



Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 0765 Salt Fork

Submitted by

MEC Water Resources

To

Missouri Department of Natural Resources

Water Protection Program

On

October 17, 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):	Salt Fk.
Missouri Water Body Identification (WBID) Number:	0765
8-digit HUC:	10300102
County(ies), Listed Upstream to Downstream:	Howard,
Upstream Legal Description (from Table H):	2, 51N, 13W
Downstream Legal Description (from Table H):	Mouth
Number of sites evaluated:	4
List all site numbers, <u>consecutively</u> upstream to downstream:	
Site 01: CRD 134 crossing	Site 03: CRD 118 crossing
Site 02: 50 m downstream of site 01	Site 04: Hwy H crossing
Include a Site Location Map(s). 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):
Higbee WWTF
MO 0093505

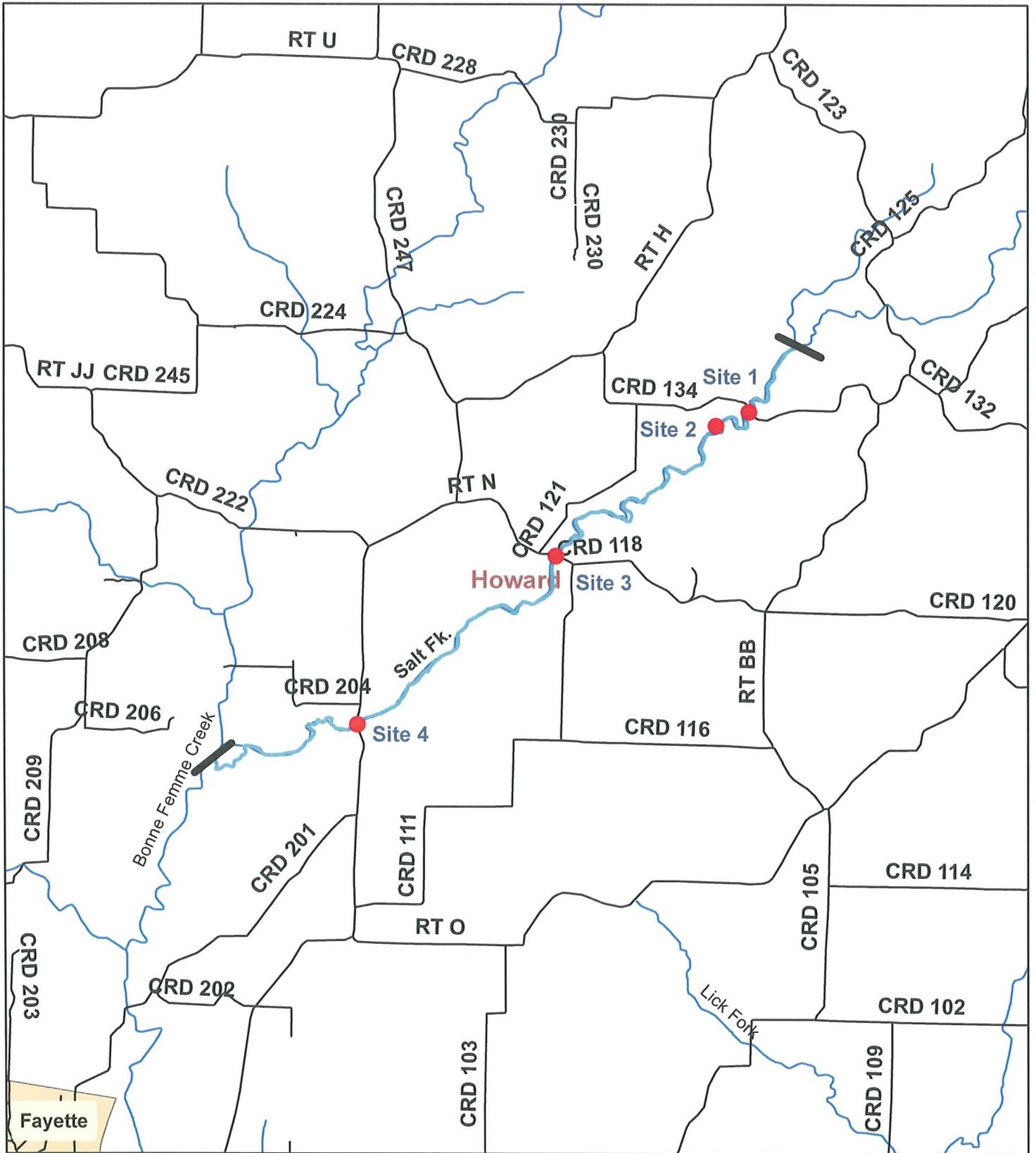
III. UAA Surveyor (please **PRINT** legibly)

