# REID CREEK
# WBID 3410

## Recreational Use Attainability Analysis

May 2007

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

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

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet A - Water Body Identification

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

| | |
|---|---|
| Water Body Name (from USGS 7.5' quad): | Reid Creek |
| Missouri Water Body Identification (WBID) Number: | 341D |
| 8-digit HUC: 07140104 | County: Iron |
| Upstream Legal Description (from Table H): | 30, 35N, 3E |
| Downstream Legal Description(from Table H): | Mouth |
| Number of sites evaluated | 3 |
| List all sites numbers, listed consequently upstream to downstream: Sites - 1, 2, 3 | |

**II. Subesegmentation** (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): Belleview R-3 School | |
| Discharger Permit Number(s): MO 0085111 | |

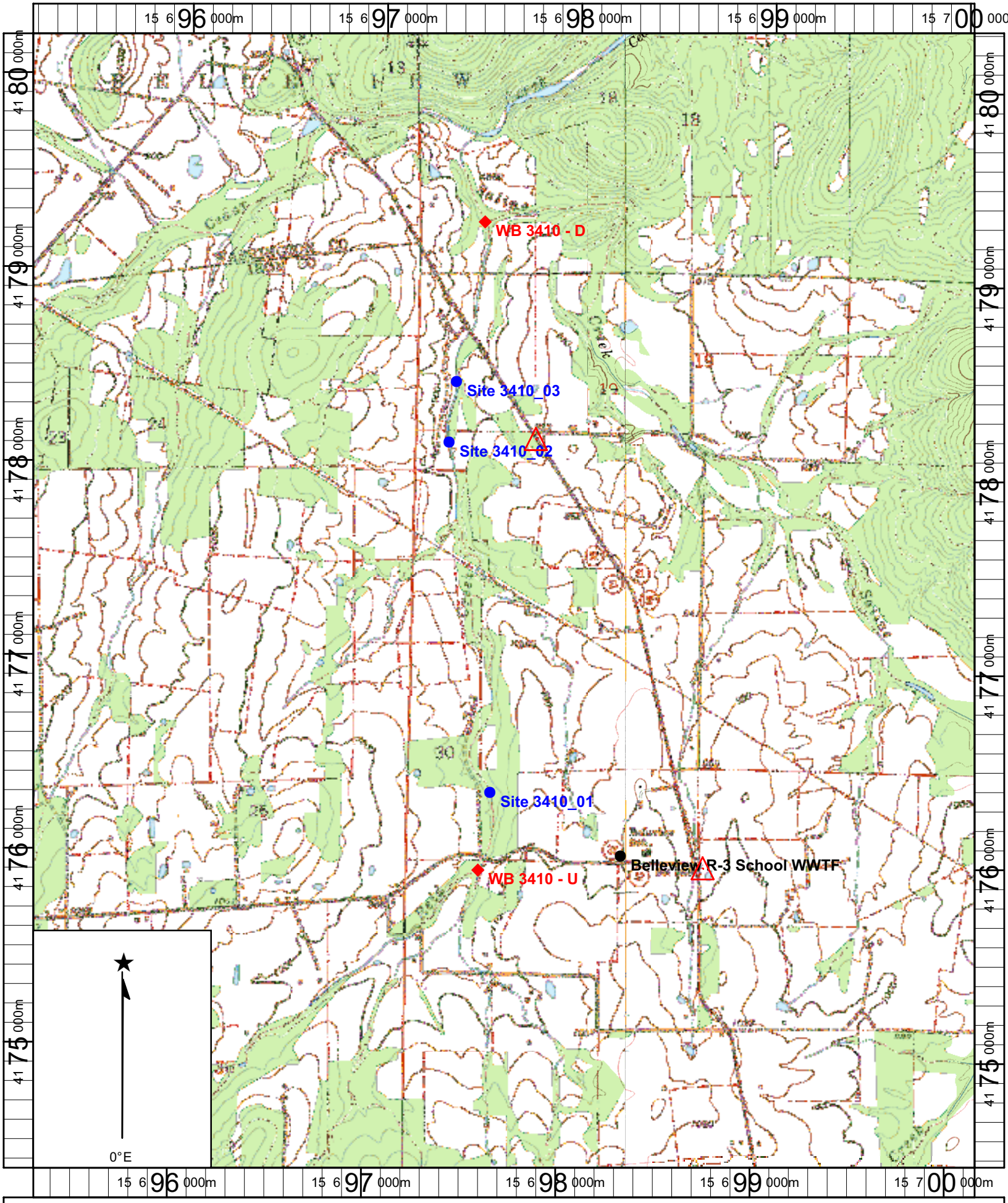
**IV. UAA Surveyor** (please print legibly)

