

St. John's Ditch
Recreational Use Attainability Analysis

August 2005

Prepared for:
UAA Review Committee
Water Quality Monitoring & Assessment Section
Water Protection Program
MISSOURI DEPARTMENT OF NATURAL RESOURCES
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I. EXECUTIVE SUMMARY AND PROJECT BACKGROUND

At the request of Sikeston Municipal Utilities (City), St. John's Ditch was evaluated for existing and attainable Whole Body Contact Recreation (WBCR) uses in August 2005. The assessment described herein is expected to meet or exceed the Missouri Department of Natural Resources (MDNR) requirements for conducting a Recreational Use Attainability Analyses (UAA) (MDNR 2004). Application of assessment methods prescribed by MDNR guidance demonstrate that Whole Body Contact Recreation (WBCR) is neither an existing or attainable use within surveyed reaches.

II. STUDY AREA

St. John's Ditch (Figure 1) is a Class P water of the state and a tributary to the St. John's Bayou near Sikeston, Missouri (Blunt 2004). Uses currently designated for St. John's Ditch include Protection of Warm-Water Aquatic Life and Human Health – Fish Consumption, Whole Body Contact Recreation (Category B), and Livestock and Wildlife Watering. Draining a 350 mi.² watershed in Scott and New Madrid Counties, St. John's Ditch is dominated by row and close grown crop agriculture (86.2%) according to 1993 Thematic Mapper imagery. The St. John's Ditch watershed is contained within the St. John's Bayou Basin (8 digit HUC 08020201) and the State assigned water body identification number is 3138.

III. METHODS AND MATERIALS

Procedures developed by MDNR for conducting Recreational UAAs (MDNR 2004) were the primary reference for this study. In summary, MDNR UAA procedures contain the minimum elements listed below:

- Survey should generally be conducted during the regulatory recreational season (April 1 to October 31);
- Surveys should be conducted during baseflow conditions;
- Recreational assessments should be performed at a minimum of three publicly accessible sites along the stream reach of interest;
- All sites shall be marked on a 1:24,000 USGS topographic map
- A photographic record of each site that includes upstream and downstream views, in addition to any evidence of observed or potential recreational uses; and
- Interviews of persons present during the time of survey and nearby-residents.

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In addition to MDNR minimum requirements, MEC staff collected the following data within an assessment reach having a total length of approximately twenty times bankfull width:

- Stream hydrogeometry (width, depth, velocity, bank slope);
- Riffle, pool, run (stream mesotype) composition; and
- Riparian corridor characteristics

Hydrogeometry measurements were obtained along three equally spaced cross-sections within each mesotype unless one mesotype dominated the entire upstream or downstream reach, e.g. one large bridge scour pool. Five equally spaced cross-sections were taken for situations where a single mesotype dominated the assessment reach. Streamflow measurements were obtained using a Price AA 'Pygmy' velocity meter and calibrated wading rod. Hydrogeometry measurements were compared against MDNR criteria for whole body contact recreation. MDNR criteria states that a maximum depth of at least one meter in the deepest pool or an average of depth of at least one-half meter must be maintained during baseflow conditions to support whole body contact recreation (MDNR 2004).

