Missouri
Department of
Natural Resources

# Use Attainability Analysis

for

WBID 0384 Keeney Creek

Submitted by
SES, Inc.

To
Missouri Department of Natural Resources
Water Protection Program

On

October 14, 2008

## 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): Keeney Creek |
| Missouri Water Body Identification (WBID) Number: 384 |
| 8-digit HUC: 10300101 |
| County(ies), Listed Upstream to Downstream: Ray |
| Upstream Legal Description (from Table H): T51N R29W Sec 13 |
| Downstream Legal Description (from Table H): T51N R29W Sec 35 |
| Number of sites evaluated: 3 |
| List all site numbers, consecutively upstream to downstream:<br>1, 2, 3 |
| **Include a Site Location Map(s)**. The map must include all requirements detailed in the *Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol* (Section IV.D.8.a). |

**II. Facility Information** (list all permitted discharges to this water body segment)

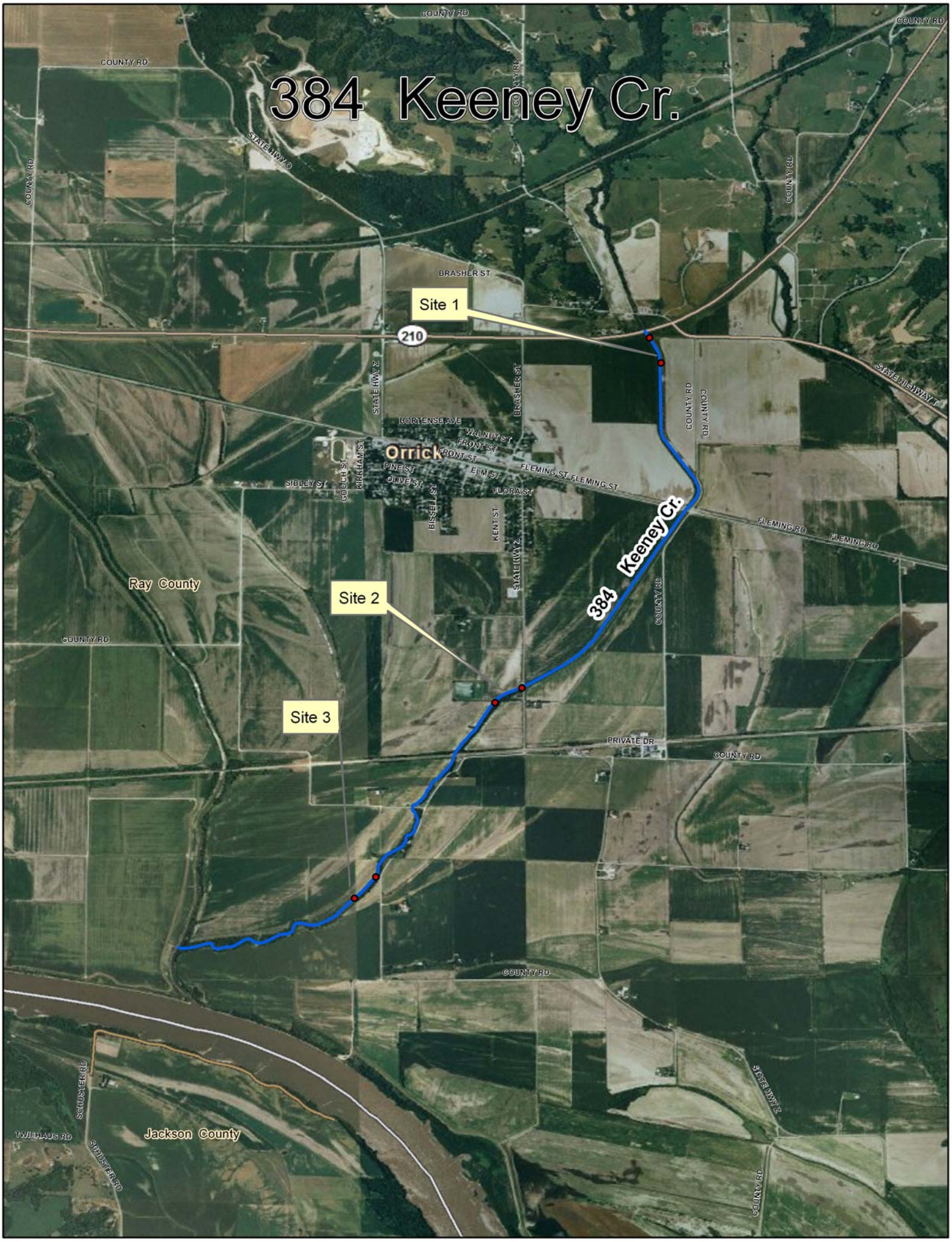
| |
|---|
| Facility Name(s) and Permit Number(s): Orrick Lagoon<br>MO002918 |

