny	% cloud cover clear/sunny	

SITE LOCATION MAP

DRAW A MAP OF THE SITE AND INDICATE THE AREAS SAMPLED (OR ATTACH A PHOTOGRAPH)

- - Run
- X - Riffle
- - Pool
- // - Snag



Kicks (20)

CIG = III
 CPOM = UH
 SAV = Ø
 SFS = UH III
 Snag = IIII

STREAM CHARACTERIZATION	Stream Subsystem		Stream Origin			Catchment Area sq km
	X	Perennial Intermittent Tidal	Glacial Non-Glacial montane Swamp and bog	X	Spring Fed Mixture of Origins Other	
	Stream Type		Cold Water	X	Warm Water	

- | | | | | |
|-------|--------|--------|---------|---------|
| 1 SFS | 5 CPOM | 9 SFS | 13 SFS | 17 Snag |
| 2 SFS | 6 SFS | 10 CIG | 14 Snag | 18 Snag |
| 3 SFS | 7 Snag | 11 CIG | 15 CPOM | 19 CPOM |
| 4 SFS | 8 CPOM | 12 CIG | 16 SFS | 20 CPOM |

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	Predominant Surrounding Landuse <input checked="" type="radio"/> 60 Forest <input type="radio"/> Commercial <input type="radio"/> 10 Field/Pasture <input type="radio"/> Industrial <input type="radio"/> Agricultural <input type="radio"/> Other <input type="radio"/> 30 Residential	Local Watershed NPS Pollution <input checked="" type="radio"/> No Evidence Some Potential sources Obvious sources Local Watershed Erosion None <input checked="" type="radio"/> Heavy Moderate	
RIPARIAN VEGETATION (18 meter buffer)	Indicate the dominant type and record the dominant species present <input checked="" type="radio"/> Trees <input type="radio"/> Shrubs <input type="radio"/> Grasses <input type="radio"/> Herbaceous Dominant species present: <u>Maple, Sycamore, Box Elder</u>		
INSTREAM FEATURES	Estimated Stream Width <u>20.0</u> ft Estimated Stream Depth <u>0.78</u> ft Surface Velocity (at thalweg) <u>1.07</u> ft/sec Estimated Reach Length <u>328</u> ft	High Water Mark _____ ft Proportion of Reach Represented by Stream Morphology Types <u>20</u> Riffle <u>75</u> Run <u>5</u> Pool	
	% Canopy Cover <u>60</u>	Channelized <input type="radio"/> YES <input checked="" type="radio"/> NO Dam Present <input type="radio"/> YES <input checked="" type="radio"/> NO	
AQUATIC VEGETATION	Indicate the dominant type and record the dominant species present <input type="radio"/> Rooted Emergent <input type="radio"/> Rooted Submerged <input type="radio"/> Rooted Floating <input type="radio"/> Floating Algae <input type="radio"/> Attached Algae <input type="radio"/> Free Floating Dominant species present <u>N/A</u> Portion of the reach with aquatic vegetation		
WATER QUALITY	Temperature <u>0.2</u> degrees C Specific Conductance <u>198</u> us Dissolved Oxygen <u>14.02</u> ppm pH <u>8.08</u>	Water Odors <input checked="" type="radio"/> None Sewage <input type="radio"/> Petroleum Chemical <input type="radio"/> Fishy Other	
	Turbidity <u>N/A</u> WQ Instrument Used	Water Surface Oils Slick Globs <input checked="" type="radio"/> None Flecks Sheen Other	
SEDIMENT/SUBSTRATE	Odors Normal Anaerobic <input type="radio"/> Chemical Petroleum <input checked="" type="radio"/> Sewage None <input type="radio"/> Other Oils <input checked="" type="radio"/> Absent Moderate <input type="radio"/> Slight Profuse	Deposits Sludge <input checked="" type="radio"/> Sand Sawdust Paper Fiber Relict shells Other Looking at stone that are not deeply embedded, are the undersides black in color? YES <input checked="" type="radio"/> NO	
INORGANIC SUBSTRATE COMPONENTS (Should add up to 100%)		ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)	
Substrate Type	Diameter	% Composition	Substrate Type Characteristic % Composition
Bedrock		<input type="radio"/>	Detritus sticks, wood, coarse plant materials (CPOM) <u>15</u>
Boulder	>256 mm (10")	<u>10</u>	Muck-Mud black, very fine organics (FPOM) <u>0</u>
Cobble	64-256 mm (2.5"-10")	<u>25</u>	Marl grey, shell fragments <u>0</u>
Gravel	2-64 mm (0.1" -2.5")	<u>25</u>	
Sand	0.06-2 mm (gritty)	<u>40</u>	
Silt	0.004-0.06 mm	<u>0</u>	
Clay	<0.004 mm (slick)	<u>0</u>	

