Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 0391 Muddy Fork

Submitted by
BWR

to
Missouri Department of Natural Resources
Water Protection Program

Date received: June 1, 2007

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):	MUDDY FORK
Missouri Water Body Identification (WBID) Number:	391
8-digit HUC: 10300101	County: CLAY
Upstream Legal Description (from Table H):	35, 54N, 31W
Downstream Legal Description(from Table H):	Mouth
Number of sites evaluated	3
List all sites numbers, listed consequently upstream to downstream:	~~1, 2, 3~~ 4, 1, 2, 5, 3

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

II. Subegmentation (fill this section out only in cases where subesgmentation is being proposed)

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)	
Upstream Coordinates: UTM X Y	Downstream Coordinates: UTM X Y

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE		
GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± 27 Feet or ± _____ Meters	
PDOP		± _____ Feet or ± _____ Meters

III. Discharger Facility Information (list all permitted dischargers on the stream)

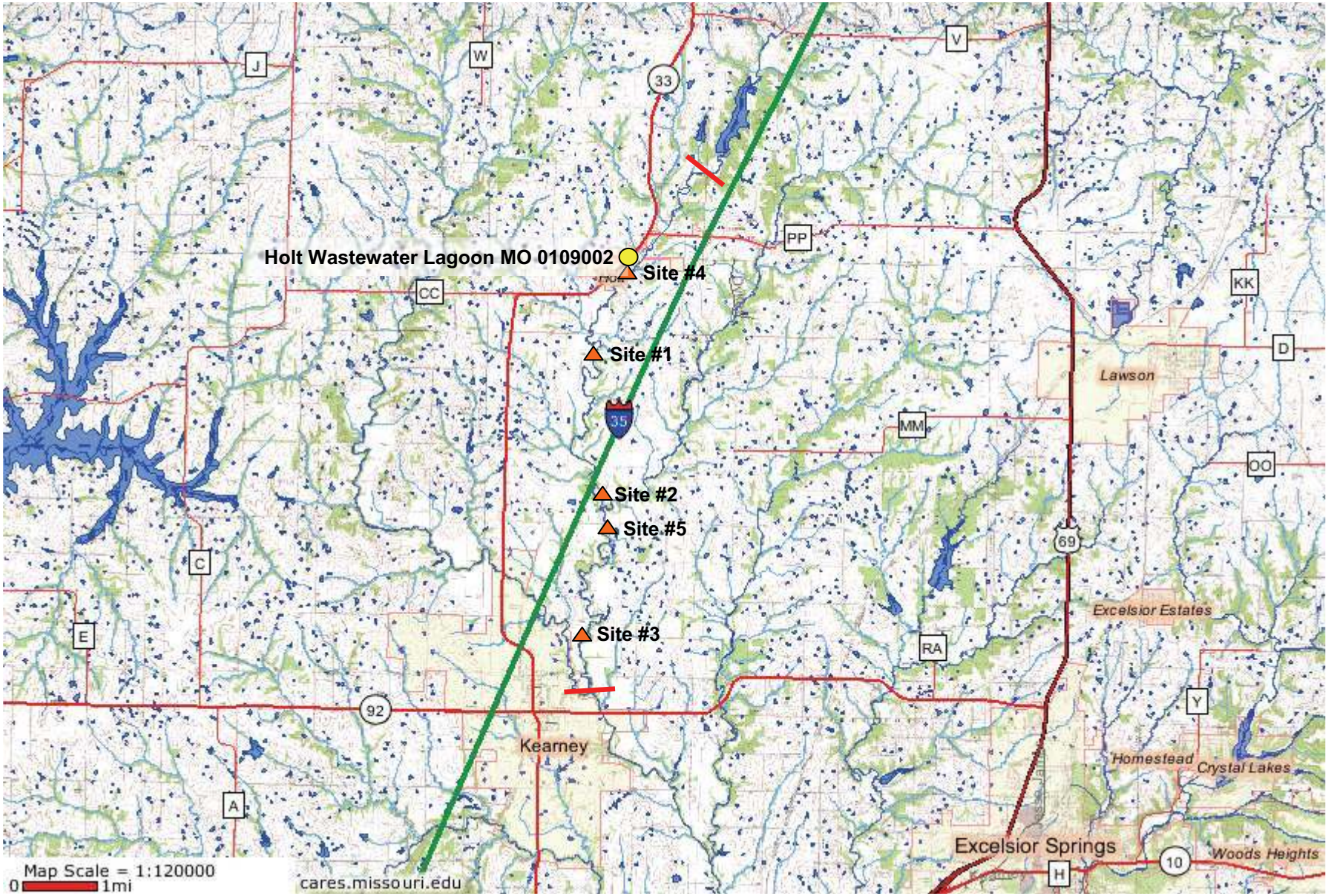
Discharger Facility Name(s):	HDIT Wastewater Lagoon, JJ Campground
Discharger Permit Number(s):	MO 0109002, MO 0102009