**III. UAA Surveyor** (please **PRINT** legibly)

| | |
|---|---|
| Name of Surveyor: Gilisa Gould | Telephone Number: 913-307-0046 |
| Organization/Employer: SES, Inc. | |

**Please verify that you have completed all sections of all data sheets, checked all applicable boxes, provided a map (that includes all requirments listed in the *Missouri Recreational Use Attainability Analysies: Water Body Survey and Assessment Protocol*) and that this form is complete.**

**Signed:** Gilisa Gould _____ **Date:** __10.08.08_____


384 Keeney Cr.
Site 1
Site 2
Site 3
384 Keeney Cr.
Orrick
Ray County
Jackson County
210
COUNTY RD
STATE HWY O
STATE HWY Z
STATE HIGHWAY 7
BRASHER ST
HORTENSE AVE
WALNUT ST
FRONT ST
PINE ST
OLIVE ST
ELM ST
FLEMING ST
FLORA ST
SIBLEY ST
COOCH ST
KIRKHAM ST
BISSELL ST
KENT ST
FLEMING RD
PRIVATE DR
SCHUSTER RD
TWIEHAUS RD

WBID # __384____

Site # ___1_____

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet B – Site Characterization (Page 1 of 3)

(must be completed for each site)

| | |
|---|---|
| **Date & Time**: 9/23/2008 9:30 | Location Description (e.g., road crossing): Hwy 210 |
| **Stream Name:** Keeney Cr. | |
| Current Weather Conditions: Clear | Facility Name(s): Orrick Lagoon |
| Weather Conditions for Past 10 days: 0.19 in | Permit Number(s): MO0022918 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐ | |

### Site Location:

| LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS) | | | | |
|---|---|---|---|---|
| Site 01 | Easting (UTM X): 0404250 | Northing (UTM Y): 4341908 | Horizontal Accuracy: (EPE / FOM / PDOP) | 2 Meters |
| Site 11 | Easting (UTM X): 0404317 | Northing (UTM Y): 4341716 | Horizontal Accuracy: (EPE / FOM / PDOP) | 5 Meters |

### Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|---|---|---|---|---|---|
| 1 | downstream | 2 | upstream | | |
| | | | | | |
| 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 the 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.)

Stream Name & WBID # __Keeney Cr.____384 _____ Date of Survey _9-23-08____

Site # __1_____

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet B – Site Characterization (Page 2 of 3)

### 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 | ☑ Rural Residential |
| ☐ Campgrounds | ☐ State parks | ☐ National forests | ☐ Nature trails | ☐ Stairs/walkway |
| ☐ Boating accesses | ☐ Fence | ☐ No trespass sign | ☐ Steep slopes | ☑ Other: Crop Fields |
| Comments: | | | | |

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

| | | | | |
|---|---|---|---|---|
| ☐ Roads | ☐ Foot paths/prints | ☐ Dock/platform | ☐ Camping Sites | ☐ Rope swings |
| ☐ RV / ATV Tracks | ☐ Fire pit/ring | ☐ NPDES Discharge | ☐ Fishing Tackle | ☐ Livestock Watering |
| ☑ None of the above | Comments / Other: | | | |

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

| | | | | | |
|---|---|---|---|---|---|
| % Cobble | 30% Gravel | % Sand | 10% Silt | 60% Mud/Clay | % Bedrock |

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

None in water; banks vegetated.

