Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 0099 Peno Creek

Submitted by
MEC Water Resources

To
Missouri Department of Natural Resources
Water Protection Program

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet A - Water Body Identification

I. Water Body Information (For water body being surveyed)

Water Body Name (from USGS 7.5' quad):	Peno CR
Missouri Water Body Identification (WBID) Number:	0099
8-digit HUC: 07090219	County: Pike
Upstream Legal Description (from Table H):	32, 54N, 3W
Downstream Legal Description(from Table H):	Mouth
Number of sites evaluated	7
List all sites numbers, listed consecutively upstream to downstream:	Site 1: County Rd. 52 - 150 m upstream Site 2: County Rd. 62 Site 3: 100m downstream of site 02 Site 4: Hwy 61 bridge Site 5: County Rd 923 Site 6: 100 m downstream of site 05 site 7: Hwy B Bridge

II. Discharger Facility Information (list all permitted dischargers on the stream)

Discharger Facility Name(s):	Bowling Green Municipal WWTF
Discharger Permit Number(s):	MO 0023141

III. UAA Surveyor (please print legibly)

Name of Surveyor: Renee Martin	Telephone Number: 573-875-7844
Organization/Employer: AE Solutions	
Position: Env. Specialist	

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Signed: _____ **Date:** 10/12/07

Ruc 10-18-07

WBID # 0099

Site # 01

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/27/07 1215	Site Location Description (e.g., road crossing): Cty Rd 52 ~150 m upstream of Bridge
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: Clear	Facility Name: Bowling Green Municipal WWTF
Weather Conditions for Past 10 days: min/clear	Permit Number: MO 0023141
Drought Conditions?: No drought X; Phase I □; Phase II □; Phase III □; Phase IV □; Unknown □	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 4365207	Northing (UTM Y): 0649462	Horizontal Accuracy: (EPE / FOM / PDOP) 18	~~Meters~~ ft
Site 11	Easting (UTM X) 4365307	Northing (UTM Y): 0649319	Horizontal Accuracy: (EPE / FOM / PDOP) 16	~~Meters~~ ft

Photos:

0099_01-253 ↑ 0099_01-254 ↑

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_252 (0099_01-252)	upstream	101_253	dnstream	101_254	rural residential
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_255 (0099_01-255)	Beaver Dam @ Trans 10				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at time of survey.)

□ Swimming	□ Skin diving	□ SCUBA diving	□ Tubing	□ Water skiing
□ Wind surfing	□ Kayaking	□ Boating	□ Wading	□ Rafting
□ Hunting	□ Trapping	□ Fishing	☒ None of the above	□ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

WBID # 0099

Site # 01

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☒ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☒ Fence	☐ No trespass sign	☐ Steep slopes	☐ Other:
Comments:				

Evidence of Human Use*: (Attach photos and reference in "Photos" section)

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
Comments / Other: none				

Substrate*: (These values should add up to 100%.)

20 % Cobble	10 % Gravel	10 % Sand	% Silt	% Mud/Clay	60 % Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

Filamentous algae - 100% coverage
duckweed
cattails narrow leaved pondweed

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☒ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☒ Oil	☐ Scum	☐ Foam	☐ None	☐ Other:

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0099

Site # 01

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: Jennifer Drabek Date of Survey: 9/27/07

Organization: AE Solutions Position: Env. Specialist

Rec 10-18-07

Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0099 Site #: 0099 _ 01 (WBID_Site#)

Estimated Channel Incision: 0.5 (m) (height between low bank width and water)

GPS Location (taken at transect 1):
UTM X: 4365207 UTM Y: 0649462
Horizontal Accuracy Estimate (GPS Data Quality): +/- 18 (feet)

GPS Location (taken at transect 11):
UTM X: 4365307 UTM Y: 0649319
Horizontal Accuracy Estimate (GPS Data Quality): +/- 16 (feet)

Average Stream Width: 8.0 (meters) Length of Survey Segment: 160 (meters)
(To determne Length of Reach) (20x average stream width)

Field Staff: JH/JF

Dissolved Oxygen

Date: 9/27/07 Time: 12:15

Dissolved Oxygen: 3.28 (mg/L)

Dissolved Oxygen: 37.7 (% sat)

Specific Cond: 869.0 (µS/cm)

Water Temp.: 22.2 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.26	0.05	0.52	0.01	0.20	0.05	0.45	0.25	0.65	0.41	1.40	0.43	1.31	0.35	1.20	0.15	1.34	0.21	0.82	0.10	0.38	0.15
2	0.52	0.08	1.04	0.02	0.40	0.05	0.90	0.20	1.30	0.74	2.80	0.65	2.62	0.36	2.40	0.24	2.68	0.23	1.64	0.06	0.76	0.12
3	0.78	0.08	1.56	0.04	0.60	0.05	1.35	0.19	1.95	0.92	4.20	0.48	3.93	0.54	3.60	0.25	4.02	0.36	2.46	0.13	1.14	0.18
4	1.04	0.09	2.08	0.05	0.80	0.04	1.80	0.18	2.60	1.00	5.60	0.00	5.24	0.67	4.80	0.27	5.36	0.37	3.28	0.11	1.52	0.16
5	1.30	0.10	2.60	0.06	1.00	0.04	2.25	0.20	3.25	1.00	7.00	0.00	6.55	0.65	6.00	0.24	6.70	0.33	4.10	0.10	1.90	0.13
6	1.56	0.09	3.12	0.05	1.20	0.02	2.70	0.20	3.90	0.84	8.40	0.34	7.86	0.50	7.20	0.31	8.04	0.41	4.92	0.04	2.28	0.13
7	1.82	0.07	3.64	0.08	1.40	0.00	3.15	0.20	4.55	0.69	9.80	0.82	9.17	0.35	8.40	0.36	9.38	0.39	5.74	0.06	2.66	0.11
8	2.08	0.04	4.16	0.09	1.60	0.07	3.60	0.14	5.20	0.45	11.20	0.62	10.48	0.37	9.60	0.35	10.72	0.35	6.56	0.03	3.04	0.10
9	2.34	0.04	4.68	0.09	1.80	0.10	4.05	0.07	5.85	0.30	12.60	0.34	11.79	0.34	10.80	0.25	12.06	0.23	7.38	0.01	3.42	0.09
Right Bank	2.60	0	5.20	0	2.05	0	4.50	0	6.50	0	14.00	0	13.10	0	12.00	0	13.45	0	8.20	0	3.80	0
Feature Type (riffle, run, or pool)	run		pool		run		run		pool		pool		pool		pool		pool		pool		pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0depth). This width is the wetted width
GPS location corresponds to Transect 01 and Transect 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

Rec 10-15-07

Signed: Jennifer Habib Date: 10/10/07

WBID # 0099
Site # 02

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/27/07 1310	Site Location Description (e.g., road crossing): City Rd 52
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: clear	Facility Name: Bowling Green Municipal WWTF
Weather Conditions for Past 10 days: rain/clear	Permit Number: MO 0023141
Drought Conditions?: No drought X; Phase I □; Phase II □; Phase III □; Phase IV □; Unknown □	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 4366625	Northing (UTM Y): 0648687	Horizontal Accuracy: (EPE / FOM / PDOP)	17 ~~Meters~~ ft
Site 11	Easting (UTM X): 4366818	Northing (UTM Y): 0648718	Horizontal Accuracy: (EPE / FOM / PDOP)	15 ~~Meters~~ ft

Photos:

0099-02-256 ↑ 0099-02-257 ↑

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101.256	dnstream	101.257	upstream - fence		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at time of survey.)

□ Swimming	□ Skin diving	□ SCUBA diving	□ Tubing	□ Water skiing
□ Wind surfing	□ Kayaking	□ Boating	□ Wading	□ Rafting
□ Hunting	□ Trapping	□ Fishing	X None of the above	□ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

WBID # 0099
Site # 02

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☒ Fence	☐ No trespass sign	☐ Steep slopes	☐ Other:
Comments:				

Evidence of Human Use*: (Attach photos and reference in "Photos" section)

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
Comments / Other: none				

Substrate*: (These values should add up to 100%.)

