



Missouri  
Department of  
Natural Resources

Use Attainability Analysis

for

WBID 0687 Walnut Creek

Submitted by

Pickett Ray & Silver Inc.

to

Missouri Department of Natural Resources  
Water Protection Program

Date received: October 31, 2007



Missouri  
 Department of Natural Resources  
 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): <u>Walnut Creek</u>	
Missouri Water Body Identification (WBID) Number: <u>687</u>	
8-digit HUC: <u>10280203</u>	County: <u>Randolph</u>
Upstream Legal Description (from Table H): <u>29,55N,14W</u>	
Downstream Legal Description (from Table H): <u>Mouth</u>	
Number of sites evaluated: <u>3</u>	
List all sites numbers, listed consequentially upstream to downstream: <u>687-1, 687-2, 687-3</u>	

**Site Locations Map(s):** Attach a map of the entire segment with assessment sites clearly labeled. Mark any other items that may be of interest.

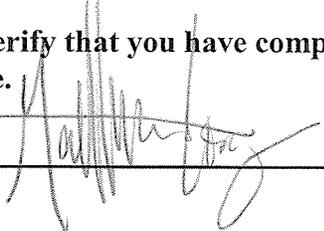
**II. Facility Information** (list all permitted discharges to the water body segment)

Facility Name(s) and Permit Number(s): <u>Shoreline WWTF, MO 0129305</u>
-----------------------------------------------------------------------------

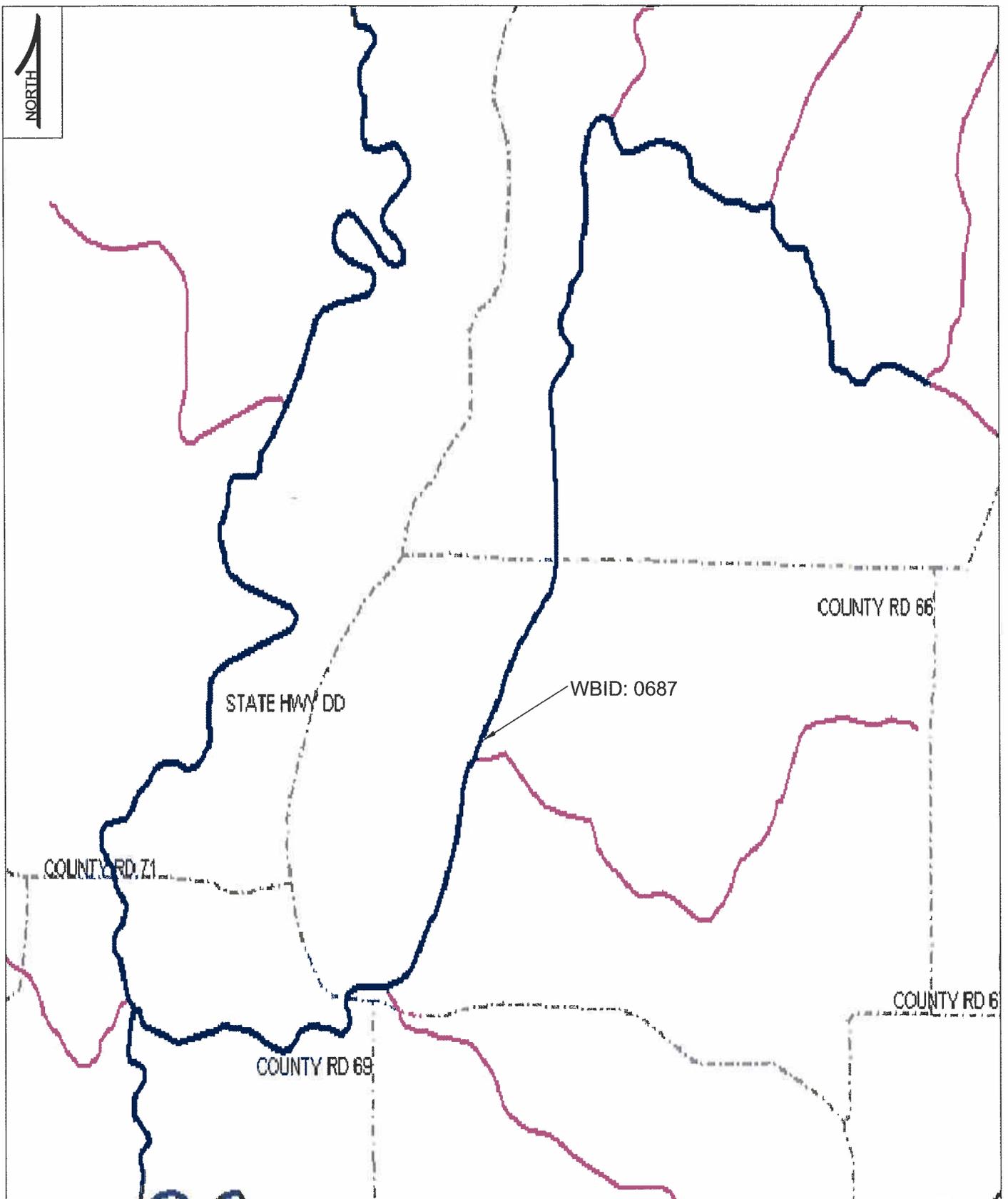
**III. UAA Surveyor** (please print legibly)