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

| | | | | | |
|---|---|---|---|---|---|
| Odor: | ☐ Sewage | ☐ Musky | ☐ Chemical | ☑ None | ☐ Other: |
| Color: | ☑ Clear | ☐ Green | ☐ Gray | ☐ Milky | ☑ Other: Silty |
| Bottom Deposit: | ☐ Sludge | ☐ Solids | ☐ Fine sediments | ☑ None | ☐ Other: |
| Surface Deposit: | ☐ Oil | ☐ Scum | ☐ Foam | ☑ None | ☐ 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 affect another use.

Stream Name & WBID # __Keeney Cr.____384 _____ Date of Survey _9-23-08____

Site # __1_____

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet B – Site Characterization (Page 3 of 3)

**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.)

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

Printed Names of Personnel Collecting Data: Bryan Deimeke and Gilisa Gould_____

Surveyor's Signature: Gilisa Gould_____ Date of Survey: 9-23-08_____

Organization: SES, Inc._____ Position: Field Team Leader_____

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

Stream Name: Keeney Cr  Waterbody ID: 384  Site #: 1

Estimated Channel Incision: 6 (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: 0404250  UTM Y: 4341908  +/- 2 (meters)

**11** UTM X: 0404317  UTM Y: 4341716  +/- 5 (meters)

Average Stream Width: 2 (meters)
(To determne Length of Reach)

Length of Survey Segment: 150 (meters)
(20x average stream width)

Field Staff: Gilisa Gould and Bryan Deimeke

### Dissolved Oxygen

Date: 9/23/2008  Time: 9:30

Dissolved Oxygen: 7.1 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 19 (°C)

### 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** | 0.10 | 0.05 | 0.20 | 0.15 | 0.20 | 0.20 | 0.30 | 0.30 | 0.10 | 0.05 | 0.20 | 0.20 | 0.20 | 0.20 | 0.10 | 0.01 | 0.20 | 0.05 | 0.10 | 0.05 | 0.10 | 0.20 |
| **2** | 0.20 | 0.10 | 0.40 | 0.30 | 0.40 | 0.35 | 0.60 | 0.40 | 0.20 | 0.25 | 0.40 | 0.25 | 0.40 | 0.25 | 0.20 | 0.05 | 0.40 | 0.10 | 0.20 | 0.25 | 0.20 | 0.25 |
| **3** | 0.30 | 0.25 | 0.60 | 0.40 | 0.60 | 0.45 | 0.90 | 0.45 | 0.30 | 0.30 | 0.60 | 0.30 | 0.60 | 0.25 | 0.30 | 0.20 | 0.60 | 0.10 | 0.30 | 0.40 | 0.30 | 0.20 |
| **4** | 0.40 | 0.35 | 0.80 | 0.40 | 0.80 | 0.50 | 1.20 | 0.45 | 0.40 | 0.30 | 0.80 | 0.30 | 0.80 | 0.30 | 0.40 | 0.20 | 0.80 | 0.15 | 0.40 | 0.40 | 0.40 | 0.20 |
| **5** | 0.50 | 0.35 | 1.00 | 0.40 | 1.00 | 0.50 | 1.50 | 0.45 | 0.50 | 0.40 | 1.00 | 0.40 | 1.00 | 0.35 | 0.50 | 0.20 | 1.00 | 0.20 | 0.50 | 0.40 | 0.50 | 0.20 |
| **6** | 0.60 | 0.30 | 1.20 | 0.30 | 1.20 | 0.50 | 1.80 | 0.45 | 0.60 | 0.30 | 1.20 | 0.40 | 1.20 | 0.35 | 0.60 | 0.30 | 1.20 | 0.25 | 0.60 | 0.30 | 0.60 | 0.20 |
| **7** | 0.70 | 0.30 | 1.40 | 0.25 | 1.40 | 0.50 | 2.10 | 0.40 | 0.70 | 0.20 | 1.40 | 0.30 | 1.40 | 0.30 | 0.70 | 0.10 | 1.40 | 0.20 | 0.70 | 0.20 | 0.70 | 0.15 |
| **8** | 0.80 | 0.25 | 1.60 | 0.15 | 1.60 | 0.45 | 2.40 | 0.30 | 0.80 | 0.20 | 1.60 | 0.15 | 1.60 | 0.25 | 0.80 | 0.05 | 1.60 | 0.20 | 0.80 | 0.20 | 0.80 | 0.10 |
| **9** | 0.90 | 0.10 | 1.80 | 0.05 | 1.80 | 0.20 | 2.70 | 0.20 | 0.90 | 0.10 | 1.80 | 0.05 | 1.80 | 0.10 | 0.90 | 0.01 | 1.80 | 0.20 | 0.90 | 0.10 | 0.90 | 0.05 |
| **Right Bank** | 1.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 3.00 | 0.00 | 1.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 1.00 | 0.00 | 2.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 |
| **Feature Type** (riffle, run, or pool) | pool | | pool | | pool | | pool | | run | | pool | | pool | | run | | run | | pool | | run | |

