



Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 0611 West Locust Creek

Submitted by

Pickett Ray and Silver

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): West Locust Cr	
Missouri Water Body Identification (WBID) 0611	
8-digit HUC: 20090415	County: Putnam
Upstream Legal Description (from Table H):	7,66N,20W
Downstream Legal Description (from Table H): Mouth	
Number of sites evaluated: 8	
List all sites numbers, listed consequently upstream to downstream: Site 1, 160 th St., Site 222, 170 th St., Site 3, Hwy 136 Bridge, Site 4, 190 th St., Site 5, 150m dnstream of site 4, Site 6 hwy EE Bridge, Site 7, 150 m dnstream of site 6, Site 8 Foxtail Tr.	

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): Premium Standard Farms MO 0118761
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III. UAA Surveyor (please print legibly)

Name of Surveyor: Renee Marting	Telephone Number: 573-875-7844
Organization/Employer: AESolutions	

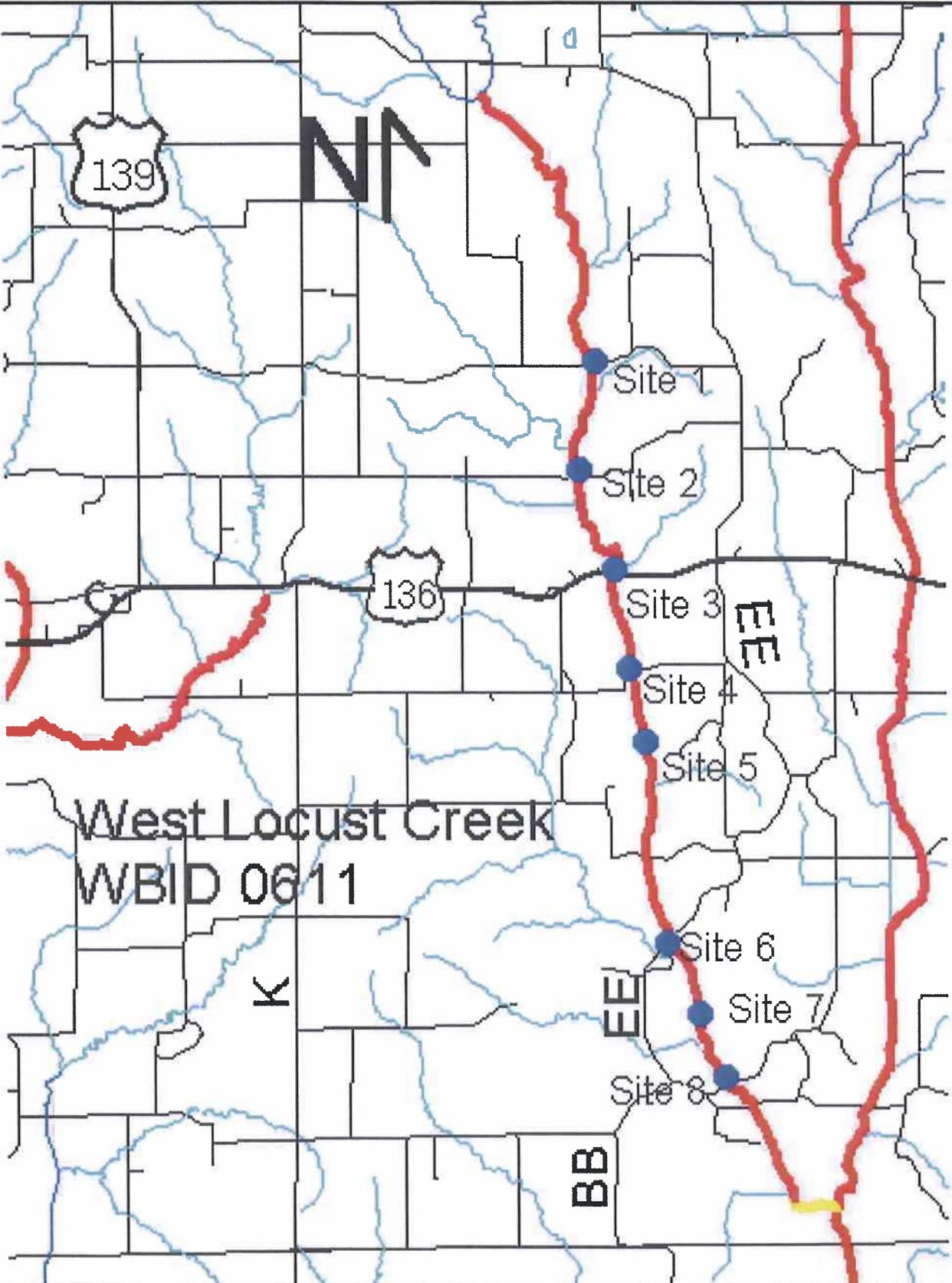
Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Signed: _____ **Date:** 9/13/07

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MATCHLINE SEE SHEET 2



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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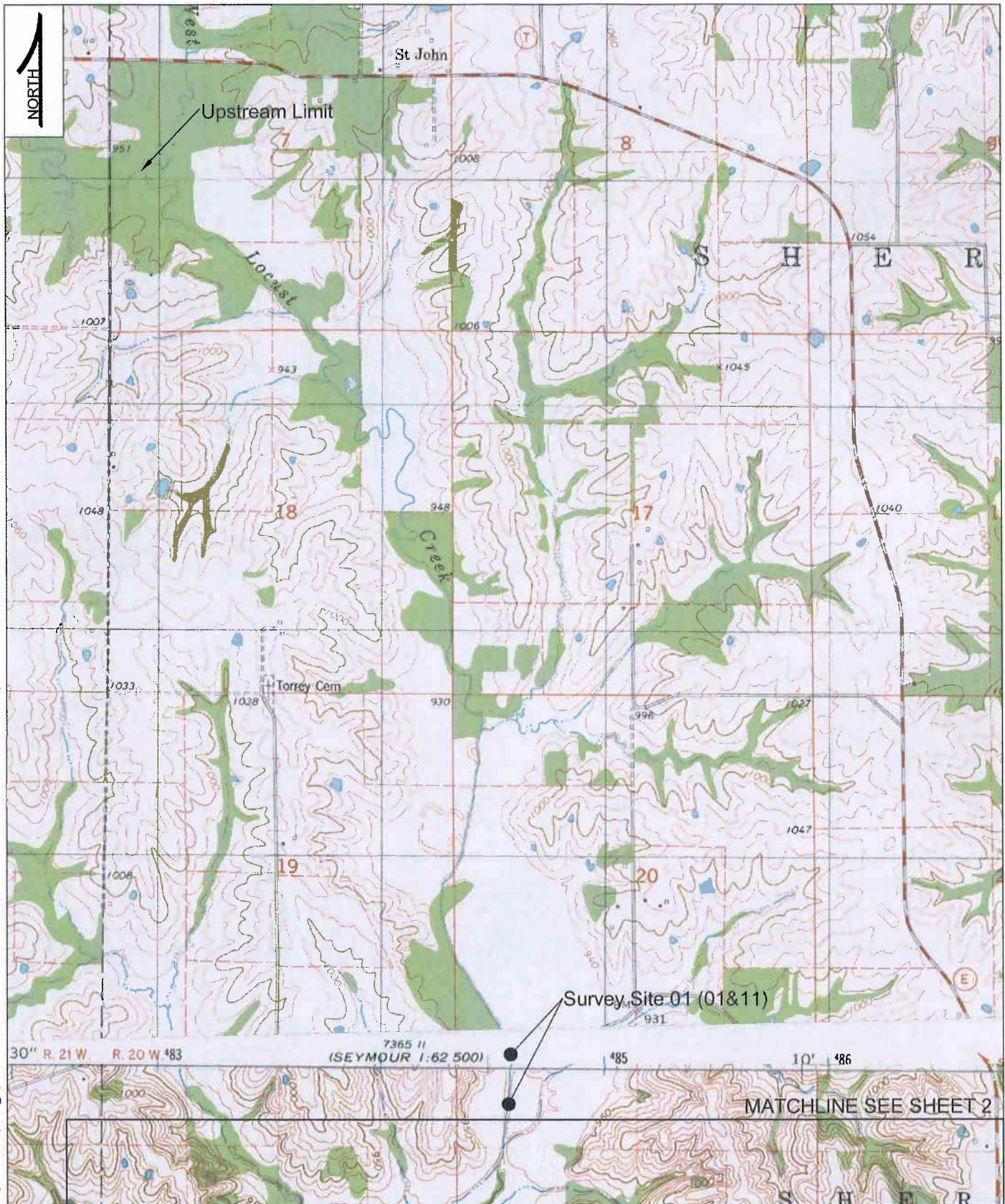
WBID #: 0611
 Name: West Locust Creek
 County: Putnam
 GIS Location Map

