WEST FORK CUIVRE RIVER
WBID 0185

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
P O Box 176
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

Data Sheet A - Water Body Identification

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

Water Body Name (from USGS 7.5' quad):	West Fork Cuivre River
Missouri Water Body Identification (WBID) Number:	185
8-digit HUC: 07110008	County: Audrain
Upstream Legal Description (from Table H):	11, 49N, 1W
Downstream Legal Description(from Table H):	Pike Co. Line
Number of sites evaluated	9
List all sites numbers, listed cnsequantly upstream to downstream:	1, 2, 3, 4, 5, 6, 7, 8, 9

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

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Upstream Coordinates: UTM X	Y	Downstream Coordinates: 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):	Benton City Sewer System
Discharger Permit Number(s):	MO 0103021

IV. UAA Surveyor (please print legibly)

Name of Surveyor Cassidy Luebbering	Telephone Number: (573) 443-4100
Organization/Employer: MFC Water Resources	
Position: WQST	

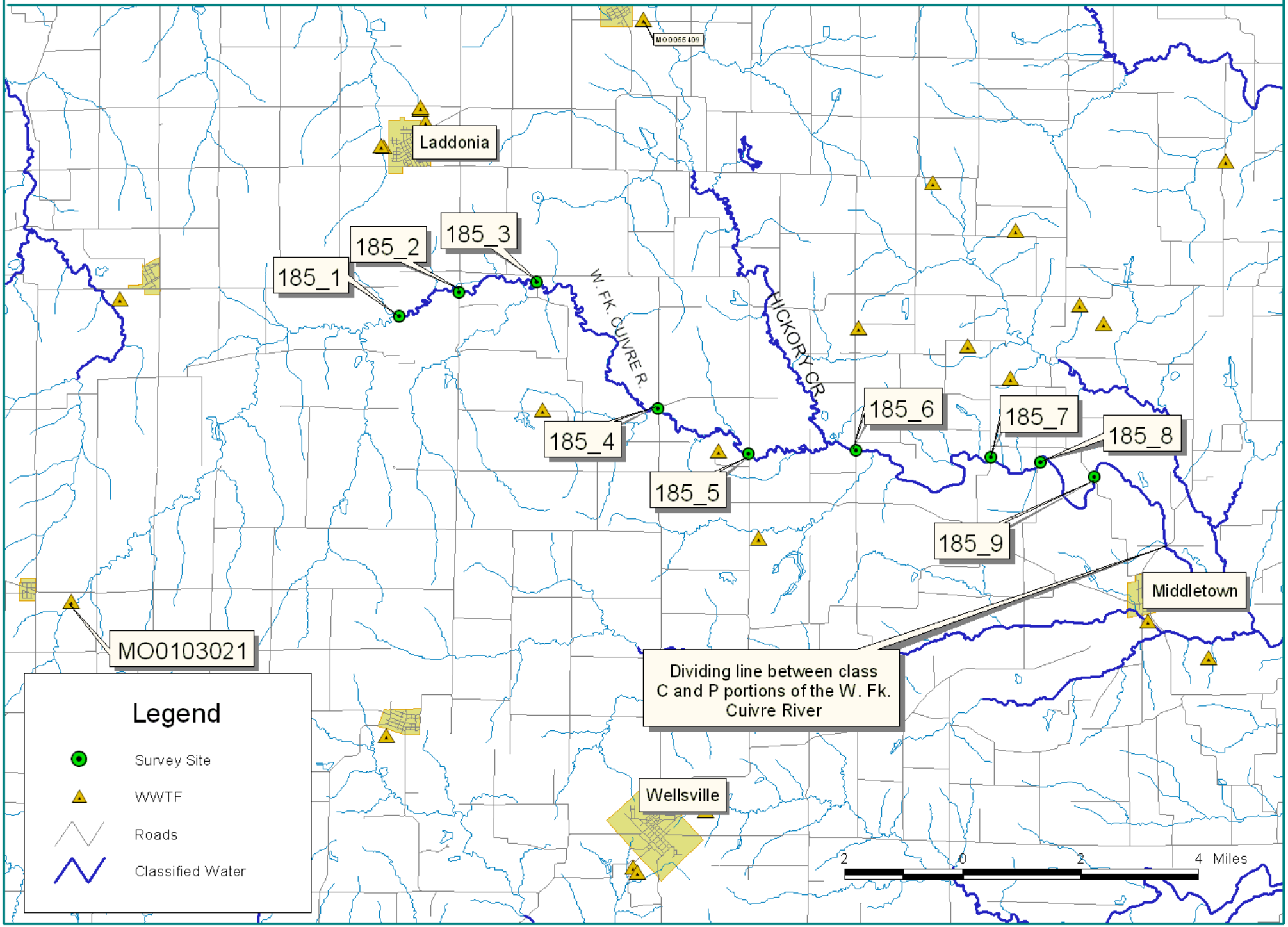
Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Signed: Cassidy Luebbering **Date:** 5/18/07

RWC 5-23-07

CMK 5/24/07

W. Fk. Cuivre River (0185), Length = 17.0 mi., Permit # MO0103021



WBID# 185
Site# 1

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/17/07 11:15	Site Location Description (e.g., road crossing): Hwy 54
Personnel (Data Collectors): CL/SB	Facility Name: Benton City Sewer System
Current Weather Conditions: Clear	Permit Number: MO 0103021
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site GPS Coordinates: UTM X: 616882		Y: 4339845	
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	± 28 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)
185_1_23	Site 1 US		
185_1_24	Site 1 DS		

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

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

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

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☑ Steep slopes	☐ None of the above	☐ Other:

Comments:

WBID# 185
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)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ 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)
20% RIFFLE	7	112	2.3	15	<.1	<.1
10% RUN	11	160	3.6	10	.1	.1
40% POOL	6	96	6.3	20	.3	.3

30% Glide Pool

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%.)

