



Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 2980 Lick Creek Ditch

Submitted by
Olsson Associates

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): Lick Cr. Ditch |
| Missouri Water Body Identification (WBID) Number: 2980 |
| 8-digit HUC: 08020203 |
| County(ies), Listed Upstream to Downstream: Stoddard |
| Upstream Legal Description (from Table H): 15, 26N, 10E |
| Downstream Legal Description (from Table H): 33, 25N, 9E |
| Number of sites evaluated: 10 |
| List all site numbers, <u>consecutively upstream to downstream</u> : 2980-1, 2980-2, 2980-3, 2980-4, 2980-5, 2980-6, 2980-7, 2980-8, 2980-9, 2980-10 |
| Include a Site Location Map(s). The map must include all requirements detailed in the <i>Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol</i> (Section IV.D.8.a). |

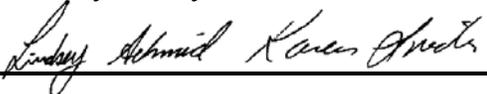
II. Facility Information (list all permitted discharges to this water body segment)

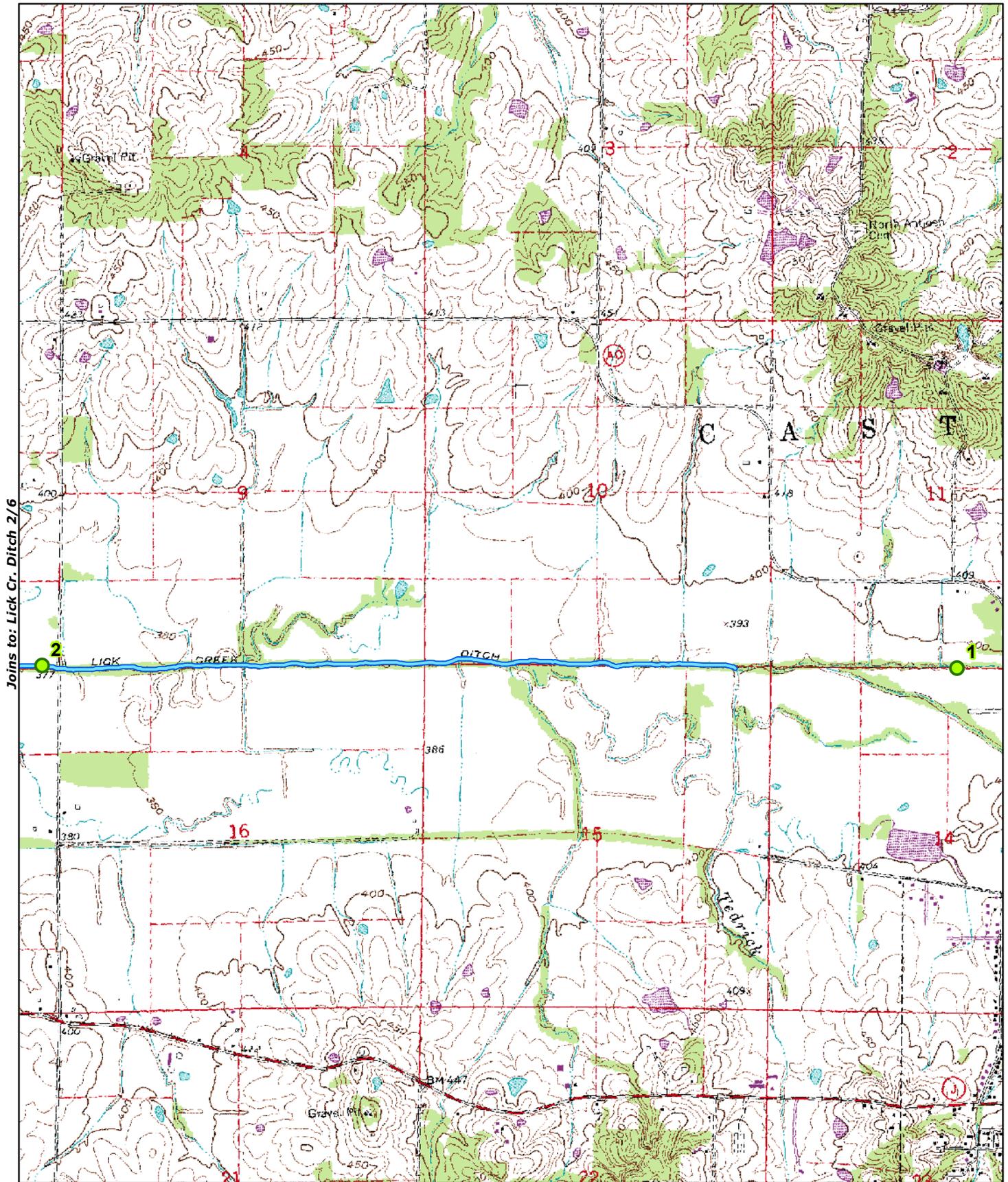
| |
|---|
| Facility Name(s) and Permit Number(s): Bloomfield WWTF MO: 0050326 Dudley Wastewater Treatment MO 0102181 |
|---|

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

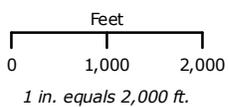
| | |
|---|--------------------------------|
| Name of Surveyor: Lindsey Schmid / Karen Snider | Telephone Number: 417-890-8802 |
| Organization/Employer: Olsson Associates | |