Sheet 1 of 1

Map provided by AES.
 Please refer to USGS for exact site location indicators.

PRS Job Number: 07031.MODN.01E
 Drawn By: BLS Date: 10-15-07
 Checked By: JCV Date: 10-15-07

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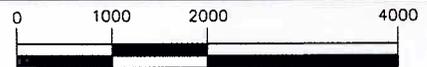
PICKETT RAY & SILVER

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WBID #: 0611
 Name: West Locust Creek
 County: Putnam
 USGS Location Map

Sheet 1 of 4



GRAPHIC SCALE
 1 inch = 2000ft.

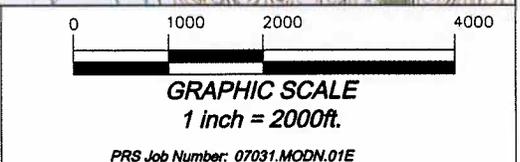
PRS Job Number: 07031.MODN.01E
 Drawn By: BLS Date: 10-15-07
 Checked By: JCV Date: 10-15-07

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 Civil Engineers Land Surveyors Natural Resources
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 St. Peters, Missouri 63376 Fax: (636)397-1104
 Website: www.prs3.com

WBID #: 0611
 Name: West Locust Creek
 County: Putnam
 USGS Location Map

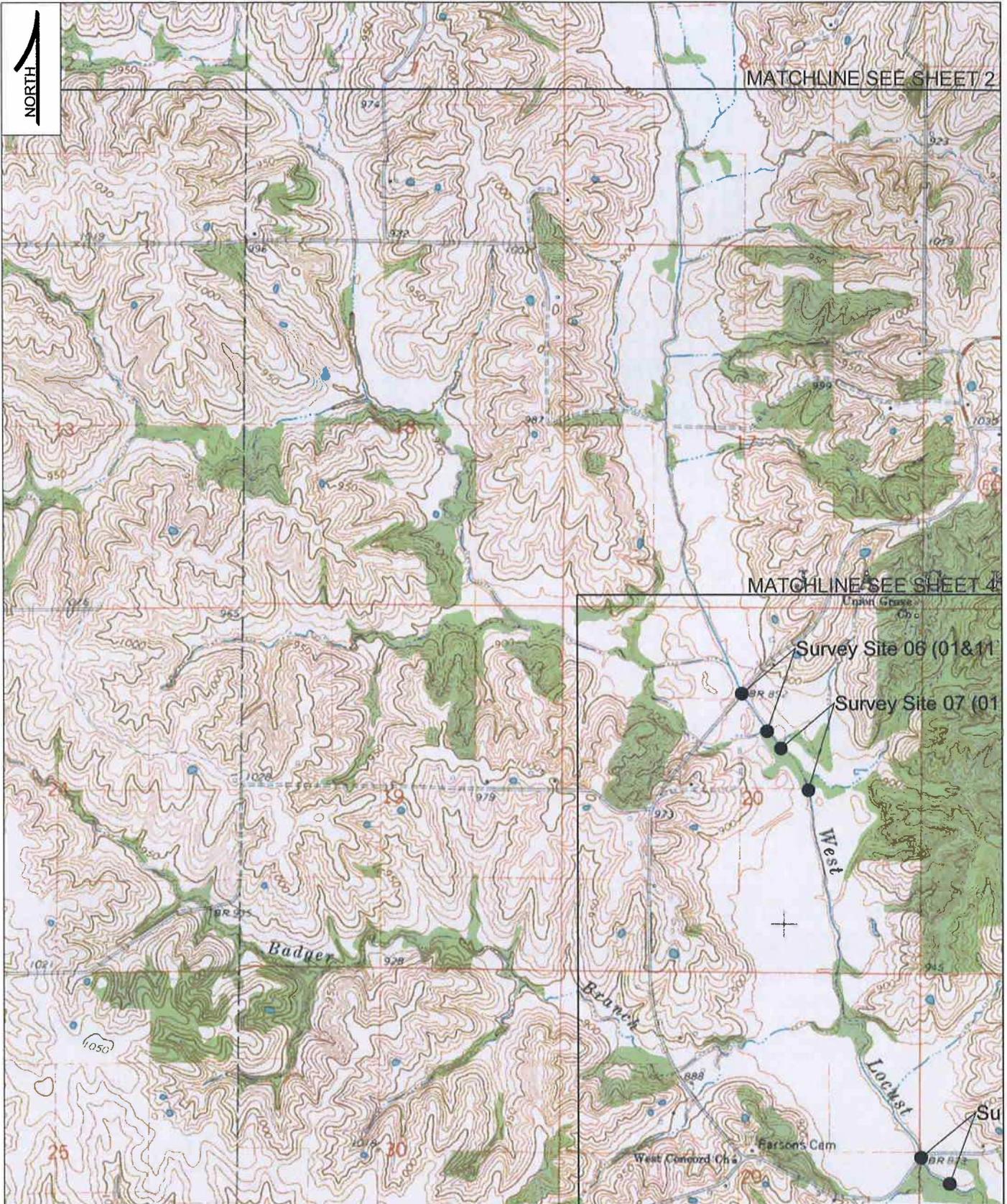


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Sheet 2 of 4

PRS Job Number: 07031.MODN.01E
 Drawn By: BLS Date: 10-15-07
 Checked By: JCV Date: 10-15-07