20	% Cobble	20	% Gravel	15	% Sand	10	% Silt	30	% Mud/Clay	5	% Bedrock

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

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
COLOR:	☐ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other: Brown
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☑ Fine sediments	☐ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☐ Foam	☑ None	☐ 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: _____ Date of Survey: 5/17/07

Organization: MEC Water Position: WQSTT / Field Team Leader

RWC 5-23-07 GAK 5/24/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 185 Site #: 1 (WBID_Site#)

Estimated Channel Incision: 0.15 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

UTM X: 6016882 UTM Y: 4339845

Horizontal Accuracy Estimate (GPS Data Quality): +/- 25 (feet)

Average Stream Width: 8 (meters) Length of Survey Segment: 160 (meters) (20x average stream width)

Field Staff: CL, SB

Dissolved Oxygen

Dissolved Oxygen: 7.09 / 74.8 (mg/L)

Dissolved Oxygen: 74.8 (% sat)

Specific Cond: 390.6 (µS/cm)

Water Temperature: 17.4 (°C)

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11		Dist
	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	0.3	0.1	5.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0	0.2	0	<.1	0	0.1	0	0.1	0.3	0.1	1.3	0.1	
2	.99	.2	.93	.2	1.09	.2	.81	0.1	.89	.3	.84	.2	.5		1.12	0.2	.92	.2	.89	.2	.59	.1	1.49
3	1.68	.4	1.56	.2	1.88	.3	1.32	.1	1.48	.3	1.38	.2	.7		1.94	.3	1.54	.3	1.48	.2	1.88	.1	1.68
4	2.37	.4	2.19	.3	2.67	.3	1.83	<.1	2.07	.2	1.92	.3	.9		2.76	.3	2.16	.3	2.07	.2	1.17	.1	1.87
5	3.06	.5	2.82	.4	3.46	.3	2.34	<.1	2.66	.2	2.46	.3	1.1		3.58	.3	2.78	.3	2.66	.2	1.46	.1	2.06
6	3.75	.4	3.45	.3	4.25	.3	2.85	<.1	3.25	.2	3.80	.3	1.3		4.4	.3	3.4	.3	3.25	.2	1.75	.1	2.25
7	4.44	.4	4.08	.2	5.04	.3	3.36	<.1	3.84	.2	3.54	.3	1.5		5.22	.3	4.02	.3	3.85	.2	2.04	.1	2.44
8	5.13	.3	4.71	.1	5.83	.3	3.87	<.1	4.43	.2	4.08	.3	1.7		6.04	.3	4.64	.3	4.43	.2	2.33	.1	2.63
9	5.82	.3	5.34	.2	6.62	.3	4.38	<.1	5.02	.3	4.62	.2	1.9		6.86	.2	5.26	.3	5.02	.2	2.62	.1	2.82
10	6.51	.3	5.97	.1	7.41	.3	4.89	.1	5.61	.2	5.16	.2	2.1		7.68	.2	5.88	.3	5.61	.2	2.91	.1	3.01
11	7.2	0.1	6.6	0.1	8.2	0.1	5.4	0.1	6.2	0.1	5.7	0.1	2.3	<.1	8.5	0.1	6.5	0.1	6.2	0.1	3.2	0.1	
12	7.5	0	7.2	0	8.2	0	6.6	0	6.6	0	6.3	0	2.3	0	8.5	0	6.6	0	6.6	0	3.6	0	
Feature Type (riffle, run, or pool)	Pool		Pool		Pool		Glide/Pool		Glide/Pool		Pool		Riffle		Glide/Pool		Pool		Glide/Pool		Run		

5/24/07

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: [signature] Date: 5/17/07

5-23-07 5/24/07

WBID# 185
Site# 2

Field Data Sheets for Recreational Use Stream Surveys

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

Date & Time: 5/17/07 12:30	Site Location Description (e.g., road crossing): County Road 109
Personnel (Data Collectors): CL/SB	Facility Name: Benton City Sewer System
Current Weather Conditions: Clear	Permit Number: MO0103021
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 618524 Y: 4340512

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	± 25 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)
185_2_25	site 2 US		
185_2_26	site 2 DS		

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

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

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

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☑ Fence	☑ Steep slopes	☐ None of the above	☐ Other:

Comments:

WBID# 185
Site# 2

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)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ 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						
RUN						
POOL	3	48	11 to 13	11+	>1	>1

100% Auc

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%.)

