



Missouri  
Department of  
Natural Resources

Use Attainability Analysis

for

WBID 0515 Lick Fork

Submitted by  
SES, Inc.

To  
Missouri Department of Natural Resources  
Water Protection Program

On  
May 28, 2008

**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): Lick Fork
Missouri Water Body Identification (WBID) Number: 515
8-digit HUC: 10280101
County(ies), Listed Upstream to Downstream: Caldwell, Daviess
Upstream Legal Description (from Table H): 58N 26W Sec 7
Downstream Legal Description (from Table H): 57N 27W Sec 31
Number of sites evaluated: 6
List all site numbers, <u>consecutively upstream to downstream</u> : 1, 2, 3, 4, 5, 6
<b>Include a Site Location Map(s).</b> The map must include all requirements detailed in the <i>Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol</i> (Section IV.D.8.a).

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

Facility Name(s) and Permit Number(s): Hamilton NE WWTF MO0022080
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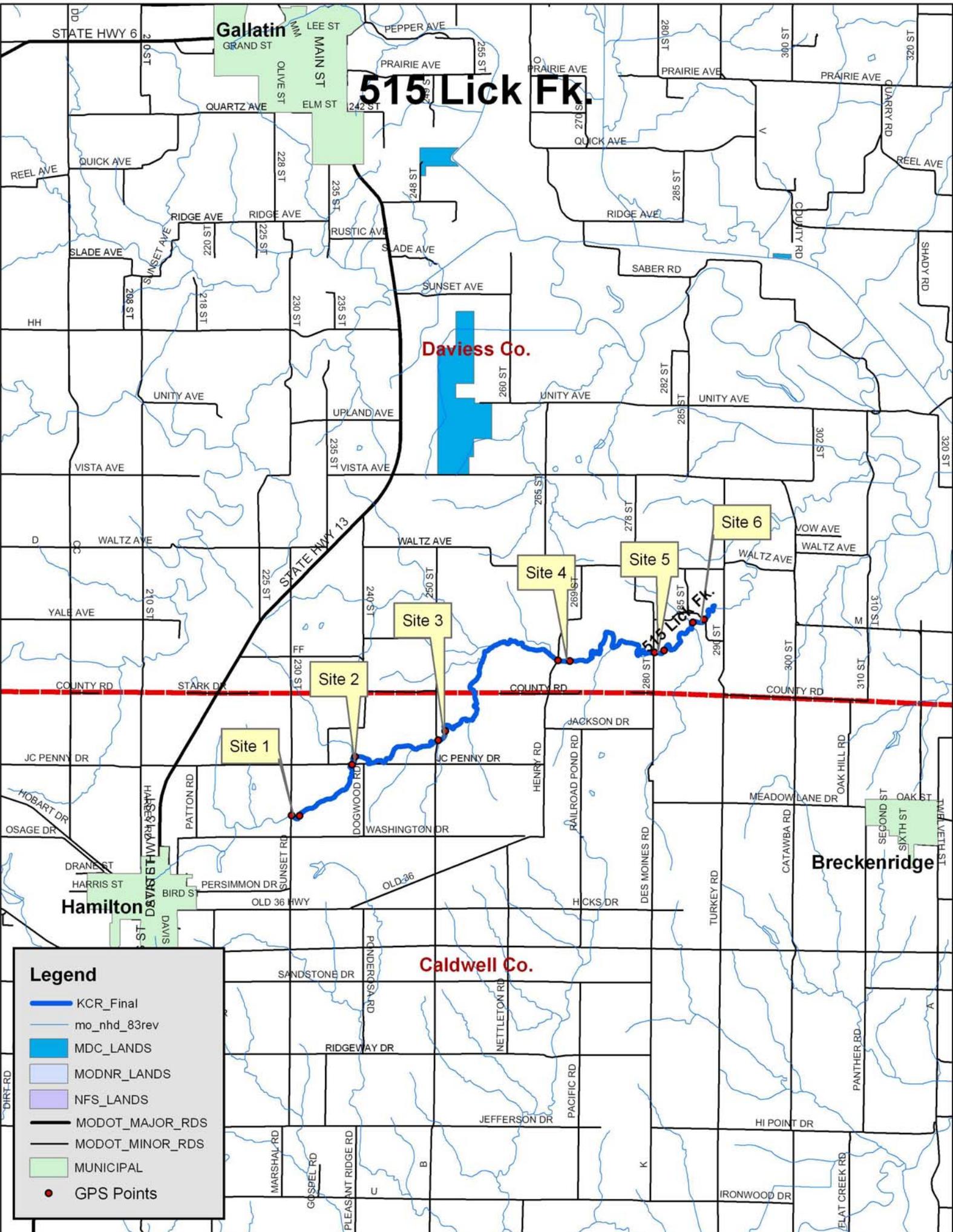
**III. UAA Surveyor** (please **PRINT** legibly)

Name of Surveyor: Aaron Ball	Telephone Number: 913.307.0046 Ext.14
Organization/Employer: SES, Inc.	