**Notes:** Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS 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 bv dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.1 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: Gilisa Gould  Date: 10.08.08

09/23/2008

09/23/2008

WBID # __384____

Site # ___2_____

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet B – Site Characterization (Page 1 of 3)

(must be completed for each site)

| | |
|---|---|
| **Date & Time**: 9/23/2008 10:00 | Location Description (e.g., road crossing): Hwy Z |
| **Stream Name:** Keeney Cr. | |
| Current Weather Conditions: Clear | Facility Name(s): Orrick Lagoon |
| Weather Conditions for Past 10 days: 0.19 in | Permit Number(s): MO0022918 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐ | |

### Site Location:

| LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS) | | | | |
|---|---|---|---|---|
| Site 01 | Easting (UTM X): 0403460 | Northing (UTM Y): 4339237 | Horizontal Accuracy: (EPE / FOM / PDOP) | 7 Meters |
| Site 11 | Easting (UTM X): 0403297 | Northing (UTM Y): 4339130 | Horizontal Accuracy: (EPE / FOM / PDOP) | 6 Meters |

### Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|---|---|---|---|---|---|
| 3 | downstream | 4 | upstream | | |
| | | | | | |
| 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 the 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.)

Stream Name & WBID # __Keeney Cr.____384 _____ Date of Survey _9-23-08____

Site # __2_____

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet B – Site Characterization (Page 2 of 3)

### 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 | ☑ Rural Residential |
| ☐ Campgrounds | ☐ State parks | ☐ National forests | ☐ Nature trails | ☐ Stairs/walkway |
| ☐ Boating accesses | ☐ Fence | ☐ No trespass sign | ☐ Steep slopes | ☑ Other: Crop Fields |
| Comments: | | | | |

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

| | | | | |
|---|---|---|---|---|
| ☐ Roads | ☐ Foot paths/prints | ☐ Dock/platform | ☐ Camping Sites | ☐ Rope swings |
| ☐ RV / ATV Tracks | ☐ Fire pit/ring | ☐ NPDES Discharge | ☐ Fishing Tackle | ☐ Livestock Watering |
| ☑ None of the above | Comments / Other: | | | |

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

| | | | | | |
|---|---|---|---|---|---|
| % Cobble | 20% Gravel | % Sand | % Silt | 80% Mud/Clay | % Bedrock |

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

None in water; banks are 40% vegetated

### 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: |
| Surface Deposit: | ☐ Oil | ☑ Scum | ☑ Foam | ☐ None | ☐ 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 affect another use.