20 % Cobble	20 % Gravel	10 % Sand	% Silt	% Mud/Clay	50 % Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

algae - 60% coverage
duckweed

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☒ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☒ Oil	☐ Scum	☐ Foam	☐ None	☐ Other:

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0099

Site # 02

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: Jennifer Hrabik Date of Survey: 9/27/07

Organization: AE Solutions Position: Env. Specialist

Anc 10-18-07

Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0099 Site #: 0099-02 (WBID_Site#)

Estimated Channel Incision: 0.5 (m) (height between low bank width and water)

GPS Location (taken at transect 1):
UTM X: 436666625 UTM Y: 0648687
Horizontal Accuracy Estimate (GPS Data Quality): +/- 17 (feet)

GPS Location (taken at transect 11):
UTM X: 436668818 UTM Y: 0648718
Horizontal Accuracy Estimate (GPS Data Quality): +/- 15 (feet)

Average Stream Width: 6.0 (meters) (To determne Length of Reach)

Length of Survey Segment: 150 (meters) (20x average stream width)

Field Staff: JH / JF

Dissolved Oxygen

Date: 9/27/07 Time: 13:10

Dissolved Oxygen: 2.25 (mg/L)

Dissolved Oxygen: 24.2 (% sat)

Specific Cond: 686.0 (µS/cm)

Water Temp.: 19.3 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1.20	0.20	0.68	0.05	0.27	0.01	0.39	0.02	0.71	0.15	0.90	0.19	0.19	0.05	0.33	0.08	0.44	0.04	0.61	0.07	0.72	0.17
2	2.40	0.24	1.36	0.10	0.54	0.02	0.78	0.01	1.42	0.24	1.80	0.36	0.38	0.14	0.66	0.10	0.88	0.07	1.22	0.15	1.44	0.29
3	3.60	0.25	2.04	0.20	0.81	0.00	1.17	0.00	2.13	0.20	2.70	0.40	0.57	0.20	0.99	0.15	1.32	0.05	1.83	0.18	2.16	0.43
4	4.80	0.26	2.72	0.21	1.08	0.00	1.56	0.04	2.84	0.02	3.60	0.56	0.76	0.14	1.32	0.15	1.76	0.02	2.44	0.15	2.88	0.44
5	6.00	0.27	3.40	0.19	1.35	0.03	1.95	0.04	3.55	0.11	4.50	0.60	0.95	0.13	1.65	0.20	2.20	0.00	3.05	0.19	3.60	0.37
6	7.20	0.25	4.08	0.19	1.62	0.02	2.34	0.05	4.26	0.13	5.40	0.47	1.14	0.11	1.98	0.14	2.64	0.04	3.66	0.16	4.32	0.36
7	8.40	0.25	4.76	0.25	1.89	0.05	2.73	0.05	4.97	0.08	6.30	0.45	1.33	0.09	2.31	0.09	3.08	0.09	4.27	0.15	5.04	0.47
8	9.60	0.26	5.44	0.29	2.16	0.00	3.12	0.06	5.68	0.06	7.20	0.30	1.52	0.05	2.64	0.11	3.52	0.10	4.88	0.11	5.76	0.34
9	10.80	0.11	6.12	0.06	2.43	0.03	3.51	0.02	6.39	0.05	8.10	0.18	1.71	0.01	2.97	0.07	3.92	0.05	5.49	0.09	6.48	0.10
Right Bank	12.00	0	6.80	0	2.70	0	3.90	0	7.10	0	9.00	0	1.95	0	3.30	0	4.40	0	6.10	0	7.20	0
Feature Type (riffle, run, or pool)	pool		pool		riffle		run		pool		pool		pool		pool		pool		pool		pool	

Notes:
Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS location corresponds to Transect 01 and Transect 11, Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

Run 10-13-07

Signed: Jennifer Harold Date: 10/10/07

WBID # 0099
Site # 03

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/27/07 1340	Site Location Description (e.g., road crossing): 100m dnstream of site 02
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: clear	Facility Name: Bowling Green Municipal WWTF
Weather Conditions for Past 10 days: rain/clear	Permit Number: MO 0023141
Drought Conditions?: No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 4366880	Northing (UTM Y): 0648715	Horizontal Accuracy: (EPE / FOM / PDOP)	18	~~Meters~~ ft
Site 11	Easting (UTM X): 4367084	Northing (UTM Y): 0648615	Horizontal Accuracy: (EPE / FOM / PDOP)	26	~~Meters~~ ft

0099-03-258 0099-03-259

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_258	upstream	101_259	dnstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

WBID # 0099
Site # 03

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☐ Steep slopes	☐ Other:
Comments: none				

Evidence of Human Use*: (Attach photos and reference in "Photos" section)

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
Comments / Other: none				

Substrate*: (These values should add up to 100%.)

20 % Cobble	30 % Gravel	10 % Sand	% Silt	% Mud/Clay	40 % Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

algae - 80% coverage duckweed
narrow leafed pondweed water primrose

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☒ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0099

Site # 03

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: Jennifer Hrabik Date of Survey: 9/27/07

Organization: AE Solutions Position: Env. Specialist

AUC 10-16-07

Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0099 Site #: 0099_03 (WBID_Site#)

Estimated Channel Incision: 0.5 (m) (height between low bank width and water)

GPS Location (taken at transect 1):
UTM X: 4366880 UTM Y: 0648715
Horizontal Accuracy Estimate (GPS Data Quality): +/- 18 (feet)

GPS Location (taken at transect 11):
UTM X: 4367084 UTM Y: 0648645
Horizontal Accuracy Estimate (GPS Data Quality): +/- 26 (feet)

Average Stream Width: 7.0 (meters) (To determne Length of Reach)

Length of Survey Segment: 150 (meters) (20x average stream width)

Field Staff: JH/JF

Dissolved Oxygen

Date: 9/27/07 Time: 13:40

Dissolved Oxygen: 2.33 (mg/L)

Dissolved Oxygen: 25.4 (% sat)

Specific Cond: 684.0 (µS/cm)

Water Temp.: 19.5 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.64	0.06	0.43	0.02	0.42	0.06	0.52	0.07	0.66	0.01	0.68	0.03	0.93	0.02	0.71	0.08	0.70	0.10	1.00	0.31	1.00	0.34
2	1.28	0.09	0.86	0.04	0.84	0.08	1.04	0.15	1.32	0.06	1.36	0.04	1.86	0.18	1.42	0.09	1.40	0.27	2.00	0.32	2.00	0.68
3	1.92	0.A	1.79	0.01	1.26	0.10	1.56	0.25	1.98	0.02	2.04	0.08	2.79	0.17	2.13	0.16	2.10	0.49	3.00	0.37	3.00	>1
4	2.56	0.26	1.72	0.00	1.68	0.20	2.08	0.30	2.64	0.14	2.72	0.09	3.72	0.29	2.84	0.20	2.80	0.55	4.00	0.34	4.00	>1
5	3.20	0.21	2.15	0.01	2.10	0.25	2.60	0.28	3.30	0.11	3.40	0.10	4.65	0.30	3.55	0.32	3.50	0.60	5.00	0.30	5.00	>1
6	3.84	0.20	2.58	0.02	2.52	0.30	3.12	0.31	3.96	0.15	4.08	0.15	5.58	0.30	4.26	0.44	4.20	0.60	6.00	0.36	6.00	>1
7	4.48	0.25	3.01	0.01	2.94	0.26	3.64	0.31	4.62	0.16	4.76	0.14	6.51	0.25	4.97	0.53	4.90	0.55	7.00	0.37	7.00	0.92
8	5.12	0.29	3.44	0.00	3.36	0.25	4.16	0.35	5.28	0.10	5.44	0.12	7.44	0.16	5.68	0.67	5.60	0.32	8.00	0.54	8.00	0.59
9	5.76	0.24	3.87	0.01	3.78	0.18	4.68	0.22	5.94	0.15	6.12	0.11	8.37	0.20	6.39	0.56	6.30	0.24	9.00	0.65	9.00	0.32
Right Bank	6.45	0	4.30	0	4.25	0	5.20	0	6.60	0	6.80	0	9.30	0	7.10	0	7.05	0	10.00	0	10.00	0
Feature Type (riffle, run, or pool)	pool		run		pool		pool		pool		pool		pool		pool		pool		pool		pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0depth). This width is the wetted width
GPS location corresponds to Transect 01 and Transect 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

