



Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 3227 Elm Springs Branch

Submitted by
Olsson Associates

To
Missouri Department of Natural Resources
Water Protection Program

On
June 3, 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): Elm Spring Branch
Missouri Water Body Identification (WBID) Number: 3227
8-digit HUC: 11070207
County(ies), Listed Upstream to Downstream: Newton
Upstream Legal Description (from Table H): 7, 24N, 31W
Downstream Legal Description (from Table H): 6, 24N, 31W
Number of sites evaluated: 3
List all site numbers, <u>consecutively upstream to downstream</u> : 1, 2, 3
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).

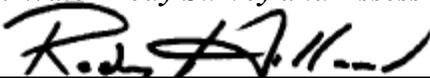
II. Facility Information (list all permitted discharges to this water body segment)

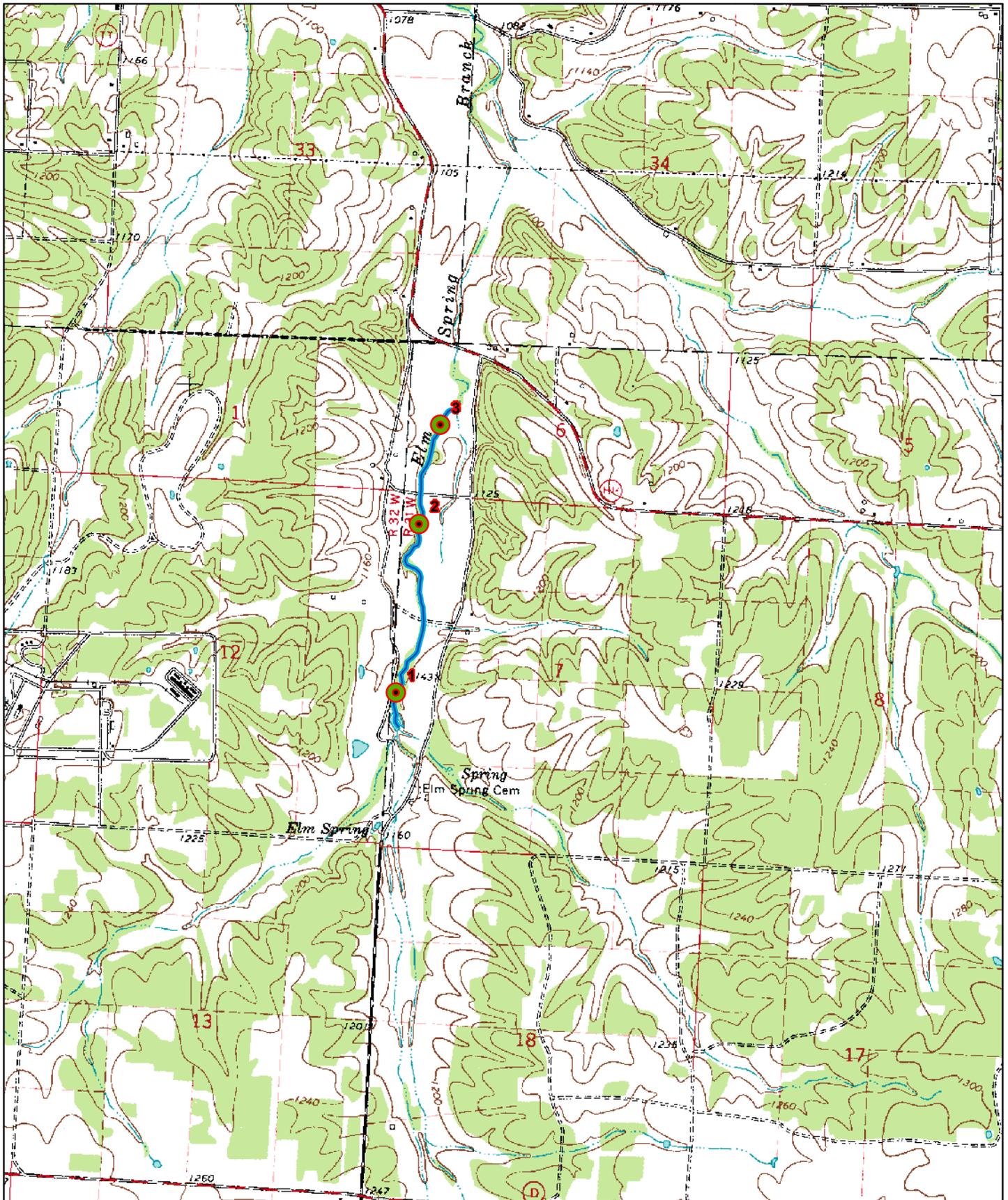
Facility Name(s) and Permit Number(s): MOARK 7 Farms MO-0122840