Stream Name & WBID # __Keeney Cr.____384 _____ Date of Survey _9-23-08____

Site # __2_____

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet B – Site Characterization (Page 3 of 3)

**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.)

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

Printed Names of Personnel Collecting Data: Bryan Deimeke and Gilisa Gould_____

Surveyor's Signature: Gilisa Gould_____ Date of Survey: 9-23-08_____

Organization: SES, Inc._____ Position: Field Team Leader_____

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

Stream Name: Keeney Cr  Waterbody ID: 384  Site #: 2

Estimated Channel Incision: 4 (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: 0403460  UTM Y: 4339237  +/- 7 (meters)

**11** UTM X: 0403297  UTM Y: 4339130  +/- 6 (meters)

Average Stream Width: 4 (meters)
(To determne Length of Reach)

Length of Survey Segment: 150 (meters)
(20x average stream width)

Field Staff: Gilisa Gould and Bryan Deimeke

### Dissolved Oxygen

Date: 9/23/2008  Time: 10:00

Dissolved Oxygen: 7.9 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 18.4 (°C)

### 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** | 0.30 | 0.01 | 0.30 | 0.05 | 0.20 | 0.05 | 0.30 | 0.10 | 0.30 | 0.05 | 0.30 | 0.01 | 0.30 | 0.01 | 0.40 | 0.10 | 0.20 | 0.05 | 0.40 | 0.10 | 0.20 | 0.05 |
| **2** | 0.60 | 0.01 | 0.60 | 0.10 | 0.40 | 0.10 | 0.60 | 0.15 | 0.60 | 0.10 | 0.60 | 0.10 | 0.60 | 0.05 | 0.80 | 0.20 | 0.40 | 0.10 | 0.80 | 0.20 | 0.40 | 0.10 |
| **3** | 0.90 | 0.05 | 0.90 | 0.15 | 0.60 | 0.15 | 0.90 | 0.20 | 0.90 | 0.20 | 0.90 | 0.05 | 0.90 | 0.10 | 1.20 | 0.35 | 0.60 | 0.10 | 1.20 | 0.40 | 0.60 | 0.10 |
| **4** | 1.20 | 0.05 | 1.20 | 0.25 | 0.80 | 0.20 | 1.20 | 0.20 | 1.20 | 0.25 | 1.20 | 0.10 | 1.20 | 0.10 | 1.60 | 0.45 | 0.80 | 0.10 | 1.60 | 0.40 | 0.80 | 0.15 |
| **5** | 1.50 | 0.01 | 1.50 | 0.25 | 1.00 | 0.25 | 1.50 | 0.20 | 1.50 | 0.25 | 1.50 | 0.10 | 1.50 | 0.10 | 2.00 | 0.45 | 1.00 | 0.10 | 2.00 | 0.40 | 1.00 | 0.20 |
| **6** | 1.80 | 0.01 | 1.80 | 0.30 | 1.20 | 0.20 | 1.80 | 0.20 | 1.80 | 0.25 | 1.80 | 0.10 | 1.80 | 0.10 | 2.40 | 0.40 | 1.20 | 0.10 | 2.40 | 0.40 | 1.20 | 0.15 |
| **7** | 2.10 | 0.10 | 2.10 | 0.25 | 1.40 | 0.15 | 2.10 | 0.10 | 2.10 | 0.20 | 2.10 | 0.10 | 2.10 | 0.10 | 2.80 | 0.30 | 1.40 | 0.15 | 2.80 | 0.35 | 1.40 | 0.20 |
| **8** | 2.40 | 0.05 | 2.40 | 0.20 | 1.60 | 0.10 | 2.40 | 0.05 | 2.40 | 0.15 | 2.40 | 0.05 | 2.40 | 0.05 | 3.20 | 0.20 | 1.60 | 0.05 | 3.20 | 0.30 | 1.60 | 0.15 |
| **9** | 2.70 | 0.01 | 2.70 | 0.05 | 1.80 | 0.01 | 2.70 | 0.01 | 2.70 | 0.05 | 2.70 | 0.05 | 2.70 | 0.05 | 3.60 | 0.05 | 1.80 | 0.05 | 3.60 | 0.15 | 1.80 | 0.05 |
| **Right Bank** | 3.00 | 0.00 | 3.00 | 0.00 | 2.00 | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 | 4.00 | 0.00 | 2.00 | 0.00 | 4.00 | 0.00 | 2.00 | 0.00 |
| **Feature Type** (riffle, run, or pool) | riffle | | pool | | run | | run | | run | | riffle | | riffle | | pool | | run | | pool | | run | |

