



Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 0685 Sweet Spring 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
 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): <i>Sweet Spring Creek</i>	
Missouri Water Body Identification (WBID) Number: <i>685</i>	
8-digit HUC: <i>10 280 203</i>	County: <i>Randolph</i>
Upstream Legal Description (from Table H): <i>18,53N,14W</i>	
Downstream Legal Description (from Table H): <i>Mouth</i>	
Number of sites evaluated: <i>7</i>	
List all sites numbers, listed consequentially upstream to downstream: <i>685-1, 685-2, 685-3, 685-4, 685-5, 685-6, 685-7</i>	

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): <i>Orton Lane Lagoon, MO 0121622</i>
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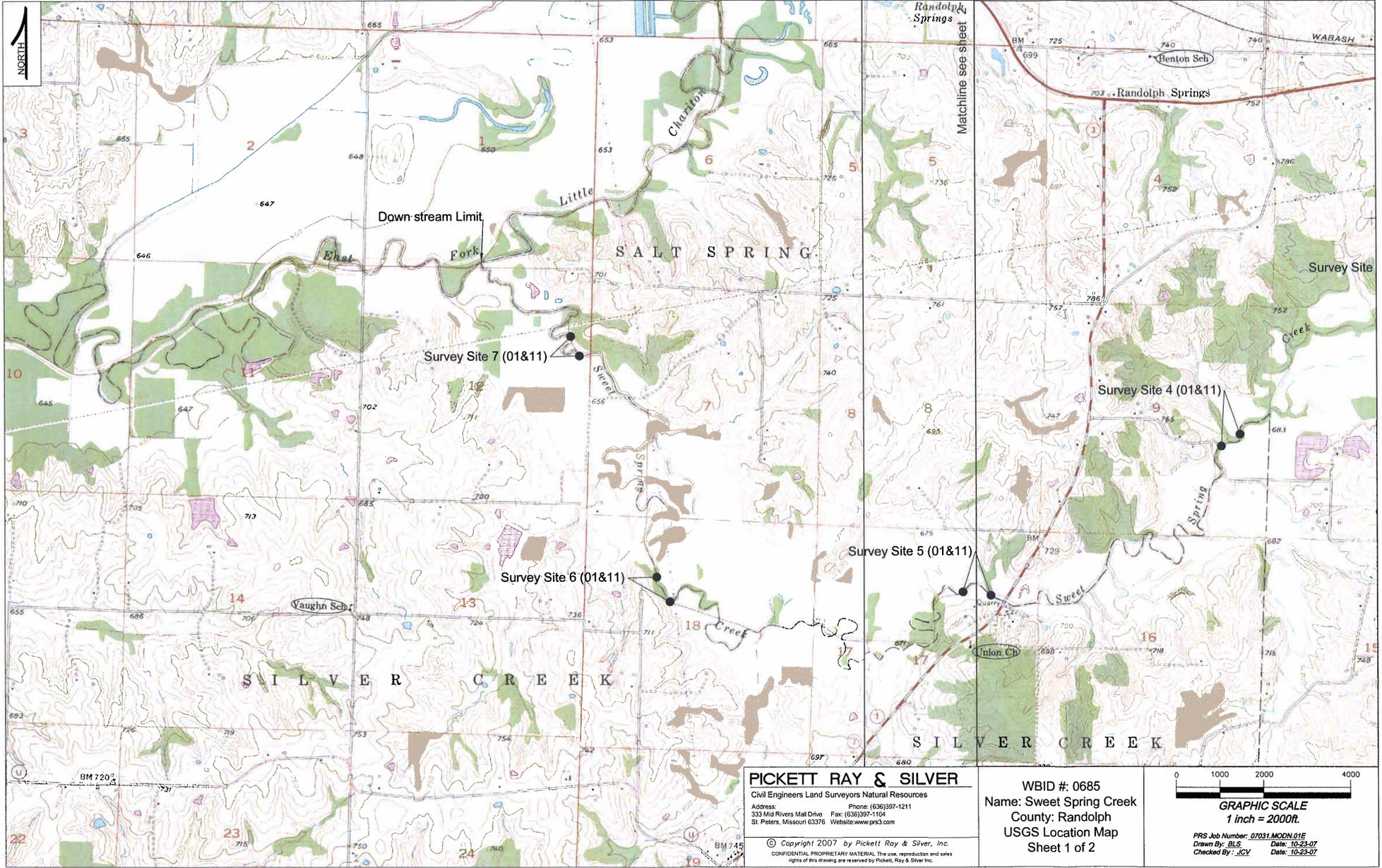
III. UAA Surveyor (please print legibly)

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

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

Signed: *[Signature]* Date: *10/16/07*

\\serverpr\Projects\07031\MODN_01E\0685 Sweet Spring Creek.dwg, 10/23/2007 10:37:22 AM, BLSTOESZ



