Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 3440 East Fork Sni-a-Bar Creek

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): East Fork Sni-a-bar Creek
Missouri Water Body Identification (WBID) Number: 3440
8-digit HUC: 10300101
County(ies), Listed Upstream to Downstream: Lafayette
Upstream Legal Description (from Table H): 48N 28W section29
Downstream Legal Description (from Table H): 49N 28W section32
Number of sites evaluated: 5
List all site numbers, consecutively upstream to downstream: 1, 2, 3, 4, 5
Include a Site Location Map(s). The map must include all requirements detailed in the *Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol* (Section IV.D.8.a).

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

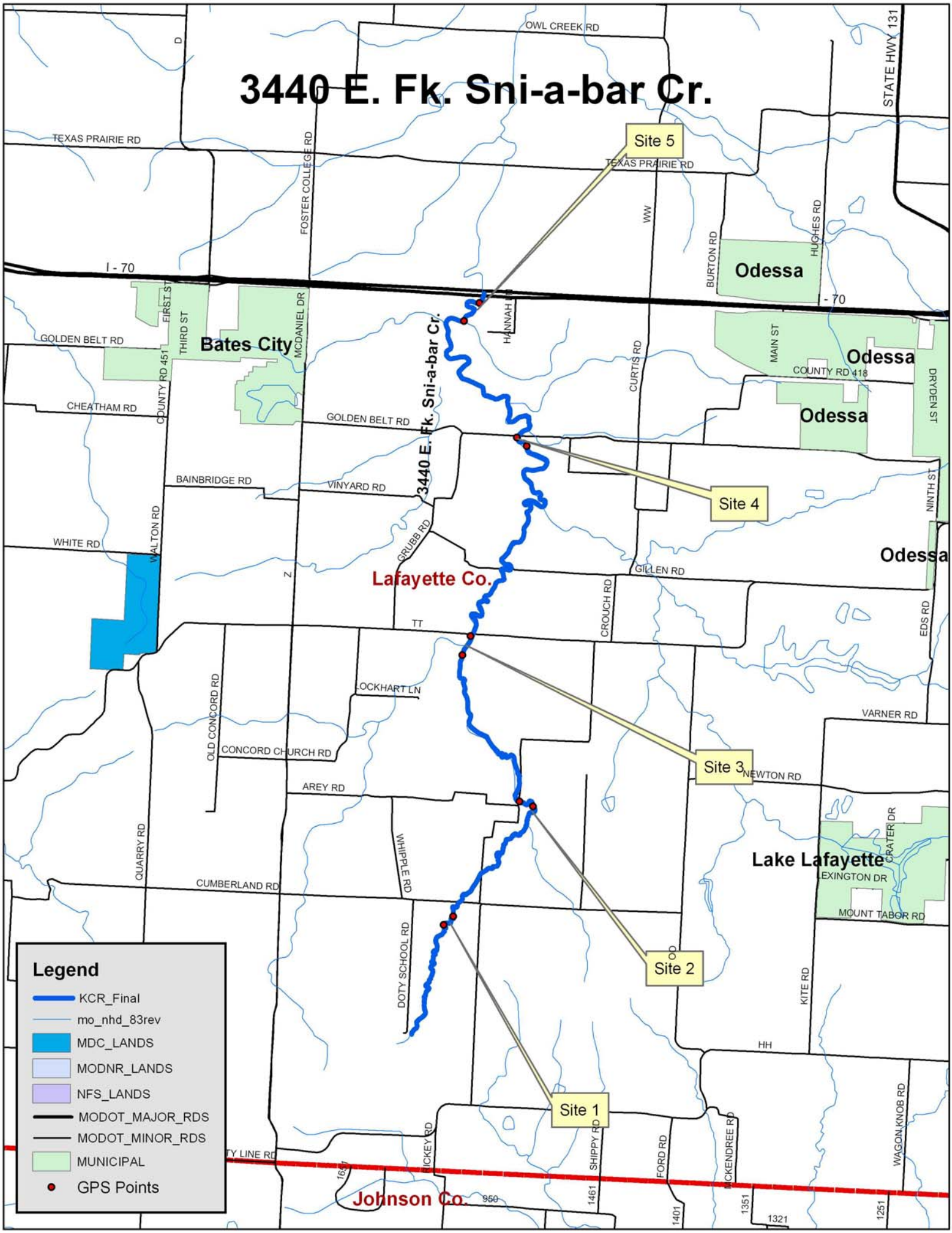
Facility Name(s) and Permit Number(s): Bates City WWTF MO0128716

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 requirments listed in the *Missouri Recreational Use Attainability Analysies: Water Body Survey and Assessment Protocol*) and that this form is complete.