| | |
|---|---|
| Name of Surveyor Abby Welschmeyer | Telephone Number: (573) 634-7078 |
| Organization/Employer: ERC | |
| Position: Field Manager | |

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

**Signed:** Robert R. Bacon **Date:** 5-24-2007

RHC 5-30-07




Name: BANNER
Date: 5/28/2007
Scale: 1 inch equals 2000 feet

Location: 15 0697665 E 4177333 N

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WBID# 3410
Site# 1

## Field Data Sheets for Recreational Use Stream Surveys

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

| | |
|---|---|
| Date & Time: 09/23/07 15:00 | Site Location Description (e.g., road crossing): Private drive off Hwy 21 - downstream |
| Personnel (Data Collectors): Abby & Anna | |
| Current Weather Conditions: partly cloudy ~85°F | Facility Name: Belleview R-3 School<br>Permit Number: MO 0085111 |
| 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: 15 S 0697624 Y: 4176334 | | | |
| 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) |
|---|---|---|---|
| C55 | Downstream T1 | C60 | Upstream T11 |

## 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: wooded + farm pasture - cattle wade in creek on a regular basis

WBID# 3410
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: NONE | | | | | |

### 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 | | | | | | |

**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%.)

| | | | | | |
|---|---|---|---|---|---|
| 60 % Cobble | 40 % Gravel | % Sand | % Silt | % Mud/Clay | % Bedrock |

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

20% algae cover on rocks - few floating mats of algae

### Water Characteristics*: (Mark all that apply.)

| | | | | | |
|---|---|---|---|---|---|
| ODOR: | ☐ Sewage | ☐ Musky | ☐ Chemical | ☒ None | ☐ Other: |
| COLOR: | ☐ Clear | ☐ Green | ☐ Gray | ☐ Milky | ☒ Other: lightly turbid |
| 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: 05/23/07

Organization: ERC Position: Field Manager

RLC 5-30-07

Water gap fence slightly downstream of T11

CDC

Pic 55 - Downstream (01-01)
Pic 60 - Upstream (01-11)

# MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 3410 Site #: 1 (WBID_Site#)

Wypt 83

Estimated Channel Incision: 0.10 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

UTM X: 15 S 0697624 UTM Y: 4176334

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

Average Stream Width: 6.0 (meters) Length of Survey Segment: 150 (meters) (20x average stream width)

Field Staff: Abby & Anna

## Dissolved Oxygen

Dissolved Oxygen: 9.48 (mg/L)

Dissolved Oxygen: 111.4 (% sat)

Specific Cond: 342 (µS/cm)

Water Temperature: 23.44 (°C)