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

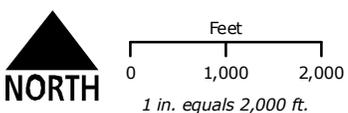
Name of Surveyor: Rodney Holland Telephone Number: 417-890-8802
Organization/Employer: Olsson Associates

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:  Date: 4-21-08



**MISSOURI RECREATIONAL
USE ATTAINABILITY ANALYSIS**



Stream: Elm Spring Br.
WBID: 3227

Map Sheet: 1/1
County: Newton



WBID # 3227

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: 4-21-08	Location Description (e.g., road crossing):
Stream Name: Elm Spring Branch	Crowder Conservation Area
Current Weather Conditions: Partly Sunny	Facility Name(s): MOARK 7 Farms
Weather Conditions for Past 10 days: 1.39" rain @ Joplin	Permit Number(s): MO-0122840
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): 382054	Northing (UTM Y): 4075828	Horizontal Accuracy: (EPE / FOM / PDOP) 45 ft. Meters
Site 11	Easting (UTM X): 382111	Northing (UTM Y): 4075990	Horizontal Accuracy: (EPE / FOM / PDOP) 76 ft. Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3227-1-A	Upstream looking down				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3227-1-B	Livestock watering				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3227-1-C	Downstream looking up				

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

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

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input checked="" type="checkbox"/> Livestock Watering
<input type="checkbox"/> None of the above	Comments / Other:			

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

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

Some Algae on rocks

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 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 # 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.)

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

Printed Names of Personnel Collecting Data: Rodney Holland, Christopher Parks

Surveyor's Signature:  Date of Survey: 4-21-08

Organization: Olsson Associates Position: Field Team Leader & Field Team Member

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: <u>Elm Spring Branch</u> Waterbody ID: <u>3227</u> Site #: <u>1</u> Estimated Channel Incision: <u>0.4</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>382054</u> UTM Y: <u>4075828</u> +/- <u>45</u> ft. (meters) 11 UTM X: <u>382111</u> UTM Y: <u>4075990</u> +/- <u>76</u> ft. (meters) Average Stream Width: <u>4.5</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Rodney Holland and Christopher Parks</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>4/21/2008</u> Time: <u>2:15 p.m.</u> Dissolved Oxygen: <u>11.39</u> (mg/L) Dissolved Oxygen: <u>114.2</u> (% sat) Specific Cond: <u>131</u> (µS/cm) Water Temperature: <u>16.7</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)																					
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	0.23	0.07	0.51	0.12	0.54	0.15	0.34	0.05	0.53	0.18	0.85	0.32	0.48	0.06	0.50	0.21	0.33	0.05	0.34	0.12	0.34	0.12	
2	0.46	0.08	1.02	0.18	1.08	0.19	0.68	0.05	1.06	0.35	1.70	0.60	0.96	0.08	1.00	0.31	0.66	0.05	0.68	0.11	0.68	0.19	
3	0.69	0.16	1.53	0.21	1.62	0.36	1.02	0.05	1.59	0.43	2.55	0.77	1.44	0.09	1.50	0.48	0.99	0.12	1.02	0.15	1.02	0.30	
4	0.92	0.11	2.04	0.26	2.16	0.32	1.36	0.10	2.12	0.41	3.40	0.78	1.92	0.08	2.00	0.44	1.32	0.18	1.36	0.16	1.36	0.31	
5	1.15	0.21	2.55	0.35	2.70	0.37	1.70	0.15	2.65	0.42	4.25	0.77	2.40	0.12	2.50	0.38	1.65	0.26	1.70	0.24	1.70	0.32	
6	1.38	0.23	3.06	0.47	3.24	0.32	2.04	0.22	3.18	0.40	5.10	0.61	2.88	0.21	3.00	0.40	1.98	0.31	2.04	0.33	2.04	0.42	
7	1.61	0.25	3.57	0.52	3.78	0.22	2.38	0.39	3.71	0.40	5.95	0.39	3.36	0.18	3.50	0.41	2.31	0.35	2.38	0.32	2.38	0.31	
8	1.84	0.22	4.08	0.48	4.32	0.24	2.72	0.40	4.24	0.31	6.80	0.29	3.84	0.15	4.00	0.35	2.64	0.31	2.72	0.40	2.72	0.21	
9	2.07	0.23	4.59	0.51	4.86	0.18	3.06	0.41	4.77	0.32	7.65	0.10	4.32	0.29	4.50	0.15	2.97	0.10	3.06	0.29	3.06	0.12	
Right Bank	2.30	0.00	5.10	0.00	5.40	0.00	3.40	0.00	5.30	0.00	8.50	0.00	4.80	0.00	5.00	0.00	3.30	0.00	3.40	0.00	3.40	0.00	
Feature Type <small>(riffle, run, or pool)</small>	Riffle		Run		Run		Riffle		Run		Pool		Riffle		Run		Riffle		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.