IV. UAA Surveyor (please print legibly)

Name of Surveyor	Amy Działowski	Telephone Number:	(816) 303-2696
Organization/Employer:	BWR		
Position:	Environmental Scientist		

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

Signed: Amy M. Działowski **Date:** 5/23/07



BWR

JJ Campground MO 01020090

(unable to locate in ArcExplorer software)

Muddy Fork

WBID #391

N

WBID# 391
Site# 1

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B - Site Characterization
(must be completed for each site)

Date & Time: May 23	Site Location Description (e.g., road crossing): Downstream from Bridge at 190th Street
Personnel (Data Collectors): AMD, JTC	
Current Weather Conditions: overcast	Facility Name: Holt Wastewater Lagoon, N Camparinti
Weather Conditions for Past 10 days:	Permit Number: MO0109902, MDD102 0090
Drought Conditions?: No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 094.34827°W Y: 39.43635°N

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± 75 Feet or ± _____ Meters	± _____ Feet or ± _____ Meters
PDOP		

Photos: see photo log

Upstream Photos		Downstream Photos		Other Photos	
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1	up	2	downstream		

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☐ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☒ Steep slopes	☐ None of the above	☐ Other:

Comments:

Indications of Human Use*: (attach photos)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☒ Fishing Tackle	☐ Other:

Comments: Bait Buckets

% Channel Feature
RUN: 60%
RIFFLE: 20%
POOL: 20%

*** Page Two – Data Sheet B for WBID #** 391 : Site # 1
Stream Morphology:

Upstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Downstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

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

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	60 % Bedroc

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

periphyton
macrophytes

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☐ Fine sediments	☒ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach any additional comments () to this form.

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

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

Surveyor's Signature: [signature] Date of Survey: 5/23/07

Organization: BWK Position: ENV. SCI

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 1

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A 1	wetted width	<0.1m			1 Channel Feature:	
2	4.0 m	<0.1m			2 RIFFLE	
3		<0.1m			3	
4	measurements	<0.1m			4 Dissolved Oxygen	
5	0.9 m	<0.1m			5	
6	apart	<0.1m			6 7.9	ppm
7		<0.1m			7	%
8		<0.1m			8	
9		<0.1m			9	
10		0.1m			10	
					11	
Transect B 1	wetted width	<0.1m			12 Channel Feature:	
2	11m m	<0.1m			13 RUN	
3		<0.1m			14	
4	measurement	<0.1m			15 Dissolved Oxygen:	
5	1.1 m	<0.1m			16	
6	apart	<0.1m			17 7.1	ppm
7		<0.1m			18	%
8		0.2m			19	
9		<0.1m			20	
10		<0.1m			21	
					22	
Transect C 1	wetted width	<0.1m			23 Channel Feature:	
2	10 m	<0.1m			24 RUN	
3		<0.1m			25	
4	measurements	<0.1m			26 Dissolved Oxygen	
5	1.0 m	<0.1m			.	
6	apart	<0.1m			. 7.9	ppm
7		0.1m			.	%
8		<0.1m			n	
9		<0.1m				
10		<0.1m				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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

Signed: Amy M. Bydalek **Date:** 5/22/07

Organization: BWR Position: Env. Sci

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 1

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 1	wetted width	<0.1m			1 Channel Feature:	
2	12.5 m	0.4m			2 RUN	
3		0.4m			3	
4	measurements	0.2m			4 Dissolved Oxygen	
5	1.25 m	0.1m			5	
6	apart	0.1m			6 8.0	ppm
7		0.1m			7	%
8		0.2m			8	
9		<0.1m			9	
10		0.1m			10	
					11	
Transect E 1	wetted width	<0.1m			12 Channel Feature:	
2	10.5 m	0.3m			13 RUN	
3		0.4m			14	
4	measurements	0.7m			15 Dissolved Oxygen:	
5	1.05 m	0.9m			16	
6	apart	0.8m			17 7.0	ppm
7		0.8m			18	%
8		0.6m			19	
9		0.7m			20	
10		0.7m			21	
					22	
Transect F 1	wetted width	<0.1m			23 Channel Feature:	
2	12 m	0.4m			24 POOL	
3		0.7m			25	
4	measurements	0.8m			26 Dissolved Oxygen	
5	1.2 m	0.8m			.	
6	apart	0.8m			. 7.5	ppm
7		0.8m			.	%
8		0.7m			n	
9		0.7m				
10		0.3m				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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