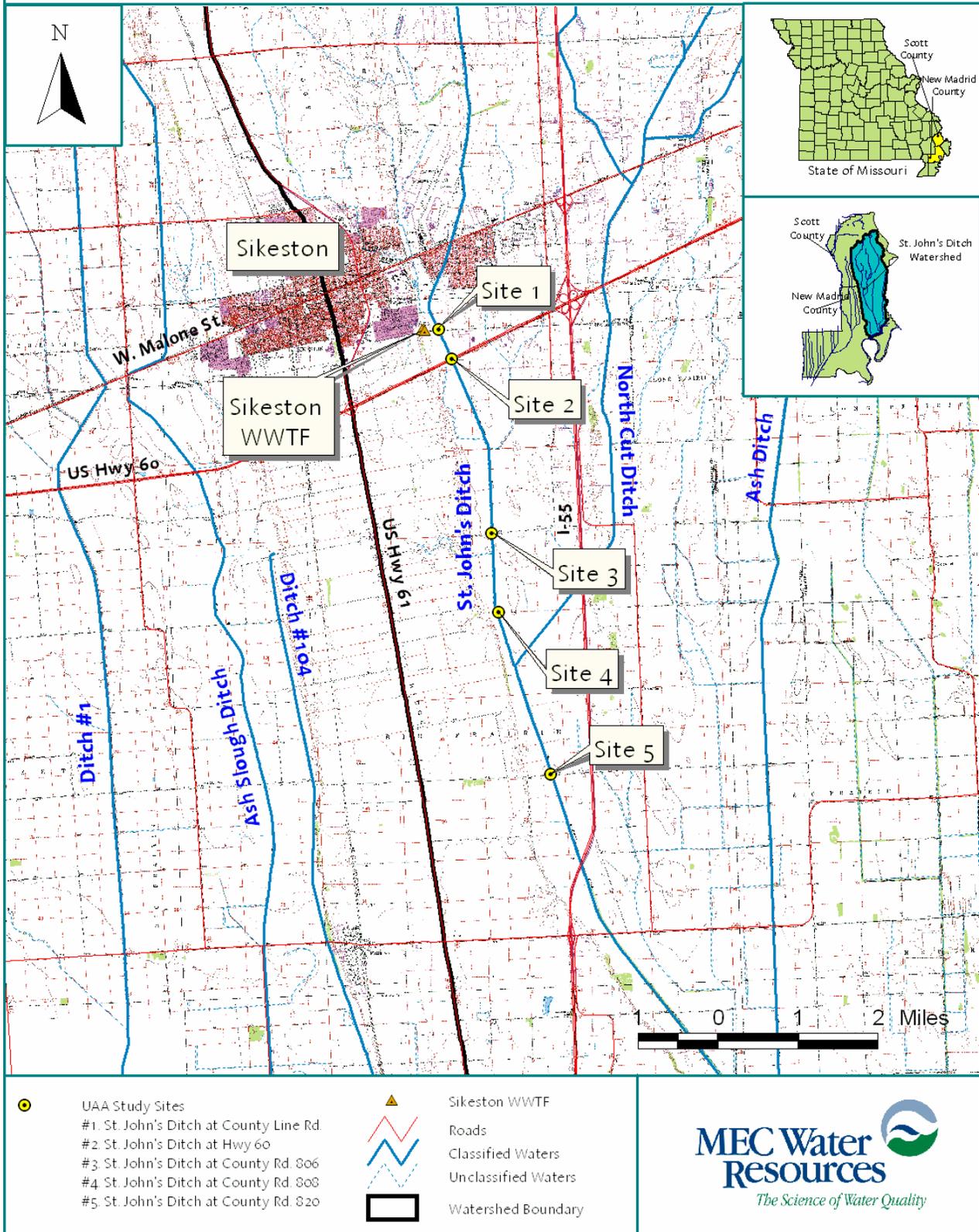
IV. RESULTS & DISCUSSION

The following discussion is provided to aid decision-makers in evaluating appropriate existing or potential recreational uses for St. John's Ditch. Although summarized in the following paragraphs, the field data sheets required by MDNR UAA protocols are included in Appendix A. Additional data collected during the survey are included in Appendix B.

A. Streamflow and Weather Conditions

Five sites (Figure 1) within classified sections of St. John's Ditch were assessed on August 4, 2005, using methods described in Section IV. The five sites were located at County Line Road Bridge Crossing (Site 1), Highway 60 Bridge Crossing (Site 2), County Road 806 Bridge Crossing (Site 3), County Road 808 Bridge Crossing (Site 4), and County Road 820 Bridge Crossing (Site 5). Surveys were conducted during presumed low-flow conditions as evidenced by precipitation data from Sikeston Power Station, Sikeston, Missouri (Table 1). Streamflow measurements taken in St. John's Ditch the day of the survey further support low-flow assumptions (Table 2).

Figure 1. St. John's Ditch Study Area and Sites



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Overall, weather conditions were stable with no significant rainfall occurring for two weeks prior to the evaluation (Table 1). Air temperatures reached approximately 93°F and skies were clear. Weather conditions are not believed to have precluded or limited recreational opportunities during the survey.