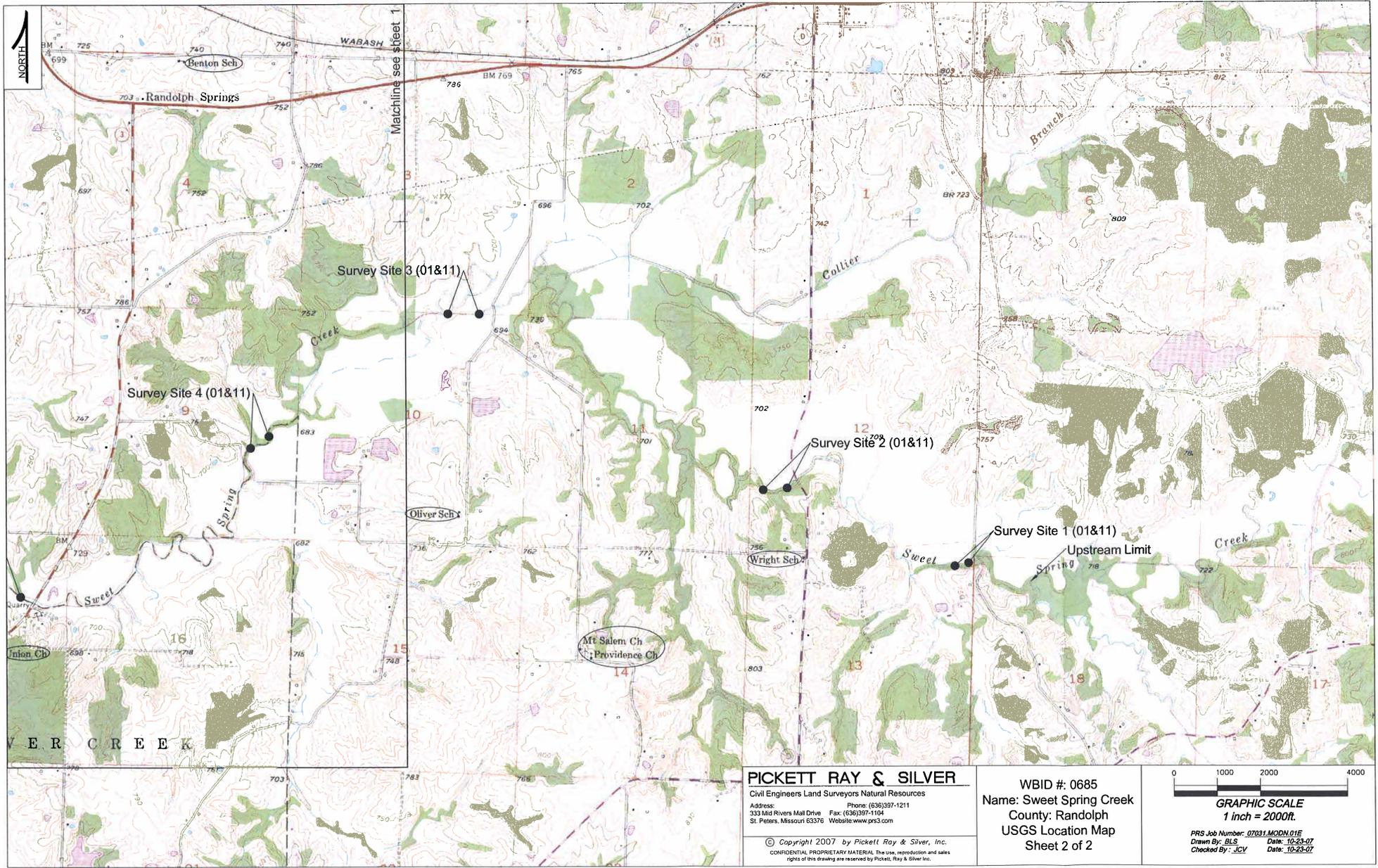
PICKETT RAY & SILVER
 Civil Engineers Land Surveyors Natural Resources
 Address: 333 Mid Rivers Mall Drive St. Peters, Missouri 63376
 Phone: (636)397-1211 Fax: (636)397-1104
 Website: www.prs3.com

WBID #: 0685
 Name: Sweet Spring Creek
 County: Randolph
 USGS Location Map
 Sheet 1 of 2

0 1000 2000 4000
GRAPHIC SCALE
 1 inch = 2000ft.
 PRS Job Number: 07031.MODN.01E
 Drawn By: BLS Date: 10-23-07
 Checked By: JCV Date: 10-23-07

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\\server\prj\Projects\07031\dwg\07031_MODN_01E\0685 Sweet Spring Creek.dwg, 10/23/2007 10:38:00 AM, BLSTOESZ



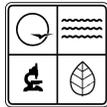
PICKETT RAY & SILVER
 Civil Engineers Land Surveyors Natural Resources
 Address: 333 Mid Rivers Mall Drive St. Peters, Missouri 63376
 Phone: (636)397-1211 Fax: (636)397-1104 Website: www.prs3.com
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WBID #: 0685
 Name: Sweet Spring Creek
 County: Randolph
 USGS Location Map
 Sheet 2 of 2

0 1000 2000 4000
GRAPHIC SCALE
 1 inch = 2000ft.
 PRS Job Number: 07031.MODN.01E
 Drawn By: BLS Date: 10-23-07
 Checked By: JCY Date: 10-23-07

WBID # 685

Site # 1



Field Data Sheets for Recreational Use Stream Surveys

Missouri Department of Natural Resources
Data Sheet B – Site Characterization
 (must be completed for each site)