Signed: Amy M. Bulcock **Date:** 5/23/07

Organization: BWK Position: ENV. SCI

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 1

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G 1	wetted width	<0.1m			1 Channel Feature:	
2	15 m	0.1m			2 POOL / RUN	
3		0.2m			3	
4	measurements	0.1m			4 Dissolved Oxygen	
5	1.5 m	0.2m			5	
6	apart	0.4m			6 7.5	ppm
7		0.8m			7	%
8		0.4m			8	
9		0.1m			9	
10		0.2m			10	
					11	
Transect H 1	wetted width	<0.1m			12 Channel Feature:	
2	13 m	0.6m			13 POOL	
3		0.7m			14	
4	measurements	0.7m			15 Dissolved Oxygen:	
5	1.3 m	0.7m			16	
6	apart	0.8m			17 7.5	ppm
7		0.8m			18	%
9		0.8m			19	
9		0.2m			20	
10		0.2m			21	
					22	
Transect I 1	wetted width	0.1m			23 Channel Feature:	
2	5 m	0.2m			24 RIFFLE	
3		0.2m			25	
4	measurements	0.2m			26 Dissolved Oxygen	
5	0.5 m	0.3m			.	
6	apart	0.3m			. 7.6	ppm
7		0.1m			.	%
8		0.1m			n	
9		<0.1m				
10		<0.1m				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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Signed: Amy M. Gustafson **Date:** 5/23/07

Organization: BWK Position: ENV. SCI.

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 1

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect J 1	wetted width	<0.1			1 Channel Feature:	
2	4 m	0.1m			2 RUN	
3		0.1m			3	
4	measurements	0.4m			4 Dissolved Oxygen	
5	1.4 m	0.4m			5	
6	apart	0.4m			6 7.3	ppm
7		0.3m			7	%
8		0.1m			8	
9		<0.1m			9	
10		0.1m			10	
					11	
Transect K 1	wetted width	<0.1m			12 Channel Feature:	
2	4 m	0.3m			13 RUN	
3		0.3m			14	
4	measurements	0.3m			15 Dissolved Oxygen:	
5	1.4 m	0.2m			16	
6	apart	0.2m			17 7.5	ppm
7		0.2m			18	%
8		<0.1m			19	
9		0.1m			20	
10		<0.1m			21	
					22	
Transect 1	wetted width				23 Channel Feature:	
2	m				24	
3					25	
4	measurements				26 Dissolved Oxygen	
5	m				.	
6	apart				.	ppm
7					.	%
8					n	
9						
10						

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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 M Gaither **Date:** 5/23/07

Organization: BWR Position: ENV. SCI.

WBID# 391
Site# 2

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B - Site Characterization
(must be completed for each site)

Date & Time: May 23	Site Location Description (e.g., road crossing): Upstream from bridge at [illegible] St.
Personnel (Data Collectors): AMD JTC	
Current Weather Conditions: Overcast	Facility Name: Holt Wastewater Lagoon, II campground
Weather Conditions for Past 10 days:	Permit Number: MO 0109002, MO 0102090

Drought Conditions?: No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 094.34548° W Y: 39.40444° N

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± 17 Feet or ± _____ Meters	± _____ Feet or ± _____ Meters
PDOP		

Photos:

Upstream Photos		Downstream Photos		Other Photos	
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☒ Steep slopes	☐ None of the above	☐ Other:

Comments:

Indications of Human Use*: (attach photos)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:

Comments:

% Channel Feature
RUN: 95%
RIFFLE: 5%
POOL: 0%

*** Page Two – Data Sheet B for WBID #** 391 : SITE # 2
Stream Morphology:

Upstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Downstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

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

% Cobble	20 % Gravel	75 % Sand	5 % Silt	% Mud/Clay	% Bedrock

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

None

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☐ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach any additional comments () to this form.

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

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

Surveyor's Signature: Amy M. Ignatius Date of Survey: 5/23/07

Organization: BWR Position: ENV. SCI

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 2

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A 1	wetted width	<0.1m			1 Channel Feature:	
2	4.0 m	0.2m			2 RUN	
3		0.2m			3	
4	measurements	0.2m			4 Dissolved Oxygen	
5	0.4 m	0.2m			5	
6	apart	0.2m			6 9.0	ppm
7		0.2m			7	%
8		0.1m			8	
9		<0.1m			9	
10		<0.1m			10	
					11	
Transect B 1	wetted width	<0.1m			12 Channel Feature:	
2	4.0 m	<0.1m			13 RUN	
3		<0.1m			14	
4	measurements	0.1m			15 Dissolved Oxygen:	
5	0.4 m	0.1m			16	
6	apart	0.1m			17 8.7	ppm
7		0.2m			18	%
8		0.2m			19	
9		0.2m			20	
10		0.2m			21	
					22	
Transect C 1	wetted width	<0.1m			23 Channel Feature:	
2	3.5 m	0.2m			24 RUN	
3		0.2m			25	
4	measurements	0.2m			26 Dissolved Oxygen	
5	0.35 m	0.2m			.	
6	apart	0.2m			. 8.6	ppm
7		0.2m			.	%
8		0.1m			n	
9		<0.1m				
10		<0.1m				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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