MAXIMUM 0.78

MEDIAN 0.26

Surveyor's Signature: _____

Date: 4/21/2008

WBID # 3227

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: 4-21-08 3:00 p.m.	Location Description (e.g., road crossing):
Stream Name: Elm Spring Branch	Crowder Conservation Area
Current Weather Conditions: Sunny	Facility Name(s): MOARK 7 Farms
Weather Conditions for Past 10 days: 1.39" rain @ Joplin	Permit Number(s): MO-0122840
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): 382130	Northing (UTM Y): 4076723	Horizontal Accuracy: (EPE / FOM / PDOP) 20 ft. Meters
Site 11	Easting (UTM X): 382168	Northing (UTM Y): 4076878	Horizontal Accuracy: (EPE / FOM / PDOP) 68 ft. Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3227-2-A	Upstream looking down				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3227-2-B	Fence/cattle				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3227-2-C	Downstream looking up				

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

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

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input checked="" type="checkbox"/> Livestock Watering
<input type="checkbox"/> None of the above	Comments / Other:			

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

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

Some Algae

Water Characteristics*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input 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 # 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.)

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

Printed Names of Personnel Collecting Data: Rodney Holland, Christopher Parks

Surveyor's Signature:  Date of Survey: 4-21-08

Organization: Olsson Associates Position: Field Team Leader & Field Team Member

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: <u>Elm Spring Branch</u> Waterbody ID: <u>3227</u> Site #: <u>2</u> Estimated Channel Incision: <u>0.4</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>382130</u> UTM Y: <u>4076723</u> +/- <u>20</u> ft. (meters) 11 UTM X: <u>382168</u> UTM Y: <u>4076878</u> +/- <u>68</u> ft. (meters) Average Stream Width: <u>4.5</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Rodney Holland and Christopher Parks</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>4/21/2008</u> Time: <u>3:05 p.m.</u> Dissolved Oxygen: <u>11.62</u> (mg/L) Dissolved Oxygen: <u>118.4</u> (% sat) Specific Cond: <u>134</u> (µS/cm) Water Temperature: <u>17.1</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)																					
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	0.11	0.44	0.05	0.65	0.28	0.49	0.12	0.40	0.21	0.68	0.36	0.37	0.05	0.40	0.05	0.47	0.16	0.46	0.08	0.60	0.13	
2	0.90	0.28	0.88	0.11	1.30	0.54	0.98	0.15	0.80	0.31	1.36	0.71	0.74	0.06	0.80	0.15	0.94	0.22	0.92	0.11	1.20	0.19	
3	1.35	0.16	1.32	0.15	1.95	0.69	1.47	0.18	1.20	0.35	2.04	0.62	1.11	0.21	1.20	0.22	1.41	0.31	1.38	0.15	1.80	0.25	
4	1.80	0.18	1.76	0.19	2.60	0.49	1.96	0.21	1.60	0.32	2.72	0.54	1.48	0.26	1.60	0.32	1.88	0.12	1.84	0.19	2.40	0.22	
5	2.25	0.17	2.20	0.20	3.25	0.33	2.45	0.13	2.00	0.31	3.40	0.49	1.85	0.31	2.00	0.31	2.35	0.13	2.30	0.20	3.00	0.21	
6	2.70	0.19	2.64	0.21	3.90	0.33	2.94	0.12	2.40	0.32	4.08	0.38	2.22	0.39	2.40	0.28	2.82	0.16	2.76	0.22	3.60	0.28	
7	3.15	0.16	3.08	0.22	4.55	0.18	3.43	0.13	2.80	0.27	4.76	0.29	2.59	0.38	2.80	0.26	3.29	0.15	3.22	0.21	4.20	0.31	
8	3.60	0.13	3.52	0.26	5.20	0.32	3.92	0.12	3.20	0.18	5.44	0.22	2.96	0.41	3.20	0.25	3.76	0.12	3.68	0.19	4.80	0.21	
9	4.05	0.13	3.96	0.21	5.85	0.45	4.41	0.11	3.60	0.09	6.12	0.14	3.33	0.50	3.60	0.21	4.23	0.06	4.14	0.16	5.40	0.25	
Right Bank	4.50	0.00	4.40	0.00	6.50	0.00	4.90	0.00	4.00	0.00	6.80	0.00	3.70	0.00	4.00	0.00	4.70	0.00	4.60	0.00	6.00	0.00	
Feature Type <small>(riffle, run, or pool)</small>	Riffle		Run		Pool		Riffle		Run		Run		Run		Run		Riffle		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.