Name of Surveyor <u>Math Cosby</u>	Telephone Number: <u>636 397 1211</u>
Organization/Employer: <u>PRS</u>	

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

Signed:  Date: 10/16/07

\\3serverprs\Projects\07031\dwg\07031\_MODN\_01E\0687 Walnut Creek.dwg, 10/26/2007 9:14:39 AM, 1:2000, MAIT COSBY



**PICKETT RAY & SILVER**  
 Civil Engineers Land Surveyors Natural Resources  
 Address: 333 Mid Rivers Mall Drive St. Peters, Missouri 63376  
 Phone: (636)397-1211 Fax: (636)397-1104 Website: www.prs3.com

WBID #: 0687  
 Name: Walnut Creek  
 County: Randolph  
 GIS Location Map  
 Sheet 1 of 1

PRs Job Number: 07031.MODN.01E  
 Drawn By: BLS Date: 10-22-07  
 Checked By: JCV Date: 10-22-07

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\\3serverpr\Projects\07031\dwg\07031\_MODN\_01E\0687 Walnut Creek.dwg, 10/22/2007 2:42:14 PM, BLSTOESZ

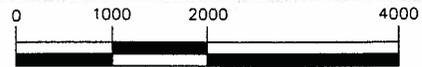


### PICKETT RAY & SILVER

Civil Engineers Land Surveyors Natural Resources  
 Address: 333 Mid Rivers Mall Drive St. Peters, Missouri 63376  
 Phone: (636)397-1211 Fax: (636)397-1104  
 Website: www.prs3.com

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WBID #: 0687  
 Name: Walnut Creek  
 County: Randolph  
 USGS Location Map

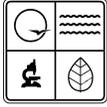


**GRAPHIC SCALE**  
 1 inch = 2000ft.

PRS Job Number: 07031.MODN.01E  
 Drawn By: BLS Date: 10-22-07  
 Checked By: JCV Date: 10-22-07

WBID # 687

Site # 1



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Sheet B – Site Characterization**  
 (must be completed for each site)

Date & Time: <u>10/16/07 8AM</u>	Site Location Description (e.g., road crossing):
Personnel (Data Collectors): <u>MCLS</u>	<u>Upstream of 1645</u>
Current Weather Conditions: <u>Cloudy 60°F</u>	Facility Name: <u>Shoreline WWTF</u>
Weather Conditions for Past 10 days: <u>4.29" of Rain</u>	Permit Number: <u>MO 0129305</u>
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): <u>541844 m</u>	Northing (UTM Y): <u>4377020 m</u>	Horizontal Accuracy: (EPE / FOM / <u>PDOP</u> ) <u>3.9</u> Meters
Site 11	Easting (UTM X): <u>541819 m</u>	Northing (UTM Y): <u>4376871 m</u>	Horizontal Accuracy: (EPE / FOM / <u>PDOP</u> ) <u>5.8</u> Meters

**Photos:**

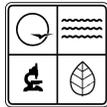
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>See attached photos and descriptions</u>					
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> 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 # 687

Site # 1



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Form B – Site Characterization (continued)**

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

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments: <u>none</u>				

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

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
Comments / Other: <u>none</u>				

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

% Cobble	<u>30</u> % Gravel	% Sand	<u>10</u> % Silt	<u>60</u> % Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site)

<u>Algae 20% Coverage</u>
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**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input checked="" type="checkbox"/> Gray	<input checked="" type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> 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 # 1087

Site # 1



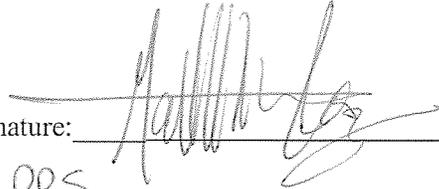
**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources – Site Characterization (continued)**

**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)

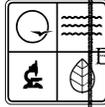
**Comments:** (Please record any additional comments here.)