Signed: Amy M. Rutowski **Date:** 5/23/07

Organization: BWR Position: ENV. SCI

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 2

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 1	wetted width	<0.1m			1 Channel Feature:	
2	9 m	0.3m			2 RUN	
3		0.3m			3	
4	measurements	0.3m			4 Dissolved Oxygen	
5	0.8 m	0.3m			5	
6	apart	0.2m			6 8.3	ppm
7		0.2m			7	%
8		0.1m			8	
9		0.1m			9	
10		<0.1m			10	
					11	
Transect E 1	wetted width	<0.1m			12 Channel Feature:	
2	11m m	0.5m			13 RUN	
3		0.5m			14	
4	measurements	0.4m			15 Dissolved Oxygen:	
5	1.1 m	0.4m			16	
6	apart	0.4m			17 8.4	ppm
7		0.3m			18	%
8		0.2m			19	
9		0.1m			20	
10		<0.1m			21	
					22	
Transect F 1	wetted width	0.1m			23 Channel Feature:	
2	6 m	0.5m			24 Run	
3		0.2m			25	
4	measurements	0.1m			26 Dissolved Oxygen	
5	1.0 m	0.1m			.	
6	apart	0.1m			. 8.3	ppm
7		0.1m			.	%
8		0.1m			n	
9		0.2m				
10		<0.1m				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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

Signed: Amy M. Bushnell **Date:** 5/23/07

Organization: BWR Position: ENV. SCI.

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 2

		Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G	1	wetted width	<0.1m			1 Channel Feature:	
	2	8.5 m	0.1m			2 RUN	
	3		0.3m			3	
	4	measurements	0.4m			4 Dissolved Oxygen	
	5	0.85 m	0.5m			5	
	6	apart	0.4m			6 8.2 ppm	
	7		0.4m			7 %	
	8		0.4m			8	
	9		0.4m			9	
	10		0.2m			10	
						11	
Transect H	1	wetted width	<0.1m			12 Channel Feature:	
	2	10.5 m	0.3m			13 RUN	
	3		0.4m			14	
	4	measurements	0.4m			15 Dissolved Oxygen:	
	5	0.65 m	0.3m			16	
	6	apart	0.3m			17 8.4 ppm	
	7		0.3m			18 %	
	8		0.3m			19	
	9		0.2m			20	
	10		<0.1m			21	
						22	
Transect I	1	wetted width	<0.1m			23 Channel Feature:	
	2	4.2 m	0.1m			24 RIFFLE	
	3		0.2m			25	
	4	measurements	0.2m			26 Dissolved Oxygen	
	5	0.42 m	0.2m			.	
	6	apart	0.1m			. 8.5 ppm	
	7		0.1m			. %	
	8		<0.1m			n	
	9		<0.1m				
	10		<0.1m				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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 M. Bradford **Date:** 5/23/07

Organization: BWR **Position:** Env. Sci.

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 2

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect 1 1	wetted width	<0.1m			1 Channel Feature:	
2	11 m	0.2m			2 RUN	
3		0.1m			3	
4	measurements	<0.1m			4 Dissolved Oxygen	
5	11 m	<0.1m			5	
6	apart	<0.1m			6 8.4 ppm	
7		<0.1m			7 ___ %	
8		0.1m			8	
9		0.1m			9	
10		0.2m			10	
					11	
Transect 2 1	wetted width	<0.1m			12 Channel Feature:	
2	8.5 m	0.1m			13 RUN	
3		0.2m			14	
4	measurements	0.2m			15 Dissolved Oxygen:	
5	0.85 m	0.2m			16	
6	apart	0.3m			17 8.3 ppm	
7		0.3m			18 ___ %	
8		0.3m			19	
9		0.3m			20	
10		0.1m			21	
					22	
Transect 1	wetted width				23 Channel Feature:	
2	___ m				24	
3					25	
4	measurements				26 Dissolved Oxygen	
5	___ m				.	
6	apart				. ___ ppm	
7					. ___ %	
8					n	
9						
10						

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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

Signed: Amy M. Bidwell **Date:** 5/23/07

Organization: BWK Position: Env. Sci.