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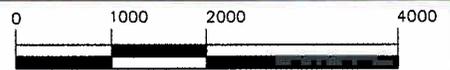
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WBID #: 0611
 Name: West Locust Creek
 County: Putnam
 USGS Location Map

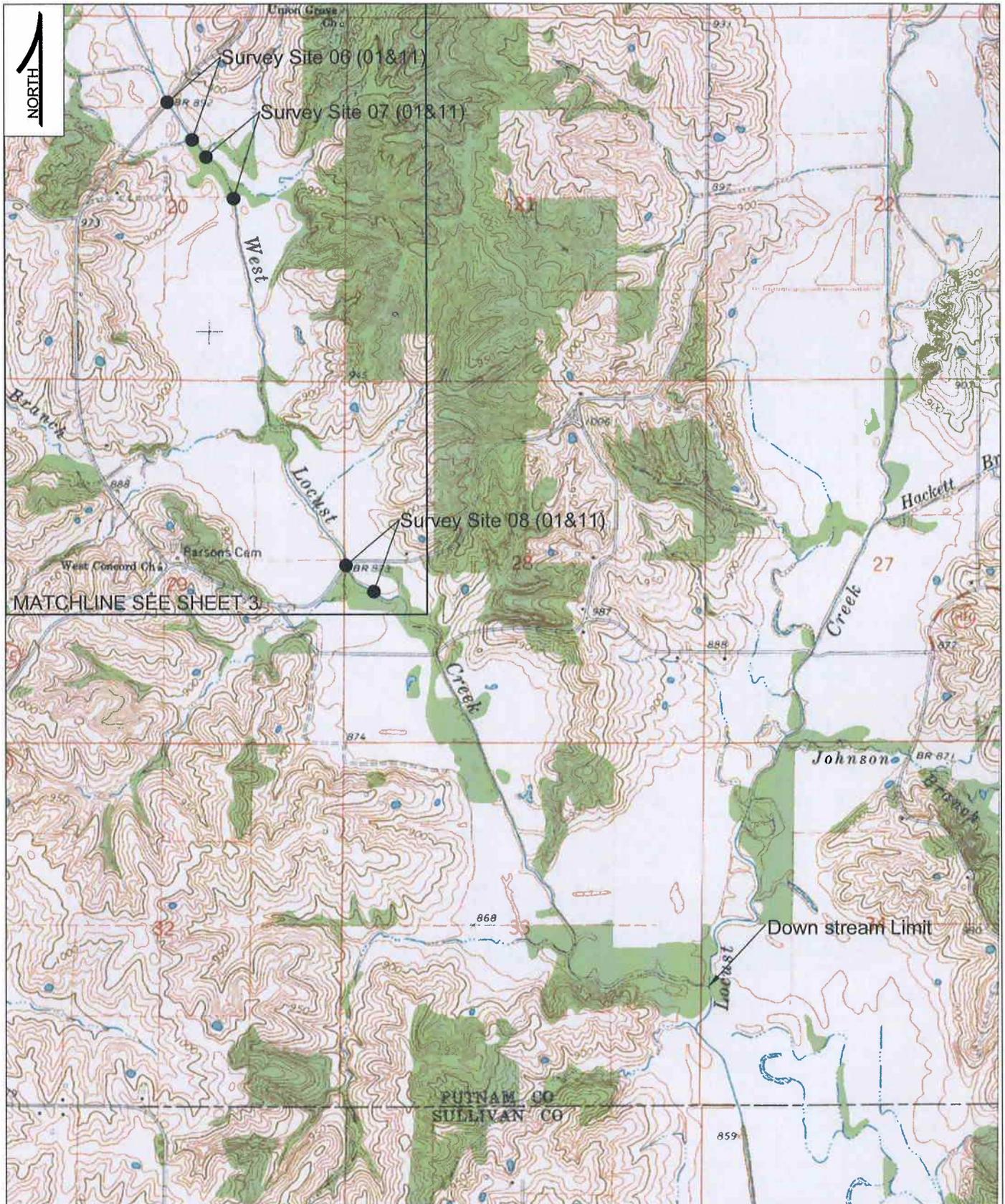
Sheet 3 of 4



GRAPHIC SCALE
 1 inch = 2000ft.

PRS Job Number: 07031.MODN.01E
 Drawn By: BLS Date: 10-15-07
 Checked By: JCV Date: 10-15-07

\\3serverpr\Projects\07031\dwg\07031_MODN_01E\0611 West Locust Creek.dwg, 10/15/2007 10:00:15 AM, BLSTOESZ



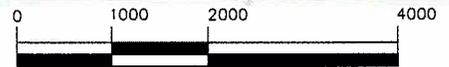
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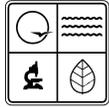
WBID #: 0611
 Name: West Locust Creek
 County: Putnam
 USGS Location Map

Sheet 4 of 4



GRAPHIC SCALE
 1 inch = 2000ft.

PRS Job Number: 07031.MODN.01E
 Drawn By: BLS Date: 10-15-07
 Checked By: JCV Date: 10-15-07



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: 9/18/2007 8:30	Site Location Description (e.g., road crossing): 160 th St.
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: ° Clear	Facility Name: Premium Standard Farms
Weather Conditions for Past 10 days: Clear/rain	Permit Number: MO0118761
Drought Conditions?: No drought <input checked="" 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:

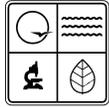
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 0484565	Northing (UTM Y): 4483326	Horizontal Accuracy: (EPE / FOM / PDOP) 17 feet
Site 11	Easting (UTM X): 0484558	Northing (UTM Y): 4483117	Horizontal Accuracy: (EPE / FOM / PDOP) 20 feet

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_133	Upstream	101-134	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

<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 <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				



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	X 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: None				

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

Cobble	1%Gravel	39%Sand	% Silt	60 % 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	X None	<input type="checkbox"/> Other:
Color:	X	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	X Other: Bronw
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	X Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	XNone	<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.



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: 9/18/07

Organization: Applied Environmental Solutions Position: Environmental Specialist

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Missouri Department of Natural Resources Site #: <u>1</u> Estimated Channel Incision: <u>2.5</u> (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: <u>484564</u> UTM Y: <u>4483326</u> <u>17</u> feet 11 UTM X: <u>484558</u> UTM Y: <u>4483117</u> <u>20</u> feet Average Stream Width: <u>7.5</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>JH/JF</u>	Dissolved Oxygen
	Date: <u>9/18/2007</u> Time: <u>8:30 AM</u>
	Dissolved Oxygen: <u>5.83</u> (mg/L)
	Dissolved Oxygen: <u>63.6</u> (% sat)
	Specific Cond: <u>203.3</u> (µS/cm)
	Water Temperature: <u>19.6</u> (°C)