RMC 10-15-07

Signed: Jennifer Hrabik Date: 10/10/07

WBID # 0099
Site # 04

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization
(must be completed for each site)

Date & Time: 9/27/07 1430	Site Location Description (e.g., road crossing): Hwy 61 Bridge
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: Clear.	Facility Name: Bowling Green Municipal WWTF
Weather Conditions for Past 10 days: rain/clear	Permit Number: MD 0023141
Drought Conditions?: No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 437 1438	Northing (UTM Y): 0645705	Horizontal Accuracy: (EPE / FOM / PDOP) 20	~~Meters~~ JKH ft
Site 11	Easting (UTM X): 4371439	Northing (UTM Y): 0645906	Horizontal Accuracy: (EPE / FOM / PDOP) 21	~~Meters~~ JKH ft

Photos:

0099-04-260 0099-04-261 0099-04-262

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101-260	upstream	101-261	downstream	101-262	ATU Trib 11
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101263	Bridge @ Trans. 11				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

0099-04-263

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

WBID # 0099
Site # 04

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☒ Steep slopes	☐ Other:
Comments:				

Evidence of Human Use*: (Attach photos and reference in "Photos" section)

☒ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☒ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
Comments / Other:				

Substrate*: (These values should add up to 100%.)

10 % Cobble	60 % Gravel	10 % Sand	% Silt	% Mud/Clay	20 % Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

algae
water primrose

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☒ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0099
Site # 04

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: Jennifer Drabek Date of Survey: 9/27/07

Organization: AE Solutions Position: Env. Specialist

RNC 10-18-07

Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0099 Site #: 0099_04 (WBID_Site#)

Estimated Channel Incision: 4 (m) (height between low bank width and water)

GPS Location (taken at transect 1):
UTM X: 4371438 UTM Y: 0645705
Horizontal Accuracy Estimate (GPS Data Quality): +/- 20 (feet)

GPS Location (taken at transect 11):
UTM X: 4371439 UTM Y: 0645906
Horizontal Accuracy Estimate (GPS Data Quality): +/- 21 (feet)

Average Stream Width: 3.5 (meters) (To determne Length of Reach)

Length of Survey Segment: 150 (meters) (20x average stream width)

Field Staff: JH / JF

Dissolved Oxygen

Date: 9/27/07 Time: 14:30

Dissolved Oxygen: 2.57 (mg/L)

Dissolved Oxygen: 31.4 ~~25.6~~ JRH (% sat)

Specific Cond: 473.7 (µS/cm)

Water Temp.: 25.6 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.29	0.02	0.56	0.21	0.62	0.21	0.37	0.00	0.21	0.00	0.30	0.00	0.27	0.00	0.25	0.00	0.35	0.00	0.44	0.04	0.27	0.01
2	0.58	0.02	1.12	0.40	1.24	0.56	0.74	|	0.42	|	0.60	|	0.54	|	0.50	|	0.70	|	0.88	0.10	0.54	0.05
3	0.87	0.05	1.68	0.40	1.86	>1	1.11	|	0.63	|	0.90	|	0.81	|	0.75	|	1.05	|	1.32	0.09	0.81	0.05
4	1.16	0.04	2.24	0.30	2.48	>1	1.48	|	0.84	|	1.20	|	1.08	|	1.00	|	1.40	|	1.76	0.07	1.08	0.07
5	1.45	0.06	2.80	0.36	3.10	0.85	1.85	|	1.05	|	1.50	|	1.35	|	1.25	|	1.75	|	2.20	0.05	1.35	0.09
6	1.74	0.04	3.36	0.29	3.72	0.45	2.22	|	1.26	|	1.80	|	1.62	|	1.50	|	2.10	|	2.64	0.06	1.62	0.11
7	2.03	0.03	3.92	0.25	4.34	0.45	2.59	|	1.47	|	2.10	|	1.89	|	1.75	|	2.45	|	3.08	0.05	1.89	0.10
8	2.32	0.02	4.48	0.26	4.96	0.25	2.96	|	1.68	|	2.40	|	2.16	|	2.00	|	2.80	|	3.52	0.05	2.16	0.06
9	2.61	0.01	5.04	0.18	5.58	0.13	3.33	|	1.89	|	2.70	|	2.43	|	2.25	|	3.15	|	3.96	0.04	2.43	0.03
Right Bank	2.90	0	5.60	0	6.25	0	3.70	0	2.10	0	3.05	0	2.70	0	2.50	0	3.50	0	4.45	0	2.70	0
Feature Type (riffle, run, or pool)	pool		pool		pool		dry		dry		dry		dry		dry		dry		pool		pool	

Notes: Transect must be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS location corresponds to Transect 01 and Transect 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

RWC 10-15-07

Signed: Jennifer Hrabik Date: 10/10/07

WBID # 0099
Site # 05

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/27/07 1510	Site Location Description (e.g., road crossing): Cty Rd 123
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: Clear	Facility Name: Bowling Green Municipal WWTF
Weather Conditions for Past 10 days: rain/clear	Permit Number: MO DB 23141
Drought Conditions?: No drought X; Phase I □; Phase II □; Phase III □; Phase IV □; Unknown □	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 4372377	Northing (UTM Y): 0641657	Horizontal Accuracy: (EPE / FOM / PDOP) 14	~~Meters~~ ft
Site 11	Easting (UTM X): 4372557	Northing (UTM Y): 0641656	Horizontal Accuracy: (EPE / FOM / PDOP) 18	~~Meters~~ ft

Photos:

0099-05-264 0099-05-265

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101-264	downstream	101-265	upstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at time of survey.)

□ Swimming	□ Skin diving	□ SCUBA diving	□ Tubing	□ Water skiing
□ Wind surfing	□ Kayaking	□ Boating	□ Wading	□ Rafting
□ Hunting	□ Trapping	□ Fishing	X None of the above	□ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

WBID # 0099
Site # 05

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☑ Steep slopes	☐ Other:
Comments:				

Evidence of Human Use*: (Attach photos and reference in "Photos" section)

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
Comments / Other: none				

Substrate*: (These values should add up to 100%.)

20 % Cobble	70 % Gravel	10 % Sand	% Silt	% Mud/Clay	% Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

algae

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
Color:	☑ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☑ Solids	☑ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☑ Oil	☐ Scum	☐ Foam	☐ None	☐ Other:

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0099

Site # 05

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: Jennifer Hrabik Date of Survey: 9/27/07

Organization: AE Solutions Position: Env. Specialist

RNC 10-18-07

Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0099 Site #: 0099-05 (WBID_Site#)

Estimated Channel Incision: 2 (m) (height between low bank width and water)

GPS Location (taken at transect 1):
UTM X: 4372377 UTM Y: 0646573
Horizontal Accuracy Estimate (GPS Data Quality): +/- 14 (feet)

GPS Location (taken at transect 11):
UTM X: 4372557 UTM Y: 0646562
Horizontal Accuracy Estimate (GPS Data Quality): +/- 18 (feet)

Average Stream Width: 6.0 (meters) (To determne Length of Reach)

Length of Survey Segment: 150 (meters) (20x average stream width)

Field Staff: JH/JF

Dissolved Oxygen

Date: 9/27/07 Time: 1510

Dissolved Oxygen: 2.18 (mg/L)

Dissolved Oxygen: 24.20 (% sat)

Specific Cond: 521.0 (µS/cm)