WBID# 391
Site# 3

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B - Site Characterization
(must be completed for each site)

Date & Time: May 23, 2007	Site Location Description (e.g., road crossing): ~~off~~ Downstream of bridge off of 164th St
Personnel (Data Collectors): AMD, JTC	
Current Weather Conditions: overcast	Facility Name: HOH Wastewater Lagoon, JJ campground
Weather Conditions for Past 10 days:	Permit Number: MO 0109002, MO010210090

Drought Conditions?: No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 94.348602°W Y: 39.386002°N

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	±_____Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± 20 Feet or ± _____Meters	±_____Feet or ±_____Meters
PDOP		

Photos:

Upstream Photos		Downstream Photos		Other Photos	
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
1	up	2	down		

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☒ Steep slopes	☐ None of the above	☐ Other:

Comments:

Indications of Human Use*: (attach photos)

☐ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:

Comments: —

% Channel Feature
RUN: 40
RIFFLE: 30
POOL: 30

*** Page Two – Data Sheet B for WBID #** 391 : SITE #3
Stream Morphology:

Upstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Downstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

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

25% Cobble	% Gravel	75 % Sand	% Silt	% Mud/Clay	% Bedroc

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

periphyton
macrophytes

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach any additional comments () to this form.

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

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

Surveyor's Signature: [signature] Date of Survey: 5/23/07

Organization: BWR Position: ENV. SCI.

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

OPPISITE K-A

WBID # 391 Site # 3

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A 1	wetted width	<0.1m			1 Channel Feature:	
2	8.5 m	0.1m			2 RIFFLE	
3		0.1m			3	
4	measurements	0.2m			4 Dissolved Oxygen	
5	0.85 m	0.2m			5	
6	apart	<0.1m			6 10.9 ppm	
7		0.1m			7 %	
8		0.1m			8	
9		0.1m			9	
10		<0.1m			10	
					11	
Transect B 1	wetted width	<0.1m			12 Channel Feature:	
2	9.0 m	0.3m			13 RUN	
3		0.5m			14	
4	measurements	0.6m			15 Dissolved Oxygen:	
5	0.9 m	0.6m			16	
6	apart	0.6m			17 9.9 ppm	
7		0.6m			18 %	
8		0.4m			19	
9		0.2m			20	
10		<0.1m			21	
					22	
Transect C 1	wetted width	<0.1m			23 Channel Feature:	
2	11 m	0.2m			24 RIFFLE	
3		0.1m			25	
4	measurements	0.1m			26 Dissolved Oxygen	
5	1.1 m	<0.1m			.	
6	apart	<0.1m			. 10.9 ppm	
7		<0.1m			. %	
8		<0.1m			n	
9		<0.1m				
10		<0.1m				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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

Signed: Amy M. Gratton **Date:** 5/23/07

Organization: BWK Position: ENV. SCI

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 3

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 1	wetted width	<0.1m			1 Channel Feature:	
2	11 m	0.5m			2 Run	
3		0.6m			3	
4	measurements	0.7m			4 Dissolved Oxygen	
5	1.1 m	0.1m			5	
6	apart	<0.1m			6 10.0	ppm
7		0.2m			7	%
8		0.3m			8	
9		0.4m			9	
10		<0.1m			10	
					11	
Transect E 1	wetted width	<0.1m			12 Channel Feature:	
2	7m m	0.5m			13 Run	
3		0.4m			14	
4	measurements	0.3m			15 Dissolved Oxygen:	
5	0.7 m	0.3m			16	
6	apart	0.3m			17 10.2	ppm
7		0.3m			18	%
8		0.2m			19	
9		0.1m			20	
10		<0.1m			21	
					22	
Transect F 1	wetted width	<0.1m			23 Channel Feature:	
2	13 m	0.4m			24 Pool	
3		0.5m			25	
4	measurements	0.5m			26 Dissolved Oxygen	
5	1.3 m	0.5m			.	
6	apart	0.6m			. 9.6	ppm
7		0.5m			.	%
8		0.3m			n	
9		0.1m				
10		<0.1m				

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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: Amy M. Bjorlund **Date:** 5/23/07

Organization: BWR Position: Env. Sci.