Time 15:00

## 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 | 0 | 0.01 | 0 | .03 | 0 | 0.02 | 0 | .01 | 0 | .01 | 0 | .01 | 0 | .03 | 0 | .01 | 0 | .01 | 0 | .01 | 0 | .02 |
| 2 | .57 | 0.11 | .46 | .11 | .69 | .04 | .56 | 0 | .585 | .05 | .68 | .11 | .83 | .17 | .625 | .07 | .565 | .05 | 1.01 | .17 | .73 | .28 |
| 3 | 1.14 | 0.10 | 0.92 | .16 | 1.38 | .10 | 1.12 | .05 | 1.17 | .11 | 1.36 | .16 | 1.66 | .30 | 1.245 | .19 | 1.13 | .16 | 2.02 | .07 | 1.46 | .39 |
| 4 | 1.71 | 0.01 | 1.38 | .15 | 2.07 | .06 | 1.68 | .08 | 1.755 | .13 | 2.04 | .18 | 2.49 | .40 | 1.87 | .22 | 1.695 | .23 | 3.03 | .06 | 2.19 | .47 |
| 5 | 2.28 | 0.01 | 1.84 | .11 | 2.76 | .10 | 2.24 | .01 | 2.34 | .08 | 2.72 | .25 | 3.32 | .64 | 2.495 | .40 | 2.26 | .30 | 4.04 | .01 | 2.95 | .56 |
| 6 | 2.85 | 0.12 | 2.3 | .12 | 3.45 | .10 | 2.8 | .07 | 2.925 | .11 | 3.4 | .27 | 4.15 | .75 | 3.12 | .69 | 2.825 | .38 | 5.05 | 0 | 3.71 | .48 |
| 7 | 3.42 | .14 | 2.76 | .12 | 4.14 | .12 | 3.36 | .07 | 3.51 | .13 | 4.08 | .27 | 4.98 | .88 | 3.745 | .83 | 3.39 | .49 | 6.06 | 0.0 | 4.47 | .47 |
| 8 | 3.99 | .14 | 3.22 | .09 | 4.83 | .11 | 3.92 | .08 | 4.095 | .20 | 4.76 | .3 | 5.81 | .96 | 4.37 | .70 | 3.955 | .48 | 7.07 | 0.0 | 5.23 | .33 |
| 9 | 4.56 | .09 | 3.68 | 0.07 | 5.52 | .11 | 4.48 | .10 | 4.68 | .16 | 5.44 | .29 | 6.64 | .97 | 4.995 | .82 | 4.52 | .29 | 8.08 | .04 | 5.96 | .27 |
| 10 | 5.13 | .18 | 4.44 | 0.06 | 6.21 | .14 | 5.04 | .07 | 5.265 | .11 | 6.12 | .33 | 7.47 | .62 | 5.62 | .30 | 5.085 | .17 | 9.09 | .05 | 6.69 | .16 |
| 11 | 5.7 | .03 | 4.6 | 0.02 | 6.9 | .03 | 5.6 | .01 | 5.95 | .01 | 6.3 | .04 | 8.3 | .01 | 6.25 | .03 | 5.65 | .01 | 10.1 | .05 | 7.3 | .02 |
| 12 | 6.11 | 0 | 5.2 | 0 | 6.95 | 0 | 5.66 | 0 | 6.0 | 0 | 6.99 | 0 | 8.4 | 0 | — | 0 | 5.7 | 0 | 10.9 | 0 | 7.7 | 0 |
| Feature Type (riffle, run, or pool) | run | | run | | run | | riffle | | run | | run | | 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: 5-23-07

QAC 5-30-07

WBID# 3410
Site# 2

**Field Data Sheets for Recreational Use Stream Surveys**

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

| | |
|---|---|
| Date & Time: 05/23/07 15:59 | Site Location Description (e.g., road crossing): upstream site 3 off private road near bridge on Hwy 32 |
| Personnel (Data Collectors): Abby + Anna | |
| Current Weather Conditions: ~84°F summer few clouds | Facility Name: Bellevieu R-3 School |
| | Permit Number: MO 0085111 |
| 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: 15 506973 68 | | Y: 4178143 | |
| 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 | ± 61 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) |
|---|---|---|---|
| C56 | Downstream T1 | C57 | Upstream T11 |

### 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: farm pasture - livestock would have access when present

WBID# 3410
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: NONE

### 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 | | | | | | |

**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%.)

| % Cobble | % Gravel | % Sand | % Silt | % Mud/Clay | 100 % Bedrock |
|---|---|---|---|---|---|

