



Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 0731 Rivaux Creek

Submitted by

MEC Water Resources

To

Missouri Department of Natural Resources

Water Protection Program

On

December 1, 2007

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet A - Water Body Identification

I. Water Body Information (For water body being surveyed)

Water Body Name (from USGS 7.5' quad):	Rivaux Creek		
Missouri Water Body Identification (WBID) Number:	0731		
8-digit HUC:	10300102	County:	Callaway
Upstream Legal Description (from Table H):	8,44N,10W		
Downstream Legal Description (from Table H):	21,44N,10W		
Number of sites evaluated	3		
List all sites numbers, listed consecutively upstream to downstream:	1, 2, 3		

II. Discharger Facility Information (list all permitted dischargers on the stream)

Discharger Facility Name(s):	Holt Summit Acres Apartments
Discharger Permit Number(s):	MO0099945

III. UAA Surveyor (please print legibly)

Name of Surveyor	James Veverka, Tim Albrecht	Telephone Number:	(573) 443-4100
Organization/Employer:	MEC - Water Resources		
Position:	Water Quality Scientist		

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

Signed: Bruce Crawford for JV Date: 10-3-07

WBID # 731
 Site # 1

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: <u>09/20/07 17:28</u>	Site Location Description (e.g., road crossing): <u>North end of Survey street off of CRD 4031</u>
Personnel (Data Collectors): <u>SU/TA</u>	Facility Name:
Current Weather Conditions: <u>Partly Cloudy</u>	Permit Number:
Weather Conditions for Past 10 days: <u>Sunny/rain</u>	
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): <u>4273460</u>	Northing (UTM Y): ¹⁵⁵ <u>0579738</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>6.2</u> Meters
Site 11	Easting (UTM X): <u>4273355</u>	Northing (UTM Y): ¹⁵⁵ <u>0579800</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>11.2</u> Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
731-1-1082 <u>1083</u>	<u>D. Stream</u>	731-1-1083 <u>1084</u>	<u>D. Stream</u>		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

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

WBID # 751

Site # 1

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

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

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

Comments: *Cattle pasture, thin riparian*

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

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering

Comments / Other: *None observed*

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

<i>10</i> % Cobble	<i>10</i> % Gravel	<i>70</i> % Sand	<i>5</i> % Silt	<i>5</i> % Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

Grasses, periphyton and algal growth common

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 checked="" type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input type="checkbox"/> None	<input type="checkbox"/> Other:

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

WBID # 731
Site # 1

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

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

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

Comments: (Please record any additional comments here.)

No additional

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

Surveyor's Signature: [Signature] Date of Survey: 9/20/07
Organization: MFC Water Res. Position: Water Quality Scientist

ARC 10-3-07

WBID # 0731

Site # 2

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: <u>09/20/07 14:12</u>	Site Location Description (e.g., road crossing): <u>off of CRA 4031</u>
Personnel (Data Collectors): <u>ZV/TA</u>	
Current Weather Conditions: <u>Pt. Cl., 82°F, L. Breeze</u>	Facility Name:
Weather Conditions for Past 10 days: <u>Clear</u>	Permit Number:
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): <u>4271796</u>	Northing (UTM Y): <u>0581665</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>10.8</u> Meters
Site 11	Easting (UTM X): <u>4271665</u>	Northing (UTM Y): <u>0581550</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>7.2</u> Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>731-2-1095</u>	<u>U. Stream</u>	<u>731-2-1096</u>	<u>DN. Stream</u>	<u>731-2-1097</u>	<u>"Pool" Tran. 04</u>

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

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)

None observed

WBID # 0731

Site # 2

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

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

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

Comments:

*Pasture/Road/Riparian
CR
731*

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

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV / ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock Watering

Comments / Other:

None Observed

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

10 % Cobble	10 % Gravel	70 % Sand	5 % Silt	5 % Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

*Algae, Smart weed, grasses
↓
common*

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 checked="" type="checkbox"/> Oil	<input checked="" type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input type="checkbox"/> None	<input type="checkbox"/> Other:

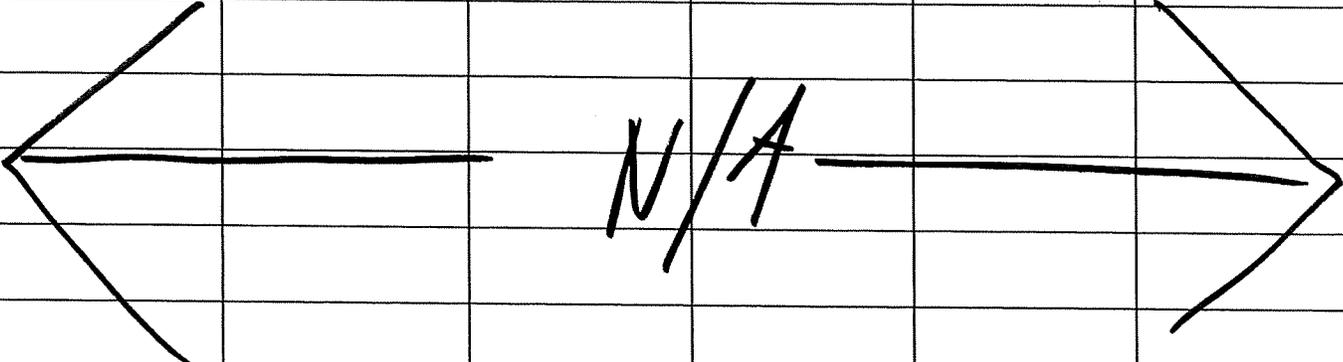
*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions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