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 3

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G 1	wetted width	0.1m			1 Channel Feature:	
2	1 m	0.2m			2 RIFFLE	
3		0.1m			3	
4	measurements	0.1m			4 Dissolved Oxygen	
5	0.7 m	0.1m			5	
6	apart	0.1m			6 10.4 ppm	
7		<0.1m			7 %	
8		<0.1m			8	
9		<0.1m			9	
10		<0.1m			10	
					11	
Transect H 1	wetted width	<0.1m			12 Channel Feature:	
2	2.5 m	<0.1m			13 RUN	
3		0.1m			14	
4	measurements	0.1m			15 Dissolved Oxygen:	
5	0.25 m	0.1m			16	
6	apart	0.2m			17 10.5 ppm	
7		0.2m			18 %	
8		0.2m			19	
9		0.1m			20	
10		<0.1m			21	
					22	
Transect I 1	wetted width	0.2m			23 Channel Feature:	
2	14 m	0.6m			24 POOL	
3		1.0m			25	
4	measurements	0.6m			26 Dissolved Oxygen	
5	1.4 m	>1.0m			.	
6	apart	>1.0m			. 10.4 ppm	
7		1.0m			. %	
8		0.8m				
9		0.5m			n	
10		0.1m				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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 M. Gylland **Date:** 5/23/07

Organization: BWR Position: BW. Sci

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 3

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect 1	wetted width	<0.1m			1 Channel Feature:	
2	6 m m	0.4m			2 RUN	
3		0.5m			3	
4	measurements	0.6m			4 Dissolved Oxygen	
5	0.6 m	0.7m			5	
6	apart	0.8m			6 10.1	ppm
7		0.8m			7	%
8		0.5m			8	
9		0.3m			9	
10		0.1m			10	
					11	
Transect 2 1	wetted width	<0.1m			12 Channel Feature:	
2	4 m	<0.1m			13 RIFFLE	
3		<0.1m			14	
4	measurements	0.1m			15 Dissolved Oxygen:	
5	0.4 m	0.1m			16	
6	apart	0.2m			17 10.9	ppm
7		0.2m			18	%
8		0.1m			19	
9		0.1m			20	
10		<0.1m			21	
					22	
Transect 1	wetted width				23 Channel Feature:	
2	m				24	
3					25	
4	measurements				26 Dissolved Oxygen	
5	m				.	
6	apart				.	ppm
7					.	%
8					n	
9						
10						

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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

Signed: Amy M. Bedowski **Date:** 5/23/07

Organization: BWR **Position:** ENV. SCI.

* change sheet A to denote order: 4, 1, 2, 5, 3

WBID# 391
Site# 4

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B - Site Characterization
(must be completed for each site)

Date & Time: 5/28/07	Site Location Description (e.g., road crossing): Bridge crossing
Personnel (Data Collectors): Ryan Lunt, SAP	
Current Weather Conditions: Sunny	Facility Name: Holt Wastewater Lagoon, N campgrou
Weather Conditions for Past 10 days: rain	Permit Number: MO 0109002; MO 0102091

Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 094.34315°W Y: 39.44897°N

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± 20 Feet or ± _____ Meters	± _____ Feet or ± _____ Meters
PDOP		

Photos:

Upstream Photos		Downstream Photos		Other Photos	
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
3(25)	Trans. I-J	2(26)	Trans. A	1(27)	possible pt. source

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☑ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☑ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☐ Steep slopes	☐ None of the above	☑ Other:

Comments: possible pt. source (G) → 39.44984°N, 094.34410°W

Indications of Human Use*: (attach photos)

☑ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☑ Other: Trash

Comments:

% CHANNEL FEATURES
RUN - 20
RIFFLE - 0
POOL - 80

*** Page Two – Data Sheet B for WBID #** 391 : SITE # 4
Stream Morphology:

Upstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Downstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

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

40 % Cobble	15 % Gravel	5 % Sand	20 % Silt	% Mud/Clay	20 % Bedrock

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

algal growth on substrate and water column.
aquatic vegetation.

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☑ Musky	☐ Chemical	☐ None	☐ Other:
Color:	☑ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☐ Fine sediments	☑ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☑ None	☐ Other:

Comments: Please attach any additional comments () to this form.

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

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

Surveyor's Signature: Ryan M. Hunt Date of Survey: 05-28-07

Organization: SETI Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 4

		Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A	1	wetted width	.1			1 Channel Feature:	
	2	5 m	.1			2 Run	
	3		.1			3	
	4	measurements	.1			4 Dissolved Oxygen	
	5	.5 m	.1			5	
	6	apart	.1			6 6.8 ppm	
	7		.1			7 74 %	
	8		.1			8	
	9		.1			9	
	10		.1			10	
						11	
Transect B	1	wetted width	.3			12 Channel Feature:	
	2	13 m	.3			13 Pool	
	3		.3			14	
	4	measurements	.2			15 Dissolved Oxygen:	
	5	1.3 m	.3			16	
	6	apart	.4			17 6.3 ppm	
	7		.4			18 67 %	
	8		.4			19	
	9		.4			20	
	10		.3			21	
						22	
Transect C	1	wetted width	.3			23 Channel Feature:	
	2	12 m	.3			24 Pool	
	3		.2			25	
	4	measurements	.2			26 Dissolved Oxygen	
	5	1.2 m	.2			.	
	6	apart	.1			. 5.9 ppm	
	7		.1			. 64 %	
	8		.2			n	
	9		.2				
	10		.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth i the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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