**Please verify that you have completed all sections of all data sheets, checked all applicable boxes, provided a map (that includes all requirements listed in the *Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol*) and that this form is complete.**

**Signed:** Aaron Ball **Date:** 4.23.08

# 515 Lick Fk.



Daviess Co.

Breckenridge

Caldwell Co.

**Legend**

- KCR\_Final
- mo\_nhd\_83rev
- MDC\_LANDS
- MODNR\_LANDS
- NFS\_LANDS
- MODOT\_MAJOR\_RDS
- MODOT\_MINOR\_RDS
- MUNICIPAL
- GPS Points

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

**Data Sheet B – Site Characterization** (Page 1 of 3)  
(must be completed for each site)

<b>Date &amp; Time:</b> 4.15.08 16:00	Location Description (e.g., road crossing):
<b>Stream Name:</b> Lick Fork	Sunset Road
Current Weather Conditions: clear	Facility Name(s): Hamilton NE WWTF
Weather Conditions for Past 10 days: 2.30 inches	Permit Number(s): MO 0022080
Official Drought Conditions at time of this survey (search DNR home page for “drought”): 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): 0417422	Northing (UTM Y): 4401721	Horizontal Accuracy: (EPE / FOM / PDOP) 8 Meters
Site 11	Easting (UTM X): 0417606	Northing (UTM Y): 4401721	Horizontal Accuracy: (EPE / FOM / PDOP) 4 Meters

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
36	downstream, T1	37	upstream, T11		
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 the 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.)				

Site #1

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

**Data Sheet B – Site Characterization** (Page 2 of 3)

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

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

**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
<input checked="" type="checkbox"/> None of the above	Comments / Other:			

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

15% Cobble	% Gravel	% Sand	% Silt	5% Mud/Clay	80% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

algae covers approximately 90% of substrate on transects 3-11.

**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 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 affect another use.

Site #1

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

**Data Sheet B – Site Characterization** (Page 3 of 3)

**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.**

Printed Names of Personnel Collecting Data: Gilisa Gould and Aaron Ball

Surveyor’s Signature: Aaron Ball

Date of Survey: 4.15.08

Organization: SES, Inc.

Position: Field Team Leader

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Lick Fork</u> Waterbody ID: <u>515</u> 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) <b>01</b> UTM X: <u>0417422</u> UTM Y: <u>4401721</u> +/- <u>8</u> (meters) <b>11</b> UTM X: <u>0417606</u> UTM Y: <u>4401721</u> +/- <u>4</u> (meters)  Average Stream Width: <u>7</u> (meters)                      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)                      (20x average stream width)  Field Staff: <u>Gilisa Gould and Aaron Ball</u>	<b>Dissolved Oxygen</b>  Date: <u>4.15.08</u> Time: <u>16:00</u>  Dissolved Oxygen: <u>18.1</u> (mg/L)  Dissolved Oxygen: _____ (% sat)  Specific Cond: _____ (µS/cm)  Water Temperature: <u>14</u> (°C)
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#### 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
	<b>1</b>	0.70	0.55	0.60	0.30	0.80	0.10	0.80	0.20	0.80	0.10	0.20	0.05	0.80	0.05	1.00	0.10	0.50	0.30	0.60	0.15	0.30	0.10
	<b>2</b>	1.40	0.95	1.20	0.45	1.60	0.15	1.60	0.30	1.60	0.10	0.40	0.05	1.60	0.05	2.00	0.10	1.00	0.30	1.20	0.10	0.60	0.10
	<b>3</b>	2.10	0.95	1.80	0.70	2.40	0.30	2.40	0.30	2.40	0.10	0.60	0.10	2.40	0.10	3.00	0.10	1.50	0.45	1.80	0.30	0.90	0.15
	<b>4</b>	2.80	0.95	2.40	0.70	3.20	0.40	3.20	0.30	3.20	0.15	0.80	0.10	3.20	0.05	4.00	0.10	2.00	0.45	2.40	0.50	1.20	0.15
	<b>5</b>	3.50	0.10	3.00	0.60	4.00	0.50	4.00	0.45	4.00	0.20	1.00	0.15	4.00	0.10	5.00	0.10	2.50	0.45	3.00	0.50	1.50	0.20
	<b>6</b>	4.20	0.75	3.60	0.50	4.80	0.60	4.80	0.40	4.80	0.20	1.20	0.15	4.80	0.10	6.00	0.10	3.00	0.45	3.60	0.50	1.80	0.20
	<b>7</b>	4.90	0.45	4.20	0.50	5.60	0.60	5.60	0.40	5.60	0.20	1.40	0.15	5.60	0.05	7.00	0.10	3.50	0.45	4.20	0.40	2.10	0.15
	<b>8</b>	5.60	0.30	4.80	0.20	6.40	0.60	6.40	0.40	6.40	0.20	1.60	0.10	6.40	0.05	8.00	0.10	4.00	0.40	4.80	0.30	2.40	0.15
	<b>9</b>	6.30	0.20	5.40	0.10	7.20	0.35	7.20	0.35	7.20	0.20	1.80	0.10	7.20	0.10	9.00	0.10	4.50	0.40	5.40	0.20	2.70	0.20
<b>Right Bank</b>		7.00	0.20	6.00	0.10	8.00	0.30	8.00	0.20	8.00	0.20	2.00	0.10	8.00	0.05	10.00	0.10	5.00	0.35	6.00	0.15	3.00	0.15
Feature Type		pool		pool		pool		pool		run		riffle		riffle		run		pool		pool		riffle	