Table 1. Two-Week Antecedent Rainfall from Sikeston Power Station, Sikeston, MO. (Source: Midwest Climate Data Center)

Date (m/d/yyyy)	Precipitation (inches)
8/3/2005	0.00
8/2/2005	0.00
8/1/2005	0.00
7/31/2005	0.00
7/30/2005	0.00
7/29/2005	0.00
7/28/2005	0.00
7/27/2005	0.00
7/26/2005	0.00
7/25/2005	0.00
7/24/2005	0.00
7/23/2005	0.00
7/22/2005	0.00
7/21/2005	0.00

Table 2. Streamflow from Little River Ditch USGS Gage Station 07043500

Date (mm/dd/yyyy)	Streamflow (cfs)
8/3/2005	82
8/2/2005	87
8/1/2005	93
7/31/2005	103
7/30/2005	105
7/29/2005	111
7/28/2005	115
7/27/2005	120
7/26/2005	131
7/25/2005	142
7/24/2005	159

Table 3. Observed Streamflow Conditions During St. John's Ditch Recreational UAA Survey

Date (m/d/yyyy)	Site (number)	Streamflow (cfs)
8/4/2005	1	31.26
8/4/2005	2	33.36
8/4/2005	3	35.24
8/4/2005	4	35.26
8/4/2005	5	31.25

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Recreational Use Attainability Analysis

B. Site Characterization

Sites surveyed as part of this study are publicly accessible areas along classified segments of St. John's Ditch. Study results are discussed for each site to provide a description of differences between assessment reaches

Site 1. County Line Road Bridge Crossing (0271619, 4083447) 0.00 miles from WWTP.

The riparian area near the County Line Road bridge crossing is primarily vegetated by deciduous trees and brush, with row crops nearby. The banks are steep and mostly covered with grass and small shrubs (Figures 2 and 3). Channel substrate is predominately sand.

Figure 2 St. John's Ditch Site 1 Downstream View



Mean depth along a 1,000 ft. assessment reach was 1.09 ft. as determined from 10 transects (Appendix B). The maximum depth observed at this location was 2.20 ft. MEC staff measured streamflow as 31.26 cubic feet per second (cfs).

Figure 3. St. John's Ditch Site 1 Upstream View



There was no evidence of WBCR use observed at Site 1. In addition, no individuals were seen or found to be available for interviews near the bridge during the survey.

MEC staff concludes that WBCR is neither an existing nor an attainable use at this site based on limited access to the stream and the absence of observed recreational uses, and low-flow, shallow conditions.

Site 2. Highway 60 Bridge Crossing (0271758, 4082922) 0.40 Miles from WWTF

Stream banks near the Highway 60 bridge crossing are steep sloping and heavily vegetated (Figures 4 and 5). Riparian areas immediately adjacent to the stream are primarily vegetated by forest and brush, with row crops nearby. The stream channel was observed to be mostly sand with little silt.

Mean depth along a 1,200 ft. assessment reach was 0.95 ft. as determined from 10 transects (Appendix B). The maximum depth observed at this location was 2.00 ft. Stream flow was measured as 33.36 cfs during the survey.

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Recreational Use Attainability Analysis

MEC staff did not observe any direct or indirect evidence of WBCR at Site 2. No individuals were seen or found to be available for interviews near the bridge crossing at the time of the survey.

MEC staff concludes that WBCR is neither an existing nor an attainable use at this site based on limited access to the stream and the absence of observed recreational uses, and low-flow, shallow conditions.

Site 3. County Road 806 Bridge Crossing (0272383, 4079352) 2.66 miles from WWTF

The riparian area near the County Road 806 bridge crossing consists of low growing brush and grasses, with some mature deciduous trees and row crops (Figures 6 and 7). The stream banks are steep sloping and covered with brush and grasses. Stream substrate consisted of mostly sand with some silt.

Mean depth along a 1,000 ft. assessment reach was 0.92 feet as determined from 10 transects (Appendix B). The maximum depth observed at this location was 2.20. Measured streamflow was 35.24 cfs at this site.

Figure 6. St. John's Ditch Site 3 Downstream View



Figure 4. St. John's Ditch Site 2 Downstream View



Figure 5. St. John's Ditch Site 2 Upstream View



Figure 7. St. John's Ditch Site 3 Upstream View



MEC staff did not observe any direct or indirect evidence of WBCR at Site 3. No individuals were seen or found to be available for interviews near the bridge crossing at the time of the survey.

MEC staff concludes that WBCR is neither an existing nor an attainable use at this site based on limited access to the stream and the absence of observed recreational uses, and low-flow, shallow conditions.

Site 4 County Road 808 Bridge Crossing (0272404, 4077739) 3.65 miles from WWTF

Stream banks near the road are steep sloping and heavily vegetated (Figures 8 and 9). Riparian areas immediately adjacent to the stream are primarily vegetated by forest and brush while grassland and row crops are also nearby.