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

Signed:  Date: 09-18-08



**MISSOURI RECREATIONAL
USE ATTAINABILITY ANALYSIS**

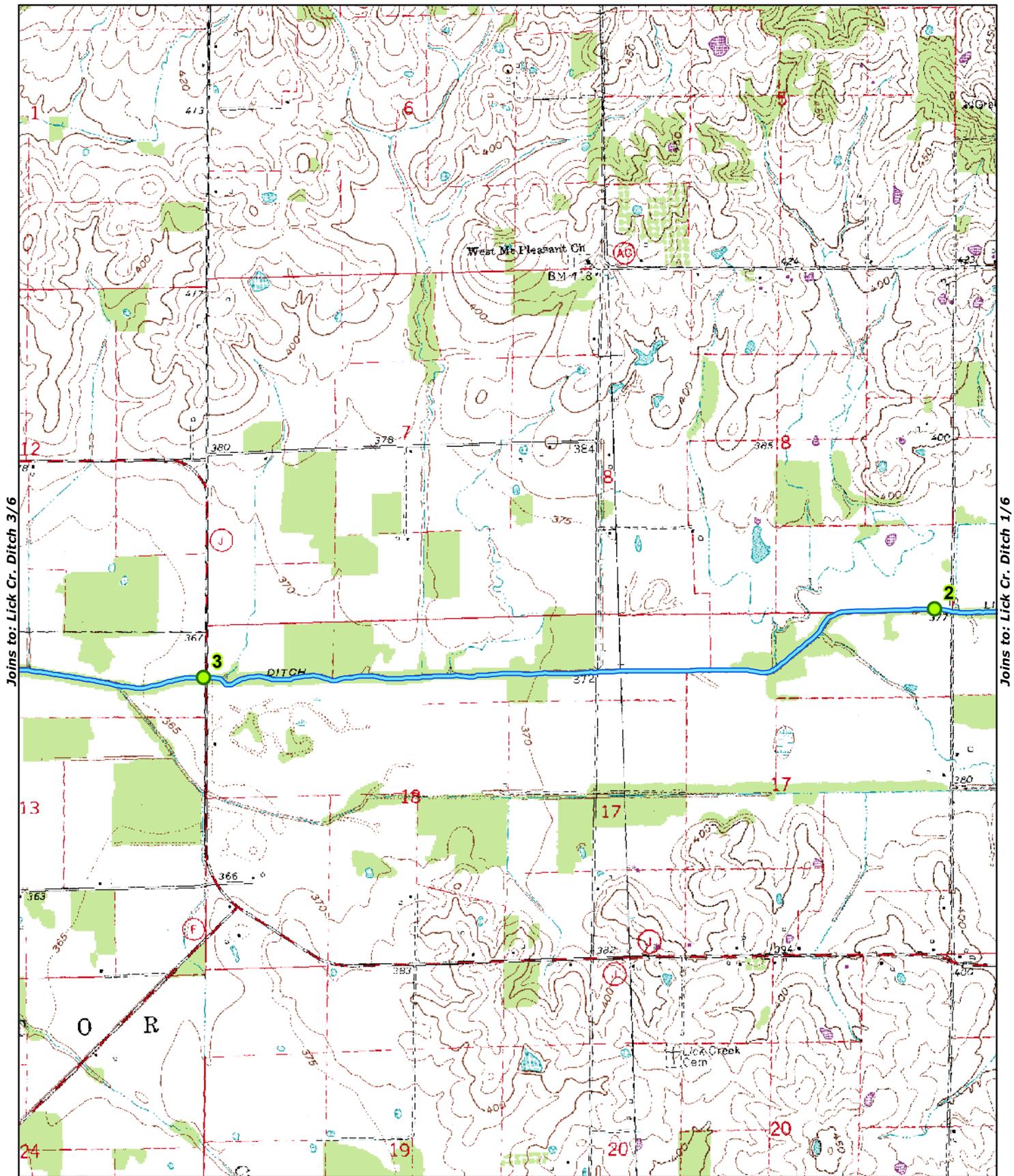


Stream: Lick Cr. Ditch
WBID: 2980

Map Sheet: 1/6
County: Stoddard



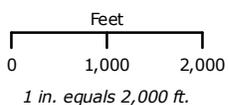
Project No. 008-1298



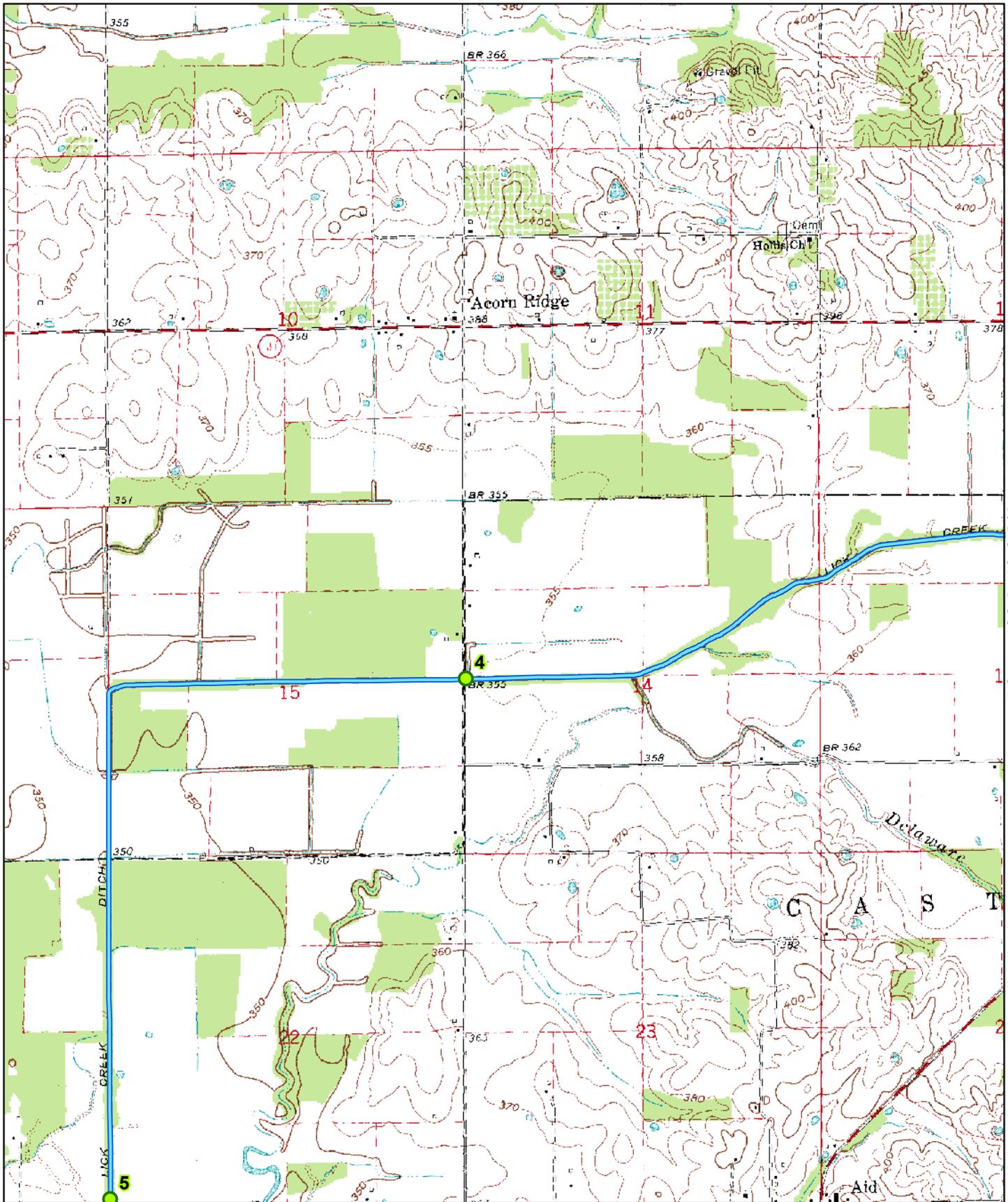
**MISSOURI RECREATIONAL
USE ATTAINABILITY ANALYSIS**

Stream: Lick Cr. Ditch
WBID: 2980

Map Sheet: 2/6
County: Stoddard



Project No. 008-1298

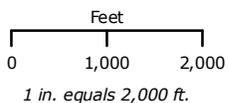


Joins to: Lick Cr. Ditch 4/6

MISSOURI RECREATIONAL USE ATTAINABILITY ANALYSIS

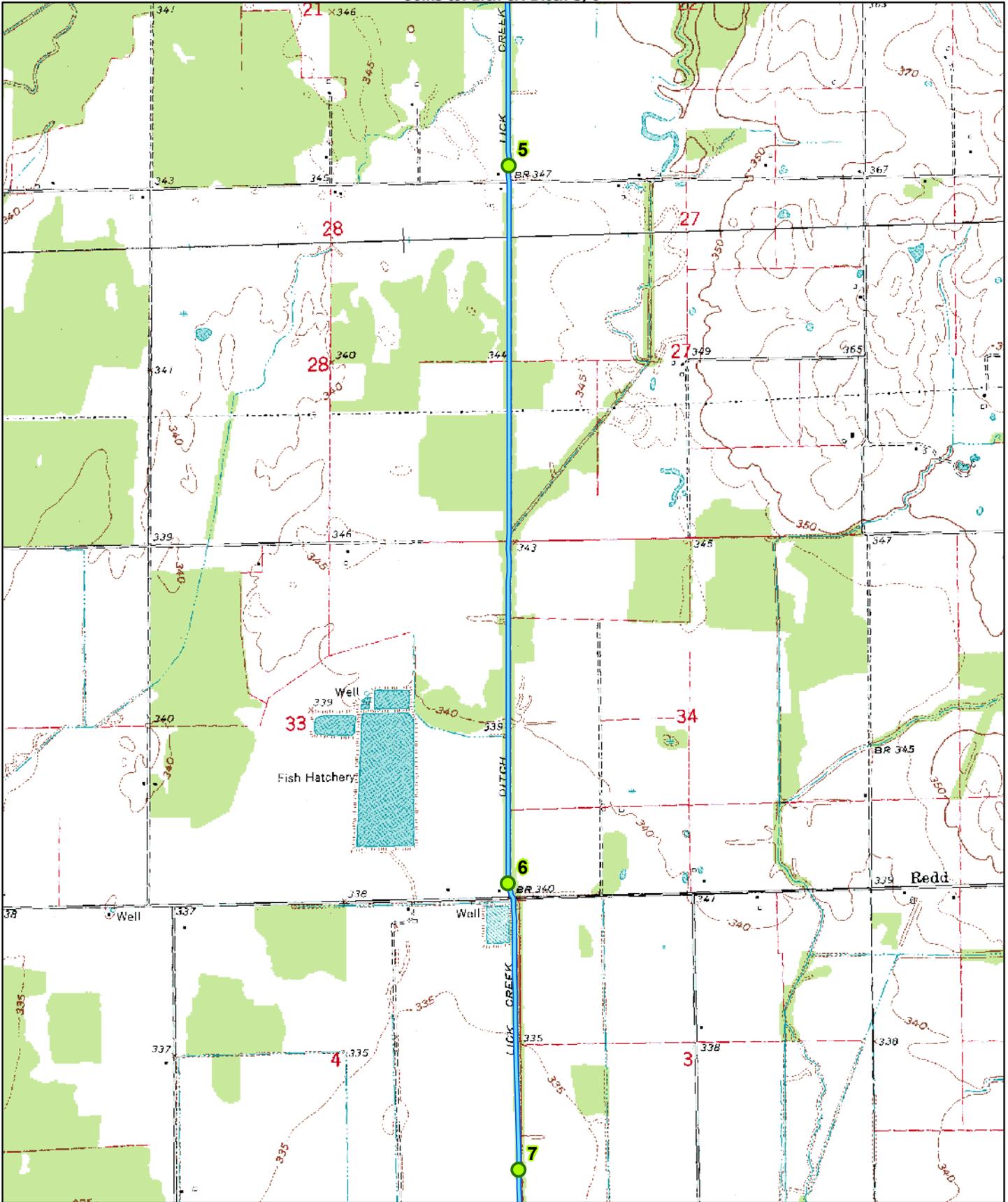
Stream: Lick Cr. Ditch
WBID: 2980

Map Sheet: 3/6
County: Stoddard



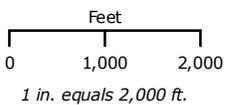
Project No. 008-1298

Joins to: Lick Cr. Ditch 3/6



Joins to: Lick Cr. Ditch 5/6

MISSOURI RECREATIONAL USE ATTAINABILITY ANALYSIS



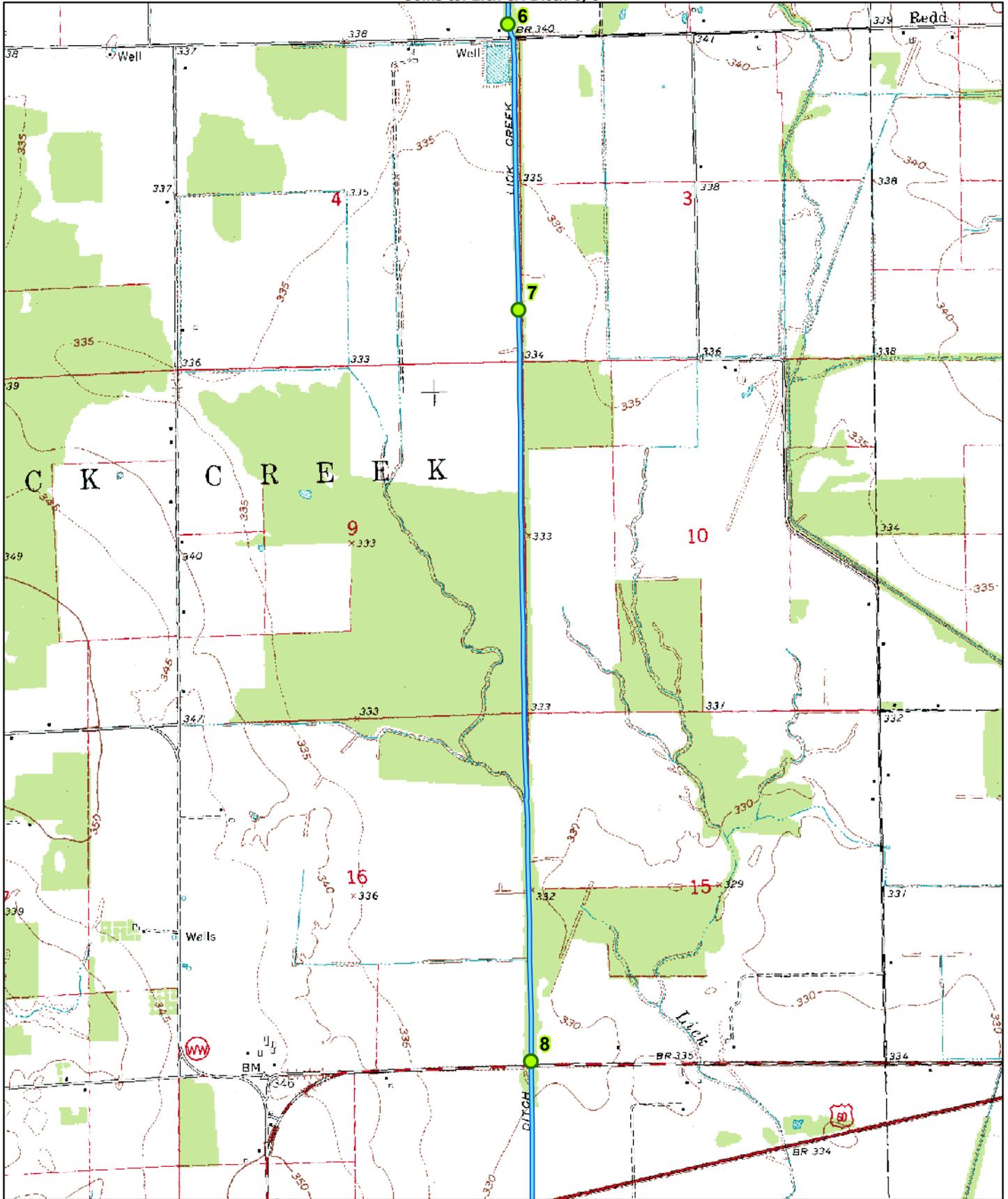
Stream: Lick Cr. Ditch
WBID: 2980

Map Sheet: 4/6
County: Stoddard



Project No. 008-1298

Joins to: Lick Cr. Ditch 6/6

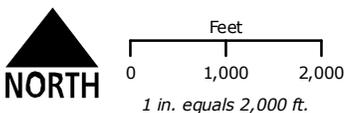


Joins to: Lick Cr. Ditch 4/6

MISSOURI RECREATIONAL USE ATTAINABILITY ANALYSIS

Stream: Lick Cr. Ditch
WBID: 2980

Map Sheet: 5/6
County: Stoddard



Project No. 008-1298

WBID # 2980

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: 09-18-08 10:30 a.m. | Location Description (e.g., road crossing): .2 miles downstream from HWY AC |
| Stream Name: Lick Cr. Ditch | |
| Current Weather Conditions: sunny/hot | Facility Name(s): Bloomfield WWTF Dudley Wastewater Treatment |
| Weather Conditions for Past 10 days: 1.92" @ Arcadia | Permit Number(s): MO 0050326 MO 0102181 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): 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): 238423 | Northing (UTM Y): 4088283 | Horizontal Accuracy: (EPE / FOM / PDOP) | 45 ft. Meters |
| Site 11 | Easting (UTM X): 238278 | Northing (UTM Y): 4088301 | Horizontal Accuracy: (EPE / FOM / PDOP) | 57 ft. Meters |

Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|-----------|-----------------------|-----------|-----------------------|-----------|---------------|
| 2980-1-A | Upstream looking down | 2980-1-B | Downstream looking up | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Uses Observed*: (Uses actually observed at the 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.) | | | | |

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.)

| | | | | |
|--|--------------------------------------|---|--|---|
| <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 type="checkbox"/> Steep slopes | <input checked="" type="checkbox"/> Other: Farm land |
| 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 |
| <input checked="" type="checkbox"/> None of the above | Comments / Other: | | | |
| | | | | |

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

| | | | | | |
|----------|----------|----------|----------|--------------|-----------|
| % Cobble | % Gravel | 40% Sand | 30% Silt | 30% Mud/Clay | % Bedrock |
|----------|----------|----------|----------|--------------|-----------|

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

| |
|------------------|
| Dark green algae |
|------------------|

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 checked="" type="checkbox"/> Other: BROWN |
| Bottom Deposit: | <input checked="" 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 checked="" type="checkbox"/> Scum | <input type="checkbox"/> Foam | <input 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 affect another use.