Signed: Ryan McDart **Date:** 05-28-07

Organization: SBSI **Position:** Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 4

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 1	wetted width	.1			1 Channel Feature:	
2	13 m	.1			2 Pool	
3		.1			3	
4	measurements	.2			4 Dissolved Oxygen	
5	.13 m	.3			5	
6	apart	.3			6 10.4	ppm
7		.5			7 70	%
8		.5			8	
9		.5			9	
10		.3			10	
					11	
Transect E 1	wetted width	.1			12 Channel Feature:	
2	10 m	.4			13 Pool	
3		.6			14	
4	measurements	.5			15 Dissolved Oxygen:	
5	.1 m	.5			16	
6	apart	.3			17 10.2	ppm
7		.3			18 101	%
8		.3			19	
9		.3			20	
10		.2			21	
					22	
Transect F 1	wetted width	.2			23 Channel Feature:	
2	11 m	.1			24 Pool	
3		.1			25	
4	measurements	.1			26 Dissolved Oxygen	
5	1.1 m	.2			.	
6	apart	.3			. 10.2	ppm
7		.2			. 109	%
8		.2			n	
9		.2				
10		.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the tw depth values surrounding the middle rank.

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

Signed: Ryan M. Hunt **Date:** 05-28-07

Organization: SETT Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 4

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G 1	wetted width	.1			1 Channel Feature:	
2	5 m	.1			2 Run	
3		.1			3	
4	measurements	.1			4 Dissolved Oxygen	
5	.5 m	.2			5	
6	apart	.2			6 6.7 ppm	
7		.2			7 72 %	
8		.3			8	
9		.2			9	
10		.1			10	
Transect H 1	wetted width	.1			11	
2	12 m	.6			12 Channel Feature:	
3		.6			13 Pool	
4	measurements	.4			14	
5	1.2 m	.4			15 Dissolved Oxygen:	
6	apart	.5			16	
7		.3			17 6.5 ppm	
8		.3			18 73 %	
9		.1			19	
10		.1			20	
Transect I 1	wetted width	.1			21	
2	1 m	.1			22	
3		.1			23 Channel Feature:	
4	measurements	.2			24 Run	
5	1 m	.2			25	
6	apart	.1			26 Dissolved Oxygen	
7		.1			.	
8		.1			. 6.8 ppm	
9		.1			. 74 %	
10		.1			n	

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth t the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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

Signed: Ryan M. Lunt **Date:** 05-28-07

Organization: SETI Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 4

		Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect X	1	wetted width	.2			1 Channel Feature:	
	2	12 m	.4			2 pool	
	3		.5			3	
	4	measurements	.5			4 Dissolved Oxygen	
	5	1.2 m	.10			5	
	6	apart	.6			6 6.5	ppm
	7		.7			7 71	%
	8		.7			8	
	9		.7			9	
	10		.1			10	
						11	
Transect Y	1	wetted width	.1			12 Channel Feature:	
	2	Y m	.2			13 pool	
	3		.2			14	
	4	measurements	.2			15 Dissolved Oxygen:	
	5	.Y m	.3			16	
	6	apart	.4			17 1.4	ppm
	7		.4			18 79	%
	8		.2			19	
	9		.2			20	
	10		.1			21	
						22	
Transect	1	wetted width				23 Channel Feature:	
	2	m				24	
	3					25	
	4	measurements				26 Dissolved Oxygen	
	5	m				.	
	6	apart				.	
	7					.	ppm
	8					.	%
	9					n	
	10						

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth i the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the tw depth values surrounding the middle rank.