**Notes:** Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS 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 bv dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.1 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: Gilisa Gould  Date: 10.08.08

09/23/2008

09/23/2008

WBID # __384____

Site # ___3_____

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet B – Site Characterization (Page 1 of 3)

(must be completed for each site)

| | |
|---|---|
| **Date & Time**: 9/23/2008 10:35 | Location Description (e.g., road crossing): Centennial Road |
| **Stream Name:** Keeney Cr. | |
| Current Weather Conditions: Clear | Facility Name(s): Orrick Lagoon |
| Weather Conditions for Past 10 days: 0.19 in | Permit Number(s): MO0022918 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐ | |

### Site Location:

| LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS) | | | | |
|---|---|---|---|---|
| Site 01 | Easting (UTM X): 0402570 | Northing (UTM Y):4337806 | Horizontal Accuracy: (EPE / FOM / PDOP) | 5 Meters |
| Site 11 | Easting (UTM X): 0402441 | Northing (UTM Y): 4337647 | Horizontal Accuracy: (EPE / FOM / PDOP) | 7 Meters |

### Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|---|---|---|---|---|---|
| 5 | downstream | 6 | upstream | | |
| | | | | | |
| 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 the 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.)

Stream Name & WBID # __Keeney Cr.____384 _____ Date of Survey _9-23-08____

Site # __3_____

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet B – Site Characterization (Page 2 of 3)

### 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 | ☑ Rural Residential |
| ☐ Campgrounds | ☐ State parks | ☐ National forests | ☐ Nature trails | ☐ Stairs/walkway |
| ☐ Boating accesses | ☐ Fence | ☐ No trespass sign | ☐ Steep slopes | ☑ Other: Crop Fields |
| Comments: | | | | |

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

| | | | | |
|---|---|---|---|---|
| ☐ Roads | ☐ Foot paths/prints | ☐ Dock/platform | ☐ Camping Sites | ☐ Rope swings |
| ☐ RV / ATV Tracks | ☐ Fire pit/ring | ☐ NPDES Discharge | ☐ Fishing Tackle | ☐ Livestock Watering |
| ☑ None of the above | Comments / Other: | | | |

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

| | | | | | |
|---|---|---|---|---|---|
| % Cobble | 10% Gravel | % Sand | % Silt | 90% Mud/Clay | % Bedrock |

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

None in water; banks are mostly washed out and bare.

### 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: |
| Surface Deposit: | ☐ Oil | ☐ Scum | ☐ Foam | ☑ None | ☐ 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 affect another use.

Stream Name & WBID # __Keeney Cr.____384 _____ Date of Survey _9-23-08____

Site # __3_____

## Field Data Sheets for Recreational Use Stream Surveys

### Data Sheet B – Site Characterization (Page 3 of 3)

**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.)

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

Printed Names of Personnel Collecting Data: Bryan Deimeke and Gilisa Gould_____

Surveyor's Signature: Gilisa Gould_____ Date of Survey: 9-23-08_____

Organization: SES, Inc._____ Position: Field Team Leader_____

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet C - Field Survey Results

Stream Name: Keeney Cr  Waterbody ID: 384  Site #: 3

Estimated Channel Incision: 5 (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: 0402570  UTM Y: 4337806  +/- 5 (meters)