WBID # 0731
Site # 2

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

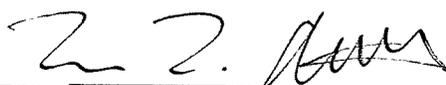
Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

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

Comments: (Please record any additional comments here.)

N/A

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

Surveyor's Signature:  Date of Survey: 9/20/07

Organization: MEC Water Resources Position: Water Quality Scientist

WBID # 0731
 Site # 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization
 (must be completed for each site)

Date & Time: <u>9/20/07 15:05</u>	Site Location Description (e.g., road crossing): <u>CR 4038 Bridge</u>
Personnel (Data Collectors): <u>TA, JV</u>	
Current Weather Conditions: <u>TA Sun Clear, Dry, Warm</u>	Facility Name:
Weather Conditions for Past 10 days: <u>Clear, Dry</u>	Permit Number:
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION; IN METERS)			
Site 01	Easting (UTM X): <u>4269753</u>	Northing (UTM Y): ^{15.5} <u>0581845</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>6.1</u> Meters
Site 11	Easting (UTM X): <u>4269584</u>	Northing (UTM Y): ^{15.5} <u>0581900</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>8.9</u> Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>0731-3- TA1087-1088</u>	<u>US</u>	<u>0731-3- TA1088-1089</u>	<u>DNS</u>		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

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

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

WBID # 0731
 Site # 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

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

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

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

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

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

% Cobble	% Gravel	<i>20</i> % Sand	<i>20</i> % Silt	<i>60</i> % Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

<i>Algae was TA Uncommon</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 type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other: <i>Brown</i>
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Other: <i>Turbid/Brown</i>
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

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WBID # 0731
Site # 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

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

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

Comments: (Please record any additional comments here.)

N/A

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

Surveyor's Signature: *[Signature]* Date of Survey: 9/20/07

Organization: MEC Water Resources Position: Water Quality Scientist

Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0731 Site #: 3^{ARC} 0731-3
 (WBID_Site#)

Estimated Channel Incision: 0.25 (m) (height between low bank width and water)

GPS Location (taken at transect 1):
 UTM X: 4269753 UTM Y: 15 S 0581845
 Horizontal Accuracy Estimate (GPS Data Quality): +/- 6.1 ^{TA}/_{feet} meters

GPS Location (taken at transect 11):
 UTM X: 4269584 UTM Y: 15 S 0581900
 Horizontal Accuracy Estimate (GPS Data Quality): +/- 8.9 ^{TA}/_{feet} meters

Average Stream Width: 6 (meters) Length of Survey Segment: 150 (meters)
 (To determine Length of Reach) (20x average stream width)

Field Staff: TA, JV

Dissolved Oxygen

Date: 9/20/07 Time: 15:05

Dissolved Oxygen: 0.51 (mg/L)

Dissolved Oxygen: 6.3 (% sat)

Specific Cond: 676 (µS/cm)

Water Temp.: 25.7 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)																				
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.57	0.17	0.72	0.11	0.75	0.14	0.70	0.21	0.86	0.20	0.52	0.05	0.48	0.08	0.60	0.09	0.74	0.10	0.74	0.15	0.76	0.19
2	1.14	0.23	1.44	0.18	1.5	0.23	1.4	0.22	1.72	0.34	1.04	0.08	0.96	0.22	1.5	0.15	1.48	0.20	1.48	0.17	1.52	0.30
3	1.71	0.27	2.16	0.20	2.25	0.25	2.1	0.30	2.58	0.39	1.56	0.14	1.44	0.25	1.8	0.22	2.22	0.28	2.22	0.28	2.28	0.39
4	2.28	0.29	2.88	0.23	3.0	0.26	2.8	0.38	3.44	0.40	2.08	0.25	1.92	0.26	2.4	0.30	2.96	0.24	2.96	0.32	3.04	0.30
5	2.85	0.28	3.6	0.25	3.75	0.28	3.5	0.35	4.3	0.36	2.6	0.26	2.4	0.24	3.0	0.30	3.7	0.23	3.7	0.28	3.8	0.26
6	3.42	0.24	4.32	0.26	4.5	0.25	4.2	0.22	5.16	0.40	3.12	0.28	2.98	0.23	3.6	0.29	4.44	0.29	4.44	0.25	4.56	0.20
7	3.99	0.31	5.04	0.31	5.25	0.24	4.9	0.15	6.02	0.41	3.64	0.25	3.36	0.16	4.2	0.20	5.18	0.30	5.18	0.08	5.32	0.25
8	4.56	0.30	5.76	0.33	6.0	0.21	5.6	0.12	6.88	0.38	4.16	0.16	3.84	0.15	4.8	0.19	5.92	0.15	5.92	0.02	6.08	0.24
9	5.13	0.15	6.48	0.25	6.75	0.11	6.3	0.11	7.74	0.28	4.68	0.06	4.32	0.08	5.4	0.10	6.66	0.01	6.66	0.05	6.84	0.21
Right Bank	5.7	0	7.2	0	7.5	0	7.0	0	8.6	0	5.2	0	4.8	0	6.0	0	7.4	0	7.4	0	7.6	0
TA	5.7		7.2		7.5		7.0		8.6		5.2		4.8		6.0		7.4		7.4		7.6	
Feature Type (riffle, run, or pool)	Run																					