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.)

Moved site upstream closer to road access
 Landowner does not allow trespass.
 Expressed concern due to large sinkholes on property!
 And tree debris (large dozer decks)

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

Printed Names of Personnel Collecting Data: Lindsey Schmid / Karen Snider

Surveyor's Signature: *Lindsey Schmid Karen Snider* Date of Survey: 09-18-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

| | |
|---|--|
| Stream Name: <u>Lick Cr. Ditch</u> Waterbody ID: <u>2980</u> Site #: <u>1</u> Estimated Channel Incision: <u>0.4</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>238423</u> UTM Y: <u>4088283</u> +/- <u>45</u> ft. (meters) 11 UTM X: <u>238278</u> UTM Y: <u>4088301</u> +/- <u>57</u> ft. (meters) Average Stream Width: <u>1</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Lindsey Schmid / Karen Snider</u> | <p align="center">Dissolved Oxygen</p> Date: <u>9/18/2008</u> Time: <u>11:25 a.m.</u> Dissolved Oxygen: <u>0.62</u> (mg/L) Dissolved Oxygen: <u>6.3</u> (% sat) Specific Cond: <u>534</u> (µS/cm) Water Temperature: <u>17</u> (°C) |
|---|--|

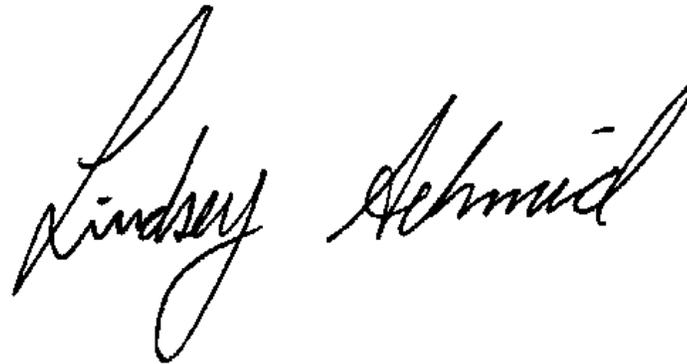
Transect Cross-Section

| 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 | 0 |
| 1 | 0.17 | 0.08 | 0.14 | 0.05 | 0.11 | 0.07 | 0.12 | 0.06 | 0.07 | 0.05 | 0.06 | 0.05 | 0.08 | 0.05 | 0.13 | 0.05 | 0.12 | 0.00 | 0.09 | 0.05 | 0.11 | 0.00 |
| 2 | 0.34 | 0.10 | 0.28 | 0.07 | 0.22 | 0.09 | 0.24 | 0.09 | 0.14 | 0.05 | 0.12 | 0.05 | 0.16 | 0.05 | 0.26 | 0.05 | 0.24 | 0.00 | 0.18 | 0.05 | 0.22 | 0.00 |
| 3 | 0.51 | 0.13 | 0.42 | 0.08 | 0.33 | 0.12 | 0.36 | 0.11 | 0.21 | 0.05 | 0.18 | 0.05 | 0.24 | 0.05 | 0.39 | 0.05 | 0.36 | 0.00 | 0.27 | 0.05 | 0.33 | 0.00 |
| 4 | 0.68 | 0.15 | 0.56 | 0.12 | 0.44 | 0.11 | 0.48 | 0.12 | 0.28 | 0.05 | 0.24 | 0.05 | 0.32 | 0.05 | 0.52 | 0.05 | 0.48 | 0.00 | 0.36 | 0.05 | 0.44 | 0.00 |
| 5 | 0.85 | 0.14 | 0.70 | 0.12 | 0.55 | 0.12 | 0.60 | 0.12 | 0.35 | 0.06 | 0.30 | 0.05 | 0.40 | 0.05 | 0.65 | 0.05 | 0.60 | 0.00 | 0.45 | 0.05 | 0.55 | 0.00 |
| 6 | 1.02 | 0.09 | 0.84 | 0.11 | 0.66 | 0.10 | 0.72 | 0.14 | 0.42 | 0.05 | 0.36 | 0.05 | 0.48 | 0.05 | 0.78 | 0.05 | 0.72 | 0.00 | 0.54 | 0.05 | 0.66 | 0.00 |
| 7 | 1.19 | 0.08 | 0.98 | 0.12 | 0.77 | 0.09 | 0.84 | 0.13 | 0.49 | 0.05 | 0.42 | 0.05 | 0.56 | 0.05 | 0.91 | 0.05 | 0.84 | 0.00 | 0.63 | 0.05 | 0.77 | 0.00 |
| 8 | 1.36 | 0.08 | 1.12 | 0.12 | 0.88 | 0.05 | 0.96 | 0.09 | 0.56 | 0.05 | 0.48 | 0.05 | 0.64 | 0.05 | 1.04 | 0.05 | 0.96 | 0.00 | 0.72 | 0.05 | 0.88 | 0.00 |
| 9 | 1.53 | 0.08 | 1.26 | 0.10 | 0.99 | 0.05 | 1.08 | 0.05 | 0.63 | 0.05 | 0.54 | 0.05 | 0.72 | 0.05 | 1.17 | 0.05 | 1.08 | 0.00 | 0.81 | 0.05 | 0.99 | 0.00 |
| Right Bank | 1.70 | 0.00 | 1.40 | 0.00 | 1.10 | 0.00 | 1.20 | 0.00 | 0.70 | 0.00 | 0.60 | 0.00 | 0.80 | 0.00 | 1.30 | 0.00 | 1.20 | 0.00 | 0.90 | 0.00 | 1.10 | 0.00 |
| Feature Type <small>(riffle, run, or pool)</small> | Run | | Dry | | Run | | Dry | | Run | |

MAXIMUM 0.15
 MEDIAN 0.05

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 0.1 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:



WBID # 2980

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: 09-18-08 9:30 a.m. | Location Description (e.g., road crossing): |
| Stream Name: Lick Cr. Ditch | CR 231 Road Crossing |
| Current Weather Conditions: sunny/hot | Facility Name(s): Bloomfield WWTF Dudley Wastewater Treatment |
| Weather Conditions for Past 10 days: 1.92" @ Arcadia | Permit Number(s): MO 0050326 MO 0102181 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): 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): 234172 | Northing (UTM Y): 4088542 | Horizontal Accuracy: (EPE / FOM / PDOP) 67 ft. Meters |
| Site 11 | Easting (UTM X): 234005 | Northing (UTM Y): 4088558 | Horizontal Accuracy: (EPE / FOM / PDOP) 42 ft. Meters |

Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|-----------|-----------------------|-----------|-----------------------|-----------|---------------|
| 2980-2-A | Upstream looking down | 2980-2-B | Downstream looking up | | |
| 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.)

| | | | | |
|--|--------------------------------------|---------------------------------------|---|---------------------------------------|
| <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.) | | | | |

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.)

| | | | | |
|--|--------------------------------------|---|--|---|
| <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 type="checkbox"/> Steep slopes | <input checked="" type="checkbox"/> Other: Farm land |
| Comments: | | | | |

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

| | | | | |
|--|--|--|---|---|
| <input checked="" 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 |
| <input type="checkbox"/> None of the above | Comments / Other: | | | |

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

| | | | | | |
|----------|------------|----------|----------|--------------|-----------|
| % Cobble | 20% Gravel | 60% Sand | 10% Silt | 10% Mud/Clay | % Bedrock |
|----------|------------|----------|----------|--------------|-----------|

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

| |
|---|
| Orange almost fungus like matter approximately 10% coverage |
| Blackish brown algae |

Water Characteristics*: (Mark all that apply.)

| | | | | | |
|------------------|--|---|--|--------------------------------|--|
| Odor: | <input type="checkbox"/> Sewage | <input checked="" type="checkbox"/> Musky | <input type="checkbox"/> Chemical | <input type="checkbox"/> None | <input type="checkbox"/> Other: |
| Color: | <input checked="" type="checkbox"/> Clear | <input type="checkbox"/> Green | <input checked="" type="checkbox"/> Gray | <input type="checkbox"/> Milky | <input checked="" type="checkbox"/> Other: BROWN |
| Bottom Deposit: | <input checked="" 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 checked="" type="checkbox"/> Scum | <input type="checkbox"/> Foam | <input 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 affect another use.

Field Data Sheets for Recreational Use Stream Surveys

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

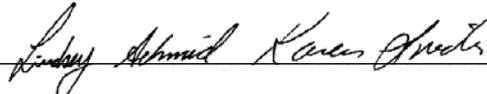
Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses.)

| 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: Lindsey Schmid / Karen Snider

Surveyor's Signature:  Date of Survey: 09-18-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

| | |
|--|---|
| Stream Name: <u>Lick Cr. Ditch</u> Waterbody ID: <u>2980</u> Site #: <u>2</u> 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>234172</u> UTM Y: <u>4088542</u> +/- <u>67</u> ft. (meters) 11 UTM X: <u>234005</u> UTM Y: <u>4088558</u> +/- <u>42</u> ft. (meters) Average Stream Width: <u>7</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Lindsey Schmid / Karen Snider</u> | <p align="center">Dissolved Oxygen</p> Date: <u>9/18/2008</u> Time: <u>9:30 a.m.</u> Dissolved Oxygen: <u>0.59</u> (mg/L) Dissolved Oxygen: <u>6.5</u> (% sat) Specific Cond: <u>1,319</u> (µS/cm) Water Temperature: <u>17.8</u> (°C) |
|--|---|

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 | 0 |
| 1 | 0.59 | 0.05 | 1.06 | 0.15 | 1.18 | 0.36 | 1.12 | 0.64 | 1.14 | 0.35 | 1.16 | 0.05 | 0.76 | 0.08 | 0.68 | 0.07 | 0.71 | 0.06 | 0.45 | 0.05 | 0.68 | 0.30 |
| 2 | 1.18 | 0.08 | 2.12 | 0.19 | 2.36 | 0.37 | 2.24 | 0.59 | 1.28 | 0.28 | 2.32 | 0.05 | 1.52 | 0.15 | 1.36 | 0.10 | 1.42 | 0.08 | 0.90 | 0.06 | 1.36 | 0.23 |
| 3 | 1.77 | 0.17 | 3.18 | 0.25 | 3.54 | 0.28 | 3.36 | 0.48 | 2.42 | 0.27 | 3.48 | 0.05 | 2.28 | 0.16 | 2.04 | 0.14 | 2.13 | 0.13 | 1.35 | 0.06 | 2.04 | 0.20 |
| 4 | 2.36 | 0.22 | 4.24 | 0.30 | 4.72 | 0.36 | 4.48 | 0.38 | 3.56 | 0.24 | 4.64 | 0.05 | 3.04 | 0.19 | 2.72 | 0.18 | 2.84 | 0.16 | 1.80 | 0.08 | 2.72 | 0.16 |
| 5 | 2.95 | 0.25 | 5.30 | 0.26 | 5.90 | 0.36 | 5.60 | 0.37 | 4.70 | 0.27 | 5.80 | 0.05 | 3.80 | 0.24 | 3.40 | 0.22 | 3.55 | 0.19 | 2.25 | 0.08 | 3.40 | 0.17 |
| 6 | 3.54 | 0.26 | 6.36 | 0.26 | 7.08 | 0.37 | 6.72 | 0.28 | 5.84 | 0.25 | 6.96 | 0.05 | 4.56 | 0.29 | 4.08 | 0.24 | 4.26 | 0.22 | 2.70 | 0.11 | 4.08 | 0.11 |
| 7 | 4.13 | 0.29 | 7.42 | 0.21 | 8.26 | 0.25 | 7.84 | 0.17 | 6.98 | 0.17 | 8.12 | 0.05 | 5.32 | 0.32 | 4.76 | 0.29 | 4.97 | 0.25 | 3.15 | 0.16 | 4.76 | 0.06 |
| 8 | 4.72 | 0.33 | 8.48 | 0.21 | 9.44 | 0.17 | 8.96 | 0.11 | 8.12 | 0.08 | 9.28 | 0.08 | 6.08 | 0.33 | 5.44 | 0.32 | 5.68 | 0.24 | 3.60 | 0.21 | 5.44 | 0.05 |
| 9 | 5.31 | 0.37 | 9.54 | 0.15 | 10.62 | 0.14 | 10.08 | 0.09 | 9.26 | 0.11 | 10.44 | 0.12 | 6.84 | 0.41 | 6.12 | 0.38 | 6.39 | 0.22 | 4.05 | 0.24 | 6.12 | 0.05 |
| Right Bank | 5.90 | 0.00 | 10.60 | 0.00 | 11.80 | 0.00 | 11.20 | 0.00 | 11.40 | 0.00 | 11.60 | 0.00 | 7.60 | 0.00 | 6.80 | 0.00 | 7.10 | 0.00 | 4.50 | 0.00 | 6.80 | 0.00 |
| Feature Type <small>(riffle, run, or pool)</small> | 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 0.1 meter unless depth is too deep to measure (then record as > 1)
 All measurements to be taken to the nearest 0.01 meter.