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

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

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.1 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: \_\_\_\_\_ Date: 4.23.08

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

**Data Sheet B – Site Characterization** (Page 1 of 3)  
(must be completed for each site)

<b>Date &amp; Time:</b> 4.15.08 16:30	Location Description (e.g., road crossing): JC Penny Dr.
<b>Stream Name:</b> Lick Fork	
Current Weather Conditions: clear	Facility Name(s): Hamilton NE WWTF
Weather Conditions for Past 10 days: 2.30 inches	Permit Number(s): MO0022080
Official Drought Conditions at time of this survey (search DNR home page for “drought”): 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): 0418764	Northing (UTM Y): 4402854	Horizontal Accuracy: (EPE / FOM / PDOP)	5 Meters
Site 11	Easting (UTM X): 0418844	Northing (UTM Y): 4403027	Horizontal Accuracy: (EPE / FOM / PDOP)	6 Meters

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
38	downstream, T1	39	upstream, T11		
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 the time of survey.)

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

Site #2

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

**Data Sheet B – Site Characterization** (Page 2 of 3)

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

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

**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
<input checked="" type="checkbox"/> None of the above	Comments / Other:			

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

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

algae on 70% of substrate

**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 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 type="checkbox"/> Fine sediments	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input checked="" type="checkbox"/> Foam	<input type="checkbox"/> None	<input type="checkbox"/> Other:

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

Site #2

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

**Data Sheet B – Site Characterization** (Page 3 of 3)

**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.**

Printed Names of Personnel Collecting Data: Gilisa Gould and Aaron Ball

Surveyor’s Signature: Aaron Ball                      Date of Survey: 4.15.08

Organization: SES, Inc.                                      Position: Field Team Leader

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Lick Fork</u> Waterbody ID: <u>515</u> Site #: <u>2</u>  Estimated Channel Incision: <u>3.5</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>0418764</u> UTM Y: <u>4402854</u> +/- <u>5</u> (meters) <b>11</b> UTM X: <u>0418844</u> UTM Y: <u>4403027</u> +/- <u>6</u> (meters)  Average Stream Width: <u>7</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Gilisa Gould and Aaron Ball</u>	<b>Dissolved Oxygen</b>
	Date: <u>4.15.08</u> Time: <u>16:30</u>
	Dissolved Oxygen: <u>19.2</u> (mg/L)
	Dissolved Oxygen: _____ (% sat)
	Specific Cond: _____ (µS/cm)
	Water Temperature: <u>14.6</u> (°C)

#### Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)																				
<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	0.70	0.40	0.80	0.25	0.80	0.10	0.70	0.15	0.40	0.05	0.70	0.10	0.60	0.20	0.50	0.15	0.60	0.35	0.60	0.10	0.40	0.10
2	1.40	0.50	1.60	0.30	1.60	0.20	1.40	0.20	0.80	0.05	1.40	0.20	1.20	0.20	1.00	0.25	1.20	0.60	1.20	0.15	0.80	0.15
3	2.10	0.60	2.40	0.40	2.40	0.20	2.10	0.40	1.20	0.05	2.10	0.20	1.80	0.20	1.50	0.40	1.80	0.65	1.80	0.15	1.20	0.20
4	2.80	0.70	3.20	0.40	3.20	0.20	2.80	0.50	1.60	0.05	2.80	0.20	2.40	0.20	2.00	0.40	2.40	0.60	2.40	0.20	1.60	0.20
5	3.50	0.80	4.00	0.40	4.00	0.20	3.50	0.40	2.00	0.10	3.50	0.30	3.00	0.30	2.50	0.40	3.00	0.60	3.00	0.15	2.00	0.20
6	4.20	0.80	4.80	0.35	4.80	0.20	4.20	0.35	2.40	0.10	4.20	0.30	3.60	0.30	3.00	0.35	3.60	0.60	3.60	0.15	2.40	0.20
7	4.90	0.80	5.60	0.35	5.60	0.20	4.90	0.30	2.80	0.15	4.90	0.30	4.20	0.30	3.50	0.30	4.20	0.60	4.20	0.10	2.80	0.20
8	5.60	0.70	6.40	0.35	6.40	0.15	5.60	0.30	3.20	0.15	5.60	0.30	4.80	0.20	4.00	0.15	4.80	0.50	4.80	0.10	3.20	0.15
9	6.30	0.65	7.20	0.30	7.20	0.15	6.30	0.25	3.60	0.15	6.30	0.30	5.40	0.20	4.50	0.15	5.40	0.35	5.40	0.10	3.60	0.15
<b>Right Bank</b>	7.00	0.40	8.00	0.20	8.00	0.10	7.00	0.30	4.00	0.10	7.00	0.20	6.00	0.15	5.00	0.10	6.00	0.20	6.00	0.15	4.00	0.10
<b>Feature Type</b> <small>(riffle, run, or pool)</small>	pool		pool		run		pool		riffle		pool		run		pool		pool		riffle		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 0.1 meter unless depth is too deep to measure (then record as > 1)  
 All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: \_\_\_\_\_ Date: 4.23.08

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

**Data Sheet B – Site Characterization** (Page 1 of 3)  
(must be completed for each site)

<b>Date &amp; Time:</b> 4.15.08 16:58	Location Description (e.g., road crossing):
<b>Stream Name:</b> Lick Fork	NE Dale Oldfield Road
Current Weather Conditions: clear	Facility Name(s): Hamilton NE WWTF
Weather Conditions for Past 10 days: 2.30 inches	Permit Number(s): MO0022080
Official Drought Conditions at time of this survey (search DNR home page for “drought”): 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): 4420696	Northing (UTM Y): 4403406	Horizontal Accuracy: (EPE / FOM / PDOP) 7 Meters
Site 11	Easting (UTM X): 4420837	Northing (UTM Y): 4403603	Horizontal Accuracy: (EPE / FOM / PDOP) 8 Meters

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
40	downstream, T1	41	upstream, T11		
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 the 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.)				

Site #3

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

**Data Sheet B – Site Characterization** (Page 2 of 3)

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

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

**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
<input checked="" type="checkbox"/> None of the above	Comments / Other:			

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

80% Cobble	20% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

approx. 20% algae covering substrate
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**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input 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 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 affect another use.

Site #3

**Field Data Sheets for Recreational Use Stream Surveys****Data Sheet B – Site Characterization** (Page 3 of 3)**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.**

Printed Names of Personnel Collecting Data: Gilisa Gould and Aaron Ball

Surveyor's Signature: Aaron Ball                      Date of Survey: 4.15.08

Organization: SES, Inc.                                      Position: Field Team Leader

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Lick Fork</u> Waterbody ID: <u>515</u> Site #: <u>3</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) <b>01</b> UTM X: <u>4420696</u> UTM Y: <u>4403406</u> +/- <u>7</u> (meters) <b>11</b> UTM X: <u>4420837</u> UTM Y: <u>4403603</u> +/- <u>8</u> (meters)  Average Stream Width: <u>5</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Gilisa Gould and Aaron Ball</u>	<b>Dissolved Oxygen</b>  Date: <u>4.15.08</u> Time: <u>16:58</u>  Dissolved Oxygen: <u>16.1</u> (mg/L)  Dissolved Oxygen: _____ (% sat)  Specific Cond: _____ (µS/cm)  Water Temperature: <u>14</u> (°C)
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#### 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	
	<b>1</b>	0.60	0.10	0.60	0.05	0.60	0.05	0.70	0.15	0.50	0.05	0.60	0.05	0.70	0.10	0.70	0.30	1.00	0.10	0.80	0.05	0.80	0.15
	<b>2</b>	1.20	0.05	1.20	0.10	1.20	0.10	1.40	0.20	1.00	0.10	1.20	0.10	1.40	0.10	1.40	0.50	2.00	0.20	1.60	0.10	1.60	0.20
	<b>3</b>	1.80	0.10	1.80	0.10	1.80	0.10	2.10	0.20	1.50	0.15	1.80	0.10	2.10	0.20	2.10	0.60	3.00	0.35	2.40	0.10	2.40	0.20
	<b>4</b>	2.40	0.10	2.40	0.10	2.40	0.10	2.80	0.25	2.00	0.20	2.40	0.10	2.80	0.40	2.80	0.55	4.00	0.50	3.20	0.05	3.20	0.30
	<b>5</b>	3.00	0.10	3.00	0.20	3.00	0.15	3.50	0.20	2.50	0.25	3.00	0.10	3.50	0.60	3.50	0.50	5.00	0.60	4.00	0.10	4.00	0.40
	<b>6</b>	3.60	0.10	3.60	0.20	3.60	0.10	4.20	0.30	3.00	0.30	3.60	0.10	4.20	0.50	4.20	0.50	6.00	0.85	4.80	0.10	4.80	0.30
	<b>7</b>	4.20	0.10	4.20	0.20	4.20	0.10	4.90	0.20	3.50	0.30	4.20	0.10	4.90	0.50	4.90	0.50	7.00	0.90	5.60	0.15	5.60	0.20
	<b>8</b>	4.80	0.05	4.80	0.20	4.80	0.15	5.60	0.20	4.00	0.30	4.80	0.10	5.60	0.60	5.60	0.45	8.00	1.00	6.40	0.10	6.40	0.25
	<b>9</b>	5.40	0.15	5.40	0.10	5.40	0.15	6.30	0.20	4.50	0.20	5.40	0.20	6.30	0.35	6.30	0.30	9.00	0.85	7.20	0.10	7.20	0.20
<b>Right Bank</b>		6.00	0.15	6.00	0.10	6.00	0.20	7.00	0.15	5.00	0.15	6.00	0.20	7.00	0.25	7.00	0.20	10.00	0.80	8.00	0.05	8.00	0.15
<b>Feature Type</b>		riffle		riffle		riffle		run		run		riffle		run		run		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 0.1 meter unless depth is too deep to measure (then record as > 1)  
 All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: \_\_\_\_\_ Date: 4.23.08