Date & Time: <u>10/16/07 11 AM</u>	Site Location Description (e.g., road crossing): <u>Downstream of Rd King @ 2210</u>
Personnel (Data Collectors): <u>ME LS</u>	Facility Name: <u>Orton Lake Lagoon</u>
Current Weather Conditions: <u>Sunny 65°</u>	Permit Number: <u>MO 0121622</u>
Weather Conditions for Past 10 days: <u>4.79" 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>539873m</u>	Northing (UTM Y): <u>4360732m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>5.3</u> Meters-
Site 11	Easting (UTM X): <u>539791m</u>	Northing (UTM Y): <u>4360710m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>3.5</u> Meters-

Photos: See attached photos + descriptions

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
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 # 685

Site # 1



Field Data Sheets for Recreational Use Stream Surveys
Missouri 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 checked="" type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other:
Comments: <p align="right"><i>ag fields</i></p>				

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: <p align="center"><i>none</i></p>				

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

% Cobble	<u>40</u>	% Gravel	% 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>none</i>

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input checked="" type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input 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 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 # 685

Site # 1



Missouri Department of Natural Resources
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.)

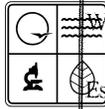
Trash & other appliances in stream around bridge.

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



Missouri
Department of
Natural Resources

Site #: 1

(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: 539873 UTM Y: 4360732 ~~± 5.3~~ (meters) PDOP

11 UTM X: 539739 UTM Y: 4360710 ~~± 3.5~~ (meters)

Average Stream Width: 6 (meters) Length of Survey Segment: 150 (meters)
(To determine Length of Reach) (20x average stream width)

Field Staff: MC LS

Dissolved Oxygen

Date: 10/16/07 Time: 11AM

Dissolved Oxygen: 4.16 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 14.7 (°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	.66	.26	.82	.62	.81	.05	.60	.06	.88	.17	.71	.03	.33	.05	.24	.02	.78	.10	.25	.07	.23	.02
2	1.3	.91	1.6	.77	1.6	.06	1.2	.22	1.8	.36	1.5	.15	.66	.08	.48	.02	1.6	.09	.50	.09	.46	.06
3	2.0	.73	2.5	.82	2.4	.10	1.8	.37	2.6	.47	2.3	.26	1.0	.11	.72	.04	2.3	.10	.75	.10	.69	.08
4	2.6	.76	3.3	.64	3.2	.15	2.4	.48	3.5	.45	3.1	.27	1.3	.10	1.0	.06	3.1	.07	1.0	.10	.92	.10
5	3.3	.66	4.1	.42	4.0	.38	3.0	.65	4.4	.38	3.9	.31	1.7	.12	1.2	.04	3.9	.20	1.3	.10	1.2	.10
6	4.0	.48	5.0	.30	4.8	.52	3.6	.68	5.3	.36	4.6	.35	2.8	.10	1.9	.05	4.7	.32	1.5	.13	1.4	.11
7	4.6	.43	5.7	.26	5.6	.47	4.2	.54	6.2	.22	5.4	.38	2.3	.07	1.7	.03	5.5	.45	1.8	.12	1.6	.10
8	5.3	.24	6.6	.22	6.4	.30	4.8	.26	7.0	.11	6.2	.34	2.6	.03	2.0	.02	6.2	.40	2.0	.10	1.8	.10
9	6.0	.10	7.4	.21	7.2	.12	5.4	.09	8.0	.17	7.0	.26	3.0	.01	2.2	.02	7.0	.34	2.3	.03	2.1	.05
Right Bank	6.6	0	8.2	0	8.1	0	6.0	0	8.8	0	7.7	0	3.3	0	2.4	0	7.8	0	2.5	0	2.3	0
Feature Type	pool		riffle		riffle		pool		run		run											
(riffle, run, or 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 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)

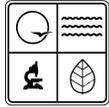
All measurements to be taken to the nearest 0.01 meter.

Signed: MC

Date: 10/16/07

WBID # 1,885

Site # 2



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

Date & Time: <u>10/16/07 12 AM</u>	Site Location Description (e.g., road crossing): <u>Down stream of Rd Xing off Hwy D</u>
Personnel (Data Collectors): <u>MC+LS</u>	
Current Weather Conditions: <u>Cloudy 65°F</u>	Facility Name: <u>Orton Lane Lagoon</u>
Weather Conditions for Past 10 days: <u>4.29" rain</u>	Permit Number: <u>MO 0121622</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>538598m</u>	Northing (UTM Y): <u>4361253m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>5.1</u> Meters
Site 11	Easting (UTM X): <u>538441m</u>	Northing (UTM Y): <u>4361202m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>2.2</u> Meters

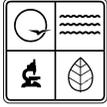
Photos: See attached photos + descriptions

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
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 # 685
 Site # 2



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 checked="" type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
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>none</i>				

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

<i>10</i> % Cobble	<i>40</i> % Gravel	% Sand	% Silt	<i>40</i> % Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

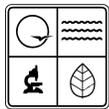
<i>Duckweed - 10% surface coverage</i> <i>Algae - 40% coverage in the 0</i>
--

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input checked="" type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input 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 checked="" 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 # 685
Site # 2



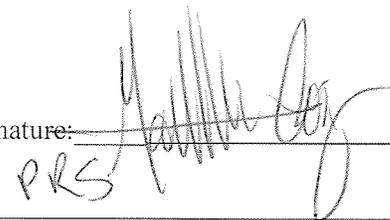
Missouri Department of Natural Resources
Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B – Site Characterization (continued)

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)

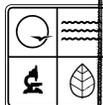
Comments: (Please record any additional comments here.)