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

Surveyor's Signature:  Date of Survey: 10/16/07  
Organization: PRS Position: field Team Leader

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results



Waterbody ID: 687 Site #: 1

Missouri Department of Natural Resources

Estimated bank to bank distance: 0.3 (m) (height between low bank width and water)

GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)

01 UTM X: 541844m UTM Y: 4377020m PDOP: 3.9 (meters)

11 UTM X: 541819m UTM Y: 4376871m PDOP: 5.8 (meters)

Average Stream Width: 4 (meters) Length of Survey Segment: 150 (meters)  
(To determine Length of Reach) (20x average stream width)

Field Staff: MCLS

**Dissolved Oxygen**

Date: 10/16/07 Time: 8AM

Dissolved Oxygen: 6.91 (mg/L)

Dissolved Oxygen: \_\_\_\_\_ (% sat)

Specific Cond: \_\_\_\_\_ (µS/cm)

Water Temperature: 14.6 (°C)

### Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	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	.6	.10	.30	.14	.58	.01	.57	.01	.17	.06	.28	.08	.41	.04	.25	.12	.36	.08	.45	.16	.56	.07
2	1.2	.12	.60	.17	1.2	.03	1.1	.01	.34	.12	.56	.12	.82	.04	.50	.20	.72	.26	.90	.17	1.01	.16
3	1.5	.09	.90	.18	1.7	0	1.7	.02	.51	.13	.84	.10	1.2	.05	.75	.28	1.1	.30	1.4	.19	1.7	.18
4	2.4	.07	1.2	.09	2.3	0	2.3	0	.68	.10	1.1	.11	1.6	.06	1.0	.25	1.4	.38	1.8	.18	2.2	.14
5	3.0	.04	1.5	.10	2.9	0	2.9	0	.85	.09	1.4	.08	2.1	.05	1.3	.24	1.8	.37	2.3	.18	2.8	.17
6	3.6	.08	1.8	.10	3.5	0	3.4	0	1.0	.07	1.7	.10	2.5	.04	1.5	.20	2.2	.23	2.7	.20	3.4	.08
7	4.2	.15	2.1	.06	4.1	0	4.0	0	1.2	.04	2.0	.07	2.9	0	1.8	.17	2.5	.14	3.2	.17	3.9	.06
8	4.8	.17	2.4	.02	4.6	.04	4.6	0	1.4	.05	2.2	.05	3.3	.02	2.0	.15	2.9	.07	3.6	.08	4.5	.09
9	5.4	.18	2.7	.01	5.2	.07	5.1	.00	1.5	.03	2.5	.04	3.7	.02	2.3	.04	3.2	.06	4.1	.06	5.0	.08
Right Bank	6.0	0	3.0	0	5.0	0	5.7	0	1.7	0	2.8	0	4.1	0	2.5	0	3.6	0	4.5	0	5.6	0
Feature Type	run		ripple		run		run		run		run											

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 locations corresponds to Transect 01 and 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.

algae.

Signed: MC

Date: 10/16/07

WBID # 687

Site # 2



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**Sheet B – Site Characterization**

(must be completed for each site)

Date & Time: <u>10/16/07 9AM</u>	Site Location Description (e.g., road crossing):
Personnel (Data Collectors): <u>MC LS</u>	<u>Down stream of Rd 400g @ 1645</u>
Current Weather Conditions: <u>Cloudy 60° F</u>	Facility Name: <u>Shoreline WWTF</u>
Weather Conditions for Past 10 days: <u>4.29" of Rain</u>	Permit Number: <u>MO 0129305</u>
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input checked="" type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): <u>541748m</u>	Northing (UTM Y): <u>4376112m</u>	Horizontal Accuracy: (EPE / FOM / <u>PDOB</u> ) <u>2.3</u> Meters-
Site 11	Easting (UTM X): <u>541661m</u>	Northing (UTM Y): <u>4375989m</u>	Horizontal Accuracy: (EPE / FOM / <u>PDOB</u> ) <u>3.5</u> Meters-

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>See attached photos and descriptions</u>					
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.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> 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 # 087

Site # 2



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources** – Site Characterization (continued)

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

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other:
Comments:				<i>Aggregated fields</i>

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

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input checked="" type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
Comments / Other: <i>See picture</i>				

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

% Cobble	<u>30</u>	% Gravel	<u>10</u>	% Sand	<u>30</u>	% Silt	<u>30</u>	% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site)

<i>Algae</i>
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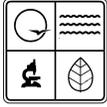
**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Other: <i>cow excrement</i>
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input checked="" type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input checked="" type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input type="checkbox"/> None	<input type="checkbox"/> 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 # 687

Site # 2



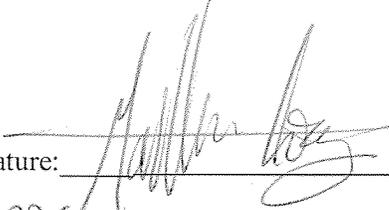
**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of**  
**Natural Resources** – Site Characterization (continued)

**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)

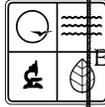
**Comments:** (Please record any additional comments here.)

