



Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 2168 Flat River Creek

Submitted by

MEC Water Resources

To

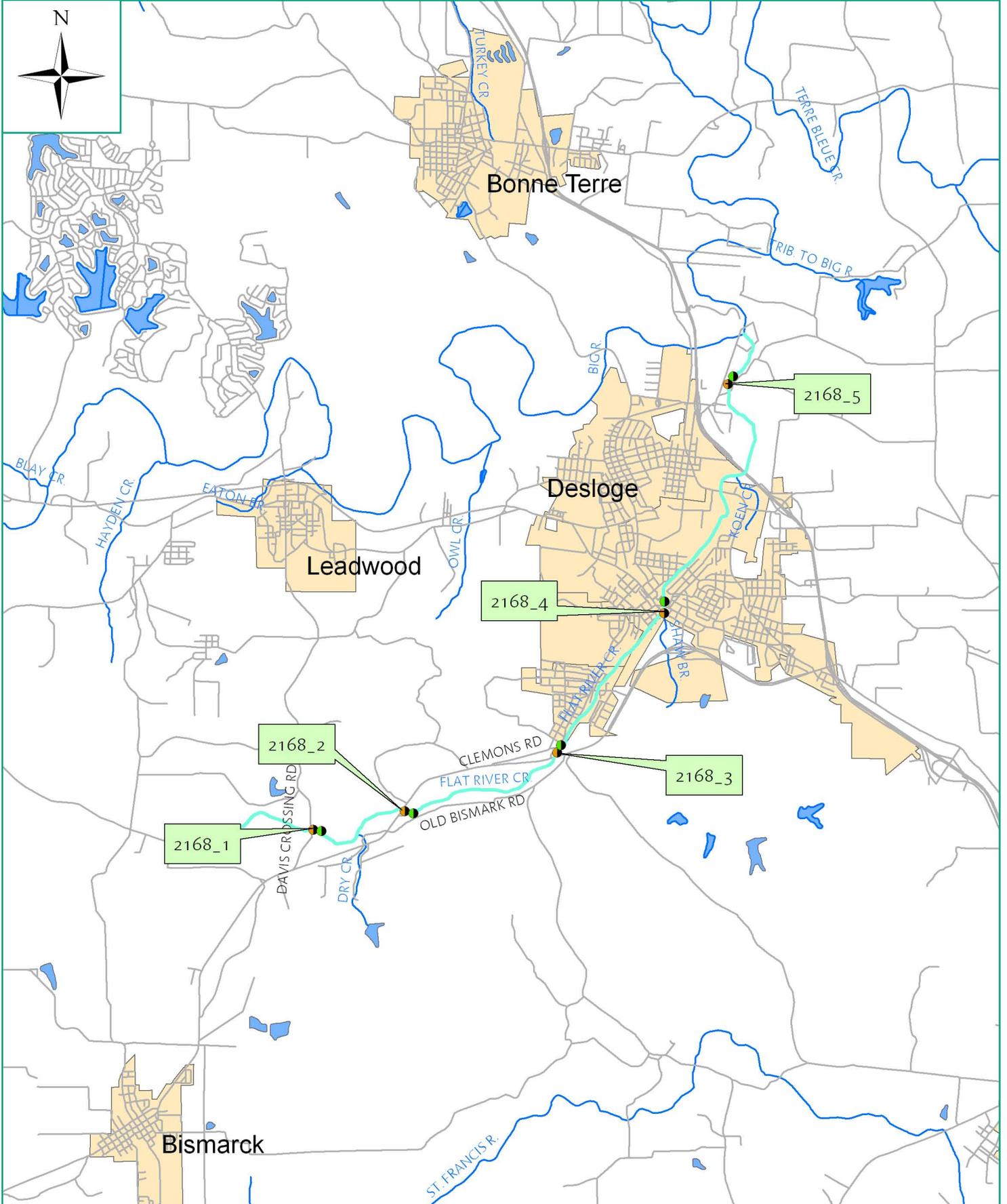
Missouri Department of Natural Resources