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

Surveyor's Signature:  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: 1085 Site #: 2

Missouri Department of Natural Resources

Establishment Elevation: 0 (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: 538598 UTM Y: 4361253 # 5.1 (meters) PDOP

11 UTM X: 538441 UTM Y: 4361202 # 2.2 (meters)

Average Stream Width: 5 (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>12:00 PM</u>
Dissolved Oxygen: <u>3.36</u> (mg/L)	
Dissolved Oxygen: _____ (% sat)	
Specific Cond: _____ (µS/cm)	
Water Temperature: <u>14.6</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	.57	.03	.65	.06	.76	.06	.73	.08	.78	.14	.76	.11	.73	.12	.40	.06	.73	.36	.60	.38	.77	.34
2	1.1	.05	1.3	.10	1.5	.03	1.5	.15	1.6	.13	1.5	.19	1.5	.18	.80	.08	1.5	.54	1.2	.43	1.5	.28
3	1.7	.08	2.0	.13	2.3	.05	2.2	.15	2.3	.13	2.3	.21	2.2	.10	1.2	.08	2.2	.60	1.8	.26	2.3	.24
4	2.3	.19	2.6	.19	3.0	.10	3.0	.19	3.1	.10	3.0	.19	3.0	.10	1.6	.12	3.0	.52	2.4	.37	3.1	.31
5	3.9	.15	3.3	.24	3.8	.13	3.7	.16	3.9	.15	3.8	.20	3.9	.13	2.0	.10	3.8	.20	3.0	.51	3.9	.25
6	3.4	.07	4.0	.28	4.6	.15	4.4	.19	4.7	.16	4.6	.23	4.5	.18	2.4	.06	4.6	.15	3.6	.43	4.6	.17
7	4.0	.06	4.6	.26	5.3	.18	5.1	.27	5.5	.27	5.3	.23	5.2	.15	2.8	.02	5.3	.01	4.2	.27	5.4	.18
8	4.6	.07	5.2	.25	6.1	.18	5.8	.32	6.2	.27	6.1	.22	5.9	.12	3.0	.03	6.1	.14	4.8	.18	6.2	.16
9	5.1	.05	5.9	.20	6.8	.20	6.6	.36	7.0	.19	6.8	.20	6.7	.10	3.6	.02	6.8	.09	5.4	.07	6.9	.16
Right Bank	5.7	0	6.5	0	7.6	0	7.3	0	7.8	0	7.6	0	7.3	0	4.0	0	7.3	0	6.0	0	7.7	0
Feature Type (riffle, run, or pool)	run		pool		riffle		run		run		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 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.

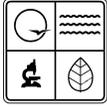
algae

Smartweed

Signed: MC

Date: 10/16/07

WBID # 685
 Site # 3



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

Date & Time: <u>10/16/07 2 PM</u>	Site Location Description (e.g., road crossing): <u>Downstream of Rd X on 2130</u>
Personnel (Data Collectors): <u>MC LS</u>	Facility Name: <u>Orton Lane Lagoon</u>
Current Weather Conditions: <u>Sunny 70°</u>	Permit Number: <u>MO 0121622</u>
Weather Conditions for Past 10 days: <u>4.29" 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>536397m</u>	Northing (UTM Y): <u>4362447m</u>	Horizontal Accuracy: (EPE / FOM) <u>(PDOP) 6.7</u> Meters
Site 11	Easting (UTM X): <u>536211m</u>	Northing (UTM Y): <u>4362459m</u>	Horizontal Accuracy: (EPE / FOM) <u>(PDOP) 4.6</u> Meters

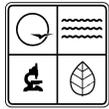
Photos: See attached photos + descriptions

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
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 # 685
 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 checked="" type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
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>None</i>				

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

% Cobble	<i>10</i> % Gravel	% Sand	<i>10</i> % Silt	<i>80</i> % Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

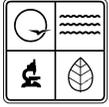
<i>None</i>

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input checked="" type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input 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 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 # 685
Site # 3



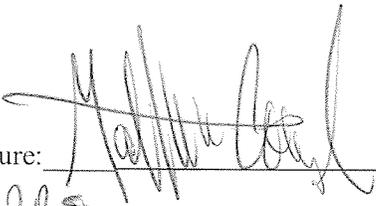
Missouri Department of Natural Resources
Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B – Site Characterization (continued)

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)

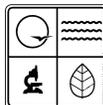
Comments: (Please record any additional comments here.)