MAXIMUM 0.64
 MEDIAN 0.19

Surveyor's Signature:



WBID # 2980

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: 09-17-08 6:00 p.m. | Location Description (e.g., road crossing): |
| Stream Name: Lick Cr. Ditch | HWY J |
| Current Weather Conditions: sunny / warm | Facility Name(s):Bloomfield WWTF Dudley Wastewater Treatment |
| Weather Conditions for Past 10 days: 1.92" @ Arcadia | Permit Number(s): MO: 0050326 MO: 0102181 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): 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): 765344 | Northing (UTM Y): 4088325 | Horizontal Accuracy: (EPE / FOM / PDOP) | 42 ft. Meters |
| Site 11 | Easting (UTM X): 765212 | Northing (UTM Y): 4088312 | Horizontal Accuracy: (EPE / FOM / PDOP) | 43 ft. Meters |

Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|-----------|-----------------------|-----------|-----------------------|-----------|---------------|
| 2980-3-A | Upstream looking down | 2980-3-B | Downstream looking up | | |
| 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.)

| | | | | |
|--|--------------------------------------|---------------------------------------|---|---------------------------------------|
| <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.) | | | | |

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.)

| | | | | |
|--|--------------------------------------|---|--|---|
| <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 type="checkbox"/> Steep slopes | <input checked="" type="checkbox"/> Other: Farm land |
| Comments: | | | | |

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

| | | | | |
|--|--|--|---|---|
| <input checked="" 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 |
| <input type="checkbox"/> None of the above | Comments / Other: | | | |

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

| | | | | | |
|----------|------------|----------|----------|--------------|-----------|
| % Cobble | 20% Gravel | 60% Sand | 10% Silt | 10% Mud/Clay | % Bedrock |
|----------|------------|----------|----------|--------------|-----------|

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

| |
|----------------------|
| Blackish/brown algae |
|----------------------|

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 checked="" type="checkbox"/> Other: blackish/brown |
| Bottom Deposit: | <input checked="" 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 checked="" type="checkbox"/> Scum | <input type="checkbox"/> Foam | <input 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 affect another use.

Site # 3

Field Data Sheets for Recreational Use Stream Surveys

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

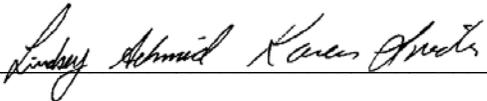
Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses.)

| 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: Lindsey Schmid / Karen Snider

Surveyor's Signature:  Date of Survey: 09-17-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

| | |
|--|--|
| Stream Name: <u>Lick Cr. Ditch</u> Waterbody ID: <u>2980</u> Site #: <u>3</u> 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>765344</u> UTM Y: <u>4088325</u> +/- <u>42</u> ft. (meters) 11 UTM X: <u>765212</u> UTM Y: <u>4088312</u> +/- <u>43</u> ft. (meters) Average Stream Width: <u>6</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Lindsey Schmid / Karen Snider</u> | <p align="center">Dissolved Oxygen</p> Date: <u>9/17/2008</u> Time: <u>6:00 p.m.</u> Dissolved Oxygen: <u>4.89</u> (mg/L) Dissolved Oxygen: <u>62.5</u> (% sat) Specific Cond: <u>444</u> (µS/cm) Water Temperature: <u>23.2</u> (°C) |
|--|--|

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 | 0 |
| 1 | 0.32 | 0.07 | 0.61 | 0.07 | 0.42 | 0.24 | 0.72 | 0.42 | 0.37 | 0.06 | 0.34 | 0.11 | 0.81 | 0.42 | 0.78 | 0.34 | 0.26 | 0.08 | 0.76 | 0.07 | 0.39 | 0.07 |
| 2 | 0.64 | 0.07 | 1.22 | 0.16 | 0.82 | 0.25 | 1.44 | 0.34 | 0.74 | 0.12 | 0.68 | 0.15 | 1.62 | 0.37 | 1.56 | 0.32 | 0.52 | 0.10 | 1.47 | 0.14 | 0.78 | 0.22 |
| 3 | 0.96 | 0.08 | 1.83 | 0.24 | 1.22 | 0.17 | 2.16 | 0.28 | 1.11 | 0.13 | 1.02 | 0.18 | 2.43 | 0.34 | 2.34 | 0.27 | 0.78 | 0.11 | 2.23 | 0.12 | 1.17 | 0.17 |
| 4 | 1.28 | 0.12 | 2.44 | 0.26 | 1.62 | 0.21 | 2.88 | 0.19 | 1.48 | 0.19 | 1.36 | 0.21 | 3.24 | 0.32 | 3.12 | 0.25 | 1.04 | 0.14 | 2.99 | 0.16 | 1.56 | 0.20 |
| 5 | 1.60 | 0.15 | 3.05 | 0.28 | 2.02 | 0.20 | 3.60 | 0.08 | 1.85 | 0.22 | 1.70 | 0.20 | 4.05 | 0.25 | 3.90 | 0.28 | 1.30 | 0.17 | 3.75 | 0.21 | 1.95 | 0.25 |
| 6 | 1.92 | 0.18 | 3.66 | 0.28 | 2.42 | 0.14 | 4.32 | 0.05 | 2.22 | 0.29 | 2.04 | 0.12 | 4.86 | 0.17 | 4.68 | 0.31 | 1.56 | 0.16 | 4.51 | 0.27 | 2.34 | 0.31 |
| 7 | 2.24 | 0.25 | 4.27 | 0.29 | 2.82 | 0.09 | 5.04 | 0.06 | 2.59 | 0.36 | 2.38 | 0.07 | 5.67 | 0.14 | 5.46 | 0.34 | 1.82 | 0.15 | 5.27 | 0.30 | 2.73 | 0.37 |
| 8 | 2.56 | 0.28 | 4.88 | 0.34 | 3.22 | 0.06 | 5.76 | 0.08 | 2.96 | 0.42 | 2.72 | 0.05 | 6.48 | 0.20 | 6.24 | 0.29 | 2.08 | 0.18 | 6.03 | 0.34 | 3.12 | 0.40 |
| 9 | 2.88 | 0.28 | 5.49 | 0.37 | 3.62 | 0.05 | 6.48 | 0.07 | 3.33 | 0.50 | 3.06 | 0.05 | 7.29 | 0.14 | 7.02 | 0.19 | 2.34 | 0.18 | 6.79 | 0.39 | 3.51 | 0.44 |
| Right Bank | 3.20 | 0.00 | 6.10 | 0.00 | 4.20 | 0.00 | 7.20 | 0.00 | 3.70 | 0.00 | 3.40 | 0.00 | 8.10 | 0.00 | 7.80 | 0.00 | 2.60 | 0.00 | 7.60 | 0.00 | 3.90 | 0.00 |
| Feature Type <small>(riffle, run, or pool)</small> | Run | Run |

MAXIMUM 0.50
 MEDIAN 0.19

Surveyor's Signature:



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 0.1 meter unless depth is too deep to measure (then record as > 1)
 All measurements to be taken to the nearest 0.01 meter.

WBID # 2980

Site # 4

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: 09-17-08 5:00 p.m. | Location Description (e.g., road crossing): CR 467 |
| Stream Name: Lick Cr. Ditch | |
| Current Weather Conditions: sunny / warm | Facility Name(s): Bloomfield WWTF/Dudley Wastewater Treatment |
| Weather Conditions for Past 10 days: 1.92" @ Arcadia | Permit Number(s): MO:0050326 MO: 0102181 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): 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): 762074 | Northing (UTM Y): 4087724 | Horizontal Accuracy: (EPE / FOM / PDOP) 55 ft. Meters |
| Site 11 | Easting (UTM X): 761880 | Northing (UTM Y): 4087710 | Horizontal Accuracy: (EPE / FOM / PDOP) 50 ft. Meters |

Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|-----------|------------------------------|-----------|-----------------------|-----------|---------------|
| 2980-4-A | Upstream looking down/bridge | 2980-4-B | Downstream looking up | | |
| 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.)

| | | | | |
|--|--------------------------------------|---------------------------------------|---|---------------------------------------|
| <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.) | | | | |

Site # 4

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.)

| | | | | |
|--|--------------------------------------|---|--|---|
| <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 type="checkbox"/> Steep slopes | <input checked="" type="checkbox"/> Other: Farm land |
| Comments: | | | | |

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

| | | | | |
|--|--|--|---|---|
| <input checked="" 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 |
| <input type="checkbox"/> None of the above | Comments / Other: | | | |

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

| | | | | | |
|----------|------------|----------|----------|--------------|-----------|
| % Cobble | 30% Gravel | 50% Sand | 10% Silt | 10% Mud/Clay | % Bedrock |
|----------|------------|----------|----------|--------------|-----------|

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

| |
|--|
| Really dark stuff on bottom Brown algae on bottom |
|--|

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 type="checkbox"/> Clear | <input type="checkbox"/> Green | <input type="checkbox"/> Gray | <input type="checkbox"/> Milky | <input checked="" type="checkbox"/> Other: Blackish brown |
| Bottom Deposit: | <input checked="" 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 checked="" type="checkbox"/> Scum | <input type="checkbox"/> Foam | <input 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 affect another use.

Site # 4

Field Data Sheets for Recreational Use Stream Surveys

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

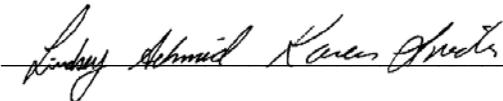
Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses.)

| 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: Lindsey Schmid / Karen Snider

Surveyor's Signature:  Date of Survey: 09-17-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

| | |
|---|--|
| Stream Name: <u>Lick Cr. Ditch</u> Waterbody ID: <u>2980</u> Site #: <u>4</u> Estimated Channel Incision: <u>0.4</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>762074</u> UTM Y: <u>4087724</u> +/- <u>55</u> ft. (meters) 11 UTM X: <u>761880</u> UTM Y: <u>4087710</u> +/- <u>50</u> ft. (meters) Average Stream Width: <u>3</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Lindsey Schmid / Karen Snider</u> | <p align="center">Dissolved Oxygen</p> Date: <u>9/17/2008</u> Time: <u>5:00 p.m.</u> Dissolved Oxygen: <u>7.61</u> (mg/L) Dissolved Oxygen: <u>89.1</u> (% sat) Specific Cond: <u>494</u> (µS/cm) Water Temperature: <u>22.9</u> (°C) |
|---|--|