Water Protection Program

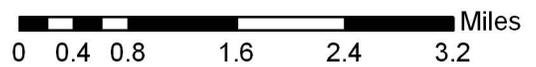
On

December 1, 2007

Flat River Cr. (WBID 2168)



- Upstream Boundary
- Downstream Boundary



WBID # 2168

Site # 1

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: <u>10/29/07 THU:50 11:10</u>	Site Location Description (e.g., road crossing):
Personnel (Data Collectors): <u>TA, JV</u>	<u>Davis Crossing Bridge</u>
Current Weather Conditions: <u>Clear, Dry</u>	Facility Name:
Weather Conditions for Past 10 days: <u>Rain/Clear</u>	Permit Number:
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): <u>4188067</u>	Northing (UTM Y): <u>0712307</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>13.7</u> Meters
Site 11	Easting (UTM X): <u>4188044</u>	Northing (UTM Y): <u>0712449</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>11.3</u> Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>2168-1-1317</u>	<u>US</u>	<u>2168-1-1318</u>	<u>ONS</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 # 2168

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 checked="" 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 type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: <i>Railroad/Gold</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%.)

<i>5</i> % Cobble	<i>20</i> % Gravel	<i>40</i> % Sand	<i>5</i> % Silt	% Mud/Clay	<i>30</i> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

<i>periphyton + algae abundant, grasses, water cress, smartweed</i>

Water Characteristics*: (Mark all that apply.)

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

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

WBID # 2168

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)
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: 10/29/07

Organization: MEC Water Resources Position: Water Quality Scientist

ANC 11-8-07

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: <u>2/68</u> Site #: <u>2E 1</u> (wbid_site #) Estimated Channel Incision: <u>0.25</u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u>4188067</u> UTM Y: <u>0712307</u> +/- <u>13.7</u> (meters) 11 UTM X: <u>4188044</u> UTM Y: <u>0712449</u> +/- <u>11.3</u> (meters) Average Stream Width: <u>5</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>TA JJV</u>	Dissolved Oxygen Date: <u>10/29/07</u> Time: <u>11:10</u> Dissolved Oxygen: <u>5.75</u> (mg/L) Dissolved Oxygen: <u>50.1</u> (% sat) Specific Cond: <u>405.5</u> (µS/cm) Water Temperature: <u>9.1</u> (°C)
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Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
Left Bank		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1		0.75	0.09	0.78	0.01	0.85	0.12	1.13	0.04	1.10	0.02	0.75	0.05	1.07	0.11	1.09	0.24	1.20	0.25	1.43	0.28	1.19	0.43
2		1.5	0.1	1.56	0.06	1.7	0.11	2.26	0.16	2.2	0.08	1.5	0.03	2.14	0.22	2.18	0.32	2.4	0.39	2.86	0.31	2.38	0.43
3		2.25	0.10	2.34	0.06	2.55	0.16	3.39	0.15	3.3	0.05	2.25	0.10	3.21	0.29	3.27	0.32	3.6	0.32	4.29	0.34	3.57	0.38
4		3.0	0.08	3.12	0.09	3.4	0.14	4.52	0.08	4.4	0.05	3.0	0.11	4.28	0.36	4.36	0.31	4.8	0.36	5.72	0.27	4.76	0.35
5		3.75	0.03	3.9	0.07	4.25	0.17	5.65	0.14	5.5	0.10	3.75	0.20	5.35	0.37	5.45	0.29	6.0	0.28	7.15	0.28	5.95	0.30
6		4.5	0.11	4.68	0.03	5.1	0.11	6.78	0.03	6.6	0.06	4.5	0.22	6.42	0.40	6.54	0.22	7.2	0.22	8.58	0.27	7.14	0.21
7		5.25	0.15	5.46	0.03	5.95	0.0	7.91	0.02	7.7	0.06	5.25	0.20	7.49	0.35	7.63	0.18	8.4	0.28	10.01	0.31	8.33	0.19
8		6.0	0.10	6.24	0.09	6.8	0.0	9.04	0.05	8.8	0.10	6.0	0.15	8.56	0.30	8.72	0.14	9.6	0.32	11.44	0.33	9.52	0.15
9		6.75	0.04	7.02	0.04	7.65	0.04	10.17	0.06	9.9	0.15	6.75	0.04	9.63	0.20	9.81	0.13	10.8	0.31	12.87	0.20	10.71	0.05
Right Bank		7.5	0	7.8	0	8.5	0	11.3	0	11.0	0	7.5	0	10.7	0	10.9	0	12.0	0	14.3	0	11.9	0
Feature Type (riffle, run, or pool)		Run		Riffle Run		Run		Run		Run		Run		Run		Run		Run		Run		Run	