Name of Surveyor: Renee Martin	Telephone Number: 573-443-4100
Organization/Employer: MEC Water Resources / AE Solutions	

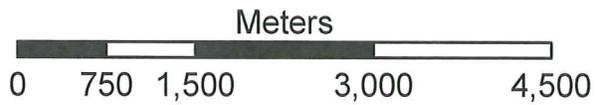
Please verify that you have completed all sections of all data sheets, checked all applicable boxes, provided a map (that includes all requirements listed in the *Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol*) and that this form is complete.

Signed: Renee Martin Date: 10/13/08

SRW 10-15-08



**Salt Fork
WBID 0765
Howard County**



WBID # 0265

Site # 01

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: <u>9/11/08</u> <u>14:22</u>	Location Description (e.g., road crossing):
Stream Name: <u>Salt Fk</u>	<u>CRD 134 Crossing</u>
Current Weather Conditions: <u>light rain, overcast</u>	Facility Name(s): <u>Highlee WWTF</u>
Weather Conditions for Past 10 days: <u>3.59" of rain</u>	Permit Number(s): <u>MO 0093505</u>
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): <u>0535984</u>	Northing (UTM Y): <u>4342427</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>17</u> Meters <u>ft</u>
Site 11	Easting (UTM X): <u>0535913</u>	Northing (UTM Y): <u>4342292</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>16</u> Meters <u>ft</u>

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>56</u>	<u>upstream</u>	<u>57</u>	<u>downstream</u>		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at 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 Data Sheet D- Recreational Use Interview when conducting interviews.)				
<u>N/A SRW</u>				

Stream Name & WBID # Salt Fork # 0765

Date of Survey 9/11/08

Site # 01

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 checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments:				

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

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

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

— % Cobble	<u>25</u> % Gravel	<u>75</u> % Sand	— % Silt	— % Mud/Clay	— % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

Benthic algae - sparse
 Filamentous algae - sparse - Transect 11 only

Water Characteristics*: (Mark all that apply.)

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

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

Stream Name & WBID # Salt FK #0765

Date of Survey 9/11/08

Site # 01

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)
			N/A		
			SRW		

Comments: (Please record any additional comments here.)