0	% Cobble	0	% Gravel	2	% Sand		% Silt	98	% Mud/Clay	0	% Bedrock

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

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
COLOR:	☐ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other: Brown/Green
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☑ Fine sediments	☐ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☑ Scum	☐ Foam	☐ None	☐ 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: Carrie Lindley Date of Survey: 5/17/07

Organization: MEC Water Position: WQS II / Field Team Lead

AWC 5-23-07 5/24/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 155 Site #: 2 (WBID_Site#)

Estimated Channel Incision: .15 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

UTM X: 6185241 UTM Y: 4340512

Horizontal Accuracy Estimate (GPS Data Quality): +/- 25 (feet)

Average Stream Width: 8 (meters) Length of Survey Segment: 160 (meters) (20x average stream width)

Field Staff: CL, SB

Dissolved Oxygen

Dissolved Oxygen: 4.56 (mg/L)

Dissolved Oxygen: 48.8 (% sat)

Specific Cond: 383.5 (µS/cm)

Water Temperature: 17.8 (°C)

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	0.3	0.1	0	0.3	0	0.1	0	0.3	0	0.3	0	0.1	0	.4	0	.5	0	0.2	0	.1	0	0.1
2	1.1	.2	1.5	.7	1.3	.6	1.1	>1	1.3	.8	1.74	.8	1.5	>1	1.3	.8	.9	.6	.9	.5	.9	.5
3	1.8	.5	2.6	.99	2.6	.9	2.2	|	2.6	>1	2.8	>1	2.6	|	2.6	>1	1.7	.9	1.8	.6	1.8	.6
4	2.6	.5	3.8	1.0	3.9	>1	3.3	|	3.9	|	~~3.92~~	|	3.8	|	3.9	|	2.6	1.0	2.7	.6	2.7	.8
5	3.4	.4	5.0	.3	5.2	|	4.4	|	5.2	|	~~3.26~~	|	5.0	|	5.2	|	3.4	.9	3.6	.7	3.6	.9
6	4.2	.5	6.2	.7	6.5	|	5.5	|	6.5	|	~~6.57.0~~	|	6.2	|	6.5	|	4.3	.9	4.5	.8	4.5	1.0
7	4.9	.6	7.3	.7	7.8	|	6.6	|	7.8	|	~~7.89.4~~	|	7.3	|	7.8	|	5.2	.8	5.4	.8	5.4	.9
8	5.7	.5	8.5	.7	9.1	|	7.7	|	9.1	|	9.8	|	8.5	|	9.1	|	6.0	.8	6.3	.8	6.3	.7
9	6.5	.5	9.7	.7	10.4	|	8.8	|	10.4	|	11.2	|	9.7	|	10.4	|	6.9	.7	7.2	.5	7.2	.6
10	7.2	.5	10.8	.7	11.7	|	9.9	|	11.7	|	12.6	|	11	|	11.7	.6	7.7	.5	8.1	.4	8.1	.2
11	8.0	0.4	12	0.1	13	0.5	11	.2	13	.4	14	.8	12	.2	13	.1	8.6	.1	9	.1	9	0.3
12	8.6	0	12	0	13	0	11	0	13	0	14		12	0	13	0	13 cut 8.6	0	9	0	9	0.0
Feature Type (riffle, run, or 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: [signature] Date: 5/17/07

MC 5/24/07

WBID# 185
Site# 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/17/05 13:30	Site Location Description (e.g., road crossing): County Road 625
Personnel (Data Collectors): CL/SB	Facility Name: Benton City Sewer System
Current Weather Conditions: P. Cloudy	Permit Number: MO 0103021
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 620629 Y: 4340784

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	± 31 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)
185_3_27	Site 3 US		
185_3_28	Site 3 DS		

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

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

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

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☑ Steep slopes	☐ None of the above	☐ Other:

Comments:

WBID# 185
Site# 3

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)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ 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						
RUN	4	60	4.5	15	.3	.4
POOL	3	45	6.1	15	.4	.8

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%.)

5	% Cobble	5	% Gravel	10	% Sand	10	% Silt	70	% Mud/Clay	0	% Bedrock

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

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
COLOR:	☐ Clear	☐ Green	☐ Gray	☐ Milky	☑ Other: Brown
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☑ Fine sediments	☐ None	☑ Other: Woody debris
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☐ Foam	☑ None	☐ 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: Carol Lindley Date of Survey: 5/17/07

Organization: MEC Water Position: WQS II / Field Team Lead

BWL 5-23-07 JJK 5/24/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 185 Site #: 3 (WBID_Site#)

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

GPS Location (taken at transect 1):

UTM X: 620629 UTM Y: 4340784

Horizontal Accuracy Estimate (GPS Data Quality): +/- 31 (feet)

Average Stream Width: 7 (meters) Length of Survey Segment: 150 (meters) (20x average stream width)

Field Staff: CC, JSB

Dissolved Oxygen

Dissolved Oxygen: 6.33 (mg/L)

Dissolved Oxygen: 65.2 (% sat)

Specific Cond: 378.2 (µS/cm)

Water Temperature: 16.2 (°C)