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

30-40% algae cover on stream floor
- slick bottom

### Water Characteristics*: (Mark all that apply.)

| | | | | | |
|---|---|---|---|---|---|
| ODOR: | ☐ Sewage | ☐ Musky | ☐ Chemical | ☒ None | ☐ Other: |
| COLOR: | ☐ Clear | ☐ Green | ☐ Gray | ☐ Milky | ☒ Other: lightly turbid |
| BOTTOM DEPOSIT: | ☐ Sludge | ☐ Solids | ☐ Fine sediments | ☐ None | ☒ Other: mud film - slick |
| 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: Alisa L. Wolnhauer Date of Survey: 05/23/07

Organization: ERC Position: Field Manager

RMC 5-30-07

CDC Pic-56-Down/02-01
Pic-57 Up (02-11)

# MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 3410 Site #: 2 (WBID_Site#) W1pE 84

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

GPS Location (taken at transect 1):

UTM X: 15 S 0697368 UTM Y: 4178143

Horizontal Accuracy Estimate (GPS Data Quality): +/- 61 (feet)

Average Stream Width: 15.5 (meters) Length of Survey Segment: 300 (meters) (20x average stream width)

Field Staff: Abby & Anna

## Dissolved Oxygen

Dissolved Oxygen: 10.82 (mg/L)

Dissolved Oxygen: 128.5 (% sat)

Specific Cond: 361 (µS/cm)

Water Temperature: 23.98 (°C)

Time: 15:59

## 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 | 0 | .01 | 0 | .01 | 0 | .10 | 0 | .04 | 0 | .01 | 0 | .04 | 0 | .10 | 0 | .03 | 0 | .01 | 0 | .02 | 0 | .10 |
| 2 | 1.59 | .19 | 1.22 | .02 | 1.84 | .13 | 1.40 | .12 | 1.31 | .10 | 1.45 | 0 | 1.35 | .03 | 1.255 | .10 | 1.01 | .17 | 1.63 | .02 | 1.56 | .07 |
| 3 | 3.18 | .17 | 2.44 | .03 | 3.69 | .12 | 2.8 | .18 | 2.62 | .07 | 2.90 | .08 | 2.70 | .08 | 2.51 | .08 | 2.02 | .17 | 3.26 | .03 | 3.12 | .10 |
| 4 | 4.77 | .15 | 3.66 | .04 | 5.52 | .11 | 4.2 | .19 | 3.93 | .10 | 4.35 | .09 | 4.05 | .10 | 3.765 | .14 | 3.03 | .18 | 4.89 | .04 | 4.68 | .07 |
| 5 | 6.36 | .08 | 4.88 | .05 | 7.36 | .08 | 5.6 | .22 | 5.24 | .14 | 5.80 | .07 | 5.40 | .08 | 5.02 | .15 | 4.04 | .17 | 6.52 | .01 | 6.24 | .06 |
| 6 | 7.95 | .11 | 6.1 | .05 | 9.2 | .07 | 7.0 | .25 | 6.55 | .13 | 7.25 | .01 | 6.75 | .03 | 6.275 | .13 | 5.05 | .17 | 8.51 | .06 | 7.8 | .04 |
| 7 | 9.54 | .19 | 7.32 | .04 | 11.04 | .06 | 8.4 | .18 | 7.86 | .13 | 8.70 | .02 | 8.10 | .01 | 7.53 | .12 | 6.06 | .14 | 9.78 | .05 | 9.36 | .06 |
| 8 | 11.13 | .16 | 8.54 | .04 | 12.88 | .03 | 9.8 | .17 | 9.17 | .08 | 10.15 | .01 | 9.45 | .01 | 8.785 | .08 | 7.07 | .09 | 11.41 | .07 | 10.92 | .05 |
| 9 | 12.72 | .12 | 9.76 | .03 | 14.72 | .04 | 11.2 | .18 | 10.46 | .03 | 11.6 | .09 | 10.8 | .09 | 10.04 | .07 | 8.08 | .11 | 13.04 | .08 | 12.48 | .04 |
| 10 | 14.31 | .10 | 10.98 | .03 | 16.56 | .04 | 12.6 | .13 | 11.79 | .02 | 13.05 | .04 | 12.15 | .08 | 11.285 | .05 | 9.09 | .08 | 14.67 | .08 | 14.04 | .04 |
| 11 | 15.9 | .02 | 12.2 | .02 | 18.4 | .03 | 14.0 | .02 | 13.1 | .01 | 14.5 | .01 | 13.5 | .02 | 12.55 | .02 | 10.1 | .03 | 16.0 | .02 | 15.6 | .02 |
| 12 | 16 | 0 | 14.2 | 0 | 18.9 | 0 | 14.6 | 0 | 13.8 | 0 | — | 0 | 13.7 | 0 | 12.7 | 0 | 11.0 | 0 | 16.3 | 0 | 16.3 | 0 |
| Feature Type (riffle, run, or pool) | run | | run | | run | | run | | run | | riffle | | run | | run | | run | | riffle | | 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: 5-23-07