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

GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Signed: [Signature] Date: 10/29/07

WBID # 2168

Site # 2

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: <u>10/29/07 11:50</u>	Site Location Description (e.g., road crossing): <u>Hwy 32 Bridge</u>
Personnel (Data Collectors): <u>TA, JV</u>	
Current Weather Conditions: <u>Clear, Dry</u>	Facility Name:
Weather Conditions for Past 10 days: <u>Rain / Clear</u>	Permit Number:
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): <u>4188392</u>	Northing (UTM Y): <u>0713907</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>6.6</u> Meters
Site 11	Easting (UTM X): <u>4188351</u>	Northing (UTM Y): <u>0714061</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>6.6</u> Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>2168-2-1319</u>	<u>US</u>	<u>2168-2-1320</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 Data Sheet D- Recreational Use Interview when conducting interviews.)				
<u>None Observed</u>				

WBID # 2168

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 checked="" 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 type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: <i>Riparian/Field</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%.)

<i>10</i> % Cobble	<i>20</i> % Gravel	<i>70</i> % Sand	<i>10</i> % Silt	% Mud/Clay	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

<i>Algae and periphyton abundant, grasses, smart weed</i>

Water Characteristics*: (Mark all that apply.)

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

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

WBID # 2168

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)
← 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: 10/29/07

Organization: MEC Water Resources Position: Water Quality Scientist

RUC 11-8-07

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: <u>2168</u> Site #: <u>2</u> (wbid_site #) Estimated Channel Incision: <u>0.25</u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u>4188392</u> UTM Y: <u>0713907</u> +/- <u>6.6</u> (meters) 11 UTM X: <u>4188351</u> UTM Y: <u>0714061</u> +/- <u>6.6</u> (meters) Average Stream Width: <u>8</u> (meters) Length of Survey Segment: <u>160</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>TA, JV</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>10/29/07</u> Time: <u>11:50</u> Dissolved Oxygen: <u>5.67</u> (mg/L) Dissolved Oxygen: <u>79.6</u> (% sat) Specific Cond: <u>TA 379.4</u> (µS/cm) Water Temperature: <u>9.1</u> (°C)
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Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
Left Bank		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1		0.50	0.05	2.0	0.23	2.55	0.16	2.25	0.16	0.27	0.14	0.55	0.08	1.23	0.15	2.0	0.15	1.24	0.48	1.11	0.15	0.91	7.5
2		1.0	0.07	4.0	0.36	5.1	0.39	4.5	0.21	0.54	0.14	1.1	0.13	2.46	0.23	4.0	0.30	2.48	0.61	2.22	0.21	1.82	6.7
3		1.5	0.11	6.0	0.46	7.65	0.39	6.75	0.07	0.81	0.15	1.65	0.28	3.69	0.38	6.0	0.25	3.72	0.57	3.33	0.24	2.73	6.8
4		2.0	0.15	8.0	0.52	10.2	0.45	9.0	0.13	1.08	0.17	2.2	0.40	4.92	0.29	8.0	0.0	4.96	0.54	4.44	0.28	3.64	5.6
5		2.5	0.22	10.0	0.61	12.75	0.69	11.25	0.19	1.35	0.19	2.75	0.42	6.15	0.03	10.0	0.0	6.2	0.40	5.55	0.25	4.55	4.5
6		3.0	0.18	12.0	0.52	15.3	0.75	13.5	0.35	1.62	0.15	3.3	0.36	7.38	0.0	12.0	0.09	7.44	0.23	6.66	0.15	5.46	0.08
7		3.5	0.14	14.0	0.52	17.85	0.60	15.75	0.41	1.89	0.10	3.85	0.31	8.61	0.04	14.0	0.39	8.68	0.14	7.77	0.11	6.37	0.30
8		4.0	0.08	16.0	0.54	20.4	0.55	18.0	0.51	2.16	0.03	4.4	0.25	9.84	0.10	16.0	0.32	9.92	0.05	8.88	0.10	7.28	0.30
9		4.5	0.04	18.0	0.54	22.95	0.41	20.25	0.40	2.43	0.03	4.95	0.13	11.07	0.02	18.0	0.18	11.16	0.03	9.99	0.02	8.19	0.19
Right Bank		5.0	0	20.0	0	25.5	0	22.5	0	2.7	0	5.5	0	12.3	0	20.0	0	12.4	0	11.1	0	9.1	0
Feature Type (riffle, run, or pool)		Run		Run		Pool		Run		Riffle		Run	Pool										