Signed: Aaron Ball Date: 5.09.08


3440 E. Fk. Sni-a-bar Cr.
Site 5
Site 4
Site 3
Site 2
Site 1
3440 E. Fk. Sni-a-bar Cr.
Odessa
Odessa
Odessa
Odessa
Bates City
Lafayette Co.
Lake Lafayette
Johnson Co.
I - 70
- 70
STATE HWY 131
OWL CREEK RD
TEXAS PRAIRIE RD
TEXAS PRAIRIE RD
FOSTER COLLEGE RD
WW
BURTON RD
HUGHES RD
GOLDEN BELT RD
FIRST ST
THIRD ST
COUNTY RD 451
MCDANIEL DR
HANNAH
CURTIS RD
MAIN ST
COUNTY RD 418
DRYDEN ST
CHEATHAM RD
GOLDEN BELT RD
BAINBRIDGE RD
VINYARD RD
NINTH ST
WALTON RD
WHITE RD
GRUBB RD
Z
GILLEN RD
CROUCH RD
EDS RD
TT
LOCKHART LN
OLD CONCORD RD
VARNER RD
CONCORD CHURCH RD
NEWTON RD
AREY RD
CRATER DR
QUARRY RD
WHIPPLE RD
LEXINGTON DR
CUMBERLAND RD
MOUNT TABOR RD
DOTY SCHOOL RD
OO
KITE RD
HH
TY LINE RD
HICKEY RD
SHIPPY RD
FORD RD
MCKENDREE RD
WAGON KNOB RD
1651
1461
1401
1351
1321
1251
950
Legend
KCR_Final
mo_nhd_83rev
MDC_LANDS
MODNR_LANDS
NFS_LANDS
MODOT_MAJOR_RDS
MODOT_MINOR_RDS
MUNICIPAL
GPS Points

WBID #3440

Site #1

Field Data Sheets for Recreational Use Stream Surveys

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

(must be completed for each site)

Date & Time: 4.28.08 10:30	Location Description (e.g., road crossing):
Stream Name: East Fork Sni-a-bar Creek	Cumberland Road
Current Weather Conditions: clear	Facility Name(s): Bates City WWTF
Weather Conditions for Past 10 days: 3.37 inches	Permit Number(s): MO0128716
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 0410305	Northing (UTM Y): 4310823	Horizontal Accuracy: (EPE / FOM / PDOP)	4 Meters
Site 11	Easting (UTM X): 0410420	Northing (UTM Y): 4310929	Horizontal Accuracy: (EPE / FOM / PDOP)	3 Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3	upstream, T11	4	fence	5	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.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☑ None of the above	☐ 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.)

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.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☑ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☐ Steep slopes	☐ Other:

Comments:
fence doesn't cross creek, it's just along it, but the bank is eroding away that now the fence is inside the banks of the creek.

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

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
☑ None of the above	Comments / Other:			

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

% Cobble	20% Gravel	20% Sand	% Silt	20% Mud/Clay	40% Bedrock

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

none in water; banks are vegetated

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
Color:	☑ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☑ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☑ None	☐ 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.

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.)