Transect Cross-Section

		01		02		03		04		05		06		07		08		09		10		11	
Station		Distance (m)	Depth (m)																				
Left Bank		0	0.41	0	0.2	0	0	0	0	0	0.38	0	0	0	0	0	0.34	0	0.45	0	0	0	0
	1	0.65	0.38	0.80	0.45	0.8	0.29	0.70	0.21	0.65	0.45	0.78	0.17	1.0	0.4	0.67	0.26	0.60	0.6	0.9	0.21	0.75	0.08
	2	1.30	0.35	1.60	0.46	1.6	0.42	1.4	0.29	1.30	0.46	1.56	0.25	2.0	>1	1.34	0.40	1.2	0.66	1.8	0.37	1.5	0.00
	3	1.95	0.31	2.40	0.46	2.4	0.35	2.1	0.64	1.95	0.64	2.34	0.31	3.0	0.82	2.01	0.55	1.8	0.58	2.7	0.5	2.25	0.00
	4	2.6	0.37	3.20	0.47	3.2	0.31	2.8	0.48	2.6	0.55	3.12	0.34	4.0	0.71	5.68	0.52	2.4	0.61	3.6	0.44	3.00	0.04
	5	3.25	0.28	4.00	0.45	4.0	0.32	3.5	0.22	3.3	0.52	3.9	0.35	5.0	0.64	3.35	0.54	3	0.64	4.5	0.36	3.8	0.00
	6	3.9	0.2	4.80	0.43	4.8	0.36	4.2	0.17	3.9	0.44	4.68	0.45	6.0	0.56	4.02	0.64	3.6	0.38	5.4	0.41	4.5	0.00
	7	4.55	0.23	5.6	0.39	5.6	0.45	4.9	0.10	4.55	0.13	5.46	0.40	7.0	0.54	4.69	0.68	4.2	0.11	6.3	0.52	5.25	0.09
	8	5.2	0.26	6.4	0.24	6.4	0.35	5.6	0.11	5.2	0.06	6.24	0.46	8.0	0.5	5.4	0.65	4.8	0.06	7.2	0.53	6	0.08
	9	5.85	0.3	7.2	0.12	7.2	0.18	6.3	0.04	5.85	0.01	7.0	0.22	9.0	0.35	6.03	0.7	5.4	0.03	8.1	0.42	6.75	0.07
Right Bank		6.5	0	8	0	8	0	7.0	0	6.5	0	7.8	0	10	0	6.75	0.5	6	0	9	0	7.5	0
Feature Type <small>(riffle, run, or pool)</small>		pool		pool		pool		run		pool		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

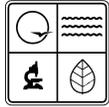
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

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: _____ Date: _____



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: pm9/18/2007 9:30	Site Location Description (e.g., road crossing): 170 th St.
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: Clear	Facility Name: Premium Standard Farms
Weather Conditions for Past 10 days: rainy/clear	Permit Number: MO 0118761
Drought Conditions?: No drought <input checked="" 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): 484317	Northing (UTM Y): 4481699	Horizontal Accuracy: (EPE / FOM / PDOP)	16 feet	
Site 11	Easting (UTM X): 484330	Northing (UTM Y): 4481489	Horizontal Accuracy: (EPE / FOM / PDOP)	26 feet	

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101-135	Upstream	101-136	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

<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 <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				



Missouri Field Data Sheets for Recreational Use Stream Surveys
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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	X 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: None				

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

Cobble	Gravel	60%Sand	% Silt	40 % Mud/Clay	Bedrock
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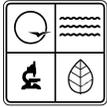
Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

--

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	X None	<input type="checkbox"/> Other:
Color:	X 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	X Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	X 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.



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: 9/18/07

Organization: Applied Environmental Solutions Position: Environmental Specialist

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

 Waterbody ID: <u>611</u> Site #: <u>0611_02</u> Estimated Channel Incision: <u>2</u> (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: <u>484317</u> UTM Y: <u>4481699</u> <u>16</u> feet 11 UTM X: <u>484330</u> UTM Y: <u>4481489</u> <u>26</u> feet Average Stream Width: <u>4</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>JH/JF</u>	Dissolved Oxygen
	Date: <u>9/18/2007</u> Time: <u>9:30 AM</u>
	Dissolved Oxygen: <u>7.04</u> (mg/L)
	Dissolved Oxygen: <u>79.2</u> (% sat)
	Specific Cond: <u>438.3</u> (µS/cm)
	Water Temperature: <u>20.3</u> (°C)

Transect Cross-Section

		01		02		03		04		05		06		07		08		09		10		11	
Station		Distance (m)	Depth (m)																				
Left Bank		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1		0.34	0.05	0.39	0.03	0.46	0.02	0.46	0.03	0.34	0.07	0.25	0.02	0.29	0.03	0.78	0.19	0.20	0.07	0.50	0.06	0.31	0.06
2		0.68	0.02	0.78	0.04	0.92	0.05	0.92	0.06	0.68	0.09	0.50	0.04	0.58	0.04	1.56	0.33	0.40	0.06	1.00	0.18	0.62	0.20
3		1.02	0.14	1.17	0.09	1.38	0.06	1.38	0.05	1.02	0.10	0.75	0.07	0.87	0.06	2.34	0.64	0.60	0.05	1.50	0.25	0.93	0.45
4		1.36	0.12	1.56	0.10	1.84	0.11	1.84	0.05	1.36	0.10	1.00	0.10	1.16	0.09	3.12	0.59	0.80	0.06	2.00	0.28	1.24	0.56
5		1.70	0.11	1.95	0.08	2.30	0.14	2.30	0.04	1.70	0.11	1.25	0.12	1.45	0.13	3.90	0.55	1.00	0.03	2.50	0.23	1.55	0.61
6		2.04	0.15	2.34	0.11	2.76	0.16	2.76	0.04	2.04	0.12	1.50	0.13	1.74	0.12	4.68	0.48	1.20	0.03	3.00	0.14	1.86	0.55
7		2.38	0.15	2.73	0.10	3.22	0.15	3.22	0.03	2.38	0.11	1.75	0.15	2.03	0.14	5.46	0.53	1.40	0.00	3.50	0.10	2.17	0.34
8		2.72	0.13	3.12	0.10	3.68	0.11	3.68	0.00	2.72	0.10	2.00	0.10	2.32	0.14	6.24	0.48	1.60	0.05	4.00	0.08	2.48	0.18
9		3.06	0.10	3.51	0.10	4.14	0.11	4.14	0.02	3.06	0.04	2.25	0.09	2.61	0.04	7.02	0.36	1.80	0.01	4.50	0.05	2.79	0.09
Right Bank		3.40	0	3.90	0	4.60	0	4.65	0	3.40	0	2.50	0	2.90	0	7.80	0	2.00	0	5.00	0	3.15	0
Feature Type		run		run		run		run		run		run		run		run		run		run		run	
	(riffle, run, or)																						

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

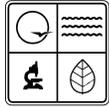
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

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: _____ Date: _____



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: pm9/18/2007 10:15	Site Location Description (e.g., road crossing): Hwy 136 Bridge
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: clear	Facility Name: Premium Standard Farms
Weather Conditions for Past 10 days: clear/rainy	Permit Number: MO 0118761
Drought Conditions?: No drought <input checked="" 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:

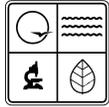
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 0484837	Northing (UTM Y): 4480332	Horizontal Accuracy: (EPE / FOM / PDOP) 24 feet		
Site 11	Easting (UTM X): 0484815	Northing (UTM Y): 4480157	Horizontal Accuracy: (EPE / FOM / PDOP) 23feet		

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101-137	Upstream	101-138	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

<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	X None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				



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	X 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: None				

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

Cobble	1% Gravel	90% Sand	% Silt	9 % Mud/Clay	Bedrock
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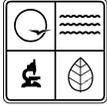
Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

None

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	X None	<input type="checkbox"/> Other:
Color:	X 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	X Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	X 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.