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

GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

unc 11-6-07

Signed: [Signature] Date: 10/29/07

WBID # 2168

Site # 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: <u>10/29/07 12:30</u>	Site Location Description (e.g., road crossing):
Personnel (Data Collectors): <u>TA, JV</u>	<u>Hwy 32 Bridge</u>
Current Weather Conditions: <u>Clear, Dry</u>	Facility Name:
Weather Conditions for Past 10 days: <u>Rain/Clear</u>	Permit Number:
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): <u>4189424</u>	Northing (UTM Y): <u>0716576</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>7.0</u> Meters
Site 11	Easting (UTM X): <u>4189551</u>	Northing (UTM Y): <u>0716649</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>2168-3-1321</u>	<u>US</u>	<u>2168-3-1322</u>	<u>ONS</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.)

None Observed

WBID # 2168

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 checked="" type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: <u>Riparian</u>
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: <p style="text-align: center;"><u>None Observed</u></p>				

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

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

<u>Coontail, algae & periphyton abundant, grasses, smartweed</u>
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Water Characteristics*: (Mark all that apply.)

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

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

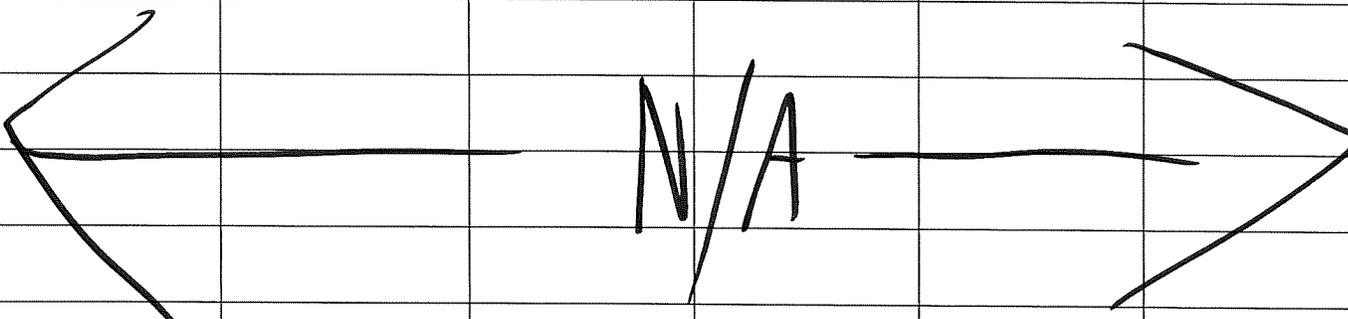
WBID # 2/68

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)
					