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: 04.28.08

Organization: SES, Inc. Position: field team leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: E. Fk. Sni-a-bar Cr. Waterbody ID: 3440 Site #: 1

Estimated Channel Incision: 1 (m) (height between low bank width and water)

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

01 UTM X: 0410305 UTM Y: 4310823 +/- 4 (meters)

11 UTM X: 0410420 UTM Y: 4310929 +/- 3 (meters)

Average Stream Width: 3 (meters) Length of Survey Segment: 150 (meters)

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

Field Staff: Gilisa Gould and Aaron Ball

Dissolved Oxygen

Date: 4.28.08 Time: 10:30

Dissolved Oxygen: 11.3 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 11.1 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.20	0.05	0.30	0.01	0.40	0.20	0.20	0.10	0.30	0.15	0.20	0.10	0.20	0.10	0.20	0.05	0.50	0.10	0.40	0.20	0.20	0.10
2	0.40	0.05	0.60	0.10	0.80	0.30	0.40	0.10	0.60	0.20	0.40	0.10	0.40	0.10	0.40	0.05	1.00	0.15	0.80	0.20	0.40	0.15
3	0.60	0.05	0.90	0.05	1.20	0.30	0.60	0.10	0.90	0.30	0.60	0.15	0.60	0.20	0.60	0.05	1.50	0.25	1.20	0.20	0.60	0.20
4	0.80	0.05	1.20	0.10	1.60	0.20	0.80	0.10	1.20	0.35	0.80	0.10	0.80	0.20	0.80	0.01	2.00	0.25	1.60	0.30	0.80	0.25
5	1.00	0.05	1.50	0.10	2.00	0.15	1.00	0.10	1.50	0.35	1.00	0.10	1.00	0.25	1.00	0.01	2.50	0.30	2.00	0.30	1.00	0.20
6	1.20	0.05	1.80	0.00	2.40	0.15	1.20	0.10	1.80	0.30	1.20	0.00	1.20	0.20	1.20	0.10	3.00	0.40	2.40	0.25	1.20	0.20
7	1.40	0.05	2.10	0.10	2.80	0.15	1.40	0.15	2.10	0.30	1.40	0.00	1.40	0.10	1.40	0.00	3.50	0.30	2.80	0.20	1.40	0.20
8	1.60	0.05	2.40	0.10	3.20	0.15	1.60	0.15	2.40	0.20	1.60	0.05	1.60	0.10	1.60	0.01	4.00	0.30	3.20	0.10	1.60	0.20
9	1.80	0.05	2.70	0.10	3.60	0.15	1.80	0.10	2.70	0.15	1.80	0.05	1.80	0.05	1.80	0.01	4.50	0.15	3.60	0.15	1.80	0.20
Right Bank	2.00	0.00	3.00	0.00	4.00	0.00	2.00	0.00	3.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00	5.00	0.00	4.00	0.00	2.00	0.00
Feature Type (riffle, run, or pool)	run		riffle		run		riffle		pool		riffle		run		riffle		pool		run		pool	

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

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

Depth measurements taken at 10 equally spaced locations along transect (determine bv 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: Aaron Ball Date: 5.09.08

WBID #3440

Site #2

Field Data Sheets for Recreational Use Stream Surveys

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

(must be completed for each site)

Date & Time: 4.28.08 11:25	Location Description (e.g., road crossing): Dade School Road
Stream Name: East Fork Sni-a-bar Creek	
Current Weather Conditions: clear	Facility Name(s): Bates City WWTF
Weather Conditions for Past 10 days: 3.37 inches	Permit Number(s): MO0128716
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 0411383	Northing (UTM Y): 4312253	Horizontal Accuracy: (EPE / FOM / PDOP)	5 Meters
Site 11	Easting (UTM X): 0411220	Northing (UTM Y): 4312318	Horizontal Accuracy: (EPE / FOM / PDOP)	6 Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
6	upstream, T11	7	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.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☑ None of the above	☐ 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.)

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.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☑ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☐ Steep slopes	☐ Other:
Comments:				

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

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
☑ None of the above	Comments / Other:			

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

% Cobble	40% Gravel	40% Sand	% Silt	10% Mud/Clay	10% Bedrock

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

none in water; banks are vegetated

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
Color:	☐ Clear	☑ Green	☐ Gray	☑ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☑ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☑ None	☐ 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.

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.)