Water Temp.: 22.7 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1.14	0.06	1.05	0.04	0.63	0.01	0.81	0.03	0.14	<0.01	0.54	0.00	0.17	0.00	0.55	0.00	0.49	0.00	0.25	0.01	0.48	0.03
2	2.28	0.10	2.10	0.07	1.26	0.02	1.62	0.05	0.28	|	1.08	|	0.34	|	1.10	|	0.98	|	0.50	0.01	0.96	0.05
3	3.42	0.10	3.15	0.15	1.89	0.05	2.43	0.05	0.42	|	1.62	|	0.51	|	1.65	|	1.47	|	0.75	0.04	1.44	0.15
4	4.56	0.15	4.20	0.21	2.52	0.05	3.24	0.10	0.56	|	2.16	|	0.68	|	2.20	|	1.96	|	1.00	0.02	1.92	0.14
5	5.70	0.26	5.25	0.26	3.15	0.02	4.05	0.12	0.70	|	2.70	|	0.85	|	2.75	|	2.45	|	1.25	0.09	2.40	0.18
6	6.84	0.36	6.30	0.30	3.78	0.05	4.86	0.14	0.84	|	3.24	|	1.02	|	3.30	|	2.94	|	1.50	0.13	2.88	0.06
7	7.98	0.41	7.35	0.31	4.41	0.01	5.67	0.10	0.98	|	3.78	|	1.19	|	3.85	|	3.43	|	1.75	0.00	3.36	0.20
8	9.12	0.47	8.40	0.20	5.04	0.01	6.48	0.11	1.12	|	4.32	|	1.36	|	4.40	|	3.92	|	2.00	0.02	3.84	0.20
9	10.26	0.26	9.45	0.04	5.67	0.01	7.29	0.10	1.26	⊥	4.86	⊥	1.53	⊥	4.95	⊥	4.41	⊥	2.25	0.01	4.32	0.05
Right Bank	11.45	0	10.50	0	6.30	0	8.15	0	1.40	0	5.40	0	1.75	0	5.50	0	4.90	0	2.50	0	4.80	0
Feature Type (riffle, run, or pool)	pool		pool		pool		pool		pool		dry		dry		dry		dry		pool		pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0depth). This width is the wetted width.
GPS location corresponds to Transect 01 and Transect 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

ANC 10-18-07

Signed: Jennifer Trabby Date: 10/10/07

WBID # 0099

Site # 06

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/28/07 ~~0800~~ JRH 0850	Site Location Description (e.g., road crossing): ~~Hwy B Bridge~~ JRH 100 m downstream of Site 05
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: Clear	Facility Name: Bowling Green Municipal WWTF
Weather Conditions for Past 10 days: rain/clear	Permit Number: mo 0023141
Drought Conditions?: No drought [X]; Phase I □; Phase II □; Phase III □; Phase IV □; Unknown □	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 4372650	Northing (UTM Y): 0646498	Horizontal Accuracy: (EPE / FOM / PDOP)	22 JRH ~~Meters~~ ft
Site 11	Easting (UTM X): 4372830	Northing (UTM Y): 0646334 JRH	Horizontal Accuracy: (EPE / FOM / PDOP)	27 JRH ~~Meters~~ ft

Photos:

0099_06_268 (↑) 0099_06_269 (↑)

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_268	upstream	101_269	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at time of survey.)

□ Swimming	□ Skin diving	□ SCUBA diving	□ Tubing	□ Water skiing
□ Wind surfing	□ Kayaking	□ Boating	□ Wading	□ Rafting
□ Hunting	□ Trapping	□ Fishing	[X] None of the above	□ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

WBID # 0099

Site # 06

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☒ Steep slopes	☐ Other:
Comments:				

Evidence of Human Use*: (Attach photos and reference in "Photos" section)

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
Comments / Other: none				

Substrate*: (These values should add up to 100%.)

40 % Cobble	40 % Gravel	10 % Sand	% Silt	% Mud/Clay	10 % Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

algae
duck weed

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☒ Other: Brown
Bottom Deposit:	☐ Sludge	☒ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☒ Oil	☐ Scum	☐ Foam	☐ None	☐ Other:

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 1099

Site # 06

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

AMC 10-15-07

Surveyor's Signature: Jennifer Hrabik Date of Survey: 9/28/07

Organization: AE Solutions Position: Env. Specialist

Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0099 Site #: 0099_06 (WBID_Site#)

Estimated Channel Incision: 2 (m) (height between low bank width and water)

GPS Location (taken at transect 1):
UTM X: 437650 UTM Y: 0646498
Horizontal Accuracy Estimate (GPS Data Quality): +/- 22 (feet)

GPS Location (taken at transect 11):
UTM X: 437830 UTM Y: 0646334
Horizontal Accuracy Estimate (GPS Data Quality): +/- 27 (feet)

Average Stream Width: 8.0 (meters) Length of Survey Segment: 160 (meters)
(To determne Length of Reach) (20x average stream width)

Field Staff: JH/JF

Dissolved Oxygen

Date: 9/28/07 Time: ~~0800~~ 1RH 0850

Dissolved Oxygen: 8.18 (mg/L)

Dissolved Oxygen: 81.60 (% sat)

Specific Cond: 527.0 (µS/cm)

Water Temp.: 15.4 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.73	0.10	1.50	0.30	0.68	0.04	0.84	0.08	0.79	0.14	0.48	0.05	0.48	0.02	1.46	0.31	0.99	0.17	1.26	0.07	0.86	0.10
2	1.46	0.06	3.00	0.30	1.36	0.13	1.68	0.22	1.58	0.16	0.96	0.08	0.96	0.01	2.92	0.37	1.98	0.14	2.52	0.07	1.72	0.10
3	2.19	0.05	4.50	0.35	2.04	0.11	2.52	0.34	2.37	0.23	1.44	0.04	1.44	0.01	4.38	0.35	2.97	0.14	3.78	0.06	2.58	0.12
4	2.92	0.09	6.00	0.37	2.72	0.15	3.36	0.34	3.16	0.24	1.92	0.04	1.92	0.03	5.84	0.30	3.96	0.21	5.04	0.01	3.44	0.16
5	3.65	0.11	7.50	0.30	3.40	0.14	4.20	0.36	3.95	0.20	2.40	0.02	2.40	0.05	7.30	0.21	4.95	0.23	6.30	0.03	4.30	0.14
6	4.38	0.16	9.00	0.31	4.08	0.15	5.04	0.25	4.74	0.24	2.88	0.03	2.88	0.07	8.76	0.15	5.94	0.21	7.56	0.00	5.16	0.13
7	5.11	0.12	10.50	0.28	4.76	0.10	5.88	0.28	5.53	0.16	3.36	0.05	3.36	0.06	10.22	0.16	6.93	0.10	8.82	0.02	6.02	0.15
8	5.84	0.11	12.00	0.35	5.44	0.12	6.72	0.25	6.32	0.17	3.84	0.04	3.84	0.01	11.68	0.15	7.92	0.06	10.08	0.05	6.88	0.20
9	6.57	0.09	13.50	0.24	6.12	0.06	7.56	0.13	7.11	0.20	4.32	0.02	4.32	0.01	13.14	0.12	8.91	0.07	11.34	0.01	7.74	0.31
Right Bank	7.30	0	15.00	0	6.80	0	8.45	0	7.98	0	4.80	0	4.80	0	14.60	0	9.90	0	12.60	0	8.65	0
Feature Type (riffle, run, or pool)	pool		pool		pool		pool		pool		pool		pool		pool		pool		pool		pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS location corresponds to Transect 01 and Transect 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

RNC 10-18-07

Signed: Jennifer Hrabik Date: 10/10/07

WBID # 0099
Site # 07

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/28/07 0800	Site Location Description (e.g., road crossing): ~~100m downstream of Site 06~~ JRH 9/28/07 Hwy B Bridge
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: clear	Facility Name: Bowling Green Municipal WWTF
Weather Conditions for Past 10 days: rain/clear	Permit Number: mo 0023141
Drought Conditions?: No drought X; Phase I □; Phase II □; Phase III □; Phase IV □; Unknown □	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 4372982	Northing (UTM Y): 0645538	Horizontal Accuracy: (EPE / FOM / PDOP) 23	~~Meters~~ JRH ft
Site 11	Easting (UTM X): 4373130	Northing (UTM Y): 0645372	Horizontal Accuracy: (EPE / FOM / PDOP) 30	~~Meters~~ JRH ft

Photos:

0099_07_266 0099_07_267

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_266	upstream	101_267	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

WBID # 0099
Site # 07

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☒ Steep slopes	☐ Other:
Comments:				

Evidence of Human Use*: (Attach photos and reference in "Photos" section)

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
Comments / Other: none				

Substrate*: (These values should add up to 100%.)