Mean depth along a 1,000 ft. assessment reach was 0.79ft based on 10 transects (Appendix B). The maximum observed depth was 2.20 ft. Measured streamflow was 35.26 cfs during the survey.

Figure 8. St. John's Ditch Site 4 Downstream View



Figure 9. St. John's Ditch Site 4 Upstream View



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MEC staff did observe gravel and dirt roads near the stream along with drainage tiles leading into the stream; however they did not observe any direct or indirect evidence of WBCR at this site. No individuals were seen or found to be available for interviews near the bridge crossing at the time of the survey.

MEC staff concludes that WBCR is neither an existing nor an attainable use at Site 4 based on limited access to the stream and the absence of observed recreational uses, and low-flow, shallow conditions.

Site 5 County Road 820 Bridge Crossing (0273278, 4074423) 5.82 miles from WWTF

Stream banks near the County Road 820 bridge crossing are heavily vegetated and steep (Figures 10 and 11).The riparian areas immediately adjacent to the stream consist of hardwood trees, brush and row crops.

Mean depth along a 1700 ft. assessment reach was 1.25ft. based on 10 transects (Appendix B). The maximum observed depth was 2.10 ft. Measured streamflow was 31.25 cfs during the survey.

Figure 10. St. John's Ditch Site 5 Downstream View



Figure 11. St. John's Ditch Site 5 Upstream View



MEC staff did observe a gravel road near the stream; however they did not observe any direct or indirect evidence of WBCR at Site 5. No individuals were seen or were available for interviews near the bridge crossing at the time of the survey.

MEC staff concludes that WBCR is neither an existing nor an attainable use at this site based on limited access to the stream and the absence of observed recreational uses, and low-flow, shallow conditions.

V. WHOLE BODY CONTACT USE ATTAINABILITY RECOMMENDATION

The surveyed reaches of St. John's Ditch do not currently support WBCR uses due to the absence of observed WBCR uses or evidence of WBCR uses. Furthermore, WBCR uses in St. John's Ditch are not attainable according to depth criteria associated with ephemeral, intermittent, or low flow conditions set forth in MDNR UAA guidance.

VI. REFERENCES

Blunt, R. 2004. Code of State Regulations; Missouri Water Quality Standards, Title 10, Division 20, Chapter 7.

Missouri Department of Natural Resources. 2004. Recreational Use Attainability Analysis Protocol. Water Protection Program, Jefferson City, MO.

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Recreational Use Attainability Analysis

Appendix A

MDNR Field Data Sheets

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet A - Water Body Identification

Water Body Name: (from USGS 7.5' quad)	St. John's Ditch
8-digit HUC:	08020201
Missouri WBID #:	3138
County:	New Madrid
Upstream Legal Description:	SE ¹ / ₄ NW ¹ / ₄ SE ¹ / ₄ 29, 26N, 14E
Downstream Legal Description:	SW ¹ / ₄ SE ¹ / ₄ SE ¹ / ₄ 21, 25N, 14E
Upstream Coordinates: (UGS 84, ddd.ddddd)	36.86935 -89.56250
Downstream Coordinates: (UGS 84, ddd.ddddd)	36.78844 -89.54100
Discharger Facility Name(s):	Sikeston WWTF
Discharger Permit Number(s):	MO 0035009
Number of Sites Evaluated:	5
Name of Surveyor and Telephone Number:	Renec Martin 573-443-4100
Organization:	MEC Water Resources, Inc.
Position:	Env. Specialist

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Renec Martin Date: 8/4/05

Page Two – Data Sheet B for WBID #:

Stream Morphology:

Upstream View Physical Dimensions: *See Appendix B in Report*

<input type="checkbox"/> Riffle	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Run	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Pool	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Flow	Present?	Yes	No	Estimated (ft ³ /sec):

Downstream View Physical Dimensions: *See Appendix B in Report*

<input type="checkbox"/> Riffle	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Run	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Pool	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Flow	Present?	Yes	No	Estimated (ft ³ /sec):

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

%Cobble	%Gravel	95 %Sand	5 %Silt	%Mud/Clay	%Bedrock
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Aquatic Vegetation*: (note amount of vegetation or algal growth at the assessment site)

5% Floating primrose / smartweed

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

Comments: Please attach additional comments (including information from interviews) to this form.