N/A SRW

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

Printed Names of Personnel Collecting Data: Tiffanie Hamilton, Jennifer Hrabik

Surveyor's Signature: Tiffanie A. Hamilton Date of Survey: 9/11/08

Organization: AE Solutions Position: Field Technician

SRW 10-15-08

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: <u> Salt Fork </u> Waterbody ID: <u> 0765 </u> Site #: <u> 0765_01 </u> Estimated Channel Incision: <u> 0.20 </u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u> 535984 </u> UTM Y: <u> 4342427 </u> +/- <u> 17 </u> (feet) 11 UTM X: <u> 535913 </u> UTM Y: <u> 4342292 </u> +/- <u> 16 </u> (feet) Average Stream Width: <u> 5.2 </u> (meters) Length of Survey Segment: <u> 150 </u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u> JRH, TAH </u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u> 9/11/2008 </u> Time: <u> 14:22 </u> Dissolved Oxygen: <u> 4.98 </u> (mg/L) Dissolved Oxygen: <u> 54.6 </u> (% sat) Specific Cond: <u> 377 </u> (µS/cm) Water Temperature: <u> 19.8 </u> (°C)
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Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
Left Bank		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	0.78	0.25	0.68	0.51	0.45	0.07	0.47	0.31	0.33	0.12	0.48	0.25	0.27	0.19	0.46	0.18	0.56	0.29	0.24	0.43	0.99	0.11
	2	1.56	0.42	1.36	0.40	0.90	0.10	0.94	0.20	0.66	0.16	0.96	0.23	0.54	0.20	0.92	0.20	1.12	0.35	0.48	0.43	1.98	0.14
	3	2.34	0.54	2.04	0.39	1.35	0.09	1.41	0.16	0.99	0.18	1.44	0.50	0.81	0.18	1.38	0.15	1.68	0.64	0.72	0.39	2.97	0.23
	4	3.12	0.49	2.72	0.31	1.80	0.13	1.88	0.14	1.32	0.21	1.92	0.74	1.08	0.16	1.84	0.14	2.24	>1.00	0.96	0.33	3.96	0.05
	5	3.90	0.24	3.40	0.28	2.25	0.16	2.35	0.14	1.65	0.22	2.40	0.98	1.35	0.22	2.30	0.12	2.80	>1.00	1.20	0.30	4.95	0.10
	6	4.68	0.20	4.08	0.19	2.70	0.13	2.82	0.22	1.98	0.16	2.88	>1.00	1.62	0.17	2.76	0.11	3.36	>1.00	1.44	0.29	5.94	0.00
	7	5.46	0.19	4.76	0.19	3.15	0.04	3.29	0.21	2.31	0.09	3.36	>1.00	1.89	0.06	3.22	0.09	3.92	>1.00	1.68	0.24	6.93	0.00
	8	6.24	0.50	5.44	0.20	3.60	0.07	3.76	0.17	2.64	0.09	3.84	0.92	2.16	0.02	3.68	0.04	4.48	>1.00	1.92	0.18	7.92	0.00
	9	7.02	0.53	6.12	0.26	4.05	0.01	4.23	0.10	2.97	0.02	4.32	0.83	2.43	0.01	4.14	0.01	5.04	>1.00	2.16	0.10	8.91	0.00
Right Bank		7.80	0.00	6.80	0.00	4.50	0.00	4.70	0.00	3.30	0.00	4.80	0.00	2.70	0.00	4.60	0.00	5.60	0.54	2.40	0.00	9.90	0.00
Feature Type		Pool		Run		Riffle		Riffle		Run		Pool		Run		Run		Pool		Run		Run	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
 GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
 Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
 Mark dry depth measurements as 0; record actual measurements to 0.1 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: 9/11/2008

WBID # 0765
 Site # 02

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: <u>9/11/08</u> <u>14:40</u>	Location Description (e.g., road crossing):
Stream Name: <u>Salt Fork</u>	<u>50m downstream of site 01</u>
Current Weather Conditions: <u>cloudy, overcast</u>	Facility Name(s): <u>Higbee WWTF</u>
Weather Conditions for Past 10 days: <u>3.59" rain</u>	Permit Number(s): <u>MO 0093505</u>
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): <u>0535909</u>	Northing (UTM Y): <u>4342264</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>18</u> Meters <u>ft</u>
Site 11	Easting (UTM X): <u>0535744</u>	Northing (UTM Y): <u>4342343</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>15</u> Meters <u>ft</u>

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>58</u>	<u>upstream</u>	<u>59</u>	<u>downstream</u>		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at 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 Data Sheet D- Recreational Use Interview when conducting interviews.) <p style="text-align: center;"><u>N/A SRW</u></p>				

Stream Name & WBID # Salt Fork # 0265

Date of Survey 9/11/08

Site # 02

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 checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments: <p style="text-align: center;">N/A saw</p>				

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

<input checked="" 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 type="checkbox"/> None of the above	Comments / Other: <p style="text-align: center;">N/A saw</p>			

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

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

<u>Willow-sparse</u> <u>Benthic algae-sparse</u>

Water Characteristics*: (Mark all that apply.)

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

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

Stream Name & WBID # Salt Fork #0765

Date of Survey 9/11/08

Site # 02

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)

N/A SRW

Comments: (Please record any additional comments here.)

