

**INDIAN CREEK
WBID 1591**

Recreational Use Attainability Analysis

May 2007

PREPARED FOR:
RFP No: B3Z07134
Water Quality Monitoring & Assessment Section
Water Protection Program
Division of Environmental Quality
MISSOURI DEPARTMENT OF NATURAL RESOURCES
301 West High Street
Jefferson City, MO 65102

PREPARED BY:
MEC WATER RESOURCES, INC.
1123 Wilkes Blvd., Ste. 400
Columbia, MO 65201

Field Data Sheets for Recreational Use Stream Surveys

AKC 5/17/07

Data Sheet A - Water Body Identification

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

Water Body Name (from USGS 7.5' quad):	<i>Indian Creek</i>
Missouri Water Body Identification (WBID) Number:	<i>1591</i>
8-digit HUC:	<i>10290202</i>
County:	<i>Texas</i>
Upstream Legal Description (from Table H):	<i>27, 30N, 9W</i>
Downstream Legal Description (from Table H):	<i>30, 30N, 9W</i>
Number of sites evaluated	<i>1</i>
List all sites numbers, listed cnsquentially upstream to downstream:	<i>Site 1</i>

II. Subsegmentation (fill this section out only in cases where subsegmentation is being proposed)

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Upstream Coordinates:		Downstream Coordinates:	
UTM X	Y	UTM X	Y
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	± _____ Feet or ± _____ Meters		
PDOP		± _____ Feet or ± _____ Meters	

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

Discharger Facility Name(s):	<i>Non point source</i>
Discharger Permit Number(s):	

IV. UAA Surveyor (please print legibly)

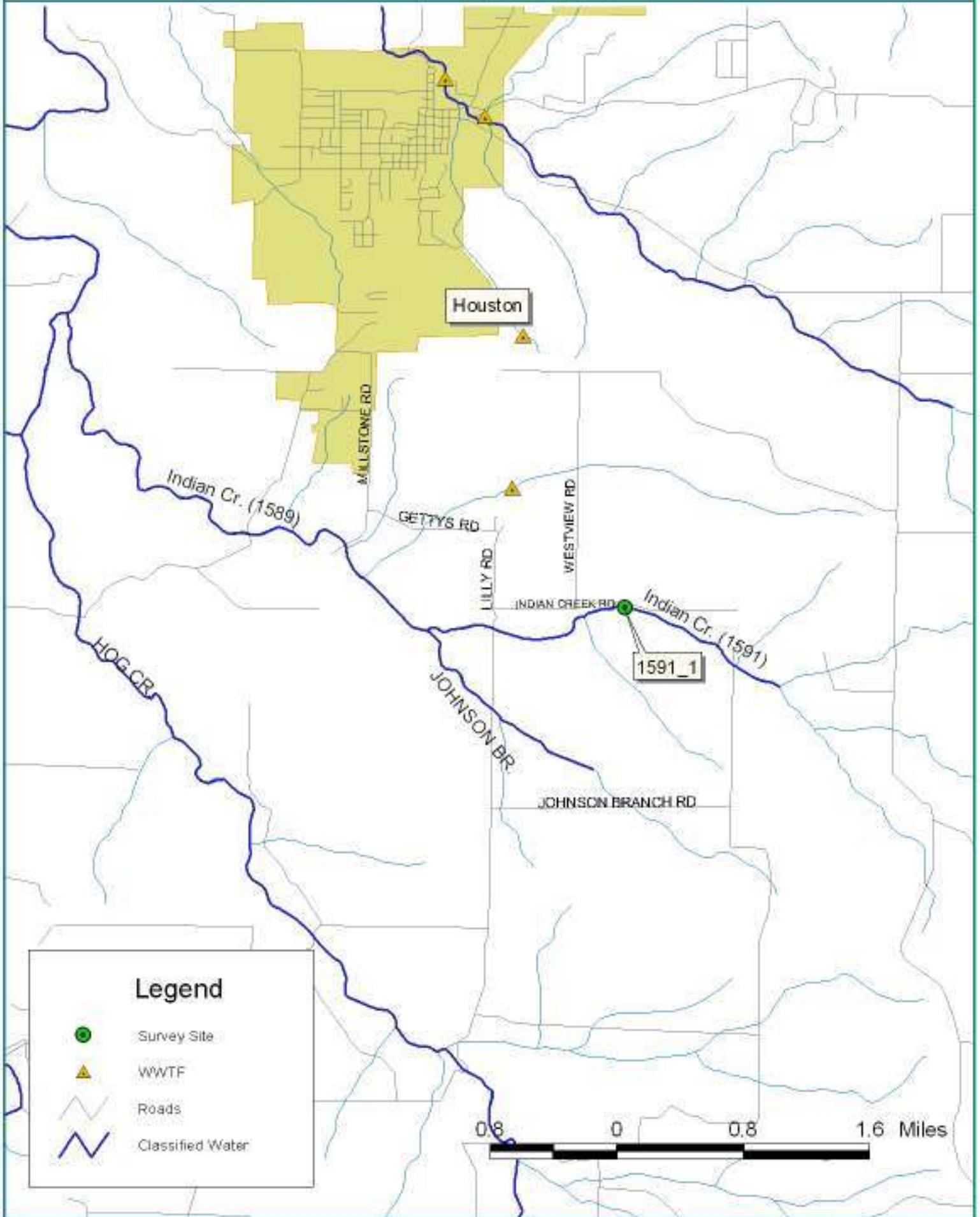
Name of Surveyor	<i>Nick Muenks</i>	Telephone Number:	<i>573-443-4100</i>
Organization/Employer:	<i>MEC Water Resources</i>		
Position:	<i>Water Quality Scientist</i>		