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

Surveyor's Signature:  Date of Survey: 10/16/07  
Organization: PRS Position: Field Team Leader

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results



Waterbody ID: 687 Site #: 2

Missouri Department of Natural Resources  
 Estimate of channel incision: 0.3 (m) (height between low bank width and water)

GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)

01 UTM X: 541748m UTM Y: 4376112m ~~PDOP 2.3~~ (meters)  
 11 UTM X: 541661m UTM Y: 4375989m ~~PDOP 3.5~~ (meters)

Average Stream Width: 2 (meters) Length of Survey Segment: 150 (meters)  
 (To determine Length of Reach) (20x average stream width)

Field Staff: MC + LS

Dissolved Oxygen	
Date: <u>10/16/07</u>	Time: <u>9 AM</u>
Dissolved Oxygen: <u>7.73</u> (mg/L)	
Dissolved Oxygen: _____ (% sat)	
Specific Cond: _____ (µS/cm)	
Water Temperature: <u>14.0</u> (°C)	

### Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	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	.14	.08	.06	.03	.43	.03	.23	.06	.30	.10	.31	.07	.33	.01	.5	.10	.45	.02	.16	.10	.30	.20
2	.28	.10	.12	.04	.86	.04	.46	.06	.60	.13	.62	.12	.66	.01	1.0	.10	.90	.05	.32	.13	.60	.18
3	.42	.10	.18	.05	1.3	0	.69	.06	.90	.13	.93	.15	.99	.04	1.5	.21	1.4	.04	.48	.09	.90	.17
4	.56	.08	.24	.05	1.7	0	.92	.08	1.2	.07	1.2	.20	1.3	.02	2.0	.18	1.8	.06	.64	.12	1.2	.15
5	.70	.07	.30	.05	2.2	0	1.2	.10	1.5	.02	1.6	.21	1.7	0	2.5	.14	2.3	.04	.80	.11	1.5	.19
6	.84	.08	.36	.05	2.6	0	1.4	.09	1.8	.01	1.9	.16	2.0	0	3.0	.11	2.7	.02	.96	.08	1.8	.14
7	.98	.08	.42	.04	3.0	0	1.6	.10	2.1	.02	2.2	.14	2.3	.06	3.5	.08	3.2	.01	1.1	.05	2.1	.12
8	1.1	.04	.48	.04	3.4	0	1.8	.10	2.4	.04	2.5	.13	2.6	.08	4.0	.14	3.6	.01	1.3	.06	2.4	.08
9	1.3	.03	.54	.02	3.9	.01	2.1	.10	2.7	.03	2.8	.09	3.0	.10	4.5	.10	4.1	.07	1.4	.03	2.7	.06
Right Bank	1.4	0	.6	0	4.3	0	2.3	0	3.0	0	3.1	0	3.3	0	5.0	0	4.5	0	1.6	0	3.0	0
Feature Type	run		riffle		riffle		run		pool		pool		run		pool		riffle		run		run	

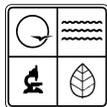
Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width  
 GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.  
 Depth measurements taken at 10 equally 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.

Signed: MC

Date: 10/16/07

WBID # 687

Site # 3



**Missouri Field Data Sheets for Recreational Use Stream Surveys**

Department of

Natural Resources

**Sheet B – Site Characterization**

(must be completed for each site)

Date & Time: <u>10/16/07</u> <u>10 AM</u>	Site Location Description (e.g., road crossing): <u>Down Stream of Rd Xing @ HWY DD</u>
Personnel (Data Collectors): <u>MC &amp; LS</u>	Facility Name: <u>Shoreline WWTF</u>
Current Weather Conditions: <u>Cloudy &amp; 60° F</u>	Permit Number: <u>MO 0129 305</u>
Weather Conditions for Past 10 days: <u>4.29" of Rain</u>	
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input checked="" type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): <u>540682m</u>	Northing (UTM Y): <u>4374567m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>6.9</u> Meters
Site 11	Easting (UTM X): <u>540527m</u>	Northing (UTM Y): <u>4374517m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>3.9</u> Meters

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>See attached photos and descriptions.</u>					
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.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> 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 # 687  
 Site # 3



**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources**  
**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.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: <i>Agricultural fields</i>
Comments:				

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

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
Comments / Other: <i>pond</i>				

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

% Cobble	<i>40</i> % Gravel	<i>40</i> % Sand	% Silt	<i>20</i> % Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site)

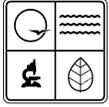
<i>Algae</i>
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**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> 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.