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

**Data Sheet B – Site Characterization** (Page 1 of 3)  
(must be completed for each site)

<b>Date &amp; Time:</b> 4.15.08 17:20	Location Description (e.g., road crossing):
<b>Stream Name:</b> Lick Fork	Henry Road
Current Weather Conditions: clear	Facility Name(s): Hamilton NE WWTF
Weather Conditions for Past 10 days: 2.30 inches	Permit Number(s): MO0022080
Official Drought Conditions at time of this survey (search DNR home page for “drought”): 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): 0423350	Northing (UTM Y): 4405176	Horizontal Accuracy: (EPE / FOM / PDOP) 7 Meters
Site 11	Easting (UTM X): 0423609	Northing (UTM Y): 4405161	Horizontal Accuracy: (EPE / FOM / PDOP) 5 Meters

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
42	downstream, T1	43	upstream, T11		
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 the 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.)				

Site #4

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

**Data Sheet B – Site Characterization** (Page 2 of 3)

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

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

**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
<input checked="" type="checkbox"/> None of the above	Comments / Other:			

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

25% Cobble	% Gravel	55% Sand	10% Silt	10% Mud/Clay	% Bedrock
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**Aquatic Vegetation\*:** (Note amount of vegetation or algal growth at the assessment site.)

none in water, banks are grass and trees
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**Water Characteristics\*:** (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input 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 affect another use.

Site #4

**Field Data Sheets for Recreational Use Stream Surveys****Data Sheet B – Site Characterization** (Page 3 of 3)**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.**

Printed Names of Personnel Collecting Data: Gilisa Gould and Aaron Ball

Surveyor's Signature: Aaron Ball                      Date of Survey: 4.15.08

Organization: SES, Inc.                                      Position: Field Team Leader