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

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: *Tom Malt* Date: 8/4/05

Organization: MEC Water Resources Position: Env. Specialist

Page Two – Data Sheet B for WBID #:

Stream Morphology:Upstream View Physical Dimensions: *See Appendix B in Report*

<input type="checkbox"/> Riffle	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Run	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Pool	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Flow	Present?	Yes	No	Estimated (ft ³ /sec):

Downstream View Physical Dimensions: *See Appendix B in Report*

<input type="checkbox"/> Riffle	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Run	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Pool	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Flow	Present?	Yes	No	Estimated (ft ³ /sec):

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

%Cobble	%Gravel	90 %Sand	10 %Silt	%Mud/Clay	%Bedrock
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Aquatic Vegetation*: (note amount of vegetation or algal growth at the assessment site)

<i>5% ~ 9' on both sides of transect</i>
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Water Characteristics*: (Mark all that apply.)

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

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I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: *Ann Munt* Date: 8/4/05Organization: *Mec Water Resources* Position: *Env. Specialist*

Stream Morphology:

Upstream View Physical Dimensions: *See Appendix B in Report*

<input type="checkbox"/> Riffle	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Run	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Pool	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Flow	Present?	Yes	No	Estimated (ft ³ /sec):

Downstream View Physical Dimensions: *See Appendix B in Report*

<input type="checkbox"/> Riffle	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Run	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Pool	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Flow	Present?	Yes	No	Estimated (ft ³ /sec):

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

%Cobble	5	%Gravel	80	%Sand	15	%Silt	%Mud/Clay	%Bedrock
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Aquatic Vegetation*: (note amount of vegetation or algal growth at the assessment site)

5% floating primrose / smart weed @ transects w/in 10ft. on each side

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

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I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: *Chase Mont* Date: *8/4/05*

Organization: *MCC Water Resources* Position: *Env. Specialist*

Stream Morphology:

Upstream View Physical Dimensions: *See Appendix B in Report*

<input type="checkbox"/> Riffle	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Run	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Pool	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Flow	Present?	Yes	No	Estimated (ft ³ /sec):

Downstream View Physical Dimensions: *See Appendix B in Report*

<input type="checkbox"/> Riffle	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Run	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Pool	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Flow	Present?	Yes	No	Estimated (ft ³ /sec):

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

%Cobble	5	%Gravel	80	%Sand	15	%Silt	%Mud/Clay	%Bedrock
---------	---	---------	----	-------	----	-------	-----------	----------

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

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Water Characteristics*: (Mark all that apply.)

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

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I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: *Paul Mart* Date: 8/4/05

Organization: *MCC Water Resources* Position: *Env. Specialist*

Stream Morphology:

Upstream View Physical Dimensions: *See Appendix B in Report*

<input type="checkbox"/> Riffle	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Run	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Pool	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Flow	Present?	Yes	No	Estimated (ft ³ /sec):

Downstream View Physical Dimensions: *See Appendix B in Report*

<input type="checkbox"/> Riffle	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Run	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Pool	Width(ft)	Length(ft)	Ave. Depth(ft)	Max. Depth(ft)
<input type="checkbox"/> Flow	Present?	Yes	No	Estimated (ft ³ /sec):

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

%Cobble	5	%Gravel	80	%Sand	15	%Silt	%Mud/Clay	%Bedrock
---------	---	---------	----	-------	----	-------	-----------	----------

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

grasses/shrubs around bank, no algae present

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

Comments: Please attach additional comments (including information from interviews) to this form.

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I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: *Dwaine Mart* Date: *8/4/05*

Organization: *MEC Water Resources* Position: *Env. Specialist*

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: 3138	Site Location Description:	
Site Lat/Long: 165 0271619/4083447	County Line Road Site 1	
Date & Time: 8/4/05 0800	Facility Name: Sikeston WWTP	
Personnel: RM/NDM	Permit Number:	
Current Weather Conditions: clear	Weather Conditions for Past 7 days: Dry/Hot/Clear	
Photo Ids: Upstream: 417-418	Downstream: 415-416	Other: 419 - outfall 001

Used Observed*:

<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, frequency of use, photo-documentation of evidence of recreational uses, etc.)				