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**Missouri Field Data Sheets for Recreational Use Stream Surveys**  
**Department of Natural Resources – 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.)

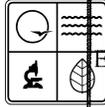
*none*

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

Surveyor's Signature: *[Signature]* Date of Survey: 10/16/07  
Organization: PRS Position: Field Team Leader

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results



Waterbody ID: 1087 Site #: 3

Missouri  
Department of Natural Resources

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

GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)

01 UTM X: 540682 m UTM Y: 4374567 m PDOP: 6.9 (meters)

11 UTM X: 540527 m UTM Y: 4374517 m PDOP: 3.9 (meters)

Average Stream Width: 4 (meters) Length of Survey Segment: 150 (meters)  
(To determine Length of Reach) (20x average stream width)

Field Staff: MC + LS

Dissolved Oxygen	
Date: <u>10/16/07</u>	Time: <u>10 AM</u>
Dissolved Oxygen: <u>8.16</u> (mg/L)	
Dissolved Oxygen: _____ (% sat)	
Specific Cond: _____ (µS/cm)	
Water Temperature: <u>14.7</u> (°C)	

### Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	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	.26	.07	.46	.04	.13	.02	.12	.03	.28	.02	.27	.05	.30	.01	.28	.01	.48	.01	.44	.02	.30	.03
2	.52	.10	.92	.05	.26	.02	.24	.06	.56	.03	.54	.10	.60	.02	.56	.01	.96	.02	.88	.04	.72	.06
3	.78	.11	1.4	.06	.39	.03	.36	.08	.84	.04	.81	.11	.90	.02	.84	.03	1.4	.02	1.3	.02	1.1	.06
4	1.0	.12	1.8	.04	.52	.05	.48	.11	1.1	.06	1.1	.10	1.2	.03	1.1	.04	1.9	.04	1.8	.02	1.4	.05
5	1.3	.10	2.3	.02	.65	.07	.60	.16	1.4	.09	1.4	.09	1.5	.03	1.4	.05	2.4	.02	2.2	.01	1.8	0
6	1.6	.08	2.8	.01	.78	.07	.72	.08	1.7	.10	1.6	.07	1.8	.04	1.7	.05	2.9	.01	2.6	0	2.2	.04
7	1.8	.07	3.2	.01	.91	.06	.84	.05	2.0	.12	1.9	.06	2.1	.06	2.0	.03	3.4	.05	3.1	.04	2.5	.04
8	2.1	.08	3.7	.03	1.0	.06	.96	.03	2.2	.14	2.2	.04	2.4	.04	2.2	.03	3.8	.08	3.5	.04	2.9	.02
9	2.3	.03	4.1	.02	1.2	.03	1.1	.03	2.5	.17	2.4	.04	2.7	.01	2.5	.07	4.3	.08	4.0	.06	3.2	.03
Right Bank	2.6	0	4.6	0	1.3	0	1.2	0	2.8	0	2.7	0	3.0	0	2.8	0	4.8	0	4.4	0	3.6	0
Feature Type (riffle, run, or pool)	run		pool		riffle		run		riffle													

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 locations corresponds to Transect 01 and 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.

*algae*

*steep banks*

Signed: *MC*

Date: 10/16/07

**WBID# 0687**



**Site# 1 Photo ID# Downstream T-1**



**Site# 1 Photo ID# Upstream T-1**



**Site# 1 Photo ID# Downstream T-11**



**Site# 1 Photo ID# Upstream T-11**

**WBID# 0687**



**Site# 2 Photo ID# Downstream T-1**



**Site# 2 Photo ID# Upstream T-1**



**Site# 2 Photo ID# Downstream T-11**



**Site# 2 Photo ID# Upstream T-11**

**WBID# 0687**



**Site# 2 Photo ID# ATV tracks**



**Site# 3 Photo ID# Upstream T-1**



**Site# 3 Photo ID# Downstream T-1**



**Site# 3 Photo ID# Upstream T-11**

**WBID# 0687**



**Site# 3 Photo ID# Downstream T-11**