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)

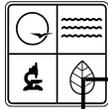
Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

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: 9/18/07

Organization: Applied Environmental Solutions Position: Environmental Specialist



Missouri
Department of
Natural Resources

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet C - Field Survey Results

Waterbody ID: 611 Site #: 0611_03

Estimated Channel Incision: 1.5 (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: 484837 UTM Y: 4480332 24 feet
11 UTM X: 484815 UTM Y: 4480157 23 feet

Average Stream Width: 5.2 (meters) Length of Survey Segment: 150 (meters)
 (To determine Length of Reach) (20x average stream width)

Field Staff: JH/JF

Dissolved Oxygen

Date: 9/18/2007 Time: 10:15 AM

Dissolved Oxygen: 6.07 (mg/L)

Dissolved Oxygen: 72.8 (% sat)

Specific Cond: 362.9 (µS/cm)

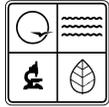
Water Temperature: 20.7 (°C)

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	0.45	0.15	0.41	0.09	0.65	0.20	0.49	0.09	0.65	0.30	0.49	0.08	0.90	0.08	0.37	0.14	0.62	0.39	0.52	0.09	0.11	0.02
2	0.90	0.06	0.82	0.25	1.30	0.23	0.98	0.17	1.30	0.30	0.98	0.25	1.80	0.35	0.74	0.28	1.24	0.34	1.04	0.11	0.22	0.04
3	1.35	0.03	1.23	0.12	1.95	0.27	1.47	0.22	1.95	0.34	1.47	0.37	2.70	0.60	1.11	0.40	1.86	0.33	1.56	0.21	0.03	0.03
4	1.80	0.05	1.64	0.04	2.60	0.24	1.96	0.19	2.60	0.28	1.96	0.55	3.60	0.80	1.48	0.36	2.48	0.36	2.08	0.29	0.44	0.03
5	2.25	0.06	2.05	0.00	3.25	0.19	2.45	0.14	3.25	0.19	2.45	0.62	4.50	0.75	1.85	0.29	3.10	0.27	2.60	0.37	0.55	0.05
6	2.70	0.01	2.46	0.00	3.90	0.11	2.94	0.11	3.90	0.18	2.94	0.66	5.40	0.80	2.22	0.24	3.72	0.19	3.12	0.35	0.66	0.05
7	3.15	0.00	2.87	0.13	4.55	0.09	3.43	0.08	4.55	0.20	3.43	0.60	6.30	0.90	2.59	0.15	4.34	0.12	3.64	0.40	0.77	0.02
8	3.60	0.04	3.28	0.20	5.20	0.08	3.92	0.04	5.20	0.21	3.92	0.49	7.20	0.51	2.96	0.10	4.96	0.08	4.16	0.26	0.88	0.03
9	4.05	0.12	3.69	0.19	5.85	0.12	4.41	0.02	5.85	0.21	4.41	0.30	8.10	0.09	3.33	0.07	5.58	0.10	4.68	0.14	0.99	0.01
Right Bank	4.50	0	4.12	0	6.50	0	4.90	0	6.50	0.10	4.90	0.30	9.00	0	3.75	0	6.25	0	5.20	0	1.10	1.00
Feature Type (riffle, run, or pool)	run		run		pool		run		run		pool		pool		run		run		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.

Signed: _____ Date: _____



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: pm9/18/2007 10:50 am	Site Location Description (e.g., road crossing): 190 th St.
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: Clear	Facility Name: Premium Standard Farms
Weather Conditions for Past 10 days: Clear/Rainy	Permit Number: MO 0118761
Drought Conditions?: No drought <input checked="" 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:

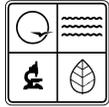
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 485090	Northing (UTM Y): 4478954	Horizontal Accuracy: (EPE / FOM / PDOP)	14 feet	
Site 11	Easting (UTM X): 485121	Northing (UTM Y): 4478775	Horizontal Accuracy: (EPE / FOM / PDOP)	19 feet	

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101-139	Upstream	101-140	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

<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 <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				



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	X 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: None				

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

Cobble	Gravel	80% Sand	20% Silt	% 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	X None	<input type="checkbox"/> Other:
Color:	X 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	X Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	X 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.



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)

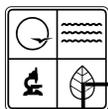
Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

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: 9/18/07

Organization: Applied Environmental Solutions Position: Environmental Specialist



Missouri
Department of
Natural Resources

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet C - Field Survey Results

Waterbody ID: 611 Site #: 0611-04

Estimated Channel Incision: 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: 485090 UTM Y: 4478954 14 feet

11 UTM X: 485121 UTM Y: 4478775 19 feet

Average Stream Width: 4.5 (meters) Length of Survey Segment: 150 (meters)
(To determine Length of Reach) (20x average stream width)

Field Staff: JH/JF

Dissolved Oxygen

Date: 9/18/2007 Time: 10:50 AM

Dissolved Oxygen: 7.15 (mg/L)

Dissolved Oxygen: 77.9 (% sat)

Specific Cond: 438.4 (µS/cm)

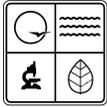
Water Temperature: 20.7 (°C)

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	0.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.25	0.04	0.12	0.05	0.13	0.15	0.23	0.05	0.75	0.05	0.64	0.01	0.19	0.03	0.40	0.03	0.50	0.25	0.52	0.04	0.78	0.50
2	0.56	0.02	0.24	0.04	0.26	0.13	0.46	0.05	1.50	0.04	1.28	0.02	0.38	0.05	0.80	0.05	1.00	0.40	1.04	0.08	1.56	>1
3	0.84	0.19	0.36	0.05	0.39	0.12	0.69	0.10	2.25	0.05	1.92	0.05	0.57	0.07	1.20	0.04	1.50	0.35	1.56	0.09	2.34	0.83
4	1.12	0.11	0.48	0.06	0.52	0.11	0.92	0.12	3.00	0.00	2.56	0.04	0.76	0.07	1.60	0.04	2.00	0.35	2.08	0.08	3.12	0.50
5	1.40	0.17	0.60	0.05	0.65	0.10	1.15	0.05	3.75	0.00	3.20	0.00	0.95	0.07	2.00	0.03	2.50	0.19	2.60	0.07	3.90	0.31
6	1.68	0.12	0.72	0.08	0.78	0.08	1.38	0.04	4.50	0.00	3.84	0.00	1.14	0.06	2.40	0.02	3.00	0.12	3.12	0.04	4.68	0.32
7	1.96	0.11	0.84	0.04	0.91	0.05	1.61	0.04	5.25	0.00	4.48	0.00	1.33	0.05	2.80	0.00	3.50	0.08	3.64	0.03	5.46	0.33
8	2.24	0.10	0.96	0.04	1.04	0.03	1.84	0.03	6.00	0.04	5.12	0.02	1.52	0.02	3.20	0.22	4.00	0.02	4.16	0.02	6.24	0.24
9	2.52	0.05	1.08	0.02	1.17	0.02	2.07	0.02	6.75	0.02	5.76	0.06	1.71	0.01	3.60	0.36	4.50	0.01	4.68	0.01	7.02	0.16
Right Bank	2.80	0	1.20	0	1.30	0	2.35	0	7.50	0	6.40	0	1.95	0	4.00	0.27	5.00	0	5.20	0	7.80	0
Feature Type (riffle, run, or pool)	run		pool		pool		pool															