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Lick Fork</u> Waterbody ID: <u>515</u> Site #: <u>4</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) <b>01</b> UTM X: <u>0423350</u> UTM Y: <u>4405176</u> +/- <u>7</u> (meters) <b>11</b> UTM X: <u>0423609</u> UTM Y: <u>4405161</u> +/- <u>5</u> (meters)  Average Stream Width: <u>7</u> (meters)      Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach)      (20x average stream width)  Field Staff: <u>Gilisa Gould and Aaron Ball</u>	<b>Dissolved Oxygen</b>
	Date: <u>4.15.08</u> Time: <u>17:20</u>
	Dissolved Oxygen: <u>15.8</u> (mg/L)
	Dissolved Oxygen: _____ (% sat)
	Specific Cond: _____ (µS/cm)
	Water Temperature: <u>12</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	
1		0.60	0.20	1.00	0.10	0.70	0.20	0.50	0.50	0.60	0.05	0.80	0.10	1.20	0.30	1.20	0.30	0.90	0.20	0.60	0.20	1.00	0.30
2		1.20	0.25	2.00	0.25	1.40	0.30	1.00	0.30	1.20	0.10	1.60	0.05	2.40	0.40	2.40	0.40	1.80	0.20	1.20	0.45	2.00	0.45
3		1.80	0.25	3.00	0.20	2.10	0.30	1.50	0.30	1.80	0.10	2.40	0.10	3.60	0.30	3.60	0.15	2.70	0.20	1.80	1.00	3.00	0.40
4		2.40	0.20	4.00	0.30	2.80	0.35	2.00	0.40	2.40	0.20	3.20	0.20	4.80	0.25	4.80	0.20	3.60	0.30	2.40	1.00	4.00	0.40
5		3.00	0.20	5.00	0.30	3.50	0.40	2.50	0.50	3.00	0.30	4.00	0.40	6.00	0.10	6.00	0.20	4.50	0.45	3.00	1.00	5.00	0.40
6		3.60	0.15	6.00	0.30	4.20	0.40	3.00	0.50	3.60	0.30	4.80	0.60	7.20	0.20	7.20	0.20	5.40	0.70	3.60	1.00	6.00	0.40
7		4.20	0.20	7.00	0.40	4.90	0.40	3.50	0.40	4.20	0.50	5.60	0.60	8.40	0.30	8.40	0.10	6.30	0.85	4.20	1.00	7.00	0.55
8		4.80	0.15	8.00	0.50	5.60	0.30	4.00	0.50	4.80	0.40	6.40	0.50	9.60	0.30	9.60	0.15	7.20	0.90	4.80	0.90	8.00	0.50
9		5.40	0.10	9.00	0.60	6.30	0.20	4.50	0.40	5.40	0.40	7.20	0.40	10.80	0.35	10.80	0.10	8.10	0.70	5.40	0.90	9.00	0.50
<b>Right Bank</b>		6.00	0.10	10.00	0.55	7.00	0.20	5.00	0.35	6.00	0.30	8.00	0.30	12.00	0.40	12.00	0.15	9.00	0.35	6.00	0.80	10.00	0.45
<b>Feature Type</b> <small>(riffle, run, or pool)</small>		rifle		pool		run		pool		run		pool		run		run		run		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 0.1 meter unless depth is too deep to measure (then record as > 1)  
 All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: \_\_\_\_\_ Date: 4.23.08

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

**Data Sheet B – Site Characterization** (Page 1 of 3)

(must be completed for each site)

<b>Date &amp; Time:</b> 4.15.08 17:50	Location Description (e.g., road crossing):
<b>Stream Name:</b> Lick Fork	280th Street
Current Weather Conditions: clear	Facility Name(s): Hamilton NE WWTF
Weather Conditions for Past 10 days: 2.30 inches	Permit Number(s): MO0022080
Official Drought Conditions at time of this survey (search DNR home page for “drought”): 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): 0425486	Northing (UTM Y): 4405355	Horizontal Accuracy: (EPE / FOM / PDOP) 6 Meters
Site 11	Easting (UTM X): 0425700	Northing (UTM Y): 4405395	Horizontal Accuracy: (EPE / FOM / PDOP) 5 Meters

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
44	downstream, T1	45	upstream, T11		
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 the 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.)				

Site #5

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

**Data Sheet B – Site Characterization** (Page 2 of 3)

**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 checked="" type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other:
Comments: grassland				

**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
<input checked="" type="checkbox"/> None of the above	Comments / Other:			

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

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

none in water

**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 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 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 affect another use.