30 % Cobble	30 % Gravel	25 % Sand	% Silt	% Mud/Clay	15 % Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

algae
duckweed
willows

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☒ Other: Brown
Bottom Deposit:	☐ Sludge	☒ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☒ Oil	☐ Scum	☐ Foam	☐ None	☐ Other:

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0099
Site # 07

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: Jennifer Drabek Date of Survey: 9/28/07

Organization: AE Solutions Position: Env. Specialist

DuC 10-18-07

Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0099 Site #: 0099-07 (WBID_Site#)

Estimated Channel Incision: 2 (m) (height between low bank width and water)

GPS Location (taken at transect 1):
UTM X: 4372982 UTM Y: 0645538
Horizontal Accuracy Estimate (GPS Data Quality): +/- 23 (feet)

GPS Location (taken at transect 11):
UTM X: 4373130 UTM Y: 0645372
Horizontal Accuracy Estimate (GPS Data Quality): +/- 30 (feet)

Average Stream Width: 80 (meters) (To determne Length of Reach)

Length of Survey Segment: 160 (meters) (20x average stream width)

Field Staff: JH/JF

Dissolved Oxygen

Date: 9/28/07 Time: 0800

Dissolved Oxygen: 7.55 (mg/L)

Dissolved Oxygen: 76.2 (% sat)

Specific Cond: 470.0 (µS/cm)

Water Temp.: 15.9 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.22	0.01	0.68	0.04	1.50	0.06	0.56	0.02	0.25	0.15	0.35	0.04	0.88	0.03	1.50	0.11	0.62	0.08	0.90	0.06	0.68	0.13
2	0.44	0.01	1.36	0.05	3.00	0.07	1.12	0.06	0.50	0.21	0.70	0.04	1.76	0.31	3.00	0.13	1.24	0.14	1.80	0.01	1.36	0.20
3	0.66	0.01	2.04	0.09	4.50	0.14	1.68	0.10	0.75	0.22	1.05	0.06	2.64	0.35	4.50	0.17	1.86	0.15	2.70	0.03	2.04	0.27
4	0.88	0.02	2.72	0.14	6.00	0.15	2.24	0.08	1.00	0.22	1.40	0.10	3.52	0.45	6.00	0.24	2.48	0.21	3.60	0.08	2.72	0.31
5	1.10	0.04	3.40	0.16	7.50	0.30	2.80	0.07	1.25	0.20	1.75	0.09	4.40	0.50	7.50	0.26	3.10	0.14	4.50	0.13	3.40	0.30
6	1.32	0.02	4.08	0.20	9.00	0.35	3.36	0.12	1.50	0.14	2.10	0.11	5.28	0.49	9.00	0.29	3.72	0.01	5.40	0.18	4.08	0.30
7	1.54	0.02	4.76	0.23	10.50	0.40	3.92	0.14	1.75	0.10	2.45	0.08	6.16	0.32	10.50	0.28	4.34	0.05	6.30	0.21	4.76	0.25
8	1.76	0.02	5.44	0.30	12.00	0.55	4.48	0.07	2.00	0.10	2.80	0.05	7.04	0.14	12.00	0.30	4.96	0.04	7.20	0.29	5.44	0.16
9	1.98	0.01	6.12	0.29	13.50	0.35	5.04	0.02	2.25	0.06	3.15	0.01	7.92	0.07	13.50	0.40	5.58	0.02	8.10	0.34	6.12	0.17
Right Bank	2.25	0	6.81	0	15.00	0	5.65	0	2.50	0	3.50	0	8.80	0	15.00	0	6.20	0	9.00	0	6.85	0
Feature Type (riffle, run, or pool)	pool		pool		pool		pool		pool		pool		pool		pool		pool		pool		pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0depth). This width is the wetted width
GPS location correspond to Transect 01 and Transect 11. Transects ordered in upstream to downstream order.
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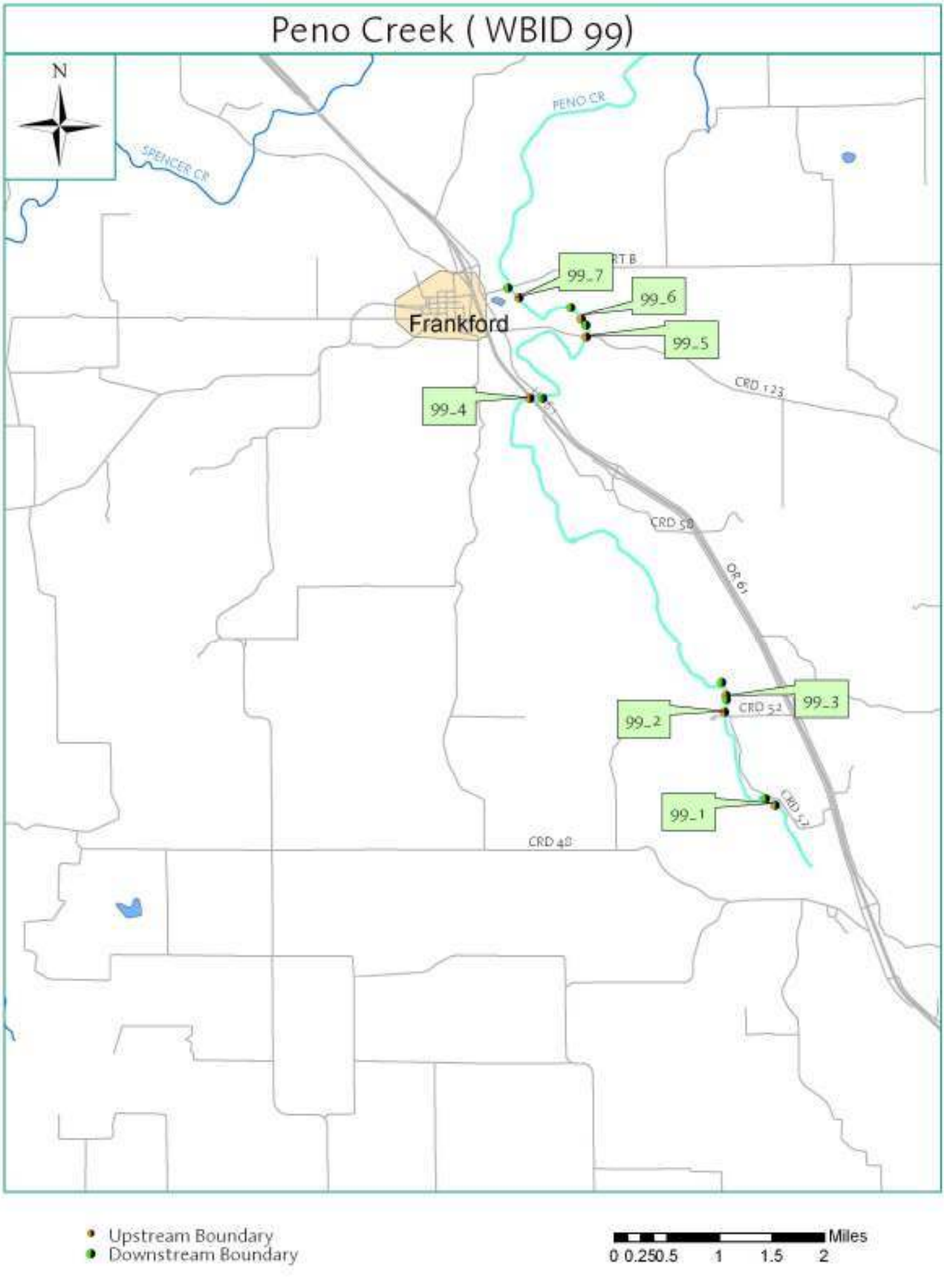
All measurements to be taken to the nearest 0.01 meter.