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

Surveyor's Signature:  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: 685 Site #: 3

Missouri Department of Natural Resources

Elevation of channel floor: 0.4 (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: 536397 UTM Y: 4362447 4.7 (meters) PDOP

11 UTM X: 536211 UTM Y: 4362459 4.6 (meters)

Average Stream Width: 3 (meters) Length of Survey Segment: 150 (meters)
(To determine Length of Reach) (20x average stream width)

Field Staff: MCLLS

Dissolved Oxygen	
Date: <u>10/16/07</u>	Time: <u>2 PM</u>
Dissolved Oxygen: <u>7.59</u> (mg/L)	
Dissolved Oxygen: _____ (% sat)	
Specific Cond: _____ (µS/cm)	
Water Temperature: <u>15.7</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	.06	.07	.21	.05	.22	.04	.67	.34	.24	.04	.30	.04	.74	.05	.49	.04	.51	.17	.22	.01	.51	.32
2	.12	.08	.40	.08	.44	.04	1.3	.52	.48	.01	.60	.06	1.5	.04	1.0	.04	1.0	.20	.44	.04	1.0	.35
3	.18	.09	.60	.13	.66	.01	2.0	.55	.72	.05	.90	.07	2.2	0	1.5	.01	1.5	.15	.66	.05	1.5	.30
4	.24	.11	.80	.16	.88	.01	2.7	.37	.96	.03	1.2	.09	3.0	.01	2.0	0	2.0	.44	.88	.05	2.0	.18
5	.30	.10	1.0	.14	1.1	.03	3.4	.47	1.2	.07	1.5	.09	3.7	.01	2.5	.03	2.5	.18	1.1	.06	2.5	.13
6	.36	.06	1.2	.12	1.3	.04	4.0	.46	1.4	.05	1.8	.08	4.4	.03	3.0	.05	3.0	.22	1.3	.09	3.0	.19
7	.42	.07	1.4	.10	1.5	.05	4.7	.38	1.7	.05	2.1	.08	5.2	.02	3.5	.09	3.5	.24	1.5	.11	3.5	.30
8	.48	.03	1.6	.05	1.8	.04	5.4	.43	1.9	.06	2.4	.06	6.0	.01	4.0	.04	4.0	.23	1.8	.11	4.0	.19
9	.54	.01	1.8	.01	2.0	.03	6.0	.54	2.2	.08	2.7	.05	6.7	.05	4.5	.01	4.5	.19	2.0	.06	4.5	.06
Right Bank	0.6	0	2.1	0	2.2	0	6.7	0	2.4	0	3.0	0	7.4	0	4.9	0	5.1	0	2.2	0	5.1	0
Feature Type	run		run		pool		pool		run		run		run		run		pool		run		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 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 # 685

Site # 4



Missouri Field Data Sheets for Recreational Use Stream Surveys

Department of Natural Resources
Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: <u>10/16/07 3PM</u>	Site Location Description (e.g., road crossing): <u>Rd Xing 86 2130 (Upstream)</u>
Personnel (Data Collectors): <u>MCLS</u>	
Current Weather Conditions: <u>Sunny 70°F</u>	Facility Name: <u>Orton Lane Lagoon</u>
Weather Conditions for Past 10 days: <u>4.29" rain</u>	Permit Number: <u>MO 0121622</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>534919m</u>	Northing (UTM Y): <u>4361599m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>2.2</u> Meters-
Site 11	Easting (UTM X): <u>534824m</u>	Northing (UTM Y): <u>4361537m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>5.2</u> Meters-

Photos: See attached photos + descriptions

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
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 # 685
 Site # 4



Missouri Department of Natural Resources
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.)

<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 checked="" type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
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>N/A</i>				

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

% Cobble	<i>10</i>	% Gravel		% Sand	<i>10</i>	% Silt	<i>80</i>	% Mud/Clay		% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

<i>None</i>

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input checked="" type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input 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 checked="" type="checkbox"/> Oil	<input checked="" 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 # 685
Site # 4



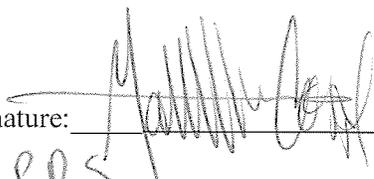
Missouri Department of Natural Resources
Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B – Site Characterization (continued)

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)

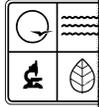
Comments: (Please record any additional comments here.)

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

Surveyor's Signature:  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: 685 Site #: 4

Missouri Department of Natural Resources

Estimated Channel Elevation: 0.7 (m) (height between low bank width and water)

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

01 UTM X: 534919 m UTM Y: 4361599 m ~~* 2.2~~ (meters)

11 UTM X: 534824 m UTM Y: 4361537 m ~~* 5.2~~ (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>3pm</u>
Dissolved Oxygen: <u>6.38</u> (mg/L)	
Dissolved Oxygen: _____ (% sat)	
Specific Cond: _____ (µS/cm)	
Water Temperature: <u>16.6</u> (°C)	