Site #5

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

**Data Sheet B – Site Characterization** (Page 3 of 3)

**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.**

Printed Names of Personnel Collecting Data: Gilisa Gould and Aaron Ball

Surveyor’s Signature: Aaron Ball      Date of Survey: 4.15.08

Organization: SES, Inc.                      Position: field team leader

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Lick Fork</u> Waterbody ID: <u>515</u> Site #: <u>5</u> Estimated Channel Incision: <u>4.5</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>0425486</u> UTM Y: <u>4405355</u> +/- <u>6</u> (meters) <b>11</b> UTM X: <u>0425700</u> UTM Y: <u>4405395</u> +/- <u>5</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>Gilisa Gould and Aaron Ball</u>	<b>Dissolved Oxygen</b> Date: <u>4.15.08</u> Time: <u>17:50</u> Dissolved Oxygen: <u>12.7</u> (mg/L) Dissolved Oxygen: _____ (% sat) Specific Cond: _____ (µS/cm) Water Temperature: <u>13.4</u> (°C)
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#### 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	0.60	0.30	0.70	0.50	0.50	0.20	0.60	0.35	0.70	0.20	0.60	0.30	0.50	0.10	0.40	0.10	0.50	0.30	0.40	0.10	0.70	0.20
	2	1.20	0.30	1.40	0.30	1.00	0.50	1.20	0.60	1.40	0.15	1.20	0.25	1.00	0.10	0.80	0.20	1.00	0.40	0.80	0.30	1.40	0.20
	3	1.80	0.30	2.10	0.50	1.50	0.45	1.80	0.50	2.10	0.20	1.80	0.35	1.50	0.10	1.20	0.25	1.50	0.30	1.20	0.35	2.10	0.30
	4	2.40	0.40	2.80	0.65	2.00	0.35	2.40	0.45	2.80	0.20	2.40	0.40	2.00	0.15	1.60	0.35	2.00	0.30	1.60	0.45	2.80	0.30
	5	3.00	0.45	3.50	0.65	2.50	0.30	3.00	0.30	3.50	0.30	3.00	0.35	2.50	0.30	2.00	0.40	2.50	0.40	2.00	0.55	3.50	0.30
	6	3.60	0.40	4.20	0.65	3.00	0.25	3.60	0.30	4.20	0.30	3.60	0.30	3.00	0.40	2.40	0.45	3.00	0.30	2.40	0.50	4.20	0.40
	7	4.20	0.50	4.90	0.65	3.50	0.20	4.20	0.20	4.90	0.30	4.20	0.30	3.50	0.45	2.80	0.50	3.50	0.35	2.80	0.40	4.90	0.55
	8	4.80	0.50	5.60	0.50	4.00	0.20	4.80	0.20	5.60	0.30	4.80	0.20	4.00	0.45	3.20	0.40	4.00	0.40	3.20	0.25	5.60	0.50
	9	5.40	0.50	6.30	0.45	4.50	0.20	5.40	0.10	6.30	0.30	5.40	0.15	4.50	0.40	3.60	0.30	4.50	0.40	3.60	0.20	6.30	0.25
<b>Right Bank</b>		6.00	0.20	7.00	0.30	5.00	0.20	6.00	0.10	7.00	0.25	6.00	0.10	5.00	0.30	4.00	0.20	5.00	0.35	4.00	0.20	7.00	0.25
<b>Feature Type</b>		run		run		run		run		run		run		run		run		run		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 0.1 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: \_\_\_\_\_ Date: 4.23.08

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

**Data Sheet B – Site Characterization** (Page 1 of 3)

(must be completed for each site)

<b>Date &amp; Time:</b> 4.15.08 18:30	Location Description (e.g., road crossing):
<b>Stream Name:</b> Lick Fork	Yale Avenue
Current Weather Conditions: clear	Facility Name(s): Hamilton NE WWTF
Weather Conditions for Past 10 days: 2.30 inches	Permit Number(s): MO0022080
Official Drought Conditions at time of this survey (search DNR home page for “drought”): 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): 0426344	Northing (UTM Y): 4406022	Horizontal Accuracy: (EPE / FOM / PDOP)	5 Meters
Site 11	Easting (UTM X): 0426593	Northing (UTM Y): 4406084	Horizontal Accuracy: (EPE / FOM / PDOP)	2 Meters

**Photos:**

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
46	upstream, T11	47	downstream, T1		
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 the 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.)				

Site #6

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

**Data Sheet B – Site Characterization** (Page 2 of 3)

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

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

**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
<input checked="" type="checkbox"/> None of the above	Comments / Other:			

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

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

none in water. banks are grassed and treed
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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 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 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 affect another use.

Site #6

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

**Data Sheet B – Site Characterization** (Page 3 of 3)

**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.**

Printed Names of Personnel Collecting Data: Aaron Ball and Gilisa Gould

Surveyor’s Signature: Aaron Ball                      Date of Survey: 4.15.08

Organization: SES, Inc.                                      Position: Field Team Leader