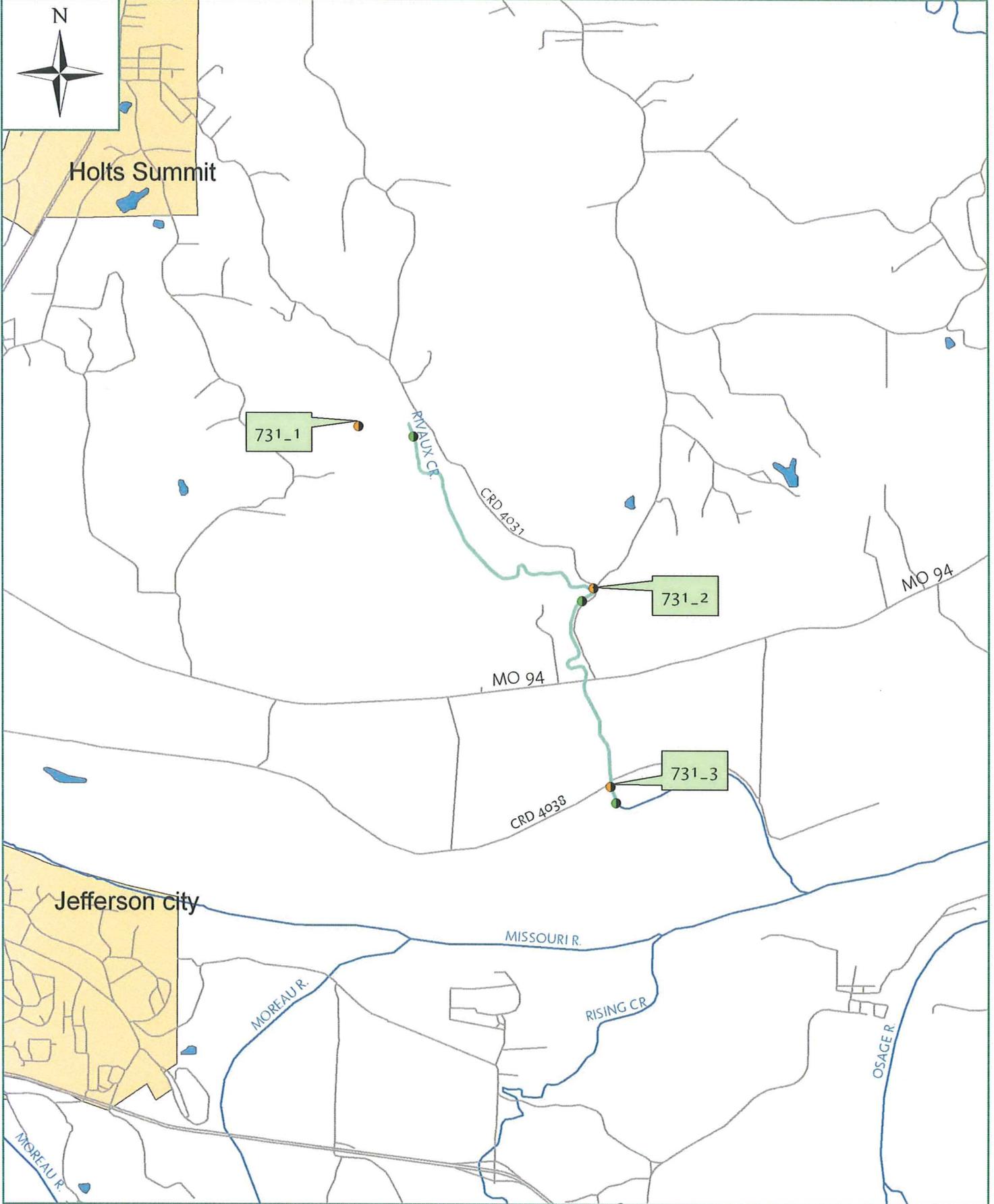
Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

GPS location corresponds to Transect 01 and Transect 11. Transects ordered in upstream to downstream order.
 Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
 Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
 All measurements to be taken to the nearest 0.01 meter.

ARC 10-3-07

Signed: [Signature] Date: 9/20/07

Rivaux Creek (WBID 731)



- Upstream Boundary
- Downstream Boundary