anc 10-15-07

Signed: Jennifer Harris Date: 10/10/07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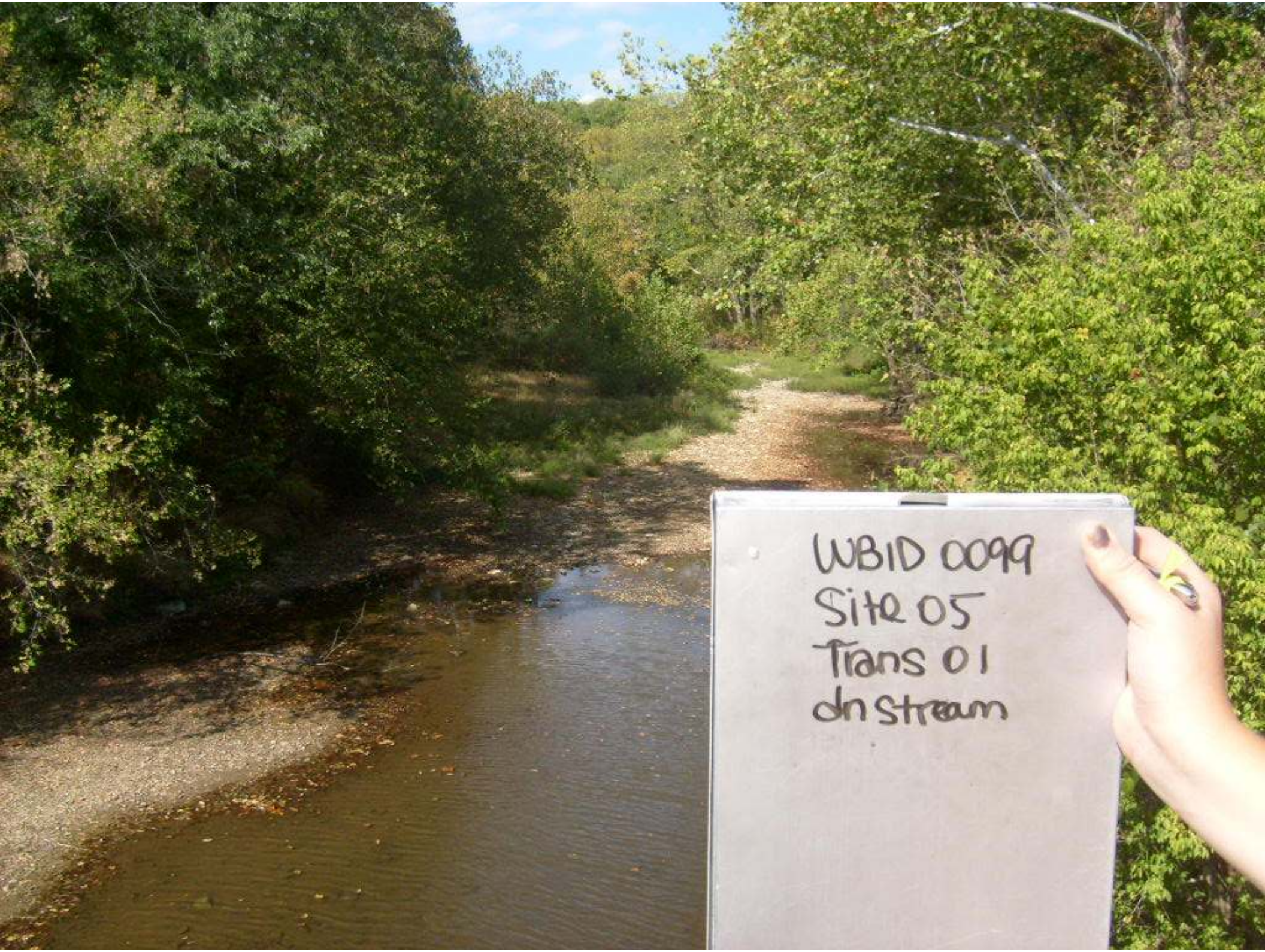
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