20157:40627: HAR 1:5



RBP Low Gradient Habitat Data Sheet

Waterbody Name: Hargus Creek Str. Code: 40627
 Station ID: 20157 : 40627 : HAR1 : S Date: 01-05-11
 Investigators: GM AW Time: 9:50 AM
 Form Completed By: GM County: Greene
 Location: Foundation 404 water Intake RBP

Habitat Parameter	Category			
	Optimal	Suboptimal	Marginal	Poor
1. Instream Cover (Fish)	Greater than 50% mix of snags, submerged logs, undercut banks, or other stable habitat; rubble, gravel may be present.	30-50% mix of boulder, cobble, or other stable habitat; adequate habitat.	10-30% mix of boulder, cobble, or other stable habitat; habitat availability less than desirable.	Less than 10% mix of boulder, cobble, or other stable habitat; lack of habitat is obvious.
Score: <u>13</u>	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1
2. Epifaunal Substrate	Preferred benthic substrate (to be sampled) abundant throughout stream site and at stage to allow full colonization potential (i.e., logs, snags that are <u>not</u> new fall and <u>not</u> transient).	Substrate common but not prevalent or well suited for full colonization potential.	Substrate frequently disturbed or removed.	Substrate unstable or lacking.
Score: <u>13</u>	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1
3. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
Score: <u>10</u>	20 19 18 17 16	15 14 13 12 11	<u>10</u> 9 8 7 6	5 4 3 2 1
4. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
Score: <u>3</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 <u>3</u> 2 1
5. Channel Alteration	No channelization or dredging present.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (> past 20 yrs) may be present, but recent channelization is not present.	New embankments present on both banks; channelization may be extensive, usually in urban areas or drainage areas of agriculture lands; and >80% of stream reach channelized and disrupted.	Extensive channelization; banks shored with gabion or cement; heavily urbanized areas; instream habitat greatly altered or removed entirely.
Score: <u>17</u>	20 19 18 <u>17</u> 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
6. Sediment Deposition	<20% of bottom affected; minor accumulation of fine and coarse material at snags and submerged vegetation; little or no enlargement of islands or point bars.	20-50% affected; moderate accumulation; substantial sediment movement only during major storm event; some new increase in bar formation.	50-80% affected; major deposition; pools shallow, heavily silted; embankments may be present on both banks; frequent and substantial sediment movement during storm events.	Channelized; mud, silt, and/or sand in braided or non-braided channels; pools almost absent due to substantial sediment deposition.
Score: <u>13</u>	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1

7. Channel Sinuosity	The bends in the stream increase the stream length 3-4X longer than if it was in a straight line.	The bends in the stream increase the stream length 2-3X longer than if it was in a straight line.	The bends in the stream increase the stream length 1-2X longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score: 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
8. Channel Flow Status	Water reaches base of both lower banks and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel and or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score: 18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
9. Condition of Banks (combined score)	Banks stable; no evidence of erosion or bank failure; side slopes generally <30%; little potential for future problems.	Moderately stable; infrequent, small areas of erosion mostly healed over; side slopes up to 40% on one bank; slight erosion potential in extreme floods.	Moderately unstable; moderate frequency and size of erosional areas; side slopes up to 60% on some banks; high erosion potential during extremely high flow.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; side slopes >60% common.
Score: 2	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
10. Bank Vegetative Protection (combined score)	>90% of the streambank surface covered by vegetation.	70-90% of the streambank surfaces covered by vegetation.	50-70% of the streambank surfaces covered by vegetation.	<50% of the streambank surfaces covered by vegetation.
Score: 7	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
11. Grazing/Other Disruptive Pressure	Vegetative disruption is minimal or not evident; almost all plants allowed to grow naturally.	Disruption is evident but not affecting full plant growth potential to any great extent; >1/2 of the potential plant stubble height remaining.	Disruption obvious; patches of bare soil or closely cropped vegetation common; <1/2 of the potential stubble height remaining.	Disruption of streambank vegetation is very high; vegetation has been removed to 2 in. or less in average stubble height.
Score: 13	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
12. Riparian Vegetative Zone Width (combined score)	Width of riparian zone >18 meters; human activities (i.e. parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.
Score: 12	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1

Station ID 20157: 40627: HAR 1: S
Habitat Score = 127/240 53%

Notes:

Chironomidae Obs. Few Macro Obs. water Temp Cold
Banks Heavily Eroded >60% slope Slushy Ice Built up Edge of Banks
Sewage Smell when Disrupting Substrate
Mostly Run (Deep) Sand Dominant w/ Boulder/Cobble/Gravel Mix

Revised 6/09

GPM = 6994.13

20157: 40627: HAR 1: S