N/A SRW

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

Printed Names of Personnel Collecting Data: Tiffanie Hamilton, Jennifer Hrabik

Surveyor's Signature: Tiffanie Hamilton Date of Survey: 9/11/08

Organization: AE Solutions Position: Field Technician

SRW 60-15-08

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: <u> Salt Fork </u> Waterbody ID: <u> 0765 </u> Site #: <u> 0765_02 </u> Estimated Channel Incision: <u> 0.20 </u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u> 535909 </u> UTM Y: <u> 4342264 </u> +/- <u> 18 </u> (feet) 11 UTM X: <u> 535744 </u> UTM Y: <u> 4342343 </u> +/- <u> 15 </u> (feet) Average Stream Width: <u> 4.8 </u> (meters) Length of Survey Segment: <u> 150 </u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u> JRH, TAH </u>	Dissolved Oxygen Date: <u> 9/11/2008 </u> Time: <u> 14:40 </u> Dissolved Oxygen: <u> 7.84 </u> (mg/L) Dissolved Oxygen: <u> 85.2 </u> (% sat) Specific Cond: <u> 249 </u> (µS/cm) Water Temperature: <u> 19.4 </u> (°C)
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Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
Left Bank		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	0.45	0.21	0.37	0.15	0.41	0.02	0.63	0.24	0.42	0.29	0.47	0.05	0.59	0.05	0.44	0.10	0.48	0.19	0.43	0.25	0.61	0.25
	2	0.90	0.16	0.74	0.06	0.82	0.04	1.26	0.16	0.84	0.06	0.94	0.10	1.18	0.05	0.88	0.11	0.96	0.16	0.86	0.21	1.22	0.44
	3	1.35	0.16	1.11	0.17	1.23	0.06	1.89	0.10	1.26	0.06	1.41	0.14	1.77	0.01	1.32	0.11	1.44	0.12	1.29	0.16	1.83	0.60
	4	1.80	0.18	1.48	0.19	1.64	0.17	2.52	0.04	1.68	0.09	1.88	0.15	2.36	0.05	1.76	0.16	1.92	0.07	1.72	0.11	2.44	0.60
	5	2.25	0.14	1.85	0.15	2.05	0.17	3.15	0.04	2.10	0.05	2.35	0.16	2.95	0.05	2.20	0.15	2.40	0.09	2.15	0.06	3.05	0.51
	6	2.70	0.12	2.22	0.16	2.46	0.19	3.78	0.02	2.52	0.10	2.82	0.12	3.54	0.10	2.64	0.11	2.88	0.10	2.58	0.08	3.66	0.34
	7	3.15	0.06	2.59	0.14	2.87	0.17	4.41	0.02	2.94	0.12	3.29	0.10	4.13	0.24	3.08	0.06	3.36	0.12	3.01	0.04	4.27	0.41
	8	3.60	0.04	2.96	0.07	3.28	0.19	5.04	0.00	3.36	0.10	3.76	0.14	4.72	0.31	3.52	0.06	3.84	0.18	3.44	0.16	4.88	0.38
	9	4.05	0.03	3.33	0.03	3.69	0.11	5.67	0.07	3.78	0.04	4.23	0.17	5.31	0.21	3.96	0.06	4.32	0.16	3.87	0.29	5.49	0.06
Right Bank		4.50	0.00	3.75	0.00	4.10	0.00	6.30	0.00	4.20	0.00	4.70	0.00	5.90	0.00	4.40	0.00	4.80	0.00	4.30	0.00	6.10	0.00
Feature Type <small>(riffle, run, or pool)</small>		Run		Run		Run		Riffle		Run		Run		Riffle		Run		Run		Run		Run	Pool

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
 GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
 Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
 Mark dry depth measurements as 0; record actual measurements to 0.1 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: 9/11/2008

WBID # 0765
 Site # 03

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: <u>9/11/08</u> <u>13:54</u>	Location Description (e.g., road crossing):
Stream Name: <u>Salt Fork</u>	<u>CRD 118 crossing</u>
Current Weather Conditions: <u>cloudy, overcast</u>	Facility Name(s): <u>Higbee WWTF</u>
Weather Conditions for Past 10 days: <u>3.59" rain</u>	Permit Number(s): <u>MO 0093205</u>
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): <u>0533616</u>	Northing (UTM Y): <u>4340665</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>16</u> Meters <u>fx</u>
Site 11	Easting (UTM X): <u>0533589</u>	Northing (UTM Y): <u>4340495</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>18</u> Meters <u>fx</u>