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	0.6	0.1	.6	0.1	0.3	.1	.3	.1	0	.1	0.3	.1	0.3	0.1	0	.3"	.3	.1	2	.1	.3	.1
2	.7	.1	1.1	.3	.9	.3	.7	.1	.4	.1	.8	.2	.9	.3	.5	.1	.9	.3	2.5	<.1	.9	.3
3	.8	.2"	1.6	.4	1.6	.4	1.1	.1	.7	.3	1.2	.4	1.5	.5	1.0	.3	1.6	.4	3.0	.1	1.4	.5
4	.9	.2	2.2	.4	2.2	.6	1.5	.1	1.1	.4	1.7	.4	2.2	.6	1.6	.4	2.2	.5	3.6	.1	2.0	.5
5	1.0	.2	2.7	.4	2.9	.8	1.9	.3	1.5	.4	2.1	.3	2.8	.6	2.1	.3	2.9	.7	4.1	<.1	2.6	.7
6	1.2	.2	3.2	.4	3.5	.8	2.3	.4	1.9	.5	2.6	.3	3.4	.7	2.6	.4	3.5	.9	4.6	<.1	3.2	.7
7	1.3	.1	3.7	.4	4.1	.6	2.6	.4	2.2	.6	3.1	.2	4.0	.6	3.1	.3	4.1	>1	5.1	.2	3.7	.7
8	1.4	.1	4.2	.3	4.8	.4	3.0	.3	2.6	.6	3.5	.2	4.6	.5	3.6	.4	4.8	.85	5.6	.3	4.3	.5
9	1.5	.1	4.8	.3	5.4	.3	3.4	.3	3.0	.5	4.0	.2	5.3	.4	4.2	.3	5.4	.7	6.2	.4	4.9	.3
10	1.6	.1	5.3	.2	6.1	.2	3.8	.2	3.3	.2	4.4	.2	5.9	.2	4.7	.3	6.1	.4	6.7	.4	5.4	.2
11	1.7	0	5.8	.1	6.7	.1	4.2	.1	3.7	.1	4.9	0.1	6.5	0.1	5.2	.1	6.7	.1	7.2	.1	6.0	.1
12	2.0	0	6.1	0	7	0	~~4.5~~	0	4	0	5.2	0	7.5	0	5.2	0	6.7	0	7.5	0	6.3	0
Feature Type (riffle, run, or pool)	Run		Pool		Pool		Run		Run		Run		Pool						Run		Run	

Pool >1m

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: [signature] Date: 5/17/07

RHC 5-23-07

WBID# 185
Site# 4

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/18/07 10:15	Site Location Description (e.g., road crossing): County Rd. 637
Personnel (Data Collectors): CC, SB	Facility Name: Benton City Sewer System
Current Weather Conditions: Clear	Permit Number: MO 0103021
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site GPS Coordinates: UTM X: 623916		Y: 4337363	
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	± 20 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)
185_4_29	Site 4 US		
185_4_30	Site 4 DS		

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

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

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

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☑ Steep slopes	☐ None of the above	☐ Other:

Comments:

WBID# 185
Site# 4

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)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ 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						
RUN	7	105	3.6	15	.4	.1
POOL	3	45	6.3	15	.4	.5

AnC

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%.)

10	% Cobble	10	% Gravel	5	% Sand	5	% Silt	70	% Mud/Clay	0	% Bedrock

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

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
COLOR:	☐ Clear	☐ Green	☐ Gray	☐ Milky	☑ Other: Brown
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☑ Fine sediments	☐ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☐ Foam	☑ None	☐ 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: Cassandra Lindley Date of Survey: 5/18/07

Organization: MEC Water Position: WQS II / Field Team Lead

AnC 5-23-07 AK 5/24/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 185 Site #: 4
(WBID_Site#)

Estimated Channel Incision: .2 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

UTM X: 623916 UTM Y: 4337363

Horizontal Accuracy Estimate (GPS Data Quality): +/- 20 (feet)

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

Field Staff: CC, JB

Dissolved Oxygen

Dissolved Oxygen: 5.85 (mg/L)

Dissolved Oxygen: 59.6 (% sat)

Specific Cond: 369.1 (µS/cm)

Water Temperature: 16.0 (°C)

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	0.1	0.1	.6	.1	.3	.1	0	.1	.3	.1	.6	.1	1.6	.1	1.5	.1	.9	0.1	.6	.1	0	.1
2	.2	.1	1.1	<.1	.8	.2	.7	.3	.5	.1	.9	.1	1.7	.1	1.6	.2	1.0	.1	.9	.1	.4	.2
3	.4	.1	1.6	<.1	1.4	.2	1.5	.4	.6	.1	1.2	.1	1.8	|	1.7	|	1.0	|	1.1	.1	.7	.2
4	.5	.1	2.2	<.1	1.9	.3	2.2	.3	.8	.1	1.6	.1	1.9	|	1.7	|	1.1	|	1.4	.2	1.1	.3
5	.6	.1	2.7	<.1	2.5	.4	2.9	.3	1.0	.2	1.9	.2	2.0	|	1.8	|	1.1	|	1.7	.2	1.5	.4
6	.8	<.1	3.2	Dry	3.0	.5	3.7	.3	1.2	.3	2.2	.3	2.2	|	1.9	|	1.2	|	2.0	.2	1.9	.4
7	.9	.1	3.7	<.1	3.5	.5	4.4	.2	1.3	3	2.5	.2	2.3	|	2.0	|	1.2	|	2.2	.1	2.2	.3
8	1.0	.1	4.2	<.1	4.1	.5	5.1	.1	1.5	.3	2.8	.2	2.4	|	2.1	|	1.3	|	2.5	.1	2.6	.2
9	1.1	.2	4.8	<.1	4.6	.5	5.8	.2	1.7	.3	3.2	.1	2.5	|	2.1	|	1.3	|	2.8	.1	3.0	.1
10	1.3	.1	5.3	.2	5.2	.4	6.6	.1	1.8	.2	3.5	.1	2.6	|	2.2	.2	1.4	|	3.0	.2	3.3	.1
11	1.4	0.1	5.8	.1	5.7	.1	7.3	.1	2.0	0.1	3.8	.1	2.7	.1	2.3	0.1	1.4	.1	3.3	.1	3.7	.1
12	3.1	0	6.1	0	6.3	.1	7.9	0	2.6	0	4.5	0	3.6	0	2.9	0	4	0	3.6	0	4	0
Feature Type (riffle, run, or pool)	Run		Run		Pool		Pool		Run		Run		Run		Run		Run		~		~	

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: [signature] Date: 5/18/07

[signature] 5/24/07

WBID# 185
Site# 5

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/18/07 11:15	Site Location Description (e.g., road crossing): C.R. 6419
Personnel (Data Collectors): CL, SB	Facility Name: Benton City Sewer System
Current Weather Conditions: Clear	Permit Number: MO 0103021
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 626374 Y: 4336137

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	± 17 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)
185_5_31	Site 5 US		
185_5_32	Site 5 DS		

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

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

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

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☑ Steep slopes	☐ None of the above	☐ Other:

Comments:

WBID# 185
Site# 5

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)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ 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						
RUN						
POOL	4	72	10	18	>1	>1

1100 QAC

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%.)