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS 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: _____ Date: _____



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: pm9/18/2007 11:15 am	Site Location Description (e.g., road crossing): 150m downstream of site 04
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: Clear	Facility Name: Premium Standard Farms
Weather Conditions for Past 10 days: Clear/Rainy	Permit Number: MO 0118761
Drought Conditions?: No drought <input checked="" 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:

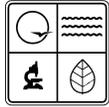
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 0485143	Northing (UTM Y): 4478690	Horizontal Accuracy: (EPE / FOM / PDOP)	20feet	
Site 11	Easting (UTM X): 0485156	Northing (UTM Y): 4478507	Horizontal Accuracy: (EPE / FOM / PDOP)	19feet	

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101-141	Upstream	101-142	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

<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 <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				



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	X Steep slopes	<input type="checkbox"/> Other:
Comments: None				

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%.)

Cobble	1%Gravel	90%Sand	% Silt	9 % Mud/Clay	Bedrock
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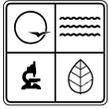
Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

None

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	X None	<input type="checkbox"/> Other:
Color:	X 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	X Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	X 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.



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)

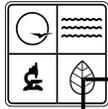
Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

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: 9/18/07

Organization: Applied Environmental Solutions Position: Environmental Specialist



Missouri
Department of
Natural Resources

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet C - Field Survey Results

Waterbody ID: 611 Site #: 0611_05

Estimated Channel Incision: 1.5 (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: 485143 UTM Y: 4478690 20 feet
11 UTM X: 485156 UTM Y: 4478507 19 feet

Average Stream Width: 2.2 (meters) Length of Survey Segment: 150 (meters)
 (To determine Length of Reach) (20x average stream width)

Field Staff: JH/JF

Dissolved Oxygen

Date: 9/18/2007 Time: 11:15 AM

Dissolved Oxygen: 6.36 (mg/L)

Dissolved Oxygen: 70.1 (% sat)

Specific Cond: 431.3 (µS/cm)

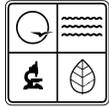
Water Temperature: 20 (°C)

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	0.64	0.06	0.48	0.04	0.10	0.02	0.21	0.05	0.11	0.05	0.23	0.02	0.26	0.04	0.21	0.10	0.13	0.05	0.12	0.09	0.44	0.05
2	1.28	0.03	0.96	0.05	0.20	0.10	0.42	0.05	0.22	0.04	0.46	0.04	0.52	0.05	0.42	0.06	0.26	0.06	0.24	0.11	0.88	0.04
3	1.92	0.00	1.44	0.06	0.30	0.16	0.63	0.03	0.33	0.04	0.69	0.04	0.78	0.04	0.63	0.06	0.39	0.07	0.36	0.08	1.32	0.02
4	2.56	0.01	1.92	0.09	0.40	0.12	0.84	0.05	0.44	0.05	0.92	0.05	1.04	0.02	0.84	0.05	0.52	0.06	0.48	0.08	1.76	0.01
5	3.20	0.01	2.40	0.11	0.50	0.10	1.05	0.05	0.55	0.03	1.15	0.04	1.30	0.01	1.05	0.05	0.65	0.08	0.60	0.07	2.20	0.00
6	3.84	0.00	2.88	0.10	0.60	0.07	1.26	0.07	0.66	0.03	1.38	0.04	1.56	0.00	1.26	0.05	0.78	0.08	0.72	0.05	2.64	0.00
7	4.48	0.00	3.36	0.12	0.07	0.05	1.47	0.10	0.77	0.02	1.61	0.04	1.82	0.01	1.47	0.05	0.91	0.07	0.84	0.04	3.08	0.01
8	5.12	0.05	3.84	0.17	0.80	0.03	1.68	0.09	0.88	0.01	1.84	0.02	2.08	0.03	1.68	0.03	1.04	0.10	0.96	0.03	3.52	0.03
9	5.76	0.02	4.32	0.16	0.90	0.01	1.89	0.04	0.99	0.01	2.07	0.01	2.34	0.02	1.89	0.02	1.17	0.05	1.08	0.01	3.96	0.02
Right Bank	6.4	0	4.8	0	1.08	0	2.1	0	1.1	0	2.3	0	2.6	0	2.1	0	1.3	0	1.2	0	4.4	0
Feature Type (riffle, run, or pool)	riffle		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: _____ Date: _____



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: pm9/1/2007 12:00 pm	Site Location Description (e.g., road crossing): Hwy EE Bridge
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: Clear	Facility Name: Premium Standard Farms
Weather Conditions for Past 10 days: rainy/clear	Permit Number: MO 0118761
Drought Conditions?: No drought <input checked="" 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:

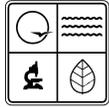
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 0485656	Northing (UTM Y): 4475032	Horizontal Accuracy: (EPE / FOM / PDOP)	18feet	
Site 11	Easting (UTM X): 0485775	Northing (UTM Y): 4474876	Horizontal Accuracy: (EPE / FOM / PDOP)	28feet	

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101-143	Upstream	101-144	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

<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	X None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				



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	X 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: None				

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

Cobble	Gravel	90% Sand	% Silt	10 % Mud/Clay	Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

Duckweed
Algae

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	X None	<input type="checkbox"/> Other:
Color:	X 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	X Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	X 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.



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)

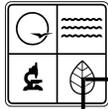
Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

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: 9/18/07

Organization: Applied Environmental Solutions Position: Environmental Specialist



Missouri
Department of
Natural Resources

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet C - Field Survey Results

Waterbody ID: 611 Site #: 0611_06

Estimated Channel Incision: 2 (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: 485656 UTM Y: 4475032 18 feet

11 UTM X: 485775 UTM Y: 4474876 28 feet

Average Stream Width: 5 (meters) Length of Survey Segment: 150 (meters)

(To determine Length of Reach) (20x average stream width)

Field Staff: JH/JF

Dissolved Oxygen

Date: 9/18/2007 Time: 12:00 PM

Dissolved Oxygen: 10.36 (mg/L)

Dissolved Oxygen: 120.5 (% sat)

Specific Cond: 465 (µS/cm)

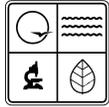
Water Temperature: 22.3 (°C)

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	0.52	0.07	0.36	0.15	0.50	0.20	0.60	0.10	0.63	0.21	0.67	0.14	0.59	0.41	0.42	0.01	0.23	0.03	0.25	0.05	0.24	0.08
2	1.04	0.06	0.72	0.20	1.00	0.24	1.20	0.14	1.26	0.16	1.34	0.18	1.18	0.45	0.84	0.01	0.46	0.05	0.50	0.07	0.48	0.05
3	1.56	0.05	1.08	0.21	1.50	0.19	1.80	0.15	1.89	0.17	2.01	0.11	1.77	0.42	1.26	0.02	0.69	0.10	0.75	0.05	0.72	0.04
4	2.08	0.01	1.44	0.20	2.00	0.18	2.40	0.11	2.52	0.18	2.68	0.06	2.36	0.35	1.68	0.03	0.92	0.11	1.00	0.03	0.96	0.07
5	2.60	0.01	1.80	0.17	2.50	0.19	3.00	0.06	3.15	0.15	3.35	0.10	2.95	0.19	2.10	0.02	1.15	0.15	1.25	0.02	1.20	0.06
6	3.12	0.00	2.16	0.14	3.00	0.25	3.60	0.07	3.78	0.20	4.02	0.14	3.54	0.11	2.52	0.05	1.38	0.24	1.50	0.01	1.44	0.10
7	3.64	0.01	2.52	0.10	3.50	0.21	4.20	0.05	4.41	0.08	4.69	0.12	4.13	0.10	2.94	0.04	1.61	0.24	1.75	0.12	1.68	0.10
8	4.16	0.01	2.88	0.11	4.00	0.12	4.80	0.10	5.04	0.06	5.36	0.10	4.72	0.08	3.36	0.08	1.84	0.24	2.00	0.10	1.92	0.09
9	4.68	0.01	3.24	0.08	4.50	0.11	5.40	0.14	5.67	0.05	6.03	0.05	5.31	0.06	3.78	0.05	2.07	0.24	2.25	0.04	2.16	0.08
Right Bank	5.2	0	3.6	0	5.0	0	6.0	0	6.3	0	6.7	0	5.9	0	4.2	0	2.3	0.24	2.5	0	2.4	0
Feature Type (riffle, run, or pool)	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: _____ Date: _____



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: pm 9/18/2007 12:25 pm	Site Location Description (e.g., road crossing): 150m downstream of site 06
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: clear	Facility Name: Premium Standard Farms
Weather Conditions for Past 10 days: Rainy/clear	Permit Number: MO 0118761
Drought Conditions?: No drought <input checked="" 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:

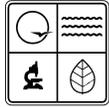
LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): 0485819	Northing (UTM Y): 4474800	Horizontal Accuracy: (EPE / FOM / PDOP)	22feet	
Site 11	Easting (UTM X): 0485941	Northing (UTM Y): 4474650	Horizontal Accuracy: (EPE / FOM / PDOP)	18feet	

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101-200	Upstream	101-199	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

<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 <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				



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	X 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: None				

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

Cobble	Gravel	90% Sand	% Silt	10 % Mud/Clay	Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

Duckweed
Algae

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	X None	<input type="checkbox"/> Other:
Color:	X 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	X Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	X 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.



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)

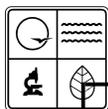
Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

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: 9/18/07

Organization: Applied Environmental Solutions Position: Environmental Specialist



Missouri
Department of
Natural Resources

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet C - Field Survey Results

Waterbody ID: 611 Site #: 0611_07

Estimated Channel Incision: 2 (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: 485819 UTM Y: 4474800 22 feet

11 UTM X: 485941 UTM Y: 4474650 18 feet

Average Stream Width: 4.4 (meters) Length of Survey Segment: 150 (meters)
(To determine Length of Reach) (20x average stream width)

Field Staff: JH/JF

Dissolved Oxygen

Date: 9/18/2007 Time: 12:25 PM

Dissolved Oxygen: 8.99 (mg/L)

Dissolved Oxygen: 105.1 (% sat)

Specific Cond: 450.4 (µS/cm)

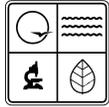
Water Temperature: 23 (°C)

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	0.28	0.03	0.58	0.05	0.28	0.11	0.39	0.06	0.25	0.04	0.25	0.03	0.29	0.08	0.27	0.01	1.00	0.02	0.50	0.01	0.60	0.11
2	0.56	0.05	1.16	0.07	0.50	0.09	0.78	0.06	0.50	0.03	0.50	0.06	0.58	0.11	0.54	0.03	2.00	0.08	1.00	0.01	1.20	0.07
3	0.84	0.04	1.74	0.04	0.84	0.01	1.17	0.05	0.75	0.06	0.75	0.11	0.87	0.13	0.81	0.03	3.00	0.01	1.50	0.10	1.80	0.01
4	1.12	0.03	2.32	0.03	1.12	0.01	1.56	0.03	1.00	0.10	1.00	0.07	1.16	0.10	1.08	0.04	4.00	0.00	2.00	0.05	2.40	0.03
5	1.40	0.01	2.90	0.00	1.40	0.01	1.95	0.04	1.25	0.10	1.25	0.06	1.45	0.07	1.35	0.05	5.00	0.00	2.50	0.06	3.00	0.05
6	1.68	0.01	3.48	0.00	1.68	0.02	2.34	0.02	1.50	0.09	1.50	0.05	1.74	0.03	1.62	0.06	6.00	0.00	3.00	0.06	3.60	0.03
7	1.96	0.03	4.06	0.00	1.96	0.04	2.73	0.02	1.75	0.09	1.75	0.03	2.03	0.01	1.89	0.06	7.00	0.03	3.50	0.05	4.20	0.05
8	2.24	0.03	4.64	0.00	2.24	0.02	3.12	0.01	2.00	0.08	2.00	0.02	2.32	0.02	2.16	0.05	8.00	0.26	4.00	0.05	4.80	0.06
9	2.52	0.04	5.22	0.02	2.52	0.02	3.51	0.01	2.25	0.03	2.25	0.01	2.61	0.01	2.43	0.04	9.00	0.64	4.50	0.11	5.40	0.15
Right Bank	2.8	0	5.85	0	2.8	0	3.9	0	2.5	0	2.5	0	2.95	0	2.75	0	10.1	0.4	5	0	6	0
Feature Type (riffle, run, or pool)	run		pool/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: _____ Date: _____



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: 9/18/2007 13:00	Site Location Description (e.g., road crossing): Foxtail Tr.
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: Clear	Facility Name: Premium Standard Farms
Weather Conditions for Past 10 days: Rainy/Clear	Permit Number: MO 0118761
Drought Conditions?: No drought <input checked="" 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): 0486457	Northing (UTM Y): 4472957	Horizontal Accuracy: (EPE / FOM / PDOP)		17feet
Site 11	Easting (UTM X): 0486619	Northing (UTM Y): 4472820	Horizontal Accuracy: (EPE / FOM / PDOP)		16feet

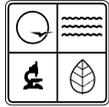
Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101-145	Downstream (1) Fence livestock	101-146	Upstream (1)		
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.)				

(1) Picture site numbers are wrong – says site 07 but they are actually site 08



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 checked="" type="checkbox"/> Livestock Watering
Comments / Other:				

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

Cobble	Gravel	90% Sand	% Silt	10 % Mud/Clay	Bedrock
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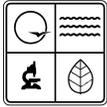
Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

Algae

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 checked="" 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.