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>54</u>	<u>upstream</u>	<u>55</u>	<u>downstream</u>		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at 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 Data Sheet D- Recreational Use Interview when conducting interviews.)				
<u>N/A SRW</u>				

Stream Name & WBID #

Salt Fk #0765

Date of Survey

9/11/08

Site #

03

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 checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments: <i>private property</i>				

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

<input checked="" 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 type="checkbox"/> None of the above	Comments / Other: <i>N/A SRW</i>			

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

<i>5</i> % Cobble	<i>35</i> % Gravel	<i>60</i> % Sand	<i>—</i> % Silt	<i>—</i> % Mud/Clay	<i>—</i> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

<i>Benthic algae</i>

Water Characteristics*: (Mark all that apply.)

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

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

Stream Name & WBID # Salt Fork #0765

Date of Survey 9/11/08

Site # 03

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)
			N/A		

Comments: (Please record any additional comments here.)

N/A SRW

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

Printed Names of Personnel Collecting Data: Tiffany Hamilton, Jennifer Hrabik

Surveyor's Signature: Tiffany A. Hamilton Date of Survey: 9/11/08
Field Technician

Organization: AE Solutions Position: Field Technician

SRW 10-15-08

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: <u> Salt Fork </u> Waterbody ID: <u> 0765 </u> Site #: <u> 0765_03 </u> Estimated Channel Incision: <u> 0.20 </u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u> 533616 </u> UTM Y: <u> 4340665 </u> +/- <u> 16 </u> (feet) 11 UTM X: <u> 533589 </u> UTM Y: <u> 4340495 </u> +/- <u> 18 </u> (feet) Average Stream Width: <u> 5.0 </u> (meters) Length of Survey Segment: <u> 150 </u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u> JRH, TAH </u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u> 9/11/2008 </u> Time: <u> 13:54 </u> Dissolved Oxygen: <u> 7.12 </u> (mg/L) Dissolved Oxygen: <u> 76.4 </u> (% sat) Specific Cond: <u> 353 </u> (µS/cm) Water Temperature: <u> 19.2 </u> (°C)
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Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
Left Bank		0	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	0.41	0.10	0.42	0.19	0.70	0.25	0.35	0.74	0.57	0.33	0.47	0.06	0.48	0.21	0.64	0.18	0.31	0.12	0.51	0.11	0.58	0.04
	2	0.82	0.18	0.84	0.20	1.40	0.15	0.70	0.85	1.14	0.24	0.94	0.12	0.96	0.26	1.28	0.12	0.62	0.14	1.02	0.15	1.16	0.05
	3	1.23	0.18	1.26	0.26	2.10	0.14	1.05	0.79	1.71	0.15	1.41	0.17	1.44	0.20	1.92	0.12	0.93	0.21	1.53	0.15	1.74	0.09
	4	1.64	0.33	1.68	0.26	2.80	0.18	1.40	0.70	2.28	0.13	1.88	0.16	1.92	0.18	2.56	0.11	1.24	0.24	2.04	0.16	2.32	0.14
	5	2.05	0.50	2.10	0.30	3.50	0.19	1.75	0.48	2.85	0.14	2.35	0.18	2.40	0.20	3.20	0.11	1.55	0.20	2.55	0.16	2.90	0.25
	6	2.46	0.56	2.52	0.25	4.20	0.15	2.10	0.14	3.42	0.11	2.82	0.23	2.88	0.17	3.84	0.10	1.86	0.17	3.06	0.18	3.48	0.29
	7	2.87	0.53	2.94	0.17	4.90	0.16	2.45	0.10	3.99	0.04	3.29	0.26	3.36	0.19	4.48	0.17	2.17	0.17	3.57	0.18	4.06	0.24
	8	3.28	0.43	3.36	0.10	5.60	0.21	2.80	0.05	4.56	0.06	3.76	0.27	3.84	0.24	5.12	0.06	2.48	0.17	4.08	0.14	4.64	0.38
	9	3.69	0.18	3.78	0.05	6.30	0.26	3.15	0.02	5.13	0.04	4.23	0.28	4.32	0.26	5.76	0.07	2.79	0.11	4.59	0.10	5.22	0.41
Right Bank		4.10	0.00	4.20	0.00	7.00	0.00	3.50	0.00	5.75	0.00	4.70	0.00	4.80	0.00	6.40	0.00	3.10	0.00	5.15	0.00	5.80	0.00
Feature Type		Run	Run	Run	Run	Run	Run	Riffle	Run	Run	Run	Run	Run	Riffle	Run	Run	Run	Run	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 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: 9/11/2008