Transect Cross-Section

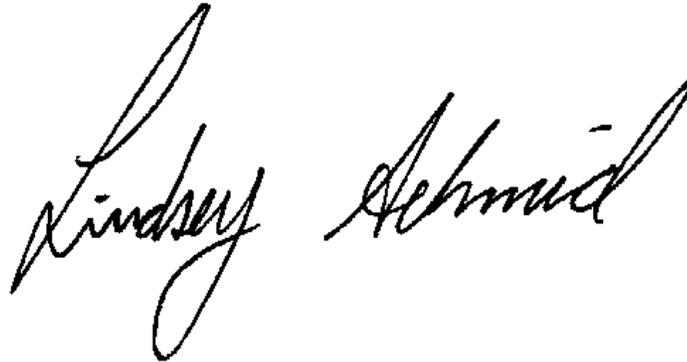
| Station | 01 | | 02 | | 03 | | 04 | | 05 | | 06 | | 07 | | 08 | | 09 | | 10 | | 11 | |
|--|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | 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 | 0 |
| 1 | 1.06 | 0.12 | 1.09 | 0.11 | 1.16 | 0.15 | 0.53 | 0.14 | 0.11 | 0.05 | 0.12 | 0.05 | 0.61 | 0.24 | 0.12 | 0.05 | 0.19 | 0.05 | 0.20 | 0.05 | 0.49 | 0.39 |
| 2 | 2.12 | 0.05 | 2.18 | 0.11 | 2.32 | 0.14 | 1.06 | 0.20 | 0.22 | 0.05 | 0.24 | 0.05 | 1.22 | 0.21 | 0.24 | 0.05 | 0.38 | 0.05 | 0.40 | 0.05 | 0.98 | 0.32 |
| 3 | 3.18 | 0.05 | 3.27 | 0.08 | 3.48 | 0.05 | 1.59 | 0.22 | 0.33 | 0.07 | 0.36 | 0.05 | 1.83 | 0.18 | 0.36 | 0.05 | 0.57 | 0.05 | 0.60 | 0.05 | 1.47 | 0.55 |
| 4 | 4.24 | 0.08 | 4.36 | 0.05 | 4.64 | 0.05 | 2.12 | 0.26 | 0.44 | 0.05 | 0.48 | 0.05 | 2.44 | 0.20 | 0.48 | 0.05 | 0.76 | 0.05 | 0.80 | 0.05 | 1.96 | 0.42 |
| 5 | 5.30 | 0.11 | 5.45 | 0.00 | 5.80 | 0.06 | 2.65 | 0.22 | 0.55 | 0.05 | 0.60 | 0.05 | 3.05 | 0.16 | 0.60 | 0.05 | 0.95 | 0.05 | 1.00 | 0.05 | 2.45 | 0.25 |
| 6 | 6.36 | 0.14 | 6.54 | 0.00 | 6.96 | 0.05 | 3.18 | 0.21 | 0.66 | 0.05 | 0.72 | 0.05 | 3.66 | 0.16 | 0.72 | 0.05 | 1.14 | 0.05 | 1.20 | 0.05 | 2.94 | 0.18 |
| 7 | 7.42 | 0.21 | 7.63 | 0.00 | 8.12 | 0.08 | 3.71 | 0.14 | 0.77 | 0.05 | 0.84 | 0.05 | 4.27 | 0.17 | 0.84 | 0.08 | 1.33 | 0.05 | 1.40 | 0.05 | 3.43 | 0.12 |
| 8 | 8.48 | 0.31 | 8.72 | 0.05 | 9.28 | 0.07 | 4.24 | 0.11 | 0.88 | 0.05 | 0.96 | 0.05 | 4.88 | 0.14 | 0.96 | 0.06 | 1.52 | 0.05 | 1.60 | 0.05 | 3.92 | 0.08 |
| 9 | 9.54 | 0.27 | 9.81 | 0.08 | 10.44 | 0.07 | 4.77 | 0.07 | 0.99 | 0.05 | 1.08 | 0.05 | 5.49 | 0.08 | 1.08 | 0.05 | 1.71 | 0.05 | 1.80 | 0.05 | 4.41 | 0.06 |
| Right Bank | 10.60 | 0.00 | 10.90 | 0.00 | 11.60 | 0.00 | 5.30 | 0.00 | 1.10 | 0.00 | 1.20 | 0.00 | 6.10 | 0.00 | 1.20 | 0.00 | 1.90 | 0.00 | 2.00 | 0.00 | 4.90 | 0.00 |
| Feature Type <small>(riffle, run, or pool)</small> | Run | Run |

MAXIMUM 0.55

MEDIAN 0.05

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 0.1 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:



WBID # 2980

Site # 5

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: 09-17-08 4:15 p.m. | Location Description (e.g., road crossing): CR 420 |
| Stream Name: Lick Cr. Ditch | |
| Current Weather Conditions: sunny/warm | Facility Name(s): Bloomfield WWTF Dudley Wastewater Treatment |
| Weather Conditions for Past 10 days: 1.92" @ Arcadia | Permit Number(s): MO: 0050326 MO: 0102181 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): 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): 760451 | Northing (UTM Y): 4085320 | Horizontal Accuracy: (EPE / FOM / PDOP) 36 ft. Meters |
| Site 11 | Easting (UTM X): 760443 | Northing (UTM Y): 4085159 | Horizontal Accuracy: (EPE / FOM / PDOP) 70 ft. Meters |

Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|-----------|------------------------------|-----------|-----------------------|-----------|---------------|
| 2980-5-A | Upstream looking down/Bridge | 2980-5-B | Downstream looking up | | |
| 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.)

| | | | | |
|--|--------------------------------------|---------------------------------------|---|---------------------------------------|
| <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.) | | | | |

Site # 5

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.)

| | | | | |
|--|--------------------------------------|---|--|---|
| <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 type="checkbox"/> Steep slopes | <input checked="" type="checkbox"/> Other: Farm land |
| Comments: | | | | |

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

| | | | | |
|--|--|--|---|---|
| <input checked="" 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 |
| <input type="checkbox"/> None of the above | Comments / Other: | | | |

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

| | | | | | |
|----------|------------|----------|----------|--------------|-----------|
| % Cobble | 10% Gravel | 70% Sand | 10% Silt | 10% Mud/Clay | % Bedrock |
|----------|------------|----------|----------|--------------|-----------|

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

| |
|----------------------------------|
| 40% coverage of dark green algae |
|----------------------------------|

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 type="checkbox"/> Clear | <input type="checkbox"/> Green | <input type="checkbox"/> Gray | <input type="checkbox"/> Milky | <input checked="" type="checkbox"/> Other: Rusty brown |
| 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 checked="" type="checkbox"/> Scum | <input type="checkbox"/> Foam | <input 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 affect another use.

Site # 5

Field Data Sheets for Recreational Use Stream Surveys

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

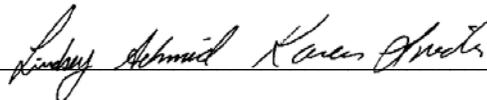
Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses.)

| 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: Lindsey Schmid / Karen Snider

Surveyor's Signature:  Date of Survey: 09-17-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

| | |
|---|--|
| Stream Name: <u>Lick Cr. Ditch</u> Waterbody ID: <u>2980</u> Site #: <u>5</u> Estimated Channel Incision: <u>0.2</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>760451</u> UTM Y: <u>4085320</u> +/- <u>36</u> ft. (meters) 11 UTM X: <u>760443</u> UTM Y: <u>4085159</u> +/- <u>70</u> ft. (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>Lindsey Schmid / Karen Snider</u> | <p align="center">Dissolved Oxygen</p> Date: <u>9/17/2008</u> Time: <u>4:15 p.m.</u> Dissolved Oxygen: <u>5.63</u> (mg/L) Dissolved Oxygen: <u>66.1</u> (% sat) Specific Cond: <u>447</u> (µS/cm) Water Temperature: <u>24.3</u> (°C) |
|---|--|

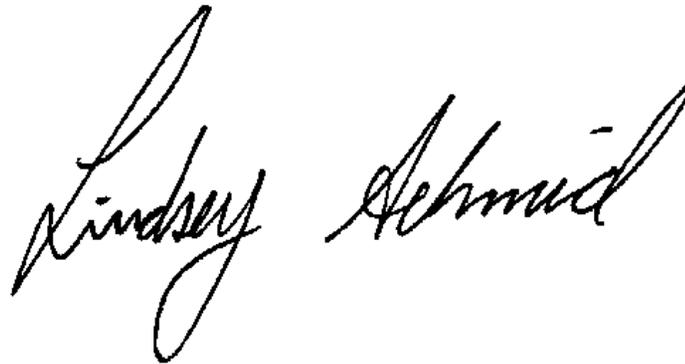
Transect Cross-Section

| 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 | 0 |
| 1 | 0.16 | 0.06 | 0.12 | 0.05 | 0.11 | 0.05 | 0.61 | 0.39 | 0.52 | 0.13 | 1.15 | 0.14 | 1.21 | 0.05 | 1.12 | 0.16 | 1.17 | 0.15 | 0.45 | 0.23 | 0.40 | 0.20 |
| 2 | 0.32 | 0.08 | 0.24 | 0.05 | 0.22 | 0.05 | 1.22 | 0.40 | 1.04 | 0.17 | 2.30 | 0.29 | 2.42 | 0.05 | 2.24 | 0.05 | 2.34 | 0.05 | 0.90 | 0.20 | 0.80 | 0.16 |
| 3 | 0.48 | 0.09 | 0.36 | 0.05 | 0.33 | 0.05 | 1.83 | 0.46 | 1.56 | 0.26 | 3.45 | 0.19 | 3.63 | 0.05 | 3.36 | 0.05 | 3.51 | 0.05 | 1.35 | 0.16 | 1.20 | 0.12 |
| 4 | 0.64 | 0.09 | 0.48 | 0.06 | 0.44 | 0.05 | 2.44 | 0.47 | 2.08 | 0.34 | 4.60 | 0.15 | 4.84 | 0.05 | 4.48 | 0.05 | 4.68 | 0.08 | 1.80 | 0.18 | 1.60 | 0.05 |
| 5 | 0.80 | 0.07 | 0.60 | 0.07 | 0.55 | 0.05 | 3.05 | 0.48 | 2.60 | 0.40 | 5.75 | 0.12 | 6.05 | 0.00 | 5.60 | 0.05 | 5.85 | 0.14 | 2.25 | 0.14 | 2.00 | 0.05 |
| 6 | 0.96 | 0.07 | 0.72 | 0.07 | 0.66 | 0.05 | 3.66 | 0.57 | 3.12 | 0.44 | 6.90 | 0.12 | 7.26 | 0.00 | 6.72 | 0.18 | 7.02 | 0.26 | 2.70 | 0.13 | 2.40 | 0.05 |
| 7 | 1.12 | 0.06 | 0.84 | 0.06 | 0.77 | 0.05 | 4.27 | 0.59 | 3.64 | 0.45 | 8.05 | 0.14 | 8.47 | 0.00 | 7.84 | 0.24 | 8.19 | 0.38 | 3.15 | 0.13 | 2.80 | 0.05 |
| 8 | 1.28 | 0.05 | 0.96 | 0.06 | 0.88 | 0.05 | 4.88 | 0.59 | 4.16 | 0.48 | 9.20 | 0.23 | 9.68 | 0.00 | 8.96 | 0.36 | 9.36 | 0.38 | 3.60 | 0.10 | 3.20 | 0.05 |
| 9 | 1.44 | 0.05 | 1.08 | 0.05 | 0.99 | 0.05 | 5.49 | 0.62 | 4.68 | 0.50 | 10.35 | 0.26 | 10.89 | 0.12 | 10.08 | 0.39 | 10.53 | 0.50 | 4.05 | 0.09 | 3.60 | 0.05 |
| Right Bank | 1.60 | 0.00 | 1.20 | 0.00 | 1.10 | 0.00 | 6.10 | 0.00 | 5.20 | 0.00 | 11.50 | 0.00 | 12.10 | 0.00 | 11.20 | 0.00 | 11.70 | 0.00 | 4.50 | 0.00 | 4.00 | 0.00 |
| Feature Type <small>(riffle, run, or pool)</small> | Run | Run |

MAXIMUM 0.62
 MEDIAN 0.07

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 0.1 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:



WBID # 2980

Site # 6

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: 09-17-08 3:35 p.m. | Location Description (e.g., road crossing): Road crossing CR 442 |
| Stream Name: Lick Cr. Ditch | |
| Current Weather Conditions: sunny/warm | Facility Name(s): Bloomfield WWTF Dudley Wastewater Treatment |
| Weather Conditions for Past 10 days: 1.92" @ Arcadia | Permit Number(s): MO 0050326 MO 0102181 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): 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): 760455 | Northing (UTM Y): 4082047 | Horizontal Accuracy: (EPE / FOM / PDOP) | 45 ft. Meters |
| Site 11 | Easting (UTM X): 760491 | Northing (UTM Y): 4081887 | Horizontal Accuracy: (EPE / FOM / PDOP) | 50 ft. Meters |

Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|-----------|------------------------------|-----------|-----------------------|-----------|---------------|
| 2980-6-A | Upstream looking down/Bridge | 2980-6-B | Downstream looking up | | |
| 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.)

| | | | | |
|--|--------------------------------------|---------------------------------------|---|---------------------------------------|
| <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.) | | | | |

Site # 6

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.)

| | | | | |
|--|--------------------------------------|---|--|---|
| <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 type="checkbox"/> Steep slopes | <input checked="" type="checkbox"/> Other: Farm land |
| Comments: | | | | |

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

| | | | | |
|--|--|--|---|---|
| <input checked="" 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 |
| <input type="checkbox"/> None of the above | Comments / Other: | | | |

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

| | | | | | |
|----------|------------|----------|----------|------------|-----------|
| % Cobble | 10% Gravel | 80% Sand | 10% Silt | % Mud/Clay | % Bedrock |
|----------|------------|----------|----------|------------|-----------|

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

| |
|----------------------------|
| Green algae (30% coverage) |
|----------------------------|

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 checked="" type="checkbox"/> Other: BROWN |
| 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 affect another use.