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

Signed: *Nick Muenks* Date: *5/8/07*

AKC 5-14-07

Indian Creek (1591), Length = 3.0 mi.



WBID# 1591
 Site# 1

Field Data Sheets for Recreational Use Stream Surveys

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

Date & Time: <u>5/8/07 700</u>	Site Location Description (e.g., road crossing): <u>Just South of Indian Creek Rd</u>
Personnel (Data Collectors): <u>NM/JR</u>	Facility Name: <u>Non-point source</u>
Current Weather Conditions: <u>Clear</u>	Permit Number:
Weather Conditions for Past 10 days:	
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 Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)	
Site GPS Coordinates: UTM X: <u>0594472</u>	Y: <u>4126690</u>
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)	
Global Positioning System (GPS)	
Static Mode	<input checked="" type="checkbox"/>
Dynamic Mode (Kinematic)	
Precise Positioning Service	
Signal Averaging	
Real Time Differential Processing	
HORIZONTAL ACCURACY ESTIMATE	
GPS Data Quality	Interpolation Data Quality
FOM ± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE ± <u>29</u> Feet or ± _____ Meters	± _____ Feet or ± _____ Meters
PDOP	

Photos:

Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)
<u>1591-1-542</u>	<u>Upstream Transect 1</u>	<u>1591-1-546</u>	<u>Right Descending Bank Transect 1</u>
<u>1591-1-543</u>	<u>Upstream Transect 1</u>	<u>1591-1-547</u>	<u>Right Descending Bank Transect 1 Down</u>
<u>1591-1-544</u>	<u>Downstream Transect 1</u>	<u>1591-1-548</u>	<u>Right Descending Bank Tr 1 upstream</u>
<u>1591-1-545</u>	<u>Downstream Transect 1</u>	<u>1591-1-549</u>	<u>Downstream from Meadow Brook Rd</u>
		<u>1591-1-550</u>	<u>Down Stream from Meadow Brook Rd</u>

Uses Observed*: (Uses actually observed at time of survey.) 1591-1-551 Upstream from Meadow Brook Rd

<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.)				

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"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Fence	<input checked="" type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Comments:				

WBID# 1591
 Site# 1

Field Data Sheets for Recreational Use Stream Surveys

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

Indications of Human Use*: (attach photos)

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

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? Yes No
 If so, is there an obvious current? Yes No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE	07	72	6.60	30		0.19
RUN	3	25	11.20	40		0.73
POOL	10	110	9.42	75		0.79

Downstream View's Physical Descriptions: Is there any water present at this view? Yes No
 If so, is there an obvious current? Yes No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

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

30 % Cobble	10 % Gravel	0 % Sand	0 % Silt	0 % Mud/Clay	60 % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

Benthic algae present on substrate, few aquatic plants

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 checked="" type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input checked="" type="checkbox"/> Foam	<input type="checkbox"/> None	<input type="checkbox"/> Other:

Comments: Please attach any additional comments to this form.

*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.

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

Surveyor's Signature: Nick Meunier Date of Survey: 5/8/07
 Organization: MEC Water Resources Position: Water Quality Scientist

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>1591</u> Site #: <u>1</u> (WBID_Site#) Estimated Channel Incision: <u>0</u> (m) (height between low bank width and water) GPS Location (taken at transect 1): UTM X: _____ UTM Y: _____ Horizontal Accuracy Estimate (GPS Data Quality): <u>+/- 29</u> (feet) Average Stream Width: <u>6</u> (meters) Length of Survey Segment: <u>120</u> (meters) (20x average stream width) Field Staff: <u>Alick Muenks, Jerrod Roberts</u>	Dissolved Oxygen Date: <u>5/8/07</u> Time: <u>7:00 am</u> Dissolved Oxygen: <u>7.89</u> (mg/L) Dissolved Oxygen: <u>79.8</u> (% sat) Specific Cond: <u>378.8</u> (µS/cm) Water Temperature: <u>16.1</u> (°C)
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Transect Cross-Section