WBID # 0765

Site # 04

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: <u>9/11/08</u> <u>1310</u>	Location Description (e.g., road crossing):
Stream Name: <u>Salt Fork</u>	<u>Hwy H crossing</u>
Current Weather Conditions: <u>Overcast, light rain</u>	Facility Name(s): <u>Higbee WWTF</u>
Weather Conditions for Past 10 days: <u>3.59" rain</u>	Permit Number(s): <u>MO 0093505</u>
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): <u>0531316</u>	Northing (UTM Y): <u>4338745</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>18</u> ^{Meters} <u>ft</u>
Site 11	Easting (UTM X): <u>0531126</u>	Northing (UTM Y): <u>4338652</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>16</u> ^{Meters} <u>ft</u>

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>52</u>	<u>upstream</u>	<u>53</u>	<u>dnstream</u>		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at 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 Data Sheet D- Recreational Use Interview when conducting interviews.) <p style="text-align: center;"><u>N/A</u> <u>SRW</u></p>				

Stream Name & WBID # Salt Fork # 0765

Date of Survey 9/11/08

Site # 04

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 checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:
Comments: <u>private property</u>				

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

<input checked="" 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 type="checkbox"/> None of the above	Comments / Other: <u>N/A SRW</u>			

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

<u>5</u> % Cobble	<u>40</u> % Gravel	<u>50</u> % Sand	<u>—</u> % Silt	<u>5</u> % Mud/Clay	<u>—</u> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

<u>None</u>

Water Characteristics*: (Mark all that apply.)

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

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

Stream Name & WBID # Salt Fork #0765

Date of Survey 9/11/08

Site # 04

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)
			SRW		
		N/A			

Comments: (Please record any additional comments here.)