Site # 6

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: Lindsey Schmid / Karen Snider

Surveyor's Signature: *Lindsey Schmid Karen Snider* Date of Survey: 09-17-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

| | |
|---|--|
| Stream Name: <u>Lick Cr. Ditch</u> Waterbody ID: <u>2980</u> Site #: <u>6</u> Estimated Channel Incision: <u>0.1</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>760455</u> UTM Y: <u>4082047</u> +/- <u>45</u> ft. (meters) 11 UTM X: <u>760491</u> UTM Y: <u>4081887</u> +/- <u>50</u> ft. (meters) Average Stream Width: <u>4</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Lindsey Schmid / Karen Snider</u> | <p align="center">Dissolved Oxygen</p> Date: <u>9/17/2008</u> Time: <u>3:35 p.m.</u> Dissolved Oxygen: <u>10.88</u> (mg/L) Dissolved Oxygen: <u>120.9</u> (% sat) Specific Cond: <u>493</u> (µS/cm) Water Temperature: <u>21.3</u> (°C) |
|---|--|

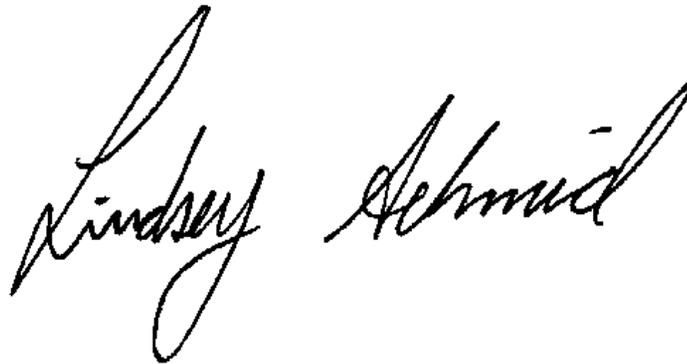
Transect Cross-Section

| 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 | 0 |
| 1 | 0.25 | 0.14 | 0.44 | 0.05 | 0.28 | 0.14 | 0.24 | 0.05 | 0.19 | 0.05 | 0.68 | 0.26 | 0.81 | 0.18 | 0.27 | 0.20 | 0.40 | 0.07 | 0.35 | 0.27 | 0.26 | 0.06 |
| 2 | 0.50 | 0.13 | 0.88 | 0.07 | 0.56 | 0.16 | 0.48 | 0.05 | 0.38 | 0.05 | 1.36 | 0.21 | 1.62 | 0.18 | 0.54 | 0.22 | 0.80 | 0.10 | 0.70 | 0.25 | 0.52 | 0.08 |
| 3 | 0.75 | 0.12 | 1.32 | 0.05 | 0.84 | 0.19 | 0.72 | 0.06 | 0.57 | 0.07 | 2.04 | 0.21 | 2.43 | 0.16 | 0.81 | 0.22 | 1.20 | 0.09 | 1.05 | 0.19 | 0.78 | 0.90 |
| 4 | 1.00 | 0.12 | 1.76 | 0.05 | 1.12 | 0.18 | 0.96 | 0.08 | 0.76 | 0.07 | 2.72 | 0.24 | 3.24 | 0.25 | 1.08 | 0.17 | 1.60 | 0.11 | 1.40 | 0.10 | 1.04 | 0.08 |
| 5 | 1.25 | 0.10 | 2.20 | 0.05 | 1.40 | 0.15 | 1.20 | 0.09 | 0.95 | 0.06 | 3.40 | 0.17 | 4.05 | 0.26 | 1.35 | 0.13 | 2.00 | 0.13 | 1.75 | 0.05 | 1.30 | 0.07 |
| 6 | 1.50 | 0.08 | 2.64 | 0.05 | 1.68 | 0.09 | 1.44 | 0.10 | 1.14 | 0.05 | 4.08 | 0.06 | 4.86 | 0.29 | 1.62 | 0.11 | 2.40 | 0.12 | 2.10 | 0.05 | 1.56 | 0.05 |
| 7 | 1.75 | 0.08 | 3.08 | 0.06 | 1.96 | 0.08 | 1.68 | 0.11 | 1.33 | 0.05 | 4.76 | 0.08 | 5.67 | 0.25 | 1.89 | 0.08 | 2.80 | 0.11 | 2.45 | 0.07 | 1.82 | 0.05 |
| 8 | 2.00 | 0.06 | 3.52 | 0.07 | 2.24 | 0.08 | 1.92 | 0.12 | 1.52 | 0.05 | 5.44 | 0.11 | 6.48 | 0.28 | 2.16 | 0.06 | 3.20 | 0.08 | 2.80 | 0.06 | 2.08 | 0.05 |
| 9 | 2.25 | 0.05 | 3.96 | 0.08 | 2.52 | 0.07 | 2.16 | 0.14 | 1.71 | 0.05 | 6.12 | 0.19 | 7.29 | 0.27 | 2.43 | 0.05 | 3.60 | 0.09 | 3.15 | 0.06 | 2.34 | 0.05 |
| Right Bank | 2.50 | 0.00 | 4.40 | 0.00 | 2.80 | 0.00 | 2.40 | 0.00 | 1.90 | 0.00 | 6.80 | 0.00 | 8.10 | 0.00 | 2.70 | 0.00 | 4.00 | 0.00 | 3.50 | 0.00 | 2.60 | 0.00 |
| Feature Type <small>(riffle, run, or pool)</small> | 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 0.1 meter unless depth is too deep to measure (then record as > 1). All measurements to be taken to the nearest 0.01 meter.

MAXIMUM 0.90
 MEDIAN 0.08

Surveyor's Signature:



WBID # 2980

Site # 7

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: 09-17-08 2:50 p.m. | Location Description (e.g., road crossing): Farm road off of CR 442 |
| Stream Name: Lick Cr. Ditch | |
| Current Weather Conditions: sunny / warm | Facility Name(s): Bloomfield WWTF Dudley Wastewater Treatment |
| Weather Conditions for Past 10 days: 1.92" @ Arcadia | Permit Number(s): MO: 0050326 MO: 0102181 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): 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): 760500 | Northing (UTM Y): 4080726 | Horizontal Accuracy: (EPE / FOM / PDOP) | 39 ft. Meters |
| Site 11 | Easting (UTM X): 760502 | Northing (UTM Y): 4080559 | Horizontal Accuracy: (EPE / FOM / PDOP) | 47 ft. Meters |

Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|-----------|-----------------------|-----------|-----------------------|-----------|---------------|
| 2980-7-A | Upstream looking down | 2980-7-B | Downstream looking up | | |
| | | | | | |
| | | | | | |
| | | | | | |

Uses Observed*: (Uses actually observed at the 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.) | | | | |

Site # 7**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.)

| | | | | |
|--|--------------------------------------|---|--|---|
| <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 type="checkbox"/> Steep slopes | <input checked="" type="checkbox"/> Other: Farm land |
| Comments: | | | | |

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

| | | | | |
|--|--|--|---|---|
| <input checked="" 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 |
| <input type="checkbox"/> None of the above | Comments / Other: | | | |

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

| | | | | | |
|----------|----------|----------|----------|--------------|-----------|
| % Cobble | % Gravel | 80% Sand | 10% Silt | 10% Mud/Clay | % Bedrock |
|----------|----------|----------|----------|--------------|-----------|

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

| |
|------------------------|
| Patches of green algae |
|------------------------|

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 checked="" type="checkbox"/> Other: BROWN |
| 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 affect another use.

Site # 7

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.)

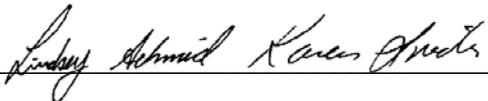
| Channel Feature | Distance from access location (m) | Width (m) | Length (m) | Median Depth (m) | Max Depth (m) |
|-----------------|-----------------------------------|-----------|------------|------------------|---------------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Comments: (Please record any additional comments here.)

Moved upstream to end of farm road access.

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

Printed Names of Personnel Collecting Data: Lindsey Schmid / Karen Snider

Surveyor's Signature:  Date of Survey: 09-17-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

| | |
|---|--|
| Stream Name: <u>Lick Cr. Ditch</u> Waterbody ID: <u>2980</u> Site #: <u>7</u> Estimated Channel Incision: <u>0.1</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>760500</u> UTM Y: <u>4080726</u> +/- <u>39</u> ft. (meters) 11 UTM X: <u>760502</u> UTM Y: <u>4080559</u> +/- <u>47</u> ft. (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>Lindsey Schmid / Karen Snider</u> | <p align="center">Dissolved Oxygen</p> Date: <u>9/17/2008</u> Time: <u>2:50 p.m.</u> Dissolved Oxygen: <u>11.58</u> (mg/L) Dissolved Oxygen: <u>146.2</u> (% sat) Specific Cond: <u>479</u> (µS/cm) Water Temperature: <u>29</u> (°C) |
|---|--|