5	% Cobble	10	% Gravel	10	% Sand	2030	% Silt	45	% Mud/Clay		% Bedrock

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

sites
Transect 1 - Arrowhead - 5'x2' area

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
COLOR:	☐ Clear	☐ Green	☐ Gray	☐ Milky	☑ Other: Brown
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☑ Fine sediments	☐ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☑ Scum	☐ Foam	☐ None	☐ 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: [signature] Date of Survey: 5/18/07

Organization: MEC Water Position: WQSIT / Field Team Lead

QAC 5-23-07 5/24/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 185 Site #: 5 (WBID_Site#)

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

GPS Location (taken at transect 1):

UTM X: 626374 UTM Y: 4336137

Horizontal Accuracy Estimate (GPS Data Quality): +/- 17 (feet)

Average Stream Width: 9 (meters) Length of Survey Segment: 180 (meters) (20x average stream width)

Field Staff: CL, JB

Dissolved Oxygen

Dissolved Oxygen: 6.56 (mg/L)

Dissolved Oxygen: 67.6 (% sat)

Specific Cond: 332.4 (µS/cm)

Water Temperature: 16.9 (°C)

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	.3	.1	0.	.1	0	.1	0	.1	0	.1	.6	.1	.6	.1	.3	.1	.6	.1	0	.1	0	.1
2	1.1	.1	1	.7	1	.3	1	.3	.9	.3	1.5	.3	1.5	.5	1.0	.3	1.4	.5	.9	.7	1	.4
3	1.8	.2	2	>1	2	.7	2	.7	1.8	.7	2.4	.5	2.4	.6	1.6	.3	2.2	.6	1.8	>1	2	.6
4	2.6	.4	3	|	3	>1	3	>1	2.7	.8	3.3	.6	3.3	.6	2.3	.4	3.0	.7	2.7	.9	3	.8
5	3.3	.6	4	|	4	|	4	|	3.6	.9	4.2	.7	4.2	.6	2.9	.4	3.8	.8	3.6	.9	4	.6
6	4.1	.5	5	|	5	|	5	|	4.5	.8	5.2	.6	5.1	.6	3.6	.5	4.6	.7	4.5	1.0	5	.5
7	4.8	.4	6	>1	6	|	6	|	5.4	.9	6.1	.5	6.0	.6	4.3	.8	5.3	.5	5.4	.9	4	.6
8	5.6	.3	7	.9	7	>1	7	>1	6.3	.8	7.0	.4	6.9	.6	4.9	.9	6.1	.6	6.3	.9	7	.6
9	6.3	.3	8	.6	8	.7	8	.7	7.2	.9	7.9	.5	7.8	.4	5.6	.9	6.9	.6	7.2	.6	8	.5
10	7.1	.2	9	.3	9	.3	9	.3	8.1	.7	8.8	.4	8.7	.4	6.2	.8	7.7	.6	8.1	.4	9	.5
11	7.8	.1	10	.1	10	.1	10	.1	9	.1	9.7	.1	9.6	.1	6.9	.1	8.5	.1	9	.1	10	.1
12	7.9	0	10	0	10	0	10	0	9	0	10	0	9.6	0	6.9	0	8.5	0	9	0	10	0
Feature Type (riffle, run, or 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: [signature] Date: 5/18/07

5/24/07 5-23-07

WBID# 185
Site# 6

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/18/07 1220	Site Location Description (e.g., road crossing): Hwy W Bridge
Personnel (Data Collectors): CC, SB	Facility Name: Benton City Sewer System
Current Weather Conditions: Clear	Permit Number: MO 0103021
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 629299 Y: 4336230

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	± 63 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)
185_6_33	Site 6 US		
185_6_34	Site 6 DS		

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

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

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

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☐ Steep slopes	☐ None of the above	☐ Other:

Comments:

WBID# 185
Site# 6

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)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ 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						
RUN						
POOL	3	60	14.5	20	.5	.7

100 RWC

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%.)

10	% Cobble	10	% Gravel	10	% Sand	25	% Silt	45	% Mud/Clay		% Bedrock

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

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
COLOR:	☐ Clear	☐ Green	☐ Gray	☐ Milky	☑ Other: Brown
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☑ Fine sediments	☐ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☐ Foam	☑ None	☐ 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: [signature] Date of Survey: 5/18/07

Organization: MEC Water Position: WQS II / Field Team Lead

RWC 5-23-07

JK 5/24/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 185 Site #: 6 (WBID_Site#)

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

GPS Location (taken at transect 1):

UTM X: 629299 UTM Y: 4336230 +/- 63 (feet)

Horizontal Accuracy Estimate (GPS Data Quality):

Average Stream Width: 15 (meters) Length of Survey Segment: 200 (meters)

(20x average stream width)

Field Staff: CL, SB

Dissolved Oxygen

Dissolved Oxygen: 5.05 (mg/L)

Dissolved Oxygen: 54.6 (% sat)

Specific Cond: 352.2 (µS/cm)