N/A SRW

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

Printed Names of Personnel Collecting Data: Tiffanie Hamilton, Jennifer Hrabik

Surveyor's Signature: Tiffanie A. Hamilton Date of Survey: 9/11/08

Organization: AE Solutions Position: Field Technician

SRW 10-15-08

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: <u> Salt Fork </u> Waterbody ID: <u> 0765 </u> Site #: <u> 0765_04 </u> Estimated Channel Incision: <u> 0.20 </u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u> 531316 </u> UTM Y: <u> 4338745 </u> +/- <u> 18 </u> (feet) 11 UTM X: <u> 531126 </u> UTM Y: <u> 4338652 </u> +/- <u> 16 </u> (feet) Average Stream Width: <u> 4.9 </u> (meters) Length of Survey Segment: <u> 150 </u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u> JRH, TAH </u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u> 9/11/2008 </u> Time: <u> 13:10 </u> Dissolved Oxygen: <u> 4.78 </u> (mg/L) Dissolved Oxygen: <u> 51.9 </u> (% sat) Specific Cond: <u> 434 </u> (µS/cm) Water Temperature: <u> 19.0 </u> (°C)
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Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
Left Bank		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	0.71	0.25	0.47	0.15	0.34	0.26	0.49	0.14	0.57	0.35	0.91	0.02	0.47	0.29	0.30	0.18	0.32	0.24	0.39	0.10	0.44	0.16
	2	1.42	0.54	0.94	0.35	0.68	0.31	0.98	0.24	1.14	0.34	1.82	0.12	0.94	0.24	0.60	0.20	0.64	0.23	0.78	0.17	0.88	0.17
	3	2.13	0.55	1.41	0.49	1.02	0.28	1.47	0.24	1.71	0.31	2.73	0.07	1.41	0.20	0.90	0.20	0.96	0.18	1.17	0.17	1.32	0.24
	4	2.84	0.73	1.88	0.60	1.36	0.22	1.96	0.25	2.28	0.25	3.64	0.05	1.88	0.15	1.20	0.16	1.28	0.26	1.56	0.21	1.76	0.23
	5	3.55	0.66	2.35	0.63	1.70	0.20	2.45	0.21	2.85	0.19	4.55	0.08	2.35	0.13	1.50	0.14	1.60	0.29	1.95	0.14	2.20	0.24
	6	4.26	0.65	2.82	0.70	2.04	0.14	2.94	0.18	3.42	0.14	5.46	0.12	2.82	0.17	1.80	0.10	1.92	0.15	2.34	0.11	2.64	0.18
	7	4.97	0.56	3.29	0.80	2.38	0.11	3.43	0.16	3.99	0.16	6.37	0.13	3.29	0.15	2.10	0.10	2.24	0.10	2.73	0.12	3.08	0.15
	8	5.68	0.41	3.76	0.84	2.72	0.10	3.92	0.11	4.56	0.15	7.28	0.09	3.76	0.13	2.40	0.14	2.56	0.09	3.12	0.09	3.52	0.13
	9	6.39	0.31	4.23	0.73	3.06	0.09	4.41	0.07	5.13	0.12	8.19	0.22	4.23	0.07	2.70	0.09	2.88	0.02	3.51	0.07	3.96	0.08
Right Bank		7.10	0.00	4.70	0.00	3.40	0.00	4.90	0.00	5.70	0.00	9.10	0.00	4.75	0.00	3.00	0.00	3.20	0.00	3.90	0.00	4.45	0.00
Feature Type <small>(riffle, run, or pool)</small>		Pool		Run		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 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: 9/11/2008

WBID #0703

SITE #01

DOWNSTREAM



WBID #0703

SITE #02

DOWNSTREAM



WBID #0703

SITE #01

UPSTREAM



WBID #0703

SITE #02

UPSTREAM



WBID #0703

SITE #03

DOWNSTREAM



WBID #0703

SITE #04

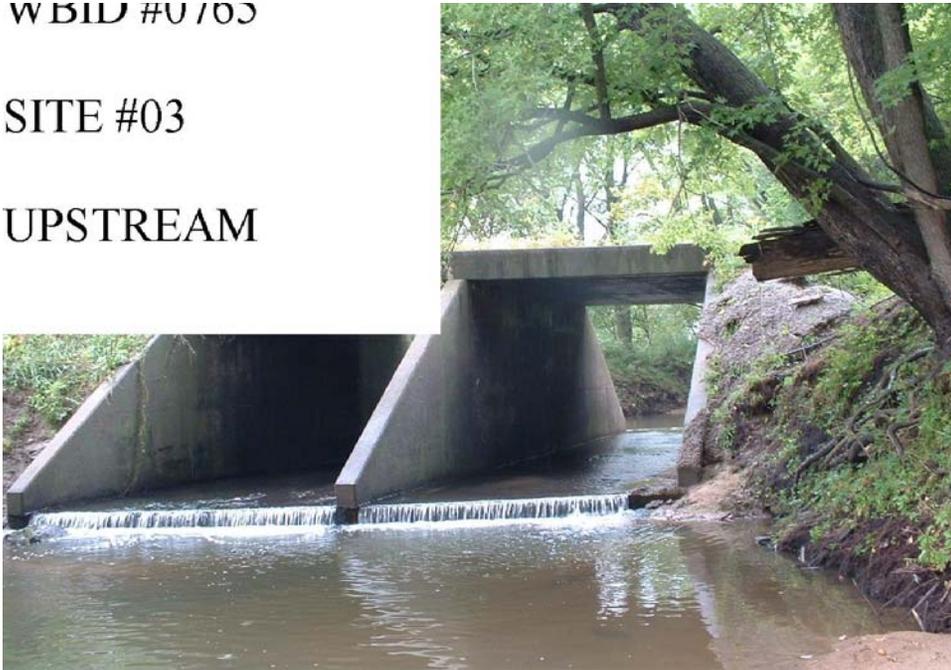
DOWNSTREAM



WBID #0703

SITE #03

UPSTREAM



WBID #0703

SITE #04

UPSTREAM