Transect Cross-Section

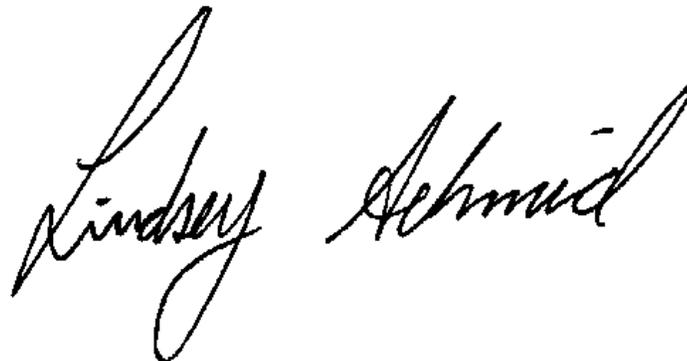
| Station | 01 | | 02 | | 03 | | 04 | | 05 | | 06 | | 07 | | 08 | | 09 | | 10 | | 11 | |
|--|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| | 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 | 0 |
| 1 | 0.27 | 0.05 | 0.52 | 0.18 | 0.21 | 0.05 | 0.86 | 0.05 | 0.52 | 0.05 | 0.59 | 0.10 | 0.69 | 0.10 | 0.55 | 0.05 | 0.48 | 0.10 | 0.59 | 0.16 | 0.78 | 0.12 |
| 2 | 0.54 | 0.05 | 1.04 | 0.19 | 0.42 | 0.05 | 1.72 | 0.05 | 1.04 | 0.05 | 1.18 | 0.19 | 1.38 | 0.05 | 1.10 | 0.08 | 0.96 | 0.11 | 1.18 | 0.18 | 1.48 | 0.08 |
| 3 | 0.81 | 0.08 | 1.56 | 0.16 | 0.63 | 0.08 | 2.58 | 0.00 | 1.56 | 0.10 | 1.77 | 0.32 | 2.07 | 0.05 | 1.65 | 0.12 | 1.44 | 0.13 | 1.77 | 0.21 | 2.26 | 0.05 |
| 4 | 1.08 | 0.12 | 2.08 | 0.16 | 0.84 | 0.09 | 3.44 | 0.00 | 2.08 | 0.08 | 2.36 | 0.34 | 2.76 | 0.05 | 2.20 | 0.15 | 1.92 | 0.15 | 2.36 | 0.21 | 3.04 | 0.05 |
| 5 | 1.35 | 0.15 | 2.60 | 0.21 | 1.05 | 0.11 | 4.30 | 0.00 | 2.60 | 0.00 | 2.95 | 0.31 | 3.45 | 0.05 | 2.75 | 0.17 | 2.40 | 0.19 | 2.95 | 0.21 | 3.82 | 0.06 |
| 6 | 1.62 | 0.14 | 3.12 | 0.18 | 1.26 | 0.12 | 5.16 | 0.00 | 3.12 | 0.00 | 3.54 | 0.24 | 4.14 | 0.06 | 3.30 | 0.18 | 2.88 | 0.22 | 3.54 | 0.22 | 4.60 | 0.10 |
| 7 | 1.89 | 0.14 | 3.64 | 0.21 | 1.47 | 0.13 | 6.02 | 0.00 | 3.64 | 0.00 | 4.13 | 0.29 | 4.83 | 0.09 | 3.85 | 0.17 | 3.36 | 0.20 | 4.13 | 0.24 | 5.38 | 0.11 |
| 8 | 2.16 | 0.14 | 4.16 | 0.20 | 1.68 | 0.12 | 6.88 | 0.05 | 4.16 | 0.08 | 4.72 | 0.25 | 5.52 | 0.08 | 4.40 | 0.24 | 3.84 | 0.20 | 4.72 | 0.21 | 6.16 | 0.11 |
| 9 | 2.43 | 0.13 | 4.68 | 0.21 | 1.89 | 0.12 | 7.74 | 0.11 | 4.68 | 0.11 | 5.31 | 0.12 | 6.21 | 0.05 | 4.95 | 0.26 | 4.32 | 0.18 | 5.31 | 0.22 | 6.94 | 0.13 |
| Right Bank | 2.70 | 0.00 | 5.20 | 0.00 | 2.10 | 0.00 | 8.60 | 0.00 | 5.20 | 0.00 | 5.90 | 0.00 | 6.90 | 0.00 | 5.50 | 0.00 | 4.80 | 0.00 | 5.90 | 0.00 | 7.80 | 0.00 |
| Feature Type <small>(riffle, run, or pool)</small> | Run | Run |

MAXIMUM 0.34

MEDIAN 0.12

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 0.1 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:



WBID # 2980

Site # 8

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: 09-17-08 11:00 a.m. | Location Description (e.g., road crossing): CR 488 |
| Stream Name: Lick Cr. Ditch | |
| Current Weather Conditions: sunny / warm | Facility Name(s): Bloomfield WWTF Dudley Wastewater Treatment |
| Weather Conditions for Past 10 days: 1.92" @ Arcadia | Permit Number(s): MO 0050326 MO 012181 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): 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): 760548 | Northing (UTM Y): 4077282 | Horizontal Accuracy: (EPE / FOM / PDOP) 40 ft. Meters |
| Site 11 | Easting (UTM X): 760556 | Northing (UTM Y): 4077095 | Horizontal Accuracy: (EPE / FOM / PDOP) 39 ft. Meters |

Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|-----------|-----------------------|-----------|---------------|-----------|-----------------------|
| 2980-8-A | Upstream looking down | 2980-8-B | Bridge | 2980-8-C | Downstream looking up |
| 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.)

| | | | | |
|--|--------------------------------------|---------------------------------------|---|---------------------------------------|
| <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.) | | | | |

Site # 8

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.)

| | | | | |
|--|--------------------------------------|---|--|---|
| <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 type="checkbox"/> Steep slopes | <input checked="" type="checkbox"/> Other: Farm land |
| Comments: | | | | |

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

| | | | | |
|--|--|--|---|---|
| <input checked="" 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 |
| <input type="checkbox"/> None of the above | Comments / Other: | | | |

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

| | | | | | |
|----------|------------|----------|----------|------------|-----------|
| % Cobble | 10% Gravel | 80% Sand | 10% Silt | % Mud/Clay | % Bedrock |
|----------|------------|----------|----------|------------|-----------|

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

| |
|------------------------------|
| Trace amounts of green algae |
|------------------------------|

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 checked="" 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 affect another use.

Site # 8

Field Data Sheets for Recreational Use Stream Surveys

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

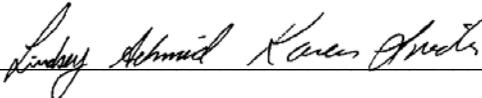
Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses.)

| 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: Lindsey Schmid / Karen Snider

Surveyor's Signature:  Date of Survey: 09-17-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

| | |
|--|---|
| Stream Name: <u>Lick Cr. Ditch</u> Waterbody ID: <u>2980</u> Site #: <u>8</u> Estimated Channel Incision: <u>0.15</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>760548</u> UTM Y: <u>4077282</u> +/- <u>40</u> ft. (meters) 11 UTM X: <u>760556</u> UTM Y: <u>4077095</u> +/- <u>39</u> ft. (meters) Average Stream Width: <u>5.5</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Lindsey Schmid / Karen Snider</u> | <p align="center">Dissolved Oxygen</p> Date: <u>9/17/2008</u> Time: <u>11:00 a.m.</u> Dissolved Oxygen: <u>10.11</u> (mg/L) Dissolved Oxygen: <u>124.5</u> (% sat) Specific Cond: <u>406</u> (µS/cm) Water Temperature: <u>26.1</u> (°C) |
|--|---|

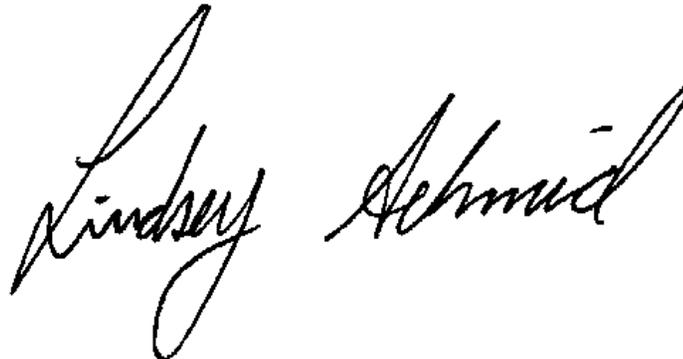
Transect Cross-Section

| 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 | 0.87 | 0.05 | 0.33 | 0.05 | 0.94 | 0.09 | 0.53 | 0.15 | 0.38 | 0.06 | 0.41 | 0.06 | 0.51 | 0.05 | 0.47 | 0.05 | 1.19 | 0.11 | 0.65 | 0.05 | 0.59 | 0.16 |
| 2 | 1.74 | 0.05 | 0.66 | 0.07 | 1.88 | 0.05 | 1.06 | 0.21 | 0.76 | 0.08 | 0.82 | 0.07 | 1.02 | 0.09 | 0.94 | 0.07 | 2.38 | 0.12 | 1.30 | 0.08 | 1.18 | 0.14 |
| 3 | 2.61 | 0.05 | 0.99 | 0.09 | 2.82 | 0.05 | 1.59 | 0.17 | 1.14 | 0.10 | 1.23 | 0.04 | 1.53 | 0.09 | 1.41 | 0.11 | 3.57 | 0.06 | 1.95 | 0.09 | 1.77 | 0.15 |
| 4 | 3.48 | 0.05 | 1.32 | 0.10 | 3.76 | 0.05 | 2.12 | 0.11 | 1.52 | 0.12 | 1.64 | 0.10 | 2.04 | 0.12 | 1.88 | 0.11 | 4.76 | 0.00 | 2.60 | 0.21 | 2.36 | 0.12 |
| 5 | 4.35 | 0.05 | 1.65 | 0.11 | 4.70 | 0.05 | 2.65 | 0.06 | 1.90 | 0.14 | 2.05 | 0.12 | 2.55 | 0.13 | 2.35 | 0.10 | 5.95 | 0.00 | 3.25 | 0.17 | 2.95 | 0.12 |
| 6 | 5.22 | 0.05 | 1.98 | 0.11 | 5.64 | 0.05 | 3.18 | 0.05 | 2.28 | 0.12 | 2.46 | 0.15 | 3.06 | 0.14 | 2.82 | 0.09 | 7.14 | 0.00 | 3.90 | 0.19 | 3.54 | 0.11 |
| 7 | 6.09 | 0.08 | 2.31 | 0.14 | 6.58 | 0.05 | 3.71 | 0.05 | 2.66 | 0.10 | 2.87 | 0.17 | 3.57 | 0.14 | 3.29 | 0.08 | 8.33 | 0.05 | 4.55 | 0.12 | 4.13 | 0.08 |
| 8 | 6.96 | 0.13 | 2.64 | 0.22 | 7.52 | 0.14 | 4.24 | 0.05 | 3.04 | 0.08 | 3.28 | 0.19 | 4.08 | 0.13 | 3.76 | 0.07 | 9.52 | 0.05 | 5.20 | 0.07 | 4.72 | 0.08 |
| 9 | 7.83 | 0.19 | 2.97 | 0.22 | 8.46 | 0.05 | 4.77 | 0.05 | 3.42 | 0.05 | 3.69 | 0.17 | 4.59 | 0.12 | 4.23 | 0.05 | 10.71 | 0.05 | 5.85 | 0.05 | 5.31 | 0.07 |
| Right Bank | 8.70 | 0.00 | 3.30 | 0.00 | 9.40 | 0.00 | 5.30 | 0.00 | 3.80 | 0.00 | 4.10 | 0.00 | 5.10 | 0.00 | 4.70 | 0.00 | 11.90 | 0.00 | 6.50 | 0.00 | 5.90 | 0.00 |
| Feature Type <small>(riffle, run, or pool)</small> | 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 0.1 meter unless depth is too deep to measure (then record as > 1)
 All measurements to be taken to the nearest 0.01 meter.

MAXIMUM 0.22
 MEDIAN 0.08

Surveyor's Signature:



WBID # 2980

Site # 9

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: 09-17-08 10:00 a.m. | Location Description (e.g., road crossing): |
| Stream Name: Lick Cr. Ditch | Parallel @ RR crossing to CR 624 |
| Current Weather Conditions: sunny / cool | Facility Name(s): Bloomfield WWTF Dudley Wastewater Treatment |
| Weather Conditions for Past 10 days: 1.92" @ Arcadia | Permit Number(s): MO 0050326 MO 0102181 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): 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): 760562 | Northing (UTM Y): 4075507 | Horizontal Accuracy: (EPE / FOM / PDOP) 44 ft. Meters |
| Site 11 | Easting (UTM X): 760563 | Northing (UTM Y): 4075310 | Horizontal Accuracy: (EPE / FOM / PDOP) 59 ft. Meters |

Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|-----------|-----------------------|-----------|-----------------------|-----------|---------------|
| 2980-9-A | Upstream looking down | 2980-9-B | Example I | 2980-9-C | Bridge |
| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
| 2980-9-D | Pool | 2980-9-E | Downstream looking up | | |
| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
| | | | | | |

Uses Observed*: (Uses actually observed at the 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.) | | | | |

Site # 9

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.)

| | | | | |
|--|--------------------------------------|---|--|--|
| <input type="checkbox"/> City/county parks | <input type="checkbox"/> Playgrounds | <input type="checkbox"/> MDC conservation lands | <input 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: None | | | | |

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

| | | | | |
|--|---|--|---|---|
| <input checked="" type="checkbox"/> Roads | <input checked="" 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 |
| <input type="checkbox"/> None of the above | Comments / Other: Lean-to built at base of railroad bridge. (example I) | | | |

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

| | | | | | |
|----------|------------|----------|----------|------------|-----------|
| % Cobble | 10% Gravel | 80% Sand | 10% Silt | % Mud/Clay | % Bedrock |
|----------|------------|----------|----------|------------|-----------|

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

| |
|--------------------------------|
| Grass Brown and green algae |
|--------------------------------|

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 checked="" type="checkbox"/> Other: BROWN |
| 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 affect another use.