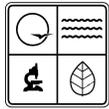
Transect Cross-Section

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	.25	.05	.52	.23	.43	.06	.46	.04	.25	.10	.74	.24	.65	.08	.25	.08	.10	.04	.35	.14	.28	.05
2	.50	.07	1.6	.27	.86	.17	.92	.12	.50	.13	1.5	.40	1.3	.24	.50	.18	.20	.06	.70	.23	.56	.06
3	.75	.16	1.6	.35	1.3	.24	1.4	.18	.75	.17	2.2	.53	2.0	.40	.75	.20	.30	.07	1.1	.40	.84	.10
4	1.0	.24	2.1	.40	1.7	.26	1.8	.16	1.0	.20	3.0	.60	2.6	.53	1.0	.21	.40	.07	1.4	.52	1.1	.10
5	1.3	.32	2.6	.52	2.2	.33	2.3	.18	1.3	.22	3.7	.61	3.3	.63	1.3	.20	.50	.06	1.8	.44	1.4	.15
6	1.5	.34	3.1	.75	2.6	.31	2.8	.17	1.5	.16	4.4	.53	3.9	.67	1.5	.20	.60	.03	2.1	.55	1.7	.14
7	1.8	.23	3.6	.84	3.0	.26	3.2	.16	1.8	.19	5.2	.40	4.6	.57	1.8	.17	.70	.03	2.5	.13	2.0	.16
8	2.0	.22	4.2	.82	3.4	.12	3.7	.10	2.0	.08	6.0	.44	5.2	.48	2.0	.14	.80	.01	2.8	.10	2.2	.12
2.5	2.3	.12	4.7	.52	3.9	.09	4.1	.07	2.3	.04	6.7	.42	5.9	.39	2.3	.12	.96	.01	3.2	.07	2.5	.06
Right Bank	0	0	5.2	0	4.3	0	4.6	0	2.5	0	7.4	0	6.5	0	2.5	0	1.0	0	3.5	0	2.8	0
Feature Type	run		pool		pool		pool		run		pool		run		run		riffle		pool		run	
(riffle, run, or 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 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.

Stationed: MC Date: 10/16/07

WBID # 685
 Site # 5



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

Date & Time: <u>10/18/07 6PM</u>	Site Location Description (e.g., road crossing): <u>Down stream of Rd Xing on Hwy 3</u>
Personnel (Data Collectors): <u>MC+LS</u>	Facility Name: <u>Orton Lane Lagoon</u>
Current Weather Conditions: <u>Sunny 60°f</u>	Permit Number: <u>MO 0121622</u>
Weather Conditions for Past 10 days: <u>4.29" 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>533153m</u>	Northing (UTM Y): <u>4360480m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>3.7</u> -Meters		
Site 11	Easting (UTM X): <u>532985m</u>	Northing (UTM Y): <u>4360495m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>4.3</u> -Meters		

Photos: See attached photos + descriptions

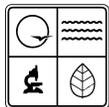
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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 # 685

Site # 5



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:
Comments: <p style="text-align: center;">rock quarry ←</p>				

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: <p style="text-align: center;">none</p>				

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

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

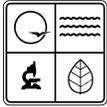
none

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 # 685
Site # 5



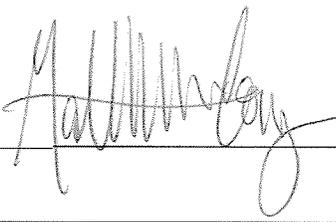
Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources
Data Sheet B – Site Characterization (continued)

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)

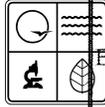
Comments: (Please record any additional comments here.)

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

Surveyor's Signature:  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: 685 Site #: 5

Missouri Department of Natural Resources

Established by Division 0 (m) (height between low bank width and water)

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

01 UTM X: 533153 UTM Y: 4360480 ~~#~~ 3.7 (meters)

11 UTM X: 532985 UTM Y: 4360495 ~~#~~ 4.3 (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>10/18/07</u>	Time: <u>6PM</u>
Dissolved Oxygen: <u>4.90</u> (mg/L)	
Dissolved Oxygen: _____ (% sat)	
Specific Cond: _____ (µS/cm)	
Water Temperature: <u>15.7</u> (°C)	

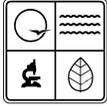
Transect Cross-Section

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	.31	.12	.22	.01	1.0	.10	.94	.04	.30	.10	.85	.37	.20	.21	.78	.37	.98	.18	.96	.20	.82	.61
2	.60	.16	.44	.02	2.0	.14	2.0	.05	.60	.08	1.7	.38	.40	.21	1.6	.33	1.8	.28	2.0	.37	1.6	.68
3	.90	.22	.66	.02	3.0	.19	2.8	.0	.90	.09	2.6	.36	.60	.20	2.3	.29	2.7	.40	2.9	.36	2.5	.90
4	1.2	.24	.88	.04	4.0	.25	3.8	.10	1.2	.14	3.4	.32	.80	.16	3.1	.18	3.8	.36	3.8	.34	3.3	.91
5	1.5	.30	1.1	.05	5.0	.26	4.7	.14	1.5	.19	4.3	.40	1.0	.10	3.9	.16	4.5	.30	4.8	.32	4.1	.88
6	1.8	.25	1.3	.04	6.0	.34	5.6	.28	1.8	.16	5.1	.50	1.2	.08	4.7	.20	5.4	.30	5.8	.32	4.9	.83
7	2.1	.20	1.5	.05	7.0	.16	6.6	.35	2.1	.10	6.0	.53	1.4	.04	5.5	.29	6.3	.34	6.7	.30	5.7	.69
8	2.4	.12	1.8	.03	8.0	.18	7.5	.39	2.4	.06	6.8	.42	1.6	.04	6.2	.24	7.2	.25	7.8	.41	6.6	.52
9	2.7	.07	2.0	.02	9.0	.18	8.5	.44	2.7	.08	7.7	.28	1.8	.02	7.0	.14	8.1	.26	8.6	.42	7.4	.54
Right Bank	3.1	0	2.2	0	10.4	0	9.4	0	3.0	0	8.5	0	2.0	0	7.8	0	9.0	0	9.6	0	8.2	0
Feature Type	run		riffle		pool		pool		run		run		riffle		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.