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: 10/29/07

Organization: MEC Water Resources Position: Water Quality Scientist

RUC 11-8-07

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: <u>2168</u> Site #: <u>3</u> (wbid_site #) Estimated Channel Incision: <u>0.25</u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u>4289424</u> UTM Y: <u>0716576</u> +/- <u>7.0</u> (meters) 11 UTM X: <u>1189551</u> UTM Y: <u>0716649</u> +/- <u>7.2</u> (meters) Average Stream Width: <u>8</u> (meters) Length of Survey Segment: <u>160</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>TA, JV</u>	<h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>10/29/07</u> Time: <u>12:30</u> Dissolved Oxygen: <u>6.85</u> (mg/L) Dissolved Oxygen: <u>65.1</u> (% sat) Specific Cond: <u>444.8</u> (µS/cm) Water Temperature: <u>13.1</u> (°C)
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Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
Left Bank		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1		0.70	0.03	1.21	0.14	1.55	0.18	1.60	0.13	1.65	0.55	1.11	0.06	1.71	0.33	1.74	0.35	1.76	0.36	1.69	0.28	2.08	0.38
2		1.4	0.05	2.42	0.15	3.1	0.36	3.2	0.20	2.1	0.46	2.22	0.10	3.42	0.43	3.48	0.41	3.52	0.42	3.38	0.43	4.16	0.45
3		2.1	0.05	3.63	0.23	4.65	0.54	4.8	0.20	3.15	0.48	3.33	0.06	5.13	0.57	5.22	0.47	5.28	0.43	5.07	0.59	6.24	0.50
4		2.8	0.02	4.84	0.32	6.2	0.41	6.4	0.05	4.2	0.54	4.44	0.0	6.84	0.67	6.96	0.54	7.04	0.34	6.76	0.56	8.32	0.54
5		3.5	0.02	6.05	0.22	7.75	0.36	8.0	0.27	5.25	0.51	5.55	0.0	8.55	0.54	8.7	0.76	8.8	0.32	8.45	0.52	10.4	0.63
6		4.2	0.05	7.26	0.10	9.3	0.15	9.6	0.48	6.3	0.44	6.66	0.01	10.26	0.51	10.44	0.64	10.56	0.32	10.14	0.40	12.48	0.49
7		4.9	0.06	8.47	0.23	10.85	0.0	11.2	0.48	7.35	0.47	7.77	0.02	11.97	0.55	12.18	0.45	12.32	0.30	11.83	0.23	14.56	0.39
8		5.6	0.06	9.68	0.21	12.4	0.05	12.8	0.45	8.4	0.36	8.88	0.03	13.68	0.46	13.92	0.37	14.08	0.29	13.52	0.10	16.64	0.38
9		6.3	0.05	10.89	0.21	13.95	0.0	14.4	0.37	9.45	0.22	9.99	0.14	15.39	0.39	15.66	0.22	15.84	0.30	15.21	0.03	18.72	0.18
Right Bank		7.0	0	12.1	0	15.5	0	16.0	0	10.5	0	11.1	0	17.1	0	17.4	0	17.6	0	16.9	0	20.8	0
Feature Type (riffle, run, or pool)		Riffle		Run		Run		Run		Run		Riffle		Run									

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

AUC 11-8-07

Signed: [Signature] Date: 10/29/07

WBID # 2168

Site # 4

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: <u>1:20 10/29/07</u>	Site Location Description (e.g., road crossing): <u>Rinke St.</u>
Personnel (Data Collectors): <u>TA, JV</u>	
Current Weather Conditions: <u>Clear, Dry</u>	Facility Name:
Weather Conditions for Past 10 days: <u>Rain/Clear</u>	Permit Number:
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): <u>4191863</u>	Northing (UTM Y): <u>0718453</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>5.6</u> Meters
Site 11	Easting (UTM X): <u>4192063</u>	Northing (UTM Y): <u>0718464</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>5.8</u> Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>2168-4-1323</u>	<u>US</u>	<u>2168-4-1324</u>	<u>DNS</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 # 2168

Site # 4

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

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

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

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

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

<i>periphyton + algae abundant, sedges, mint, grasses, smartweed</i>
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Water Characteristics*: (Mark all that apply.)