MAC 5-30-07

WBID# 3416
Site# 3

**Field Data Sheets for Recreational Use Stream Surveys**

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

| | |
|---|---|
| Date & Time: 05/23/07 16:37 | Site Location Description (e.g., road crossing): Private drive north of bridge on Hwy 32 upstream |
| Personnel (Data Collectors): Abby & Anna | |
| Current Weather Conditions: ~84°F sunny few clouds | Facility Name: Bellevue R-3 School |
| | Permit Number: MO 0085111 |
| 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: 15S 0697399 | | Y: 4178454 | |
| 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 | ± 24 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) |
|---|---|---|---|
| C58 | Downstream T1 | C59 | upstream T11 |

## 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: farm pasture- livestock would have access if present

WBID# 3410
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: NONE | | | | | |

### 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 | | | | | | |

**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%.)

| % Cobble | % Gravel | % Sand | % Silt | % Mud/Clay | 100 % Bedrock |
|---|---|---|---|---|---|

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

- mud + algae growth (40% cover)
- slick bottom

### Water Characteristics*: (Mark all that apply.)

| | | | | | |
|---|---|---|---|---|---|
| ODOR: | ☐ Sewage | ☐ Musky | ☐ Chemical | ☒ None | ☐ Other: |
| COLOR: | ☐ Clear | ☐ Green | ☐ Gray | ☐ Milky | ☒ Other: lightly turbid |
| BOTTOM DEPOSIT: | ☐ Sludge | ☐ Solids | ☐ Fine sediments | ☐ None | ☒ Other: mud/slim-slick |
| 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: 05/23/07

Organization: ERC Position: Field Manager

RHC 5-30-07

CDC PIC-58-Down (03-01
Pic-59-Up-(03-11)

# MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 3410 Site #: 3 (WBID_Site#)

Estimated Channel Incision: <0.1 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

UTM X: 15S 0697399 UTM Y: 4178454

Horizontal Accuracy Estimate (GPS Data Quality): +/- 24 (feet)

Average Stream Width: 10 (meters) Length of Survey Segment: 200 (meters) (20x average stream width)

Field Staff: Abby & Anna

**Dissolved Oxygen**

Dissolved Oxygen: 11.15 (mg/L)

Dissolved Oxygen: 134.8 (% sat)

Specific Cond: 341 (µS/cm)

Water Temperature: 24.95 (°C)