Signed: MC Date: 10/18/07

WBID # 658
 Site # 6



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 5PM</u>	Site Location Description (e.g., road crossing):
Personnel (Data Collectors): <u>MCLS</u>	Off Rd <u>off Rd Xing @ CR 152</u>
Current Weather Conditions: <u>Sunny 60°F</u>	Facility Name: <u>Orton Lane Lagoon</u>
Weather Conditions for Past 10 days: <u>4.29" rain</u>	Permit Number: <u>MO 0121622</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>530877m</u>	Northing (UTM Y): <u>4360421m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>4.1</u> Meters
Site 11	Easting (UTM X): <u>530803m</u>	Northing (UTM Y): <u>4360576m</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>5.2</u> Meters

Photos: See attached photos + descriptions

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
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 type="checkbox"/> None of the above	<input checked="" type="checkbox"/> Other:

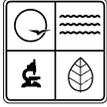
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)

~~Rock collecting. Picture was OK. However they refused to give names or an interview. Did say they enjoyed walking the creek.~~

Rock collecting. Picture was OK. However they refused to give names or an interview. Did say they enjoyed walking the creek.

WBID # 685

Site # 6



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 checked="" 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 type="checkbox"/> Other:
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:				

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

<u>20</u> % Cobble	<u>20</u> % Gravel	<u>20</u> % Sand	% Silt	<u>20</u> % Mud/Clay	% Bedrock
--------------------	--------------------	------------------	--------	----------------------	-----------

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

<u>none</u>

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.

WBID # 685

Site # 6



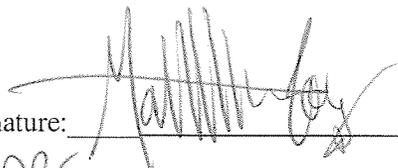
Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of
Natural Resources – Site Characterization (continued)

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)

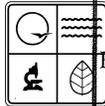
Comments: (Please record any additional comments here.)

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: 685 Site #: 6

Missouri Department of Natural Resources

Established in 1820

Estimated channel width: 0 (m) (height between low bank width and water)

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

01 UTM X: 530877 m UTM Y: 4360421 m 4.1 (meters)

11 UTM X: 530803 m UTM Y: 4360576 m 5.2 (meters)

Average Stream Width: 6 (meters) Length of Survey Segment: 150 (meters)
(To determine Length of Reach) (20x average stream width)

Field Staff: MCLS

Dissolved Oxygen	
Date: <u>10/16/07</u>	Time: <u>5PM</u>
Dissolved Oxygen: <u>6.57</u> (mg/L)	
Dissolved Oxygen: _____ (% sat)	
Specific Cond: _____ (µS/cm)	
Water Temperature: <u>16.2</u> (°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	.89	.14	.26	.12	.90	.03	.47	.01	.43	.04	.54	.06	.73	.08	.54	.05	.89	.14	.66	.04	.54	.01
2	1.8	.18	.52	.14	1.8	.02	.94	.02	.86	.08	1.1	.05	1.5	.10	1.1	.13	1.8	.17	1.3	.04	1.1	.04
3	2.7	.42	.73	.18	2.7	.04	1.9	.06	1.3	.10	1.6	.06	2.2	.11	1.6	.24	2.7	.22	2.0	.04	1.6	.06
4	3.4	.62	1.0	.24	3.6	.0	2.8	.06	1.7	.06	2.2	.05	3.0	.12	2.2	.32	3.6	.25	2.6	.11	2.2	.12
5	4.5	.60	1.3	.22	4.5	.05	3.8	.08	2.2	.08	2.7	.10	3.7	.13	2.7	.39	4.5	.34	3.3	.10	2.7	.13
6	5.4	.51	1.6	.14	5.4	.03	4.7	.02	2.6	.10	3.2	.09	4.4	.16	3.2	.34	5.4	.16	4.0	.08	3.2	.10
7	6.3	.46	1.8	.14	6.3	.01	5.6	.06	3.0	.09	3.8	.10	5.1	.15	3.8	.28	6.3	.27	4.6	.18	3.8	.10
8	7.2	.32	2.1	.09	7.2	.01	6.6	.04	3.4	.03	4.3	.15	5.8	.16	4.3	.18	7.2	.18	5.3	.19	4.3	.06
9	8.1	.19	2.3	.04	8.1	.04	7.5	.02	3.9	.02	4.8	.17	6.6	.22	4.8	.06	8.1	.15	6.0	.17	4.8	.04
Right Bank	8.9	0	2.6	0	9.0	0	4.7	0	4.3	0	5.4	0	7.3	0	5.4	0	8.9	0	6.6	0	5.4	0
Feature Type	riffle		pool and		riffle		run		riffle		run		run		run		pool		run		run	
(riffle, run, or 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 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: ME Date: 10/16/07