Water Temperature: 18.6 (°C)

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	0.1	0	.2	0	.2	0	.3	0	.1	0	.2	0	.1	0	.2	0	0.1	0	.1	0	0.1
2	1.6	.4	1.4	.6	1.5	.4	1.4	.5	1.5	.3	1.5	.4	1.5	.3	1.6	.6	1.6	.5	1.7	.7	1.7	.7
3	3.2	.6	2.8	.6	2.9	.5	2.8	.6	2.9	.4	3.0	.5	3.0	.4	3.2	.7	3.3	.6	3.5	.8	3.4	.9
4	4.8	1	4.2	.7	4.4	.6	4.2	.7	4.4	.5	4.5	.7	4.5	.5	4.8	.8	4.8	.7	5.2	.8	5.1	.9
5	6.4	>1	5.6	.7	5.8	.6	5.6	.7	5.9	.5	6.0	.7	6.0	.7	6.4	.8	6.4	.8	6.9	.9	6.8	.8
6	8.0	.6	7.0	.5	7.3	.7	7.0	.6	7.4	.7	7.5	.6	7.5	.7	8.0	.7	8.0	.8	8.7	.8	8.5	.8
7	9.6	.6	8.4	.5	8.7	.7	8.4	.5	8.8	.7	9.0	.6	9.0	.6	9.6	.7	9.6	.7	10.4	.9	10.3	.9
8	11.2	.6	9.8	.4	10.2	.5	9.8	.5	10.3	.6	10.5	.5	10.5	.6	11.2	.6	11.2	.7	12.1	.8	11.89	.8
9	12.8	.5	11.2	.4	11.6	.5	11.2	.4	11.8	.5	12.0	.4	12.0	.4	12.8	.7	12.8	.6	13.8	.8	13.6	.7
10	14.4	.5	12.6	.5	13.1	.4	12.6	.4	13.2	.4	13.5	.4	13.5	.4	14.4	.5	14.4	.6	15.6	.6	15.3	.6
11	16	.4	14	.3	14.5	.3	14	.3	14.1	.3	15	.3	15	.3	16	.1	16	.1	17.3	.1	17	.1
12	16	0	14	0	14.5	0	14	0	14.1	0	15	0	15	0	16	0	16	0	17.3	0	17	0
Feature Type (riffle, run, or 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: [signature] Date: 5/18/07

5/24/07 5-23-07

WBID# 185
Site# 7

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/18/07 13:30	Site Location Description (e.g., road crossing): C.R. 681
Personnel (Data Collectors): CL, JB	Facility Name: Benton City Sewer System
Current Weather Conditions: Clear	Permit Number: MO 0103021
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 632976 Y: 4336024

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	± 26 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)
185_7_35	Site 7 US		
185_7_36	Site 7 DS		

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

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

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

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☑ Steep slopes	☐ None of the above	☐ Other:

Comments:

WBID# 185
Site# 7

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)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ 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						
RUN						
POOL	6	120	~~2016~~	20	.5	.7

100 RWC

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	30	% Gravel	20	% Sand	10	% Silt	10	% Mud/Clay		% Bedrock

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

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
COLOR:	☑ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other: Brown
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☐ Fine sediments	☑ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☑ Scum	☐ Foam	☐ None	☐ 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: [signature] Date of Survey: 5/18/07

Organization: MEC Water Position: WQSTT / Field Team Lead

RWC - 5-23-07 [signature] 5/24/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 185 Site #: 7 (WBID_Site#)

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

GPS Location (taken at transect 1):

UTM X: 632976 UTM Y: 4336024

Horizontal Accuracy Estimate (GPS Data Quality): +/- 26 (feet)

Average Stream Width: 12 (meters) Length of Survey Segment: 200 (meters) (20x average stream width)

Field Staff: CC, JB

Dissolved Oxygen

Dissolved Oxygen: 6.76 (mg/L)

Dissolved Oxygen: 70.6 (% sat)

Specific Cond: 326.6 (µS/cm)

Water Temperature: 17.9 (°C)

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	0.3	.1	0	.1	0	.3	0	.4	0	.3	0	.2	0	.1	0	.1	.3	.1	0	.1	0	.1
2	1.4	.4	1.3	>1	1.2	>1	1.6	.6	1.6	.4	1.6	.3	1.6	.2	1.6	.6	1.6	.5	1.7	.5	1.8	.5
3	2.4	.5	2.6	>1	2.3	>1	3.2	.6	3.2	.3	3.2	.4	3.1	.5	3.3	.4	3.3	.6	3.5	.6	3.5	.6
4	3.5	.6	3.9	.9	3.5	>1	4.8	.5	4.8	.4	4.8	.5	4.7	.5	4.9	.5	4.9	.4	5.2	.4	5.3	.5
5	4.5	.7	5.2	.8	4.7	.9	6.4	.3	6.4	.3	6.4	.5	6.3	.6	6.5	.6	6.5	.4	6.9	.4	7.0	.5
6	5.6	.8	6.5	.8	5.9	.7	8.0	.3	8.0	.3	8.0	.7	7.9	.6	8.2	.6	8.2	.4	8.7	.5	8.8	.5
7	6.7	1.0	7.8	.8	7.0	.7	9.6	.5	9.6	.3	9.6	.6	9.4	.6	9.8	.6	9.8	.4	10.4	.5	10.6	.6
8	7.7	1.0	9.1	.7	8.2	.6	11.2	.4	11.2	.4	11.2	.7	11.0	.6	11.4	.6	11.4	.5	12.1	.4	12.3	.6
9	8.8	.7	10.4	.4	9.4	.4	12.8	.2	12.8	.6	12.8	.7	12.6	.7	13.0	.5	13.0	.5	13.8	.5	14.1	.6
10	9.8	.4	11.7	.2	10.5	.2	14.4	.2	14.4	.7	14.4	.5	14.1	.7	14.7	.5	14.7	.4	15.6	.5	15.8	.5
11	10.9	0.1	13	0.1	11.7	.1	16	.1	16	.3	16.0	.1	15.7	.3	16.3	.1	16.3	.1	17.3	.1	17.6	.1
12	11.2	0	13	0	12	0	16	0	16	0	16	0	15.7	0	16.3	0	16.6	0	17.6	0	17.6	~~17.6~~ 0
Feature Type (riffle, run, or pool)	Pool						Glide	Pool	Glide	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: [signature] Date: 5/18/07