Site # 9

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) |
|-----------------|-----------------------------------|-----------|------------|------------------|---------------|
| Pool | 10 meters | 23 | 28 | 1 | 1.5 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

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: Lindsey Schmid / Karen Snider

Surveyor's Signature: *Lindsey Schmid Karen Snider* Date of Survey: 09-17-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

| | |
|---|--|
| Stream Name: <u>Lick Cr. Ditch</u> Waterbody ID: <u>2980</u> Site #: <u>9</u> Estimated Channel Incision: <u>0.2</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>760562</u> UTM Y: <u>4075507</u> +/- <u>44 ft.</u> (meters) 11 UTM X: <u>760563</u> UTM Y: <u>4075310</u> +/- <u>59 ft.</u> (meters) Average Stream Width: <u>4</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Lindsey Schmid / Karen Snider</u> | <h4 style="text-align: center; margin: 0;">Dissolved Oxygen</h4> Date: <u>9/17/2008</u> Time: <u>10:00 a.m.</u> Dissolved Oxygen: <u>7.89</u> (mg/L) Dissolved Oxygen: <u>90.6</u> (% sat) Specific Cond: <u>401</u> (µS/cm) Water Temperature: <u>22.3</u> (°C) |
|---|--|

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 | 0.56 | 0.05 | 2.30 | 1.00 | 0.61 | 0.33 | 0.57 | 0.08 | 0.31 | 0.15 | 0.40 | 0.05 | 0.36 | 0.05 | 0.36 | 0.09 | 0.24 | 0.05 | 0.39 | 0.05 | 0.49 | 0.08 |
| | 2 | 1.12 | 0.07 | 4.60 | 1.00 | 1.22 | 0.25 | 1.14 | 0.08 | 0.62 | 0.15 | 0.80 | 0.05 | 0.72 | 0.05 | 0.72 | 0.09 | 0.48 | 0.05 | 0.78 | 0.08 | 0.98 | 0.11 |
| | 3 | 1.68 | 0.09 | 6.90 | 1.00 | 1.83 | 0.18 | 1.71 | 0.06 | 0.93 | 0.16 | 1.20 | 0.05 | 1.08 | 0.09 | 1.08 | 0.10 | 0.72 | 0.06 | 1.17 | 0.07 | 1.47 | 0.07 |
| | 4 | 2.24 | 0.09 | 9.20 | 1.00 | 2.44 | 0.21 | 2.28 | 0.05 | 1.24 | 0.18 | 1.60 | 0.05 | 1.44 | 0.14 | 1.44 | 0.09 | 0.96 | 0.06 | 1.56 | 0.08 | 1.96 | 0.06 |
| | 5 | 2.80 | 0.09 | 11.50 | 1.00 | 3.05 | 0.20 | 2.85 | 0.05 | 1.55 | 0.19 | 2.00 | 0.05 | 1.80 | 0.17 | 1.80 | 0.07 | 1.20 | 0.07 | 1.95 | 0.09 | 2.45 | 0.06 |
| | 6 | 3.36 | 0.08 | 13.80 | 1.00 | 3.66 | 0.18 | 3.42 | 0.06 | 1.86 | 0.16 | 2.40 | 0.06 | 2.16 | 0.13 | 2.16 | 0.05 | 1.44 | 0.09 | 2.34 | 0.10 | 2.94 | 0.05 |
| | 7 | 3.92 | 0.10 | 16.10 | 1.00 | 4.37 | 0.14 | 3.99 | 0.07 | 2.17 | 0.14 | 2.80 | 0.05 | 2.52 | 0.11 | 2.52 | 0.05 | 1.68 | 0.08 | 2.73 | 0.12 | 3.43 | 0.05 |
| | 8 | 4.48 | 0.09 | 18.40 | 1.00 | 4.98 | 0.11 | 4.56 | 0.06 | 2.48 | 0.13 | 3.20 | 0.05 | 2.88 | 0.08 | 2.88 | 0.05 | 1.92 | 0.05 | 3.12 | 0.10 | 3.92 | 0.05 |
| 9 | 5.04 | 0.09 | 20.70 | 1.00 | 5.59 | 0.08 | 5.13 | 0.05 | 2.79 | 0.11 | 3.60 | 0.05 | 3.24 | 0.09 | 3.24 | 0.05 | 2.16 | 0.05 | 3.51 | 0.08 | 4.41 | 0.05 | |
| Right Bank | | 5.60 | 0.00 | 23.00 | 0.00 | 6.10 | 0.00 | 5.70 | 0.00 | 3.10 | 0.00 | 4.00 | 0.00 | 3.60 | 0.00 | 3.60 | 0.00 | 2.40 | 0.00 | 3.90 | 0.00 | 4.90 | 0.00 |
| Feature Type <small>(riffle, run, or pool)</small> | | Ripple | | 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 by 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.

MAXIMUM 1.00

MEDIAN 0.08

Surveyor's Signature:

Date: 9/17/2008

WBID # 2980

Site # 10

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: 09-17-08 9:15 a.m. | Location Description (e.g., road crossing): CR 624 |
| Stream Name: Lick Cr. Ditch | |
| Current Weather Conditions: sunny / cool | Facility Name(s): Bloomfield WWTF Dudley Wastewater Treatment |
| Weather Conditions for Past 10 days: 1.92" @ Arcadia | Permit Number(s): MO 0050326 MO 0102181 |
| Official Drought Conditions at time of this survey (search DNR home page for "drought"): 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): 760566 | Northing (UTM Y): 4074042 | Horizontal Accuracy: (EPE / FOM / PDOP) 35 ft. Meters |
| Site 11 | Easting (UTM X): 760559 | Northing (UTM Y): 4073875 | Horizontal Accuracy: (EPE / FOM / PDOP) 52 ft. Meters |

Photos:

| Photo ID# | Photo Purpose | Photo ID# | Photo Purpose | Photo ID# | Photo Purpose |
|-----------|-----------------------|-----------|-----------------------|-----------|---------------|
| 2980-10-A | Upstream looking down | 2980-10-B | Downstream looking up | | |
| | | | | | |
| | | | | | |
| | | | | | |

Uses Observed*: (Uses actually observed at the 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.) | | | | |

Site # 10

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.)

| | | | | |
|--|--------------------------------------|---|--|---|
| <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 type="checkbox"/> Steep slopes | <input checked="" type="checkbox"/> Other: Farm land |
| Comments: | | | | |

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

| | | | | |
|--|--|--|---|---|
| <input checked="" 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 |
| <input type="checkbox"/> None of the above | Comments / Other: | | | |

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

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

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

| |
|----------------------------|
| Some brown and green algae |
|----------------------------|

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 checked="" type="checkbox"/> Other: Brown |
| 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 affect another use.

Site # 10

Field Data Sheets for Recreational Use Stream Surveys

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

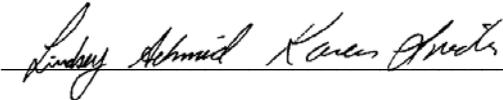
Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses.)

| 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: Lindsey Schmid / Karen Snider

Surveyor's Signature:  Date of Survey: 09-17-08

Organization: Olsson Associates Position: Field Service

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

| | |
|---|--|
| Stream Name: <u>Lick Cr. Ditch</u> Waterbody ID: <u>2980</u> Site #: <u>10</u> Estimated Channel Incision: <u>0.35</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>760566</u> UTM Y: <u>4074042</u> +/- <u>35</u> ft. (meters) 11 UTM X: <u>760559</u> UTM Y: <u>4073875</u> +/- <u>52</u> ft. (meters) Average Stream Width: <u>5.5</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Lindsey Schmid / Karen Snider</u> | <p align="center">Dissolved Oxygen</p> Date: <u>9/17/2008</u> Time: <u>9:15 a.m.</u> Dissolved Oxygen: <u>8.34</u> (mg/L) Dissolved Oxygen: <u>91.5</u> (% sat) Specific Cond: <u>419</u> (µS/cm) Water Temperature: <u>21.7</u> (°C) |
|---|--|

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 | 0 |
| 1 | 0.59 | 0.09 | 0.67 | 0.05 | 0.57 | 0.06 | 0.56 | 0.05 | 0.43 | 0.05 | 0.59 | 0.05 | 0.57 | 0.08 | 0.56 | 0.05 | 0.48 | 0.23 | 0.72 | 0.09 | 0.78 | 0.21 |
| 2 | 1.18 | 0.15 | 1.34 | 0.08 | 1.14 | 0.07 | 1.12 | 0.05 | 0.86 | 0.05 | 1.18 | 0.05 | 1.14 | 0.10 | 1.12 | 0.05 | 0.96 | 0.20 | 1.44 | 0.07 | 1.56 | 0.27 |
| 3 | 1.77 | 0.12 | 2.01 | 0.14 | 1.71 | 0.06 | 1.68 | 0.05 | 1.29 | 0.05 | 1.77 | 0.07 | 1.71 | 0.10 | 1.68 | 0.05 | 1.44 | 0.20 | 2.16 | 0.08 | 2.34 | 0.29 |
| 4 | 2.36 | 0.13 | 2.68 | 0.16 | 2.28 | 0.05 | 2.24 | 0.05 | 1.72 | 0.07 | 2.36 | 0.08 | 2.28 | 0.09 | 2.24 | 0.09 | 1.92 | 0.18 | 2.88 | 0.12 | 3.12 | 0.26 |
| 5 | 2.95 | 0.05 | 3.35 | 0.13 | 2.85 | 0.05 | 2.80 | 0.05 | 2.15 | 0.08 | 2.95 | 0.06 | 2.85 | 0.09 | 2.80 | 0.12 | 2.40 | 0.22 | 3.60 | 0.14 | 3.90 | 0.24 |
| 6 | 3.54 | 0.06 | 4.02 | 0.13 | 3.42 | 0.05 | 3.36 | 0.05 | 2.58 | 0.07 | 3.54 | 0.09 | 3.42 | 0.08 | 3.36 | 0.15 | 2.88 | 0.19 | 4.32 | 0.16 | 4.68 | 0.26 |
| 7 | 4.13 | 0.05 | 4.69 | 0.18 | 3.99 | 0.05 | 3.92 | 0.06 | 3.01 | 0.08 | 4.13 | 0.08 | 3.99 | 0.08 | 3.92 | 0.17 | 3.36 | 0.15 | 5.04 | 0.17 | 5.46 | 0.28 |
| 8 | 4.72 | 0.05 | 5.36 | 0.19 | 4.56 | 0.05 | 4.48 | 0.06 | 3.44 | 0.05 | 4.72 | 0.11 | 4.56 | 0.10 | 4.48 | 0.13 | 3.84 | 0.13 | 5.76 | 0.19 | 6.24 | 0.25 |
| 9 | 5.31 | 0.05 | 6.03 | 0.16 | 5.13 | 0.05 | 5.04 | 0.08 | 3.87 | 0.05 | 5.31 | 0.05 | 5.13 | 0.07 | 5.04 | 0.19 | 4.32 | 0.11 | 6.48 | 0.13 | 7.02 | 0.18 |
| Right Bank | 5.90 | 0.00 | 6.70 | 0.00 | 5.70 | 0.00 | 5.60 | 0.00 | 4.30 | 0.00 | 5.90 | 0.00 | 5.70 | 0.00 | 5.60 | 0.00 | 4.80 | 0.00 | 7.20 | 0.00 | 7.80 | 0.00 |
| Feature Type <small>(riffle, run, or pool)</small> | 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 0.1 meter unless depth is too deep to measure (then record as > 1) All measurements to be taken to the nearest 0.01 meter.

MAXIMUM 0.29
MEDIAN 0.08

Surveyor's Signature:

