



Use Attainability Analysis

for

WBID 1179 Starvey Creek

Submitted by

MEC Water Resources

To

Missouri Department of Natural Resources

Water Protection Program

On

December 1, 2007

**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):	Starvey Creek
Missouri Water Body Identification (WBID) Number:	1179
8-digit HUC:	County: Dallas
Upstream Legal Description (from Table H):	15, 32N, 18W
Downstream Legal Description (from Table H):	Mouth
Number of sites evaluated:	3
List all sites numbers, listed consequently upstream to downstream:	1, 2, + 3

**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):
MODOT I-44 Rest Area WWTF
MO0096227

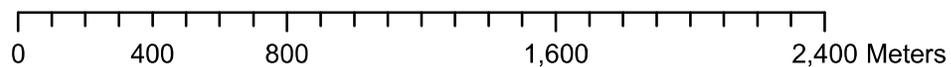
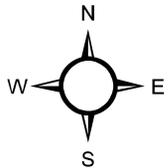
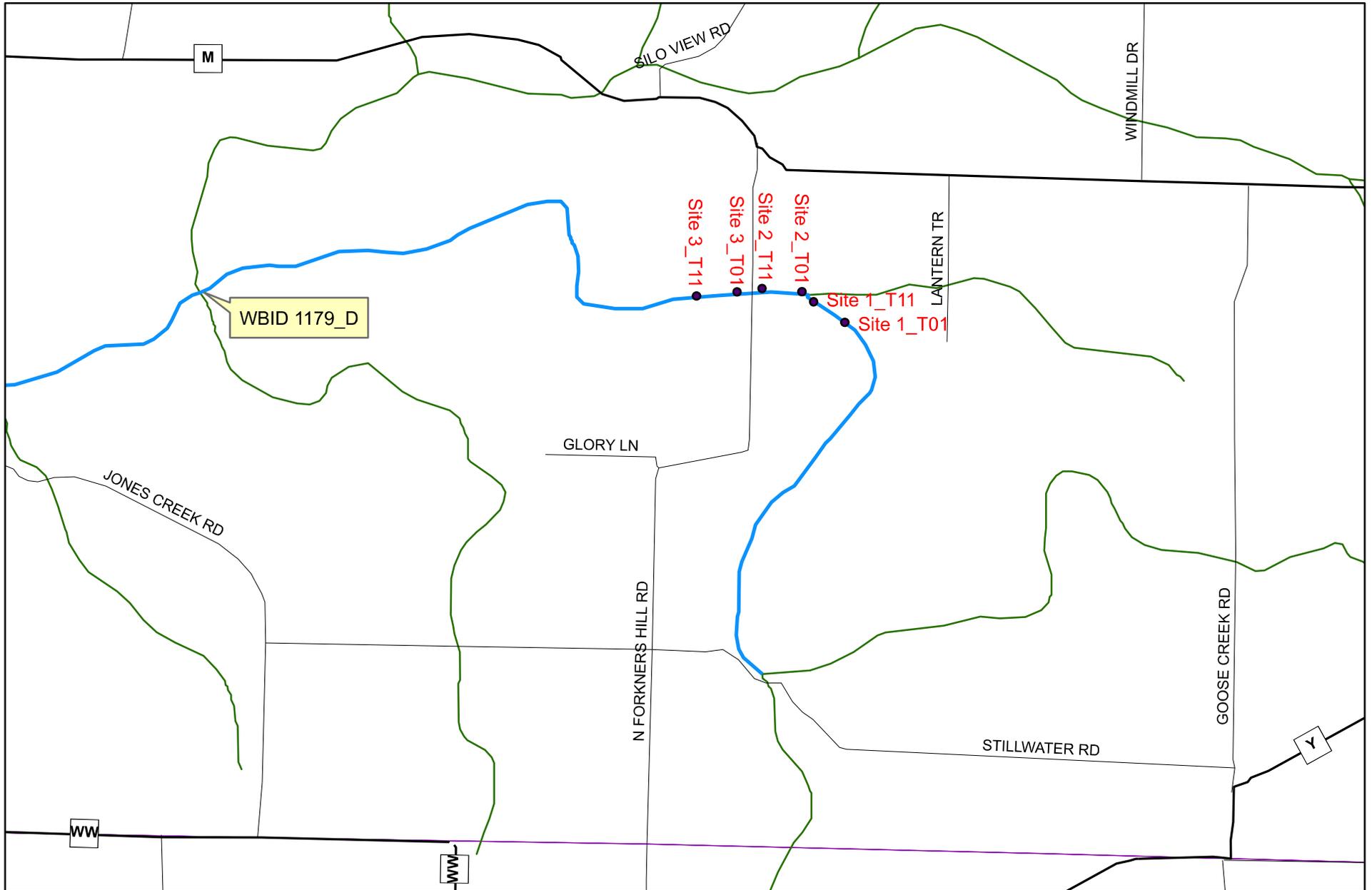
**III. UAA Surveyor** (please print legibly)

Name of Surveyor	Bob Bacon	Telephone Number:	(523) 634-7078
Organization/Employer:	ERC		

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

Signed: Bob Bacon Date: 10-5-2007

# WBID 1179 Starvey Creek - Dallas County



## **WBID 1179: Starvey Creek**

### **Notes:**

Due to limited road crossings and open access to stream within the classified reach a central location was selected to conduct our assessment. At this central location we secured property owner permission to access the stream. We examined approximately one half mile of the three mile classified reach (~ 17 percent) and selected what we believe are representative sections of the stream to conduct our assessments.

## Weather Conditions

Weather conditions ten days previous to stream assessment are listed in the tables below. The date(s) that the stream was assessed are shaded.

Data from the Midwest Regional Climate Center  
Buffalo\_2\_N, Missouri - Station ID: 231087

<b>Date</b>	<b>Precipitation (Inches)</b>	<b>Min. Temp (°F)</b>	<b>Max. Temp (°F)</b>	<b>Avg. Temp (°F)</b>
9/25/2007	0.00	70	84	77
9/26/2007	0.56	59	82	71
9/27/2007	-	59	79	69
9/28/2007	-	54	82	68
9/29/2007	0.00	54	81	68
9/30/2007	0.00	53	79	66
10/1/2007	0.02	50	84	67
10/2/2007	0.39	52	79	66
10/3/2007	0.39	52	84	68
10/4/2007	0.00	52	77	65
10/5/2007	0.00	65	84	75



WBID # 1179

Site # 01

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

**Data Sheet B – Site Characterization (continued)**

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

<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 type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments: <i>Woods and rural houses (2)</i>				

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

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input 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> <i>- noticed livestock watering at start of this classified reach</i>				

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

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

<i>+restail vegetation in channel</i>
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**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other: <i>None</i>
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input checked="" 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 # 1179

Site # 01

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

**Data Sheet B – Site Characterization (continued)**

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

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

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

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

Surveyor's Signature: *Robert R. Beem* Date of Survey: 10-5-07

Organization: ERC Position: Field Manager

# Field Data Sheets for Recreational Use Stream Surveys

T01 - I71 down stream  
T11 - I72 up stream

## Data Sheet C - Field Survey Results

Waterbody ID: <u>1179</u> Site #: <u>01</u>  Estimated Channel Incision: <u>    </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>155 0508958</u> UTM Y: <u>4150937</u> +/- <u>9</u> (meters) 033 11 UTM X: <u>155 0508927</u> UTM Y: <u>4150923</u> +/- <u>10</u> (meters) 034  Average Stream Width: <u>0.5</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Bob Bacon and Matt Nelson</u>	<h3 style="text-align: center; margin: 0;">Dissolved Oxygen</h3> Date: <u>10-5-2007</u> Time: <u>16:23</u>  Dissolved Oxygen: <u>3.12</u> (mg/L) Dissolved Oxygen: <u>36.7</u> (% sat)  Specific Cond: <u>270</u> (µS/cm)  Water Temperature: <u>23.50</u> (°C)
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### 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			.36	.05																		
	2			.72	.17																		
	3			1.08	.13																		
	4			1.44	.29																		
	5			1.80	.27																		
	6			2.16	.23																		
	7			2.52	.19																		
	8			2.88	.23																		
9			3.24	.09																			
Right Bank	0	0	3.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Feature Type <small>(riffle, run, or pool)</small>			dry	Pool	dry	dry																	

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: Bob Bacon      Date: 10-5-07

WBID # 1179

Site # 02

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

**Data Sheet B – Site Characterization**

(must be completed for each site)

Date & Time: <u>10/5/07 16:40</u>	Site Location Description (e.g., road crossing): <u>upstream of N. Forkness Hill Rd. downstream of site 1</u>
Personnel (Data Collectors): <u>Bob B + Matt N</u>	
Current Weather Conditions: <u>Sunny w/ clouds 85°</u>	Facility Name: <u>MODOT 1-44 Rest Area WJTF</u>
Weather Conditions for Past 10 days:	Permit Number: <u>M00056227</u>
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)					
Site 01	Easting (UTM X): <u>1550508779</u>	Northing (UTM Y): <u>4150965</u>	Horizontal Accuracy: (EPE / FOM / PDOP)	Meters	<u>12</u>
Site 11	Easting (UTM X): <u>1550508612</u>	Northing (UTM Y): <u>4150978</u>	Horizontal Accuracy: (EPE / FOM / PDOP)	Meters	<u>10</u>

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>I-073</u>	<u>downstream T-1</u>	<u>I-074</u>	<u>upstream T-1</u>		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)				

WBID # 179

Site # 02

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

**Data Sheet B – Site Characterization (continued)**

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

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

**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%.)

DRY

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

<u>DRY</u>
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**Water Characteristics\*:** (Mark all that apply.)

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

\*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 # 1179

Site # 02

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

**Data Sheet B – Site Characterization (continued)**

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

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

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

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

Surveyor's Signature: Robert A. Bean Date of Survey: 10-5-07

Organization: ERC Position: Field Manager

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

T01 - I73 downstream  
 T11 - I74 upstream

Waterbody ID: 1179 Site #: 02

Estimated Channel Incision:      (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: 1520508779 UTM Y: 4150965 +/- 12 (meters) 025

11 UTM X: 1520508612 UTM Y: 4150978 +/- 10 (meters) 036

Average Stream Width: 0 (meters) Length of Survey Segment: 150 (meters)  
 (To determine Length of Reach) (20x average stream width)

Field Staff: Bob Bacon & Matt Nelson

**Dissolved Oxygen**

Date: 10-5-2007 Time: 16:40

Dissolved Oxygen:      (mg/L)

Dissolved Oxygen:      (% sat)

Specific Cond:      (μS/cm)

Water Temperature:      (°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																						
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
Right Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Feature Type (riffle, run, or pool)	dry																					

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: Bob Bacon Date: 10-5-07

WBID # 1179

Site # 03

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

**Data Sheet B – Site Characterization**

(must be completed for each site)

Date & Time: <u>10/5/07 17:10</u>	Site Location Description (e.g., road crossing): <u>downstream of N. Finkner Rd.</u>
Personnel (Data Collectors): <u>Bob B + Matt N.</u>	
Current Weather Conditions: <u>sunny w/ clouds 86°</u>	Facility Name: <u>MO DOT I-44 Rest Area WWTF</u>
Weather Conditions for Past 10 days:	Permit Number: <u>MO0036227</u>
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

**Site Location:**

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): <u>1550508508</u>	Northing (UTM Y): <u>4150964</u>	Horizontal Accuracy: (EPE / FOM / PDOP) Meters <u>10</u>
Site 11	Easting (UTM X): <u>1550508339</u>	Northing (UTM Y): <u>4150947</u>	Horizontal Accuracy: (EPE / FOM / PDOP) Meters <u>10</u>

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>I-075</u>	<u>downstream T-1</u>	<u>I-076</u>	<u>upstream T-11</u>		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				

WBID # 1179

Site # 03

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

**Data Sheet B – Site Characterization (continued)**

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

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

Comments:

**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%.)

DRY

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

DRY

**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input type="checkbox"/> None	<input type="checkbox"/> Other: <u>2</u>
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other: <u>2</u>
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other: <u>2</u>
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input type="checkbox"/> None	<input type="checkbox"/> Other: <u>2</u>

\*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 # 1179

Site # 03

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

**Data Sheet B – Site Characterization (continued)**

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

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

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

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

Surveyor's Signature: Bob R. B... Date of Survey: 10-5-2007

Organization: ERC Position: Field Manager

# Field Data Sheets for Recreational Use Stream Surveys

T01 - I75 downstream  
T11 - I76 upstream

## Data Sheet C - Field Survey Results

Waterbody ID: 1179 Site #: 03

Estimated Channel Incision:      (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: 15 S 0508508 UTM Y: 4150964 +/- 10 (meters) 037

11 UTM X: 15 S 0508239 UTM Y: 4150947 +/- 10 (meters) 038

Average Stream Width: 0 (meters) Length of Survey Segment: 150 (meters)  
(To determine Length of Reach) (20x average stream width)

Field Staff: Rob Beaman and Matt Nelson

Dissolved Oxygen	
Date: <u>10-5-07</u>	Time: <u>17:10</u>
Dissolved Oxygen: <u>    </u> (mg/L)	
Dissolved Oxygen: <u>    </u> (% sat)	
Specific Cond: <u>    </u> (μS/cm)	
Water Temperature: <u>    </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																						
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
Right Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Feature Type <small>(riffle, run, or pool)</small>	dry																					

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: Rob Beaman Date: 10-5-07

**WBID# 1179 Starvey Creek**



**Site# 1 Photo ID# T01-71 Downstream**



**Site# 1 Photo ID# T11-72 Upstream**



**Site# 2 Photo ID# T01-73 Downstream**



**Site# 2 Photo ID# T11-74 Upstream**

**WBID# 1179 Starvey Creek**



**Site# 3 Photo ID# T01-75 Downstream**



**Site# 3 Photo ID# T11-76 Upstream**

Use Attainability Analysis

for

WBID 1179 Starvey Creek

Submitted by

SES, Inc.

To

Missouri Department of Natural Resources

Water Protection Program

Date Received: October 26, 2007

## Field Data Sheets for Recreation 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): Starvey Creek	
Missouri Water Body Identification (WBID) Number: 1179	
8 digit HUC code: 10290110	County: Dallas
Upstream Legal Description (from Table H): T32N R18W 15	
Downstream Legal Description (from Table H): T32N R18W 8	
Number of sites evaluated: 2	
List all site numbers, listed consequently upstream to downstream: 1,2	

**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): MODOT I-44 Rest Area MO 0056227
--

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

Name of Surveyor: Aaron Ball	Telephone Number: (913)307-0046
Organization/Employer: SES, Inc.	

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

Signed:                     Aaron Ball                     Date: 10/23/2007



WBID # 1179  
 Site # 1

**Field Data Sheets For Recreational Use Stream Surveys**

**Data Sheet B-Site Characterization**

Date & Time:	10/11/07	17:35	Site Location Description (e.g. road crossing):
Personnel:	Aaron Ball and Drew Dodson		C.R. Y-268
Current Weather Conditions:	clear	Facility Name:	MODOT I-44 Rest Area
Weather conditions for the past 10 days:	0.74 inches	Permit Number:	MO 0056227
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):	Northing (UTM Y):	Horizontal Accuracy: Meters
	0508498	4149482	6.3
Site 11	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy: Meters
	0508502	4149784	5.4

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
82	Upstream	83	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:**

<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:				

WBID # 1179  
 Site # 1

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

**Data Sheet B- Site Characterization (Continued)**

**Surrounding Conditions:**

<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/walkways
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep Slopes	<input type="checkbox"/> Other:
Comments:				

**Evidence of Human Use:**

<input checked="" type="checkbox"/> Roads	<input type="checkbox"/> Foot path/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:**

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

**Aquatic Vegetation:**

Rooted and floating aquatic vegetation.
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**Water Characteristics:**

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 type="checkbox"/> Fine sediments	<input checked="" 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:

WBID # 1179  
Site # 1

**Field Data Sheets for Recreational Use Stream Survey:**

**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.)

None

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

Surveyor's Signature: Aaron Ball Date of Survey: 10/11/2007

Organization: SES, Inc. Position: Field Team Leader

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Waterbody ID: <u>1179</u> Site #: <u>1</u>  Estimated Channel Incision: <u>2.0</u> (m) (height between low bank width and water)  GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) <b>01</b> UTM X: <u>0508498</u> UTM Y: <u>4149482</u> +/- <u>6.3</u> (meters) <b>11</b> UTM X: <u>0508502</u> UTM Y: <u>4149784</u> +/- <u>5.4</u> (meters)  Average Stream Width: <u>6</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Aaron Ball, Drew Dodson</u>	<b>Dissolved Oxygen</b>
	Date: <u>10/11/07</u> Time: <u>17:35</u>  Dissolved Oxygen: <u>3.3</u> (mg/L)  Dissolved Oxygen: _____ (% sat)  Specific Cond: _____ (µS/cm)  Water Temperature: <u>18.9</u> (°C)

#### Transect Cross-Section

		01		02		03		04		05		06		07		08		09		10		11	
Station		Distance (m)	Depth (m)																				
<b>Left Bank</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	0.1	0.10	0.3	0.05	0.1	0.15		0.00	0.5	0.10	0.5	0.20	0.5	0.05	0.9	0.50	0.8	0.20	0.2	0.05		0.00
	2	0.2	0.10	0.6	0.20	0.2	0.20		0.00	1.0	0.20	1.0	0.20	1.0	0.10	1.8	0.70	1.6	0.20	0.4	0.05		0.00
	3	0.3	0.10	0.9	0.20	0.3	0.30		0.00	1.5	0.25	1.5	0.15	1.5	0.10	2.7	0.90	2.4	0.20	0.6	0.05		0.00
	4	0.4	0.10	1.2	0.20	0.4	0.30		0.00	2.0	0.30	2.0	0.20	2.0	0.25	3.6	1.00	3.2	0.30	0.8	0.05		0.00
	5	0.5	0.10	1.5	0.15	0.5	0.40		0.00	2.5	0.40	2.5	0.10	2.5	0.25	4.5	1.00	4	0.50	1.0	0.10		0.00
	6	0.6	0.10	1.8	0.15	0.6	0.40		0.00	3.0	0.40	3.0	0.10	3.0	0.30	5.4	1.00	4.8	0.50	1.2	0.05		0.00
	7	0.7	0.10	2.1	0.10	0.7	0.35		0.00	3.5	0.30	3.5	0.10	3.5	0.30	6.3	1.00	5.6	0.40	1.4	0.05		0.00
	8	0.8	0.05	2.4	0.10	0.8	0.35		0.00	4.0	0.30	4.0	0.15	4.0	0.25	7.2	0.70	6.4	0.20	1.6	0.05		0.00
	9	0.9	0.05	2.7	0.05	0.9	0.30		0.00	4.5	0.30	4.5	0.15	4.5	0.15	8.1	0.50	7.2	0.10	1.8	0.05		0.00
<b>Right Bank</b>		1.0	0.00	3.0	0.00	1.0	0.00	N/A	0.00	5.0	0.00	5.0	0.00	5.0	0.00	9.0	0.00	8	0.00	2.0	0.00	N/A	0.00
<b>Feature Type</b>		pool		pool		pool		N/A		pool		N/A											

**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: Aaron Ball      Date: 10/11/07

WBID # 1179  
 Site # 2

**Field Data Sheets For Recreational Use Stream Surveys**

**Data Sheet B-Site Characterization**

Date & Time: 10/11/07 18:05	Site Location Description (e.g. road crossing):
Personnel: Aaron Ball, Drew Dodson	C.R. 671
Current Weather Conditions: Clear	Facility Name: MODOT I-44 Rest Area
Weather conditions for the past 10 days: .74 inches	Permit Number: MO 0056227
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):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0508720	4150970		7.2	
Site 11	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0508567	4150963		4.8	

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
84	Upstream	85	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:**

<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:				

WBID # 1179  
 Site # 2

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

**Data Sheet B- Site Characterization (Continued)**

**Surrounding Conditions:**

<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/walkways
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep Slopes	<input type="checkbox"/> Other:
Comments:				

**Evidence of Human Use:**

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot path/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 (N/A)				

**Substrate:**

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

**Aquatic Vegetation:**

N/A
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**Water Characteristics:**

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 type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other:
					Brown
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input checked="" 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:

WBID # 1179  
Site # 2

**Field Data Sheets for Recreational Use Stream Survey:**

**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.)

none

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

Surveyor's Signature: Aaron Ball Date of Survey: 10/11/2007

Organization: SES, Inc. Position: Field Team Leader

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Waterbody ID: <u>1179</u> Site #: <u>2</u>  Estimated Channel Incision: <u>2.0</u> (m) (height between low bank width and water)  GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) <b>01</b> UTM X: <u>0508720</u> UTM Y: <u>4150970</u> +/- <u>7.2</u> (meters) <b>11</b> UTM X: <u>0508567</u> UTM Y: <u>4150963</u> +/- <u>4.8</u> (meters)  Average Stream Width: <u>N/A</u> (meters)                      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)                      (20x average stream width)  Field Staff: <u>Aaron Ball, Drew Dodson</u>	<b>Dissolved Oxygen</b>  Date: <u>10/11/07</u> Time: <u>18:04</u>  Dissolved Oxygen: <u>N/A</u> (mg/L)  Dissolved Oxygen: _____ (% sat)  Specific Cond: _____ (µS/cm)  Water Temperature: <u>N/A</u> (°C)
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#### Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11		
		Distance (m)	Depth (m)																					
<b>Left Bank</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
2		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
3		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
4		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
5		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
6		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
7		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
8		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
9		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		
<b>Right Bank</b>	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	0.00	N/A	
<b>Feature Type</b> <small>(riffle, run, or pool)</small>	N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A	

**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: Aaron Ball                      Date: 10/11/07

**WBID# 1179**



**Site# 1 Photo ID# 82, Upstream**



**Site# 1 Photo ID# 83, Downstream**



**Site# 2 Photo ID# 84, Upstream**



**Site# 2 Photo ID# 85, Downstream**