Time: 16:37

**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 | 0 | .01 | 0 | .01 | 0 | .05 | 0 | .01 | 0 | .06 | 0 | .03 | 0 | .04 | 0 | .02 | 0 | 0.10 | 0 | .10 | 0 | 0.08 |
| 2 | 0.91 | .01 | 0.75 | .05 | 1.15 | .02 | 0.83 | .01 | 1.22 | .20 | 0.5 | .06 | 0.507 | .04 | 0.61 | .04 | 1.29 | 0.10 | 1.26 | 0.15 | 1.18 | 0.07 |
| 3 | 1.82 | .07 | 1.5 | .01 | 2.3 | .07 | 1.66 | .04 | 2.44 | .15 | 1.0 | .05 | 1.014 | .05 | 1.22 | .07 | 2.58 | 0.03 | 2.52 | .25 | 2.36 | 0.06 |
| 4 | 2.73 | .08 | 2.25 | .03 | 3.45 | .14 | 2.49 | .12 | 3.66 | .40 | 1.5 | .16 | 1.521 | .03 | 1.83 | .09 | 3.87 | 0.12 | 3.78 | .24 | 3.54 | 0.08 |
| 5 | 3.64 | .03 | 3.0 | .05 | 4.60 | .06 | 3.32 | .01 | 4.88 | .42 | 2.0 | .10 | 2.028 | .13 | 2.44 | .15 | 5.16 | 0.10 | 5.04 | .20 | 4.72 | 0.10 |
| 6 | 4.55 | .05 | 3.75 | .03 | 5.75 | 0 | 4.15 | .02 | 6.1 | .43 | 2.5 | .10 | 2.535 | .06 | 3.05 | .18 | 6.45 | 0.11 | 6.3 | .20 | 5.9 | 0.18 |
| 7 | 5.46 | .07 | 4.50 | .03 | 6.9 | 0 | 4.98 | .02 | 7.32 | .45 | 3.0 | .10 | 3.042 | 0 | 3.66 | .21 | 7.74 | 0.13 | 7.56 | .16 | 7.08 | 0.21 |
| 8 | 6.37 | .10 | 5.25 | .03 | 8.05 | .02 | 5.81 | .07 | 8.54 | .33 | 3.5 | .05 | 3.549 | .16 | 4.27 | .22 | 9.03 | 0.18 | 8.82 | .16 | 8.26 | 0.16 |
| 9 | 7.28 | .10 | 6.0 | .04 | 9.20 | .07 | 6.64 | .04 | 9.76 | .21 | 4.0 | .06 | 4.056 | .05 | 4.88 | .24 | 10.32 | 0.04 | 10.08 | .11 | 9.44 | 0.16 |
| 10 | 8.19 | .07 | 6.75 | .03 | 10.35 | .06 | 7.47 | 0 | 10.98 | .10 | 4.5 | .03 | 4.563 | .03 | 5.49 | .24 | 11.61 | 0.10 | 11.34 | .14 | 10.62 | 0.11 |
| 11 | 9.1 | .04 | 7.5 | .01 | 11.5 | .03 | 8.3 | .10 | 12.2 | .06 | 5.0 | .01 | 5.07 | .01 | 6.1 | .08 | 12.9 | 0.07 | 12.6 | .11 | 11.8 | 0.08 |
| 12 | 9.25 | 0 | 7.63 | 0 | 11.58 | 0 | 9.1 | 0 | — | 0 | 5.11 | 0 | 5.20 | 0 | — | 0 | 13.0 | 0 | — | 0 | 11.91 | 0 |
| Feature Type (riffle, run, or pool) | riffle | | riffle | | riffle | | riffle | | run | | riffle | | riffle | | run | | run | | run | | riffle | |

**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: Anna G. Welschmeyer Date: 5-23-07

RAC 5-30-07

**WBID# 3410 Reid Creek**

**Site# 1  Photo ID# 55, Downstream, T1**

**Site# 1  Photo ID# 60, Upstream, T 11**

**Site# 2  Photo ID# 56, Downstream, T1**

**Site# 2  Photo ID# 57, Upstream, T11**

**WBID# 3410 Reid Creek**

**Site# 3  Photo ID# 58, Downstream, T1**

**Site# 3  Photo ID# 59, Upstream, T 11**