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

Evidence of Human Use*:

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

Site Locations Map(s): Attach a map of entire segment with assessment sites clearly labeled. Mark any other items that may be of interest. (Include photographs)

*Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: <u>3138</u>	Site Location Description:	
Site Lat/Long: <u>165 0271758/4082922</u>	<u>Hwy. 60 Bridge Site 2</u>	
Date & Time: <u>8/4/05 0920</u>	Facility Name: <u>Sikeston WWTP</u>	
Personnel: <u>RM/NM</u>	Permit Number:	
Current Weather Conditions: <u>clear</u>	Weather Conditions for Past 7 days:	
Photo Ids: Upstream: <u>421</u>	Downstream: <u>422</u>	Other: <u>420 - drainage upstream ~ 400 ft</u> <u>423 - tile downstream ~ 300 ft</u>

Used Observed*:

<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, frequency of use, photo-documentation of evidence of recreational uses, etc.)

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"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Fence	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: <u>corn/bean fields</u>	

Evidence of Human Use*:

<input checked="" type="checkbox"/> Roads <u>Hwy 60</u>	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV/ATV Tracks
<input type="checkbox"/> Rope swings	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle
<input type="checkbox"/> Other:				

Site Locations Map(s): Attach a map of entire segment with assessment sites clearly labeled. Mark any other items that may be of interest. (Include photographs)

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Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: <u>3138</u>	Site Location Description:	
Site Lat/Long: <u>16502 72383/4079352</u>	<u>County Road 806 Site 3</u>	
Date & Time: <u>8/4/05 10:15</u>	Facility Name: <u>Sikeston WWTP</u>	
Personnel: <u>RM/NM</u>	Permit Number:	
Current Weather Conditions: <u>Clear</u>	Weather Conditions for Past 7 days:	
Photo Ids: Upstream: <u>425-426</u>	Downstream: <u>428-429</u>	Other: <u>427 - irrigation US CR806</u>

*428-429 - ds of T5
430-431 - DS + US of T10
432-433 - debris DS of CR806*

Used Observed*:

<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, frequency of use, photo-documentation of evidence of recreational uses, etc.)

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"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Fence	<input checked="" type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: <u>farm fields (cotton + corn)</u>	

Evidence of Human Use*:

<input checked="" type="checkbox"/> Roads <u>CR 806</u>	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV/ATV Tracks
<input type="checkbox"/> Rope swings	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle
<input checked="" type="checkbox"/> Other: <u>farm field dirt roads along fields + riparian area - drain tile leading into stream</u>				

Site Locations Map(s): Attach a map of entire segment with assessment sites clearly labeled. Mark any other items that may be of interest. (Include photographs)

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Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: <i>3138</i>	Site Location Description:	
Site Lat/Long: <i>165 027 24 04 / 40 77 39</i>	<i>CR 808 Site 4</i>	
Date & Time: <i>8/4/05 1115</i>	Facility Name: <i>Sikeston WWTP</i>	
Personnel: <i>RM / NM</i>	Permit Number:	
Current Weather Conditions: <i>Clear / Hot</i>	Weather Conditions for Past 7 days:	
Photo Ids: Upstream: <i>434-435</i>	Downstream: <i>436</i>	Other: <i>437 - new bridge @ CR 808</i>

Used Observed*:

<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, frequency of use, photo-documentation of evidence of recreational uses, etc.)

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"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Fence	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: <i>Field Rd. access to cotton and corn fields / Ag fields</i>	

Evidence of Human Use*:

<input checked="" type="checkbox"/> Roads gravel + dirt roads near stream	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV/ATV Tracks
<input type="checkbox"/> Rope swings	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle
<input checked="" type="checkbox"/> Other: <i>drain tiles to stream</i>				

Site Locations Map(s): Attach a map of entire segment with assessment sites clearly labeled. Mark any other items that may be of interest. (Include photographs)

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Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(A separate data sheet must be completed for each site)

Missouri WBID #: <u>3138</u>	Site Location Description:	
Site Lat/Long: <u>165 0273278/4074423</u>	<u>CR 820 Site 5</u>	
Date & Time: <u>8/4/05 1220</u>	Facility Name: <u>Sikeston WWTP</u>	
Personnel: <u>RM/NM</u>	Permit Number:	
Current Weather Conditions: <u>Clear/Hot</u>	Weather Conditions for Past 7 days:	
Photo Ids: Upstream: <u>438</u>	Downstream: <u>439</u>	Other: <u>440 - drain pipe</u> <u>441 - CR 820 Bridge</u>

Used Observed*:

<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, frequency of use, photo-documentation of evidence of recreational uses, etc.)