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: 4.28.08

Organization: SES, Inc. Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: East Fork Sni-a-bar Creek Waterbody ID: 3440 Site #: 2

Estimated Channel Incision: 3 (m) (height between low bank width and water)

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

01 UTM X: 0411383 UTM Y: 4312253 +/- 5 (meters)

11 UTM X: 0411220 UTM Y: 4312318 +/- 6 (meters)

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

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

Field Staff: Gilisa Gould and Aaron Ball

Dissolved Oxygen

Date: 4.28.08 Time: 11:25

Dissolved Oxygen: 9.6 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 12.7 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.60	0.10	0.50	0.05	0.70	0.20	0.50	0.20	0.20	0.10	0.70	0.25	0.40	0.05	0.40	0.10	0.60	0.10	0.20	0.10	0.70	0.20
2	1.20	0.15	1.00	0.10	1.40	0.30	1.00	0.20	0.40	0.15	1.40	0.40	0.80	0.15	0.80	0.10	1.20	0.10	0.40	0.15	1.40	0.25
3	1.80	0.25	1.50	0.20	2.10	0.30	1.50	0.35	0.60	0.15	2.10	0.55	1.20	0.30	1.20	0.15	1.80	0.30	0.60	0.10	2.10	0.20
4	2.40	0.35	2.00	0.25	2.80	0.30	2.00	0.50	0.80	0.15	2.80	0.50	1.60	0.30	1.60	0.20	2.40	0.40	0.80	0.10	2.80	0.15
5	3.00	0.50	2.50	0.35	3.50	0.30	2.50	0.40	1.00	0.10	3.50	0.45	2.00	0.15	2.00	0.20	3.00	0.40	1.00	0.10	3.50	0.15
6	3.60	0.65	3.00	0.40	4.20	0.25	3.00	0.30	1.20	0.10	4.20	0.50	2.40	0.25	2.40	0.20	3.60	0.40	1.20	0.10	4.20	0.15
7	4.20	0.50	3.50	0.40	4.90	0.30	3.50	0.20	1.40	0.10	4.90	0.50	2.80	0.20	2.80	0.25	4.20	0.40	1.40	0.10	4.90	0.20
8	4.80	0.30	4.00	0.30	5.60	0.30	4.00	0.15	1.60	0.10	5.60	0.30	3.20	0.20	3.20	0.20	4.80	0.30	1.60	0.10	5.60	0.15
9	5.40	0.20	4.50	0.15	6.30	0.20	4.50	0.10	1.80	0.10	6.30	0.20	3.60	0.10	3.60	0.20	5.40	0.10	1.80	0.10	6.30	0.10
Right Bank	6.00	0.00	5.00	0.00	7.00	0.00	5.00	0.00	2.00	0.00	7.00	0.00	4.00	0.00	4.00	0.00	6.00	0.00	2.00	0.00	7.00	0.00
Feature Type (riffle, run, or pool)	pool		pool		run		run		riffle		pool		run		run		run		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 bv 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: Aaron Ball Date: 5.09.08

WBID #3440

Site #3

Field Data Sheets for Recreational Use Stream Surveys

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

(must be completed for each site)

Date & Time: 4.28.09 12:30	Location Description (e.g., road crossing):
Stream Name: East Fork Sni-a-bar Creek	TT Highway
Current Weather Conditions: clear	Facility Name(s): Bates City WWTF
Weather Conditions for Past 10 days: 3.37 inches	Permit Number(s): MO0128716
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 0410531	Northing (UTM Y): 4314068	Horizontal Accuracy: (EPE / FOM / PDOP)	6 Meters
Site 11	Easting (UTM X): 0410634	Northing (UTM Y): 4314307	Horizontal Accuracy: (EPE / FOM / PDOP)	6 Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
8	upstream, T11	9	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.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☑ None of the above	☐ 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.)

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.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☑ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☐ Steep slopes	☐ Other:
Comments:				

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

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
☑ None of the above	Comments / Other:			

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

% Cobble	100% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock

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

none in the water; banks are vegetated

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
Color:	☑ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☐ Fine sediments	☑ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☑ Foam	☐ None	☐ 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.

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.)