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet C - Field Survey Results

Stream Name: <u>Lick Fork</u> Waterbody ID: <u>515</u> Site #: <u>6</u> Estimated Channel Incision: <u>6</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>0426344</u> UTM Y: <u>4406022</u> +/- <u>5</u> (meters) <b>11</b> UTM X: <u>0426593</u> UTM Y: <u>4406084</u> +/- <u>2</u> (meters) Average Stream Width: <u>8</u> (meters)      Length of Survey Segment: <u>160</u> (meters) (To determine Length of Reach)      (20x average stream width) Field Staff: <u>Gilisa Gould and Aaron Ball</u>	<b>Dissolved Oxygen</b>
	Date: <u>4.15.08</u> Time: <u>18:30</u>
	Dissolved Oxygen: <u>13.7</u> (mg/L)
	Dissolved Oxygen: _____ (% sat)
	Specific Cond: _____ (µS/cm)
	Water Temperature: <u>13.1</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	0.70	0.90	0.70	0.25	0.60	1.00	0.80	0.80	0.80	0.30	0.80	1.00	1.00	0.40	0.90	0.30	0.80	0.35	0.70	0.25	0.80	0.20
	2	1.40	0.90	1.40	0.30	1.20	1.00	1.60	0.80	1.60	0.55	1.60	1.00	2.00	0.75	1.80	0.35	1.60	0.70	1.40	0.50	1.60	0.20
	3	2.10	1.00	2.10	0.25	1.80	1.00	2.40	0.85	2.40	0.70	2.40	1.00	3.00	0.90	2.70	0.45	2.40	1.00	2.10	0.70	2.40	0.30
	4	2.80	1.00	2.80	0.30	2.40	1.00	3.20	1.00	3.20	0.80	3.20	1.00	4.00	0.90	3.60	0.45	3.20	1.00	2.80	0.85	3.20	0.30
	5	3.50	1.00	3.50	0.30	3.00	1.00	4.00	1.00	4.00	0.75	4.00	1.00	5.00	1.00	4.50	0.45	4.00	1.00	3.50	1.00	4.00	0.40
	6	4.20	1.00	4.20	0.40	3.60	1.00	4.80	1.00	4.80	0.70	4.80	1.00	6.00	0.95	5.40	0.45	4.80	1.00	4.20	1.00	4.80	0.55
	7	4.90	1.00	4.90	0.50	4.20	1.00	5.60	1.00	5.60	0.60	5.60	1.00	7.00	1.00	6.30	0.50	5.60	1.00	4.90	0.95	5.60	0.65
	8	5.60	1.00	5.60	0.55	4.80	1.00	6.40	1.00	6.40	0.60	6.40	1.00	8.00	1.00	7.20	0.70	6.40	1.00	5.60	0.80	6.40	0.70
	9	6.30	1.00	6.30	0.50	5.40	1.00	7.20	0.90	7.20	0.60	7.20	1.00	9.00	1.00	8.10	0.85	7.20	0.65	6.30	0.80	7.20	0.50
<b>Right Bank</b>		7.00	1.00	7.00	0.40	6.00	1.00	8.00	0.45	8.00	0.30	8.00	0.60	10.00	1.00	9.00	0.80	8.00	0.40	7.00	0.70	8.00	0.50
<b>Feature Type</b>		run		run		pool		run		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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All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: \_\_\_\_\_ Date: 4.23.08

**WBID# 0515 Lick Fork**



**Site# 1 Photo ID# 36 Downstream, T01**



**Site# 1 Photo ID# 37, Upstream, T11**



**Site#2 Photo ID# 39, Upstream, T11**



**Site# 2 Photo ID# 38 Downstream, T01**

Camera malfunction has miss dated some photos...All photos are from 4/18/2008

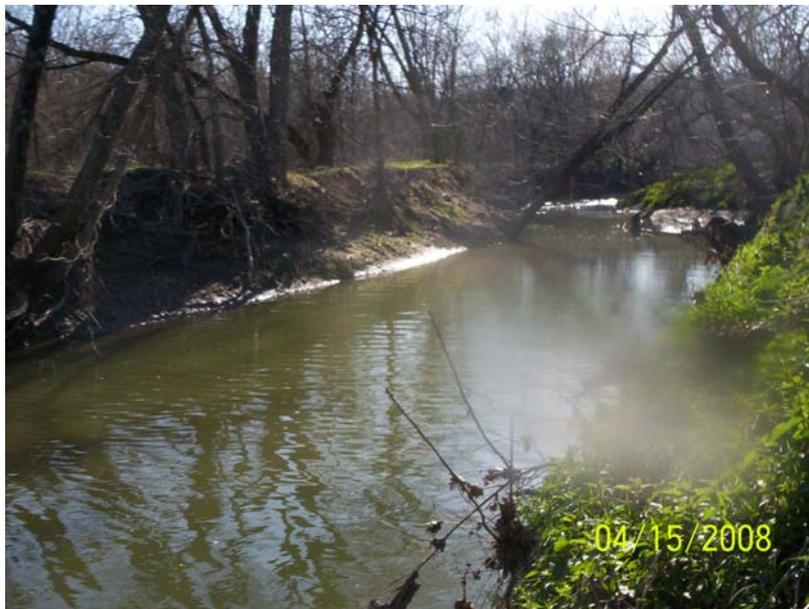
**WBID# 0515 Lick Fork**



**Site# 3 Photo ID# 40 Downstream, T01**



**Site# 3 Photo ID# 41, Upstream, T11**



**Site#4 Photo ID# 43, Upstream, T11**



**Site# 4 Photo ID# 42 Downstream, T01**

Camera malfunction has miss dated some photos...All photos are from 4/18/2008

**WBID# 0515 Lick Fork**



**Site#5 Photo ID# 44, Downstream, T11**



**Site#5 Photo ID# 45, Upstream, T11**



**Site#6 Photo ID# 46, Upstream, T11**



**Site# 6 Photo ID# 47 Downstream, T01**

Camera malfunction has miss dated some photos...All photos are from 4/18/2008