5/24/07 RMC 5-23-07

WBID# 185
Site# 8

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/18/09 14:30	Site Location Description (e.g., road crossing): C,R, 689
Personnel (Data Collectors): CC, JB	Facility Name: Benton City Sewer System
Current Weather Conditions: Clear	Permit Number: MO 0103021
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 634319 Y: 4335884

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	± 22 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)
185_8_37	Site 8 US		
185_8_38	Site 8 DS		

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

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

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

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☑ Steep slopes	☐ None of the above	☐ Other:

Comments:

WBID# 185
Site# 9

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)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ 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						
RUN						
POOL	4	80	12.6	20	.3	.3

100 MUC

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%.)

40	% Cobble	30	% Gravel	15	% Sand	5	% Silt	10	% Mud/Clay		% Bedrock

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

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
COLOR:	☑ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☐ Fine sediments	☑ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☐ Foam	☑ None	☐ 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: [signature] Date of Survey: 5/18/07

Organization: MEC Water Position: WQSIT

MUC 5-23-07

5/24/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 185 Site #: 8 (WBID_Site#)

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

GPS Location (taken at transect 1):

UTM X: 634319 UTM Y: 4335884

Horizontal Accuracy Estimate (GPS Data Quality): +/- 22 (feet)

Average Stream Width: 12 (meters) Length of Survey Segment: 200 (meters) (20x average stream width)

Field Staff: CC, SB

Dissolved Oxygen

Dissolved Oxygen: 8.71 (mg/L)

Dissolved Oxygen: 100.8 (% sat)

Specific Cond: 314.5 (µS/cm)

Water Temperature: 21.2 (°C)

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	.3	.1	0	.2	1	0.1	0.6	0.1	1.6	0.1	1.3	0.1	1.3	0.1	0.6	0.1	.6	0.1	.3	.1	1	0.1
2	1.5	.2	1.3	.4	2.0	.2	1.8	.2	2.6	.2	2.3	.2	2.6	.1	2.1	.2	2.0	.1	1.8	.2	2.1	.3
3	3.7	.3	2.6	.4	2.9	.2	3.0	.2	3.5	.3	3.3	.2	3.8	.1	3.5	.2	3.5	.2	3.3	.3	3.1	.4
4	3.9	.3	3.9	.3	3.9	.1	4.2	.2	4.5	.3	4.4	.3	5.1	.1	5.0	.2	4.9	.5	4.8	.4	4.2	.5
5	5.1	.3	5.2	.3	4.9	.1	5.4	.3	5.5	.4	5.4	.3	6.4	.2	6.5	.3	6.4	.6	6.3	.5	5.2	.5
6	6.3	.3	6.6	.3	5.9	.3	6.6	.3	6.5	.4	6.4	.3	7.7	.3	8.0	.5	7.8	.8	7.8	.6	6.3	.6
7	7.5	.3	7.9	.4	6.8	.3	7.8	.3	7.4	.4	7.4	.4	8.9	.4	9.4	.4	9.2	.8	9.3	.6	7.4	.7
8	8.7	.3	9.2	.3	7.8	.3	9.0	.3	8.4	.4	8.4	.4	10.2	.4	10.9	.4	10.7	.7	10.8	.7	8.4	.6
9	9.9	.2	10.5	.3	8.8	.2	10.2	.3	9.4	.4	9.5	.4	11.5	.4	12.4	.5	12.1	.5	12.3	.8	9.5	.6
10	11.1	.1	11.8	.3	9.7	.2	11.4	.3	10.3	.4	10.5	.5	12.7	.4	13.8	.4	13.6	.4	13.8	.6	10.5	.3
11	12.3	.1	13.1	.2	10.7	0.1	12.6	0.1	11.3	0.1	11.5	0.4	14	.3	15.3	0.1	15	.1	15.3	0.1	11.6	0.1
12	13.6	0	13.1	0	12	0	12.6	0	11.3	0	11.5	0	14	0	15.3	0	15	0	15.3	0	11.9	0
Feature Type (riffle, run, or pool)	Glide/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: [signature] Date: 5/18/07

[signature] 5/24/07 awc 5-23-07

WBID# 185
Site# 9

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 5/18/07 15:30	Site Location Description (e.g., road crossing): C.R. 695
Personnel (Data Collectors): CL, JB	Facility Name: Benton City Sewer System
Current Weather Conditions: Clear, 70°F	Permit Number: MO0103021
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 635798 Y: 4335492

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	± 17 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)
185-9-39	Site 9 US		
185-9-40	Site 9 DS		

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

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

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

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☑ Steep slopes	☐ None of the above	☐ Other:

Comments:

WBID# 185
Site# 9

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)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ 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)
25 RIFFLE	6	120	5.5	20	<.1	<.1
20 RUN	7	140	4.0	20	.2	.2
55 POOL	2	410	15.0	20	.5	.6

QAC

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	45 % Gravel	15 % Sand	5 % Silt	5 % Mud/Clay	0 % Bedrock

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

Water Characteristics*: (Mark all that apply.)