Measurement	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)	
1	0.90	0.11	0.40	0.10	0.00	0.11	0.50	0.10	1.80	0.11	0.50	0.10	0.50	0.10	0.10	0.11	0.0	0.26	0.0	0.10	0.0	0.0	0.22
2	1.12	0.10	0.85	0.13	1.12	0.50	1.15	0.23	2.25	0.10	0.92	0.11	1.10	0.10	0.90	0.29	0.70	0.27	0.94	0.31	0.94	0.44	
3	1.34	0.11	1.30	0.12	2.24	0.42	1.80	0.24	2.70	0.10	1.34	0.10	1.70	0.11	^{1.70} 0.31	1.40	0.57	1.88	0.59	1.88	0.54		
4	1.56	0.10	1.75	0.15	3.36	0.18	2.45	0.25	3.15	0.11	1.76	0.13	2.30	0.14	2.60	0.33	2.10	0.47	2.82	0.71	2.82	0.56	
5	1.78	0.12	2.20	0.16	4.48	0.0	3.10	0.29	3.60	0.16	2.18	0.12	2.90	0.12	3.30	0.42	2.80	0.46	3.76	0.79	3.76	0.65	
6	2.00	0.14	2.65	0.22	5.60	0.10	3.75	0.30	4.05	0.15	2.60	0.10	3.50	0.12	4.10	0.44	3.50	0.71	4.70	0.59	4.70	0.65	
7	2.22	0.13	3.10	0.27	6.72	0.13	4.35	0.26	4.50	0.11	3.02	0.18	4.10	0.19	4.90	0.50	4.20	0.60	5.66	0.58	5.66	0.66	
8	2.44	0.11	3.55	0.17	7.84	0.29	5.00	0.35	4.95	0.22	3.44	0.12	4.70	0.19	5.70	0.45	4.90	0.51	6.60	0.61	6.60	0.58	
9	2.66	0.16	4.00	0.26	8.96	0.46	5.65	0.33	5.40	0.18	3.86	0.13	5.30	0.17	6.50	0.10	5.60	0.16	7.54	0.59	7.54	0.42	
10	2.88	0.18	4.45	0.28	^{10.03} 9.90	0.73	6.30	0.31	5.85	0.19	4.28	0.16	5.90	0.22	7.30	0.18	6.30	0.23	8.48	0.36	8.48	0.20	
11	3.10	0.17	4.85	0.2	11.10	0.17	6.95	0.20	6.25	0.18	4.70	0.10	6.50	0.17	8.10	0.11	7.00	0.13	9.40	0.13	9.40	0.10	
12	4.30	0	4.86	0	11.20	0	7.20	0	7.55	0	5.60	0	6.60	0	8.50	0	7.25	0	9.45	0	9.60	0	
Feature Type (riffle, run, or pool)	run		run		run/pool		run/pool		run		riffle		riffle		pool		pool		pool		pool		

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Alick Muenks Date: 5/8/07
 0720 5-14-07

WBID# 1591



Site# 1 Photo ID# 1591-1-542, Upstream T1



Site# 1 Photo ID# 1591-1-543, Upstream T1



Site# 1 Photo ID# 1591-1-544, Downstream T1



Site# 1 Photo ID# 1591-1-545, Downstream T1

WBID# 1591



Site# 1 Photo ID# 1591-1-546, Right descending bank T1



Site# 1 Photo ID# 1591-1-547, Right descending bank T1 downstream



Site# 1 Photo ID# 1591-1-548, Right descending bank T1 upstream

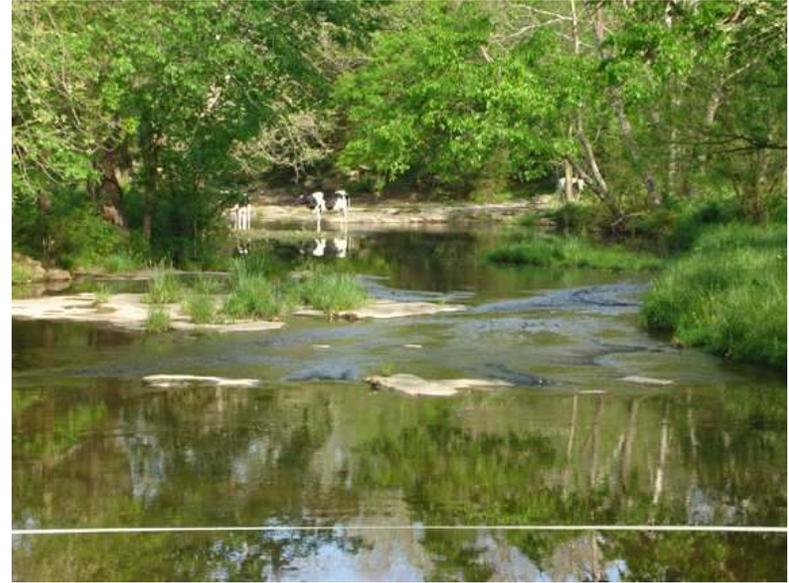


Site# 1 Photo ID# 1591-1-549, Downstream

WBID# 1591



Site# 1 Photo ID# 1591-1-550, Downstream



Site# 1 Photo ID# 1591-1-551, Upstream