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

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

WBID # 2168
Site # 4

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: 10/29/07

Organization: MEC Water Resources Position: Water Quality Scientist

Phuc 11-8-07

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: <u>2168</u> Site #: <u>4</u> (wbid_site #) Estimated Channel Incision: <u>0.25</u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u>4191863</u> UTM Y: <u>0718453</u> +/- <u>5.6</u> (meters) 11 UTM X: <u>4192063</u> UTM Y: <u>0718464</u> +/- <u>5.8</u> (meters) Average Stream Width: <u>60</u> (meters) Length of Survey Segment: <u>200</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>TA, JV</u>	<h3 style="text-align: center; margin: 0;">Dissolved Oxygen</h3> Date: TA <u>10/29/07</u> Time: <u>1:20</u> Dissolved Oxygen: <u>4.76</u> (mg/L) Dissolved Oxygen: <u>46.3</u> (% sat) Specific Cond: <u>998.0</u> (µS/cm) Water Temperature: <u>13.7</u> (°C)
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Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)																				
Left Bank		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1		1.47	0.13	1.09	0.04	1.56	0.05	1.00	0.08	1.07	0.05	0.78	0.06	1.58	0.25	1.25	0.14	1.09	0.01	1.18	0.18	1.41	0.20
2		2.94	0.22	2.18	0.10	2.72	0.05	2.0	0.11	2.14	0.07	1.56	0.18	3.16	0.31	2.5	0.25	2.18	0.02	2.36	0.25	2.82	0.21
3		4.41	0.25	3.27	0.14	4.08	0.05	3.0	0.18	3.21	0.0	2.34	0.18	4.74	0.39	3.75	0.26	3.27	0.02	3.54	0.24	4.23	0.32
4		5.89	0.31	4.36	0.39	5.44	0.21	4.0	0.45	4.28	0.17	3.12	0.18	6.32	0.37	5.0	0.26	4.36	0.02	4.72	0.23	5.64	0.30
5		7.35	0.38	5.45	0.44	6.8	0.54	5.0	0.58	5.35	0.53	3.9	0.30	7.9	0.33	6.25	0.27	5.45	0.06	5.9	0.21	7.05	0.36
6		8.82	0.48	6.54	0.50	8.16	0.61	6.0	0.50	6.42	0.56	4.68	0.33	9.48	0.30	7.5	0.28	6.54	0.06	7.08	0.21	8.46	0.25
7		10.29	0.45	7.63	0.50	9.52	0.56	7.0	0.21	7.49	0.54	5.46	0.39	11.06	0.36	8.75	0.28	7.63	0.0	8.26	0.21	9.87	0.25
8		11.76	0.22	8.72	0.45	10.88	0.48	8.0	0.08	8.56	0.41	6.24	0.32	12.64	0.32	10.0	0.17	8.72	0.03	9.44	0.11	11.29	0.22
9		13.23	0.38	9.81	0.43	12.24	0.46	9.0	0.29	9.63	0.23	7.02	0.25	14.22	0.32	11.25	0.13	9.81	0.24	10.62	0.12	12.69	0.20
Right Bank		14.70	0	10.90	0	13.60	0	10.00	0	10.7	0	7.8	0	15.8	0	12.5	0	16.9	0	11.8	0	14.1	0
Feature Type (riffle, run, or pool)		Run		Run		Run		Run		Run		Run		Run		Run		Riffle		Run		Run	

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

RNC 11-8-07

Signed: [Signature] Date: 10/29/07

WBID # 2168

Site # 5

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: <u>10/29/07 2:10</u>	Site Location Description (e.g., road crossing): <u>Cedar Falls Rd. Bridge</u>
Personnel (Data Collectors): <u>TA, JV</u>	
Current Weather Conditions: <u>Clear, Dry, Warm</u>	Facility Name:
Weather Conditions for Past 10 days: <u>Rain/Clear</u>	Permit Number:
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): <u>4195877</u>	Northing (UTM Y): <u>0719571</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>6.9</u> Meters
Site 11	Easting (UTM X): <u>4196014</u>	Northing (UTM Y): <u>0719663</u>	Horizontal Accuracy: (EPE / FOM / PDOP) <u>33.0</u> Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
<u>2168-5-1325</u>	<u>US</u>	<u>2168-5-1326</u>	<u>ONS</u>	<u>2168-5-1327</u>	<u>"mianow trap"</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.)				
<u>None Observed</u>				

WBID # 2168
 Site # 5

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 type="checkbox"/> Other:
Comments:				

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

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

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

<u>10</u> % Cobble	<u>5</u> % Gravel	<u>60</u> % Sand	<u>5</u> % Silt	% Mud/Clay	<u>20</u> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

<u>Reeds, grasses, algal growth abundant</u>
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Water Characteristics*: (Mark all that apply.)