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"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Fence	<input checked="" type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: <u>Ag. farm fields</u>	

Evidence of Human Use*:

<input checked="" type="checkbox"/> Roads <u>Gravel/Dirt Rd. near Stream</u>	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV/ATV Tracks
<input type="checkbox"/> Rope swings	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle
<input checked="" type="checkbox"/> Other: <u>drain pipes from Ag. fields</u>				

Site Locations Map(s): Attach a map of entire segment with assessment sites clearly labeled. Mark any other items that may be of interest. (Include photographs)

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MEC Water Resources, Inc.

St. John's Ditch

Recreational Use Attainability Analysis

Appendix B. Stream Morphology Information**3138_Site 1_St. John's Ditch 0.00 Miles from WWTF**

Length of Assessment Reach (ft.)		1000		
Transect (#)	Reach Type (Riffle, Pool, Run, Dry)	Type Length (ft.)	Mean Depth (ft.)	Maximum Depth (ft.)
1	Run	500	1.06	1.7
2	Run		0.69	1.4
3	Run		0.75	1.5
4	Run		0.96	1.9
5	Run		1.11	1.6
6	Run	500	1.39	2.2
7	Run		1.33	2.2
8	Run		1.51	2.2
9	Run		1.10	1.65
10	Run		0.97	1.7

Maximum Observed Depth (ft.)	2.20
Mean Assessment Reach Depth (ft.)	1.09

3138_Site 2_St. John's Ditch 0.40 Miles from WWTF

Length of Assessment Reach (ft.)		1200		
Transect (#)	Reach Type (Riffle, Pool, Run, Dry)	Type Length (ft.)	Mean Depth (ft.)	Maximum Depth (ft.)
1	Run	600	1.21	2
2	Run		1.15	1.9
3	Run		1.07	1.8
4	Run		0.90	2
5	Run		1.24	2
6	Run	600	0.79	1.4
7	Run		0.80	1.35
8	Run		0.86	1.4
9	Run		0.84	1.05
10	Run		0.65	0.85

Maximum Observed Depth (ft.)	2.00
Mean Assessment Reach Depth (ft.)	0.95

MEC Water Resources, Inc.

St. John's Ditch

Recreational Use Attainability Analysis

3138_Site 3_St. John's Ditch 2.66 Miles from WWTF

Length of Assessment Reach (ft.)		1000		
Transect (#)	Reach Type (Riffle, Pool, Run, Dry)	Type Length (ft.)	Mean Depth (ft.)	Maximum Depth (ft.)
1	Run	500	0.91	1.65
2	Run		0.97	1.4
3	Run		1.08	1.95
4	Run		0.80	1.1
5	Run		0.73	1.2
6	Run	500	1.08	2.2
7	Run		0.91	1.6
8	Run		0.91	1.2
9	Run		0.87	1.2
10	Run		0.89	1.1

Maximum Observed Depth (ft.)	2.20
Mean Assessment Reach Depth (ft.)	0.92

3138_Site 4_St. John's Ditch 3.65 Miles from WWTF

Length of Assessment Reach (ft.)		1000		
Transect (#)	Reach Type (Riffle, Pool, Run, Dry)	Type Length (ft.)	Mean Depth (ft.)	Maximum Depth (ft.)
1	Run	500	0.79	1.1
2	Run		0.80	1.05
3	Run		0.70	1.5
4	Run		0.80	1
5	Run		0.62	1.2
6	Run	500	1.18	2.2
7	Run		0.71	1.2
8	Run		0.82	1.35
9	Run		0.70	1.2
10	Run		0.74	1.2

Maximum Observed Depth (ft.)	2.20
Mean Assessment Reach Depth (ft.)	0.79

3138_Site 5_St. John's Ditch 5.82 Miles from WWTF

Length of Assessment Reach (ft.)		1700		
Transect (#)	Reach Type (Riffle, Pool, Run, Dry)	Type Length (ft.)	Mean Depth (ft.)	Maximum Depth (ft.)
1	Run	850	1.20	1.6
2	Run		1.24	1.6
3	Run		1.14	1.5
4	Run		1.11	1.8
5	Run		1.19	1.4
6	Run	850	1.14	1.6
7	Run		1.18	1.7
8	Run		1.61	2.1
9	Run		1.38	1.6
10	Run		1.35	1.8

Maximum Observed Depth (ft.)	2.10
Mean Assessment Reach Depth (ft.)	1.25