**11** UTM X: 0402441  UTM Y: 4337647  +/- 7 (meters)

Average Stream Width: 4 (meters)
(To determne Length of Reach)

Length of Survey Segment: 150 (meters)
(20x average stream width)

Field Staff: Gilisa Gould and Bryan Deimeke

### Dissolved Oxygen

Date: 9/23/2008  Time: 10:35

Dissolved Oxygen: 7.5 (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temperature: 20 (°C)

### 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** | 0.10 | 0.05 | 0.20 | 0.05 | 0.20 | 0.01 | 0.30 | 0.01 | 0.10 | 0.01 | 0.20 | 0.01 | 0.20 | 0.05 | 0.10 | 0.01 | 0.20 | 0.01 | 0.10 | 0.05 | 0.10 | 0.05 |
| **2** | 0.20 | 0.10 | 0.40 | 0.10 | 0.40 | 0.10 | 0.60 | 0.05 | 0.20 | 0.10 | 0.40 | 0.05 | 0.40 | 0.01 | 0.20 | 0.05 | 0.40 | 0.01 | 0.20 | 0.10 | 0.20 | 0.10 |
| **3** | 0.30 | 0.10 | 0.60 | 0.10 | 0.60 | 0.05 | 0.90 | 0.10 | 0.30 | 0.10 | 0.60 | 0.01 | 0.60 | 0.01 | 0.30 | 0.05 | 0.60 | 0.05 | 0.30 | 0.10 | 0.30 | 0.10 |
| **4** | 0.40 | 0.01 | 0.80 | 0.15 | 0.80 | 0.05 | 1.20 | 0.10 | 0.40 | 0.10 | 0.80 | 0.05 | 0.80 | 0.01 | 0.40 | 0.10 | 0.80 | 0.05 | 0.40 | 0.10 | 0.40 | 0.10 |
| **5** | 0.50 | 0.01 | 1.00 | 0.10 | 1.00 | 0.05 | 1.50 | 0.20 | 0.50 | 0.15 | 1.00 | 0.10 | 1.00 | 0.05 | 0.50 | 0.05 | 1.00 | 0.10 | 0.50 | 0.10 | 0.50 | 0.10 |
| **6** | 0.60 | 0.05 | 1.20 | 0.15 | 1.20 | 0.05 | 1.80 | 0.15 | 0.60 | 0.15 | 1.20 | 0.10 | 1.20 | 0.10 | 0.60 | 0.10 | 1.20 | 0.10 | 0.60 | 0.05 | 0.60 | 0.10 |
| **7** | 0.70 | 0.05 | 1.40 | 0.10 | 1.40 | 0.10 | 2.10 | 0.20 | 0.70 | 0.15 | 1.40 | 0.10 | 1.40 | 0.10 | 0.70 | 0.15 | 1.40 | 0.10 | 0.70 | 0.10 | 0.70 | 0.05 |
| **8** | 0.80 | 0.05 | 1.60 | 0.05 | 1.60 | 0.10 | 2.40 | 0.15 | 0.80 | 0.10 | 1.60 | 0.10 | 1.60 | 0.10 | 0.80 | 0.15 | 1.60 | 0.05 | 0.80 | 0.10 | 0.80 | 0.20 |
| **9** | 0.90 | 0.01 | 1.80 | 0.01 | 1.80 | 0.05 | 2.70 | 0.10 | 0.90 | 0.01 | 1.80 | 0.01 | 1.80 | 0.25 | 0.90 | 0.15 | 1.80 | 0.01 | 0.90 | 0.05 | 0.90 | 0.15 |
| **Right Bank** | 1.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 3.00 | 0.00 | 1.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 1.00 | 0.00 | 2.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 |
| **Feature Type** (riffle, run, or pool) | pool | | pool | | pool | | pool | | run | | pool | | pool | | run | | run | | pool | | run | |

**Notes:** Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS 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 bv dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.1 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

Surveyor's Signature: Gilisa Gould  Date: 9/23/2008

09/23/2008

09/23/2008