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

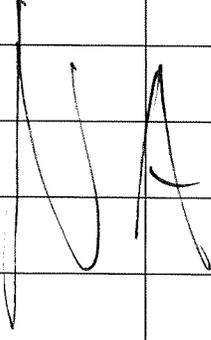
*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions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

WBID # 2168
Site # 5

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

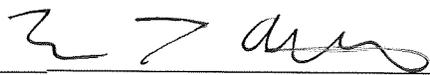
Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

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

Comments: (Please record any additional comments here.)

None

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

Surveyor's Signature:  Date of Survey: 10/29/07

Organization: MEC Water Resources Position: Water Quality Scientist

RNC 11-8-07

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: <u>2168</u> Site #: <u>5</u> (wbid_site #) Estimated Channel Incision: <u>0.25</u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u>1195877</u> UTM Y: <u>0719571</u> +/- <u>6.9</u> (meters) 11 UTM X: <u>4196014</u> UTM Y: <u>350719663</u> +/- <u>33.0</u> (meters) Average Stream Width: <u>RTA 8</u> (meters) Length of Survey Segment: <u>160</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>TA, JV</u>	<h3 style="text-align: center; margin: 0;">Dissolved Oxygen</h3> Date: <u>10/29/07</u> Time: <u>2:10</u> Dissolved Oxygen: <u>7.26</u> (mg/L) Dissolved Oxygen: <u>75.0</u> (% sat) Specific Cond: <u>1000.487</u> ^{1049.0} μS/cm Water Temperature: <u>16.8</u> (°C)
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Transect Cross-Section

Station		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)	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)
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	1.03	^{0.05} 0.05	0.91	0.20	1.24	0.21	1.37	0.33	1.25	0.29	1.37	0.39	1.02	0.61	8.96	0.12	1.00	0.11	2.01	0.43	1.95	0.05
	2	2.06	0.07	1.82	0.49	2.48	0.33	2.74	0.39	2.5	0.33	2.74	0.45	2.09	0.53	1.92	0.24	2.0	0.32	4.02	0.54	3.9	0.25
	3	3.09	0.16	2.73	0.60	3.72	0.41	4.11	0.32	3.75	0.44	4.11	0.55	3.06	0.50	2.88	0.15	3.0	0.40	6.03	0.42	5.85	0.55
	4	4.12	0.18	3.64	0.64	4.96	0.52	5.48	0.24	5.0	0.37	5.48	0.54	4.08	0.44	3.89	0.13	4.0	0.45	8.04	0.42	7.8	0.32
	5	5.15	0.16	4.55	0.76	6.2	0.81	6.85	0.16	6.25	0.41	6.85	0.36	5.1	0.35	4.8	0.18	5.0	0.43	10.05	0.39	9.75	0.39
	6	6.18	0.15	5.46	0.77	7.44	0.66	8.22	0.00	7.5	0.40	8.22	0.20	6.12	0.19	5.76	0.17	6.0	0.55	12.06	0.26	11.7	0.29
	7	7.21	0.13	6.37	0.66	8.68	0.32	9.59	0.00	8.75	0.36	9.59	0.19	7.14	0.16	6.72	0.18	7.0	0.56	14.07	0.14	13.65	0.25
	8	8.24	0.03	7.28	0.51	9.92	0.22	10.96	0.05	10.0	0.20	10.96	0.14	8.16	0.08	7.68	0.13	8.0	0.25	16.08	0.10	15.6	0.24
	9	9.27	0.03	8.19	0.21	11.16	0.09	12.33	0.04	11.25	0.09	12.33	0.10	9.18	0.06	8.64	0.01	9.0	0.16	18.09	0.09	17.55	0.00
Right Bank		10.3	0	9.10	0	12.40	0	13.70	0	12.50	0	13.70	0	10.20	0	9.60	0	16.60	0	20.10	0	19.50	0
Feature Type (riffle, run, or pool)		Riffle		Run		Run		Run		Run		Run		Run		Run		Run		Run		Run	

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

guc 11-8-07

Signed: Z. [Signature] Date: 10/29/07