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: 4.28.08

Organization: SES, Inc. Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: East Fork Sni-a-bar Creek Waterbody ID: 3440 Site #: 3

Estimated Channel Incision: 4 (m) (height between low bank width and water)

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

01 UTM X: 0410531 UTM Y: 4314068 +/- 6 (meters)

11 UTM X: 0410634 UTM Y: 4314307 +/- 6 (meters)

Average Stream Width: 6 (meters)
(To determne Length of Reach)

Length of Survey Segment: 150 (meters)
(20x average stream width)

Field Staff: Gilisa Gould and Aaron Ball

Dissolved Oxygen

Date: 4.28.09 Time: 12:30

Dissolved Oxygen: 10.9 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 13.4 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.70	0.15	0.50	0.20	0.70	0.10	0.70	0.20	0.70	0.15	0.40	0.10	0.30	0.05	0.60	0.40	0.50	0.20	0.50	0.10	0.40	0.15
2	1.40	0.15	1.00	0.20	1.40	0.10	1.40	0.25	1.40	0.45	0.80	0.10	0.60	0.20	1.20	0.40	1.00	0.20	1.00	0.20	0.80	0.15
3	2.10	0.15	1.50	0.25	2.10	0.10	2.10	0.35	2.10	0.80	1.20	0.10	0.90	0.15	1.80	0.40	1.50	0.25	1.50	0.20	1.20	0.10
4	2.80	0.10	2.00	0.25	2.80	0.20	2.80	0.40	2.80	1.00	1.60	0.10	1.20	0.10	2.40	0.40	2.00	0.20	2.00	0.20	1.60	0.05
5	3.50	0.10	2.50	0.25	3.50	0.30	3.50	0.55	3.50	1.00	2.00	0.05	1.50	0.10	3.00	0.35	2.50	0.25	2.50	0.20	2.00	0.10
6	4.20	0.10	3.00	0.25	4.20	0.35	4.20	0.55	4.20	0.95	2.40	0.05	1.80	0.10	3.60	0.20	3.00	0.20	3.00	0.20	2.40	0.10
7	4.90	0.10	3.50	0.15	4.90	0.40	4.90	0.50	4.90	0.60	2.80	0.05	2.10	0.05	4.20	0.10	3.50	0.20	3.50	0.10	2.80	0.10
8	5.60	0.10	4.00	0.10	5.60	0.40	5.60	0.50	5.60	0.45	3.20	0.01	2.40	0.01	4.80	0.10	4.00	0.20	4.00	0.10	3.20	0.20
9	6.30	0.20	4.50	0.10	6.30	0.20	6.30	0.25	6.30	0.20	3.60	0.01	2.70	0.01	5.40	0.05	4.50	0.10	4.50	0.05	3.60	0.20
Right Bank	7.00	0.00	5.00	0.00	7.00	0.00	7.00	0.00	7.00	0.00	4.00	0.00	3.00	0.00	6.00	0.00	5.00	0.00	5.00	0.00	4.00	0.00
Feature Type (riffle, run, or pool)	riffle		run		pool		pool		pool		run		riffle		pool		run		run		riffle	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine bv 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: Aaron Ball Date: 5.09.08

WBID #3440

Site #4

Field Data Sheets for Recreational Use Stream Surveys

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

(must be completed for each site)

Date & Time: 4.28.09 13:00	Location Description (e.g., road crossing): Goldenbelt Road
Stream Name: East Fork Sni-a-bar Creek	
Current Weather Conditions: clear	Facility Name(s): Bates City WWTF
Weather Conditions for Past 10 days: 3.37 inches	Permit Number(s): MO0128716
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 0411304	Northing (UTM Y): 4316578	Horizontal Accuracy: (EPE / FOM / PDOP)	7 Meters
Site 11	Easting (UTM X): 0411192	Northing (UTM Y): 4316687	Horizontal Accuracy: (EPE / FOM / PDOP)	5 Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
10	upstream, T1	11	downstream, 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.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☑ None of the above	☐ 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.)

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.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☑ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☐ Steep slopes	☐ Other:
Comments:				

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

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
☑ None of the above	Comments / Other:			

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

% Cobble	% Gravel	30% Sand	% Silt	70% Mud/Clay	% Bedrock

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

none in water; banks are vegetated

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
Color:	☐ Clear	☑ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☑ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☑ None	☐ 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.

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.)