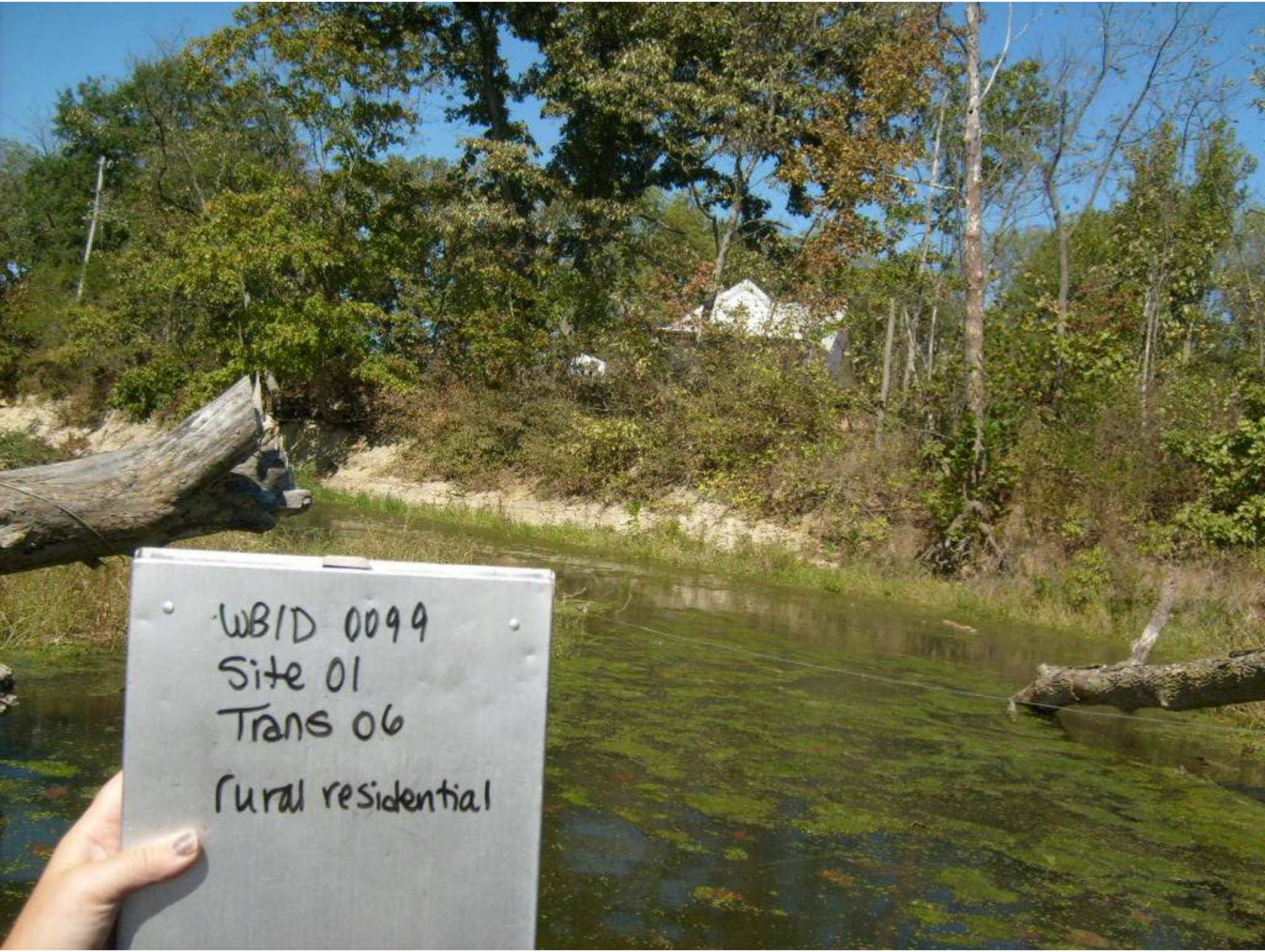
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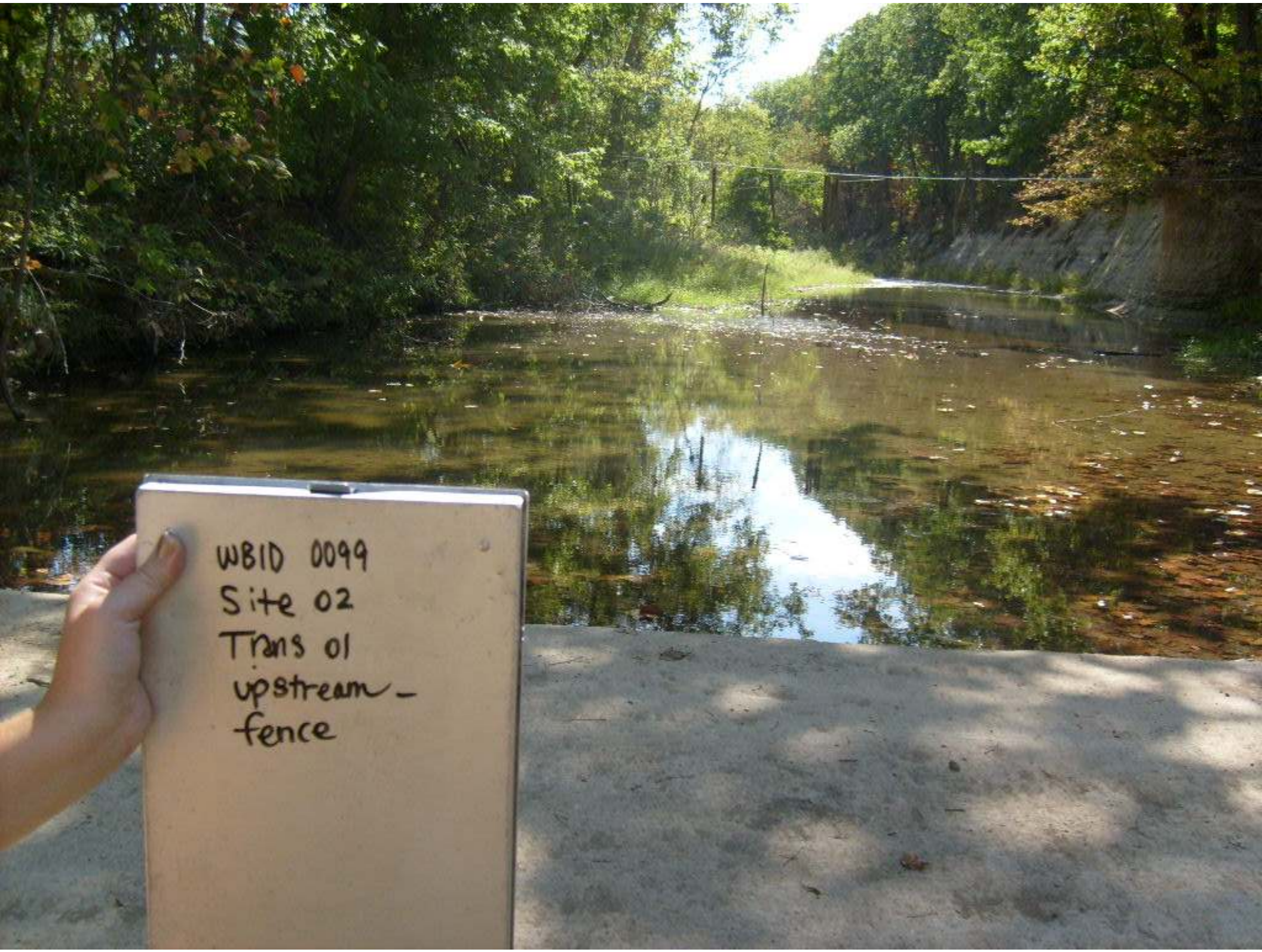
Trans 06
rural residential