ODOR:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
COLOR:	☑ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
BOTTOM DEPOSIT:	☐ Sludge	☐ Solids	☐ Fine sediments	☑ None	☐ Other:
WATER SURFACE DEPOSITION:	☐ Oil	☐ Scum	☑ Foam @ Riffle	☐ None	☐ 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: [signature] Date of Survey: 5/18/07

Organization: MEC Water Position: WQSTT / Field Team Lead

QAC 5-23-07 5/24/07

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 185 Site #: 9 (WBID_Site#)

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

GPS Location (taken at transect 1):

UTM X: 635798 UTM Y: 4335492

Horizontal Accuracy Estimate (GPS Data Quality): +/- 17 (feet)

Average Stream Width: 12 (meters) Length of Survey Segment: 200 (meters) (20x average stream width)

Field Staff: CL, SB

Dissolved Oxygen

Dissolved Oxygen: 7.60 (mg/L)

Dissolved Oxygen: 86.5 (% sat)

Specific Cond: 314 (µS/cm)

Water Temperature: 21.4 (°C)

Transect Cross-Section

Measurement	01 Distance (m)	01 Depth (m)	02 Distance (m)	02 Depth (m)	03 Distance (m)	03 Depth (m)	04 Distance (m)	04 Depth (m)	05 Distance (m)	05 Depth (m)	06 Distance (m)	06 Depth (m)	07 Distance (m)	07 Depth (m)	08 Distance (m)	08 Depth (m)	09 Distance (m)	09 Depth (m)	10 Distance (m)	10 Depth (m)	11 Distance (m)	11 Depth (m)
1	.3	.1	0.	.1	.3	.1	.6	.1	1.3	.1	0	<.1	.7	0.1	.6	.1	1.6	.1	0	[illegible]	.3	.1
2	1.7	.4	1.5	.3	2.1	.4	1.8	.3	2.2	.1	.55		1.0	.1	1.4	.2	2.8	.1	.3	[illegible]	1.5	.3
3	3.0	.7	2.9	.6	3.8	.5	3.0	.4	3.1	.2	1.1		1.3	.1	2.3	.3	4.0	.3	.6		2.6	.5
4	4.4	.6	4.4	.5	5.6	.7	4.2	.5	4.0	.3	1.7		1.7	.2	3.1	.4	5.2	.5	.9		3.8	.6
5	5.8	.7	5.9	.4	7.3	.8	5.4	.6	4.9	.3	2.2		2.0	.2	4.0	.5	6.4	.6	1.2		5.0	.6
6	7.2	.7	7.4	.5	9.1	.7	6.6	.7	5.8	.4	2.8		2.3	.2	4.8	.7	7.7	.8	1.5		6.2	.9
7	8.5	.7	8.8	.5	10.8	.6	7.8	.8	6.7	.4	3.3		2.6	.2	5.6	.8	8.9	.8	1.8		7.3	1.0
8	9.9	.7	10.3	.5	12.6	.6	9.0	.8	7.6	.3	3.9		2.9	.2	6.5	.7	10.1	1.0	2.1		8.5	.9
9	11.3	.6	11.8	.6	14.3	.6	10.2	.7	8.5	.2	4.4		3.3	.1	7.3	.5	11.3	>1	2.4		9.7	1.0
10	12.6	.6	13.2	.6	16.1	.4	10.4	.6	9.4	.1	5.0		3.6	.1	8.2	.3	12.3	.7	2.7		10.8	>1
11	14	.2	14.7	0.1	17.8	0.1	12.6	.4	10.3	.1	5.5	<.1	3.9	0.1	9	.1	13.7	0.1	3	[illegible]	12	.7
12	14	0	15	0	18.1	0	12.6	0	11	0	5.5	0	4	0	9	0	13.7	0	3	0	12.1	0
Feature Type (riffle, run, or pool)	Pool										Riffle		Run		Pool		Pool		Riffle		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: [signature] Date: 5/18/07

CL 5/24/07

BWC 5-23-07

WBID# 0185 West Fork Cuivre River

Site# 1 Photo ID# 23, Upstream

Site# 1 Photo ID# 24, Downstream

Site# 2 Photo ID# 25, Upstream

Site# 2 Photo ID# 26, Downstream

WBID# 0185 West Fork Cuivre River

Site# 3 Photo ID# 27, Upstream

Site# 3 Photo ID# 28, Downstream

Site# 4 Photo ID# 29, Upstream

Site# 4 Photo ID# 30, Downstream

WBID# 0185 West Fork Cuivre River

Site# 5 Photo ID# 31, Upstream

Site# 5 Photo ID# 32, Downstream

Site# 6 Photo ID# 33, Upstream

Site# 6 Photo ID# 34, Downstream

WBID# 0185 West Fork Cuivre River

Site# 7 Photo ID# 35, Upstream

Site# 7 Photo ID# 36, Downstream

Site# 8 Photo ID# 37, Upstream

Site# 8 Photo ID# 38, Downstream

WBID# 0185 West Fork Cuivre River

Site# 9 Photo ID# 39, Upstream

Site# 9 Photo ID# 40, Downstream