WBID # 685

Site # 7



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>6/14/07 4PM</u>	Site Location Description (e.g., road crossing): <u>Run stream off Rd King @ 2015</u>
Personnel (Data Collectors): <u>LS + MC</u>	
Current Weather Conditions: <u>Sunny 60°F</u>	Facility Name: <u>Ortan Lane Leigowen</u>
Weather Conditions for Past 10 days: <u>4.29" rain</u>	Permit Number: <u>MO 0121622</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>536290 m</u>	Northing (UTM Y): <u>4362153 m</u>	Horizontal Accuracy: (EPE / FOM / <u>PDOP</u>) <u>3.4</u> Meters
Site 11	Easting (UTM X): <u>530201 m</u>	Northing (UTM Y): <u>4362300 m</u>	Horizontal Accuracy: (EPE / FOM / <u>PDOP</u>) <u>5.0</u> Meters

Photos: See attached photos + descriptions

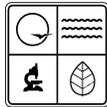
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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 # 483

Site # 7



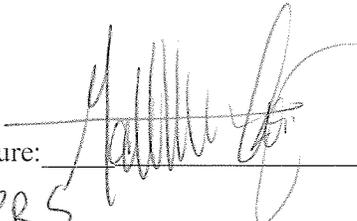
Missouri Field Data Sheets for Recreational Use Stream Surveys
Department of Natural Resources – Site Characterization (continued)

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)

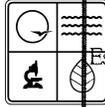
Comments: (Please record any additional comments here.)

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: 685 Site #: 7

Missouri Department of Natural Resources

Estimated channel width: 0.4 (m) (height between low bank width and water)

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

01 UTM X: 530290 W UTM Y: 4362153 W # 3.4 (meters)

11 UTM X: 530201 W UTM Y: 4362300 W # 5.0 (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: 4PM

Dissolved Oxygen: 8.22 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 15.1 (°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)														
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	.47	.25	.23	.12	.57	.02	.49	.04	.89	.02	.31	.02	.21	.02	.57	.51	0.51	>1	.55	.17	.96	.03
2	.94	.36	.46	.18	1.1	.02	1.0	.08	1.8	.02	.60	.01	.40	.18	1.1	.74			1.1	.28	1.9	.10
3	1.4	.37	.64	.20	1.7	.05	1.5	.10	2.7	0	.90	.02	.68	.23	1.7	.83			1.7	.43	2.9	0
4	1.9	.48	.92	.18	2.3	.12	2.0	.10	3.6	0	1.2	0	.80	.28	2.3	.80			2.2	.46	3.8	0
5	2.4	.52	1.2	.10	2.9	.12	2.5	.09	4.5	0	1.5	0	1.0	.30	2.9	.71			2.8	.61	4.8	0
6	2.8	.41	1.4	.09	3.4	.11	3.0	.14	5.4	0	1.8	.01	1.2	.33	3.4	.39			3.3	.66	5.8	0
7	3.3	.24	1.6	.07	4.0	.13	3.5	.12	6.3	0	2.1	.02	1.4	.24	4.0	.42			3.9	.69	6.7	0
8	3.8	.13	1.8	.05	4.6	.30	4.0	.10	7.2	.03	2.4	.04	1.6	.17	4.6	.40			4.4	.60	7.7	.06
9	4.2	.08	2.1	.03	5.1	.34	4.5	.11	8.1	.05	2.7	.06	1.8	.06	5.1	.31			5.0	.38	8.6	.09
Right Bank	4.7	0	2.3	0	5.7	0	4.9	0	8.9	0	3.1	0	2.1	0	5.7	0	5.0	0	5.5	0	9.6	0
Feature Type	pool		run		run		run		riffle		riffle		run		pool		pool		pool		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.

Discharge from field.

Signed: MC

Date: 10/16/07

WBID# 0685



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# 0685



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# 0685



Site# 3 Photo ID# Downstream T-1



Site# 3 Photo ID# Upstream T-1



Site# 3 Photo ID# Downstream T-11



Site# 3 Photo ID# Upstream T-11

WBID# 0685



Site# 4 Photo ID# Downstream T-1



Site# 4 Photo ID# Upstream T-1



Site# 4 Photo ID# Downstream T-11



Site# 4 Photo ID# Upstream T-11

WBID# 0685



Site# 5 Photo ID# Downstream T-1



Site# 5 Photo ID# Upstream T-1



Site# 5 Photo ID# Downstream T-11



Site# 5 Photo ID# Upstream T-11

WBID# 0685



Site# 6 Photo ID# Downstream T-1



Site# 6 Photo ID# Upstream T-1



Site# 6 Photo ID# Downstream T-11



Site# 6 Photo ID# Upstream T-11

WBID# 0685



Site# 7 Photo ID# Downstream T-1



Site# 7 Photo ID# Upstream T-1



Site# 7 Photo ID# Downstream T-11



Site# 7 Photo ID# Upstream T-11

WBID# 0685



Site# 7 Photo ID# Pipe discharge