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)

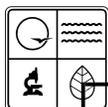
Comments: (Please record any additional comments here.)

Site number in pictures is wrong – says site 07 but it is site 08

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

Surveyor's Signature: _____ Date of Survey: 9/18/07

Organization: Applied Environmental Solutions Position: Environmental Specialist



Missouri
Department of
Natural Resources

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet C - Field Survey Results

Waterbody ID: 611 Site #: 0611_08

Estimated Channel Incision: 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: 486457 UTM Y: 4472957 17 feet

11 UTM X: 486619 UTM Y: 4472820 16 feet

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

Field Staff: JH/JF

Dissolved Oxygen

Date: 9/18/2007 Time: 1:00 PM

Dissolved Oxygen: 8.43 (mg/L)

Dissolved Oxygen: 100.2 (% sat)

Specific Cond: 463.2 (µS/cm)

Water Temperature: 22.8 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)																				
Left Bank	0	0.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.63	0.48	0.70	0.04	0.24	0.04	0.25	0.02	0.38	0.01	0.27	0.24	0.27	0.02	0.34	0.02	0.36	0.02	0.40	0.02	0.39	0.07
2	1.26	0.54	1.40	0.17	0.48	0.05	0.50	0.04	0.76	0.03	0.54	0.23	0.55	0.05	0.68	0.01	0.72	0.01	0.80	0.05	0.78	0.08
3	1.89	0.52	2.10	0.21	0.72	0.07	0.75	0.10	1.14	0.05	0.81	0.24	0.82	0.04	1.02	0.01	1.08	0.01	1.20	0.06	1.17	0.05
4	2.52	0.52	2.80	0.25	0.96	0.04	1.00	0.18	1.52	0.07	1.08	0.24	1.10	0.06	1.36	0.02	1.44	0.07	1.60	0.08	1.56	0.04
5	3.15	0.57	3.50	0.32	1.20	0.01	1.25	0.25	1.90	0.06	1.38	0.10	1.37	0.08	1.70	0.02	1.80	0.05	2.00	0.05	1.95	0.04
6	3.78	0.50	4.20	0.35	1.44	0.08	1.50	0.13	2.28	0.07	1.62	0.08	1.65	0.05	2.04	0.04	2.16	0.04	2.40	0.06	2.34	0.06
7	4.41	0.24	4.90	0.36	1.68	0.09	1.75	0.28	2.66	0.04	1.89	0.05	2.20	0.04	2.72	0.05	2.52	0.03	2.80	0.04	2.73	0.04
8	5.04	0.48	5.60	0.22	1.92	0.09	2.00	0.30	3.04	0.04	2.16	0.05	2.20	0.07	2.72	0.11	2.88	0.02	3.20	0.08	3.12	0.04
9	5.67	0.18	6.30	0.15	2.16	0.07	2.25	0.24	3.42	0.01	2.43	0.02	2.47	0.02	3.06	0.09	3.24	0.08	3.60	0.05	3.51	0.06
Right Bank	6	0	7	0	2.4	0	2.5	0	3.8	0	2.7	0	2.75	0	3.4	0	3.6	0	4	0	3.9	0
Feature Type (riffle, run, or pool)	pool		pool		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
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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: _____ Date: _____

WBID# 0611



Site# 1 Photo ID# 101-133, Upstream



Site# 1 Photo ID# 101-134, Downstream



Site# 2 Photo ID# 101-135, Upstream

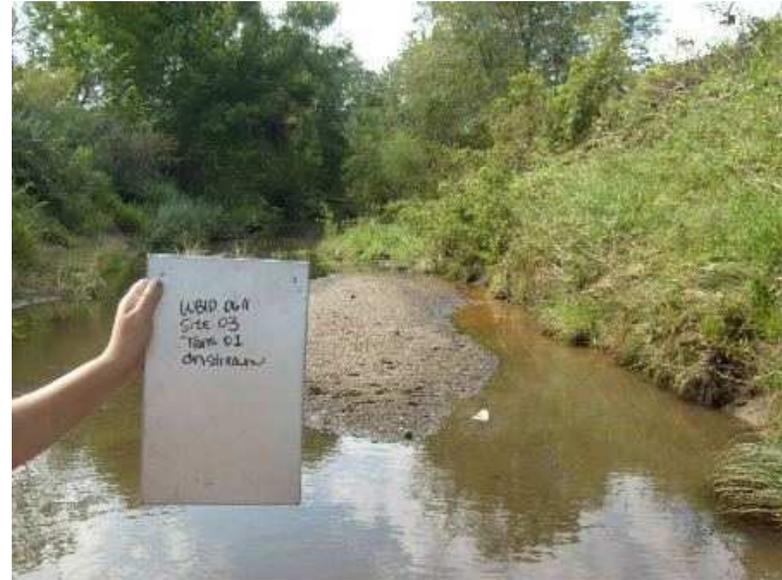


Site# 2 Photo ID# 101-136, Downstream

WBID# 0611



Site# 3 Photo ID# 101-137, Upstream



Site# 3 Photo ID# 101-138, Downstream

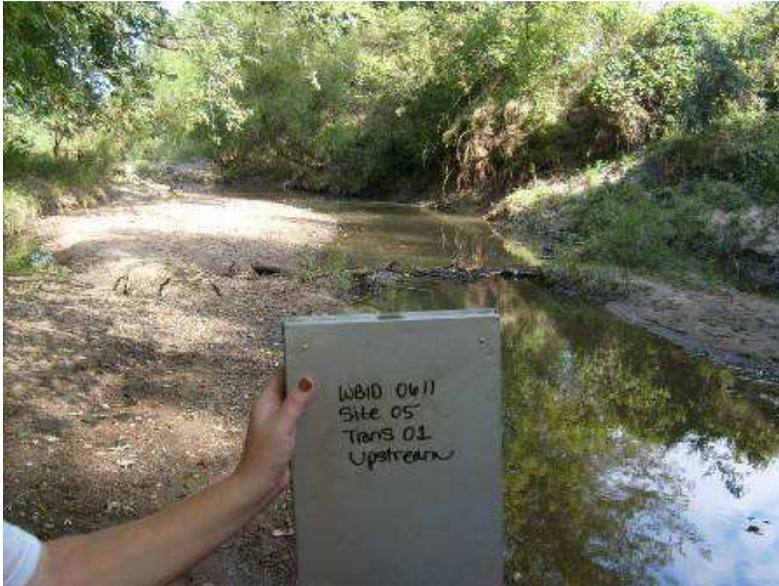


Site# 4 Photo ID# 101-139, Upstream



Site# 4 Photo ID# 101-140, Downstream

WBID# 0611



Site# 5 Photo ID# 101-141, Upstream



Site# 5 Photo ID# 101-142, Downstream



Site# 6 Photo ID# 101-143, Upstream



Site# 6 Photo ID# 101-144, Downstream

WBID# 0611



Site# 7 Photo ID# 101-200, Upstream



Site# 7 Photo ID# 101-199, Downstream



Site# 8 Photo ID# 101-145, Downstream



Site# 8 Photo ID# 101-146, Upstream