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: 4.28.08

Organization: SES, Inc. Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: East Fork Sni-a-bar Creek Waterbody ID: 3440 Site #: 4

Estimated Channel Incision: 4 (m) (height between low bank width and water)

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

01 UTM X: 0411304 UTM Y: 4316578 +/- 7 (meters)

11 UTM X: 0411192 UTM Y: 4316687 +/- 5 (meters)

Average Stream Width: 5 (meters)
(To determne Length of Reach)

Length of Survey Segment: 150 (meters)
(20x average stream width)

Field Staff: Gilisa Gould and Aaron Ball

Dissolved Oxygen

Date: 4.28.08 Time: 13:00

Dissolved Oxygen: 11.3 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 13.3 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.50	0.25	0.60	0.35	0.70	0.35	0.70	0.20	0.50	0.30	0.50	0.20	0.60	0.20	0.70	0.20	0.40	0.25	0.60	0.30	0.60	0.10
2	1.00	0.40	1.20	0.60	1.40	0.45	1.40	0.40	1.00	0.40	1.00	0.30	1.20	0.35	1.40	0.30	0.80	0.35	1.20	0.50	1.20	0.20
3	1.50	0.55	1.80	0.60	2.10	0.70	2.10	0.60	1.50	0.50	1.50	0.50	1.80	0.45	2.10	0.75	1.20	0.55	1.80	0.90	1.80	0.40
4	2.00	0.50	2.40	0.80	2.80	1.00	2.80	0.70	2.00	0.70	2.00	0.80	2.40	0.50	2.80	0.85	1.60	0.50	2.40	0.75	2.40	0.60
5	2.50	0.50	3.00	0.70	3.50	1.00	3.50	0.70	2.50	0.70	2.50	0.80	3.00	0.60	3.50	0.85	2.00	0.45	3.00	0.60	3.00	0.50
6	3.00	0.65	3.60	0.60	4.20	1.00	4.20	0.70	3.00	0.65	3.00	0.60	3.60	0.70	4.20	0.85	2.40	0.30	3.60	0.50	3.60	0.20
7	3.50	0.60	4.20	0.45	4.90	1.00	4.90	0.70	3.50	0.60	3.50	0.40	4.20	0.80	4.90	0.70	2.80	0.20	4.20	0.45	4.20	0.10
8	4.00	0.45	4.80	0.40	5.60	0.60	5.60	0.55	4.00	0.45	4.00	0.30	4.80	0.60	5.60	0.45	3.20	0.20	4.80	0.40	4.80	0.10
9	4.50	0.20	5.40	0.15	6.30	0.10	6.30	0.35	4.50	0.30	4.50	0.20	5.40	0.30	6.30	0.20	3.60	0.10	5.40	0.20	5.40	0.10
Right Bank	5.00	0.00	6.00	0.00	7.00	0.00	7.00	0.00	5.00	0.00	5.00	0.00	6.00	0.00	7.00	0.00	4.00	0.00	6.00	0.00	6.00	0.00
Feature Type (riffle, run, or pool)	pool		pool		pool		run		run		pool		pool		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 bv 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: Aaron Ball Date: 5.09.08

WBID #3440

Site #5

Field Data Sheets for Recreational Use Stream Surveys

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

(must be completed for each site)

Date & Time: 4.28.08 13:30	Location Description (e.g., road crossing): Cumberland Road
Stream Name: East Fork Sni-a-bar Creek	
Current Weather Conditions: clear	Facility Name(s): Bates City WWTF
Weather Conditions for Past 10 days: 3.37 inches	Permit Number(s): MO0128716
Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 0410549	Northing (UTM Y): 4318081	Horizontal Accuracy: (EPE / FOM / PDOP)	7 Meters
Site 11	Easting (UTM X): 0410727	Northing (UTM Y): 4318311	Horizontal Accuracy: (EPE / FOM / PDOP)	4 Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
12	upstream, T11	13	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.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☑ None of the above	☐ 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.)

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.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☑ Urban areas	☑ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☐ Steep slopes	☑ Other:

Comments:
Highway 70
Railroad

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

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
☑ None of the above	Comments / Other:			

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

% Cobble	% Gravel	30% Sand	% Silt	70% Mud/Clay	% Bedrock

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

none in water; banks are vegetated

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
Color:	☐ Clear	☑ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☐ Fine sediments	☑ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☑ Foam	☐ None	☐ 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.