MAXIMUM 0.71

MEDIAN 0.21

Surveyor's Signature: _____

Date: 4/21/2008

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: 6-17-08 2:00 p.m.	Location Description (e.g., road crossing): .35 miles upstream of Hwy HH bridge
Stream Name: Elm Spring Branch	
Current Weather Conditions: Sunny	Facility Name(s): MOARK 7 Farms
Weather Conditions for Past 10 days: 5.06" rain @ Joplin	Permit Number(s): MO-0122840
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): 382184	Northing (UTM Y): 4076900	Horizontal Accuracy: (EPE / FOM / PDOP) 96 ft. Meters
Site 11	Easting (UTM X): 382237	Northing (UTM Y): 4077069	Horizontal Accuracy: (EPE / FOM / PDOP) 91 ft. Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3227-3-A	Upstream looking down				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3227-3-B	Downstream looking up				
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3227-3-C	Bridge				

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

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

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering
<input checked="" type="checkbox"/> None of the above	Comments / Other:			

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

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

Some Algae

Water Characteristics*: (Mark all that apply.)

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

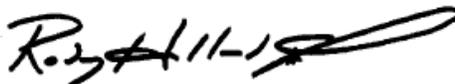
Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

Coordinates of Hwy HH Bridge (downstream of segment): 382270E, 4077413N
 Coordinates of confluence at downstream end of segment: 3823215E, 4077109N
 Photo 3227-3-C is downstream of segment

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

Printed Names of Personnel Collecting Data: Rodney Holland, Christopher Parks

Surveyor's Signature:  Date of Survey: 6-17-08

Organization: Olsson Associates Position: Field Team Leader & Field Team Member

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Stream Name: <u>Elm Spring Branch</u> Waterbody ID: <u>3227</u> Site #: <u>3</u> Estimated Channel Incision: <u>0.45</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>382184</u> UTM Y: <u>4076900</u> +/- <u>96</u> ft. (meters) 11 UTM X: <u>382237</u> UTM Y: <u>4077069</u> +/- <u>91</u> ft. (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>Rodney Holland and Christopher Parks</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>6/17/2008</u> Time: <u>2:10 p.m.</u> Dissolved Oxygen: <u>11.15</u> (mg/L) Dissolved Oxygen: <u>114.75</u> (% sat) Specific Cond: <u>128</u> (µS/cm) Water Temperature: <u>18.2</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)																					
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0.52	0.12	0.43	0.15	0.38	0.21	0.44	0.05	0.52	0.20	0.62	0.13	0.51	0.17	0.48	0.06	0.67	0.20	0.58	0.22	0.56	0.18	
2	1.04	0.16	0.86	0.26	0.76	0.39	0.88	0.13	1.04	0.26	1.24	0.23	1.02	0.29	0.96	0.11	1.34	0.27	1.16	0.31	1.12	0.29	
3	1.56	0.21	1.29	0.32	1.14	0.46	1.32	0.21	1.56	0.30	1.86	0.29	1.53	0.41	1.44	0.38	2.01	0.31	1.74	0.42	1.68	0.36	
4	2.08	0.28	1.72	0.44	1.52	0.51	1.76	0.26	2.08	0.34	2.48	0.38	2.04	0.52	1.92	0.42	2.68	0.42	2.32	0.51	2.24	0.55	
5	2.60	0.32	2.15	0.46	1.90	0.65	2.20	0.36	2.60	0.39	3.10	0.44	2.55	0.48	2.40	0.61	3.35	0.38	2.90	0.56	2.80	0.58	
6	3.12	0.36	2.58	0.39	2.28	0.59	2.64	0.33	3.12	0.36	3.72	0.41	3.06	0.39	2.88	0.58	4.02	0.33	3.48	0.48	3.36	0.39	
7	3.64	0.24	3.01	0.41	2.66	0.48	3.08	0.38	3.64	0.41	4.34	0.36	3.57	0.19	3.36	0.36	4.69	0.26	4.06	0.36	3.92	0.36	
8	4.16	0.22	3.44	0.32	3.04	0.32	3.52	0.29	4.16	0.32	4.96	0.42	4.08	0.12	3.84	0.28	5.36	0.24	4.46	0.28	4.48	0.27	
9	4.68	0.18	3.87	0.29	3.42	0.25	3.96	0.21	4.68	0.24	5.58	0.38	4.59	0.08	4.32	0.33	6.03	0.18	5.22	0.19	5.04	0.21	
Right Bank	5.20	0.00	4.30	0.00	3.80	0.00	4.40	0.00	5.20	0.00	6.20	0.00	5.10	0.00	4.80	0.00	6.70	0.00	5.80	0.00	5.60	0.00	
Feature Type <small>(riffle, run, or pool)</small>	Riffle		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.

MAXIMUM 0.65

MEDIAN 0.32

Surveyor's Signature: _____

Date: 6/17/2008







WBID: 3227
SITE: 3
PHOTO: 3227-3-C
21 APR 08
4:19 PM BRIDGE