WBID 0099
Site 01
Trans 10
Beaver Dam

WBID 0099
Site 02
Trans 01
downstream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upstream -
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upstream

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Site 03
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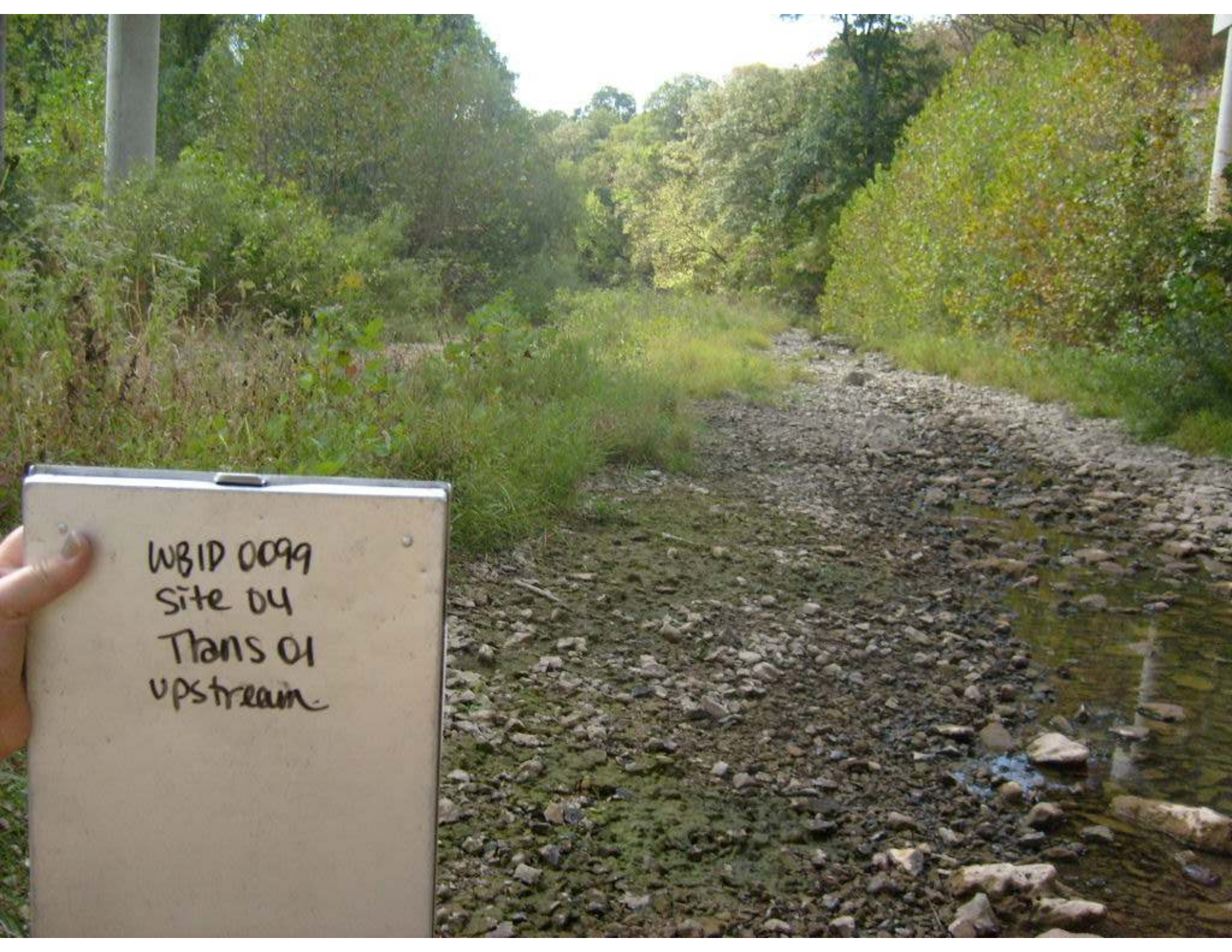
Upstream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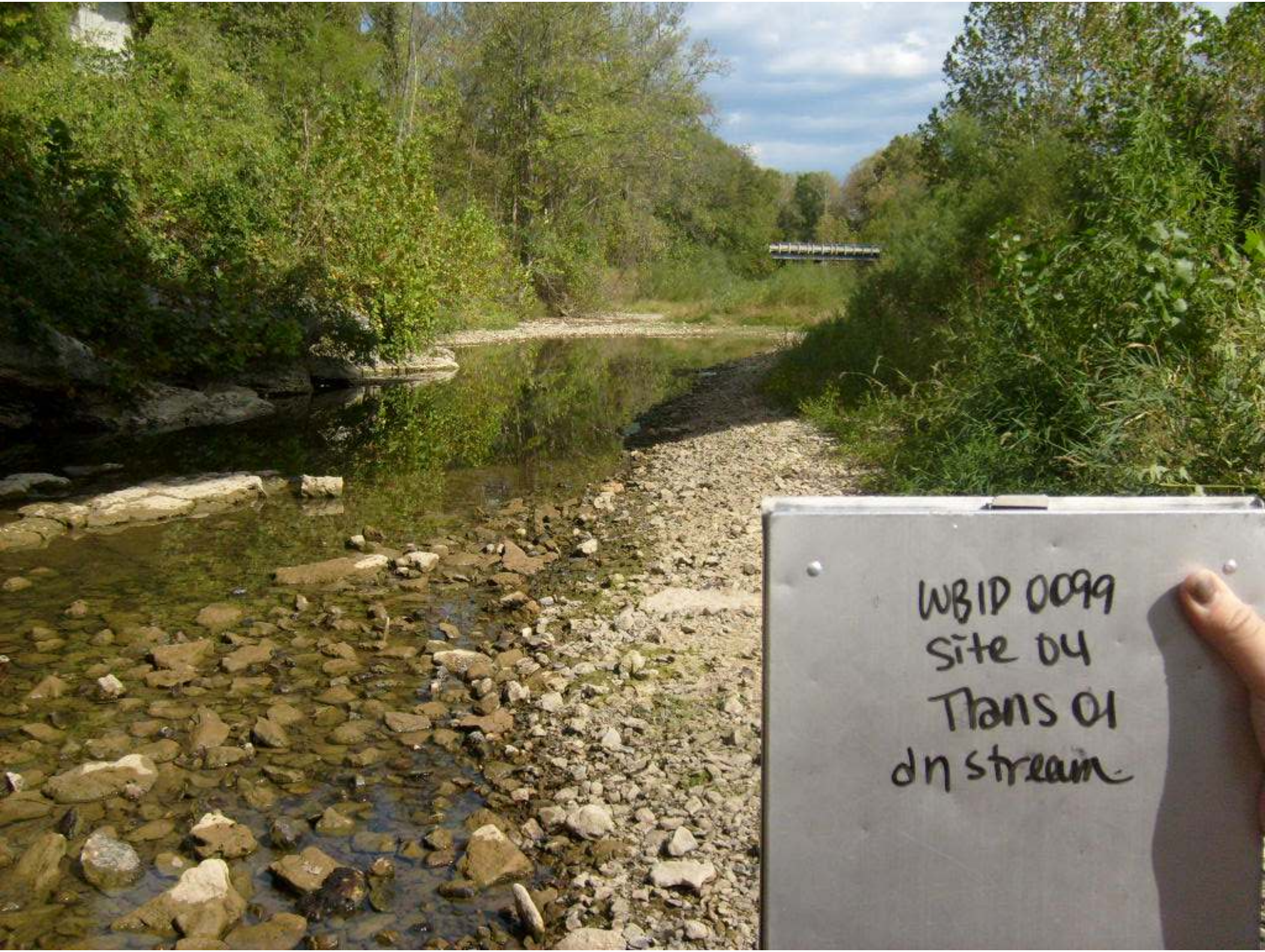
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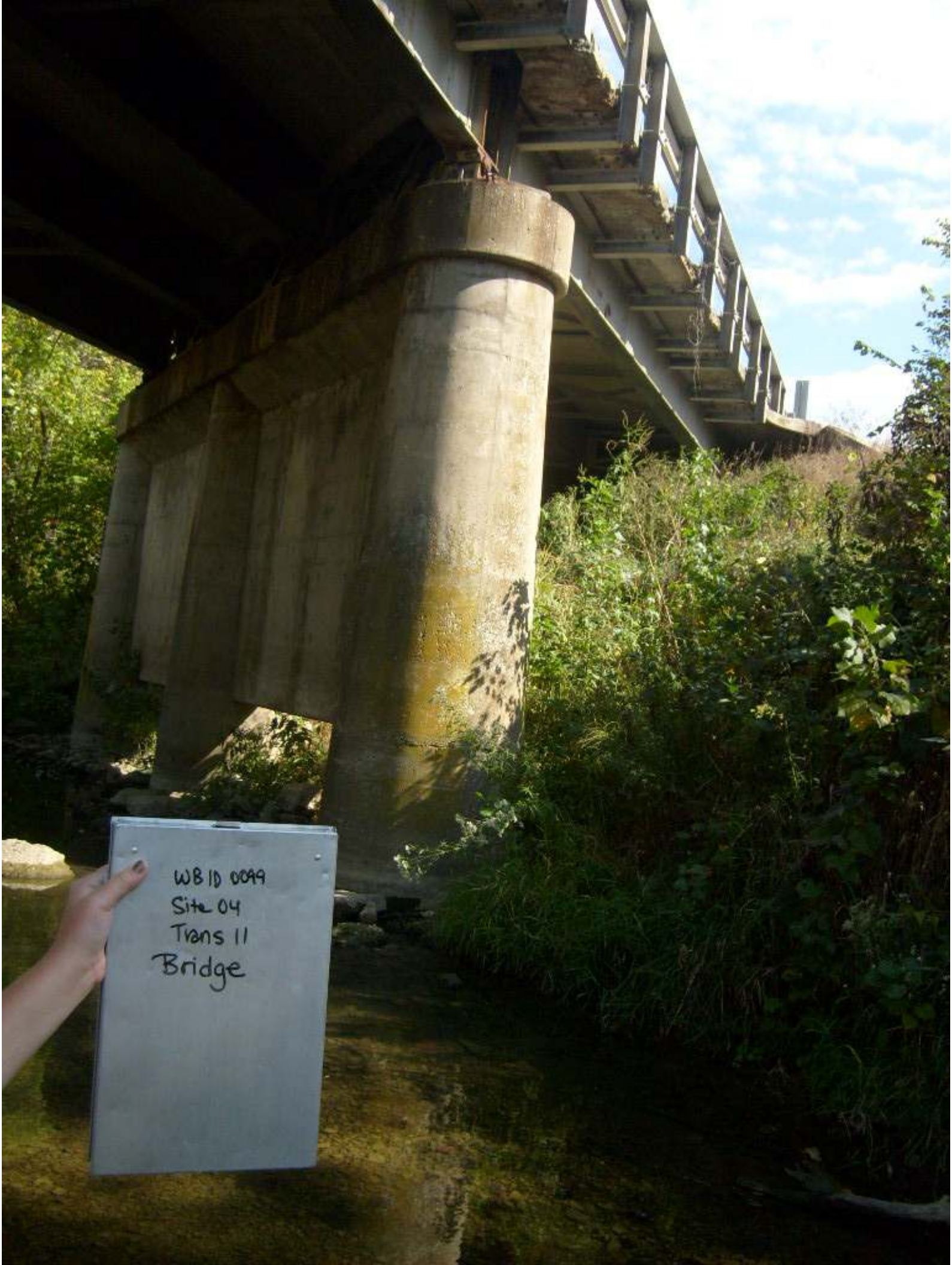
Site 04
Theis 01
ATV trail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