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.)

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: 4.28.08

Organization: SES, Inc. Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: East Fork Sni-a-bar Creek Waterbody ID: 3440 Site #: 5

Estimated Channel Incision: 5 (m) (height between low bank width and water)

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

01 UTM X: 0410549 UTM Y: 4318081 +/- 7 (meters)

11 UTM X: 0410727 UTM Y: 4318311 +/- 4 (meters)

Average Stream Width: 7 (meters)
(To determne Length of Reach)

Length of Survey Segment: 150 (meters)
(20x average stream width)

Field Staff: Gilisa Gould and Aaron Ball

Dissolved Oxygen

Date: 4.28.08 Time: 13:30

Dissolved Oxygen: 8.9 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 13 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.90	0.45	0.90	0.30	0.80	0.30	0.60	0.40	0.70	0.20	0.50	0.20	0.50	0.25	0.40	0.10	0.50	0.30	0.40	0.55	0.70	0.70
2	1.80	0.95	1.80	0.65	1.60	0.60	1.20	1.00	1.40	0.60	1.00	0.40	1.00	0.70	0.80	0.40	1.00	0.70	0.80	0.60	1.40	0.90
3	2.70	1.00	2.70	0.70	2.40	0.80	1.80	1.00	2.10	0.90	1.50	0.80	1.50	0.95	1.20	0.25	1.50	0.90	1.20	0.80	2.10	1.00
4	3.60	1.00	3.60	0.90	3.20	0.90	2.40	0.95	2.80	1.00	2.00	0.95	2.00	1.00	1.60	0.20	2.00	1.00	1.60	1.00	2.80	1.00
5	4.50	1.00	4.50	1.00	4.00	0.90	3.00	0.70	3.50	1.00	2.50	1.00	2.50	1.00	2.00	0.25	2.50	1.00	2.00	1.00	3.50	1.00
6	5.40	1.00	5.40	1.00	4.80	0.75	3.60	0.90	4.20	1.00	3.00	0.85	3.00	1.00	2.40	0.45	3.00	1.00	2.40	1.00	4.20	1.00
7	6.30	0.90	6.30	0.85	5.60	0.60	4.20	0.90	4.90	0.75	3.50	0.50	3.50	0.70	2.80	0.45	3.50	1.00	2.80	0.70	4.90	0.85
8	7.20	0.75	7.20	0.70	6.40	0.30	4.80	0.70	5.60	0.60	4.00	0.35	4.00	0.30	3.20	0.40	4.00	0.90	3.20	0.60	5.60	0.70
9	8.10	0.60	8.10	0.50	7.20	0.10	5.40	0.40	6.30	0.55	4.50	0.10	4.50	0.10	3.60	0.30	4.50	0.40	3.60	0.60	6.30	0.40
Right Bank	9.00	0.00	9.00	0.00	8.00	0.00	6.00	0.00	7.00	0.00	5.00	0.00	5.00	0.00	4.00	0.00	5.00	0.00	4.00	0.00	7.00	0.00
Feature Type (riffle, run, or pool)	pool		pool		run		run		run		run		pool		riffle		pool		run		pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine bv 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: Aaron Ball Date: 5.09.08

WBID# 3440 East Fork Sni-A-Bar Creek

Site# 1 Photo ID# 5, Downstream, T1

Site# 1 Photo ID# 3, Upstream, T11

Site# 1 Photo ID# 4, Fence crosses

Site# 2 Photo ID# 6, Upstream, T11

WBID# 3440 East Fork Sni-A-Bar Creek

Site# 2 Photo ID# 7, Downstream, T1

Site# 3 Photo ID# 8, Upstream, T11

Site# 3 Photo ID# 9, Downstream, T1

Site# 4 Photo ID# 10, Upstream, T11

WBID# 3440 East Fork Sni-A-Bar Creek

Site# 4 Photo ID# 11, Downstream, T1

Site# 5 Photo ID# 12, Upstream, T11

Site# 5 Photo ID# 13, Downstream, T1