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

Signed: Ryan A. Smart **Date:** 05-29-07

Organization: SETI **Position:** Environmental Scientist

WBID# 391
Site# 5

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B - Site Characterization
(must be completed for each site)

Date & Time: 5/28/07	Site Location Description (e.g., road crossing): Bridge Crossing @ 172nd → Going Downstream
Personnel (Data Collectors): Ryan Lutt	
Current Weather Conditions: sunny	Facility Name: Holt Wastewater Lagoon, W campgrd
Weather Conditions for Past 10 days: rain	Permit Number: MO 0109002, MO0102.0091

Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 094.34528°W Y: 39.40223°N

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	±_____Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± 26 Feet or ± _____Meters	±_____Feet or ±_____Meters
PDOP		

Photos:

Upstream Photos		Downstream Photos		Other Photos	
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
23(5)	H to J	24(4)	Trans. A		

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☑ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☐ Steep slopes	☑ None of the above	☐ Other:

Comments:

Indications of Human Use*: (attach photos)

☑ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:

Comments:

% CHANNEL FEATURES

RUN - 10
RIFFLE -
POOL - 90

*** Page Two – Data Sheet B for WBID #** 391 : SITE #5
Stream Morphology:

Upstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Downstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

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

40 % Cobble	30 % Gravel	15 % Sand	15 % Silt	% Mud/Clay	% Bedrock

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

none in water column.
Fallen trees, algal growth on substrate and woody debris from flooding.

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☑ None	☐ Other:
Color:	☑ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☑ Fine sediments	☑ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☑ None	☐ Other:

Comments: Please attach any additional comments () to this form.

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

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

Surveyor's Signature: Ryan M. Lunt Date of Survey: 05-28-07

Organization: Seagull Environmental Technologies Inc (SETI) Position: Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 5

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A 1	wetted width	.1			1 Channel Feature:	
2	6 m	.1			2 Run	
3		.1			3	
4	measurements	.1			4 Dissolved Oxygen	
5	.10 m	.1			5	
6	apart	.1			6 8.4	ppm
7		.1			7 94	%
8		.1			8	
9		.1			9	
10		.1			10	
					11	
Transect B 1	wetted width	.1			12 Channel Feature:	
2	10 m	.3			13 Pool	
3		.4			14	
4	measurements	.4			15 Dissolved Oxygen:	
5	.1 m	.4			16	
6	apart	.3			17 1.9	ppm
7		.2			18 87	%
8		.1			19	
9		.1			20	
10		.1			21	
					22	
Transect C 1	wetted width	.1			23 Channel Feature:	
2	9 m	.3			24 Pool	
3		.4			25	
4	measurements	.5			26 Dissolved Oxygen	
5	.9 m	.5			.	
6	apart	.5			. 8.2	ppm
7		.4			. 91	%
8		.3			n	
9		.2				
10		.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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

Signed: Ryan M. Lunt **Date:** 05-28-07

Organization: SETI **Position:** Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 5

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 1	wetted width	.1			1 Channel Feature:	
2	10 m	.1			2 pool	
3		.2			3	
4	measurements	.3			4 Dissolved Oxygen	
5	.10 m	.3			5	
6	apart	.4			6 8.2	ppm
7		.4			7 90	%
8		.3			8	
9		.3			9	
10		.2			10	
					11	
Transect E 1	wetted width	.1			12 Channel Feature:	
2	10.5 m	.2			13 pool	
3		.3			14	
4	measurements	.3			15 Dissolved Oxygen:	
5	.105 m	.5			16	
6	apart	.10			17 8.1	ppm
7		.10			18 89	%
8		.5			19	
9		.3			20	
10		.1			21	
					22	
Transect F 1	wetted width	.1			23 Channel Feature:	
2	7.5 m	.2			24 pool	
3		.2			25	
4	measurements	.3			26 Dissolved Oxygen	
5	.75 m	.3			.	
6	apart	.4			. 8.1	ppm
7		.4			. 89	%
8		.5			n	
9		.6				
10		.3				

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Signed: Ryan M. Hurt **Date:** 05-28-07

Organization: SETI **Position:** Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 5

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G 1	wetted width	.1			1 Channel Feature:	
2	12 m	.2			2 Run	
3		.1			3	
4	measurements	.2			4 Dissolved Oxygen	
5	1.2 m	.3			5	
6	apart	.4			6 8.3	
7		.4			7 89	ppm %
8		.4			8	
9		.5			9	
10		.7			10	
Transect H 1	wetted width	.1			11	
2	13 m	.2			12 Channel Feature:	
3	.13	.3			13 pool	
4	measurements	.4			14	
5	m	.2			15 Dissolved Oxygen:	
6	apart	.2			16	
7		.3			17 8.1	
8		.3			18 89	ppm %
9		.3			19	
10		.2			20	
Transect I 1	wetted width	.1			21	
2	1 m	.2			22	
3		.3			23 Channel Feature:	
4	measurements	.3			24 pool	
5	.1 m	.3			25	
6	apart	.2			26 Dissolved Oxygen	
7		.3			.	
8		.4			. 8.2	
9		.2			. 90	ppm %
10		.2			n	

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Signed: Ryan M. Lunt **Date:** 05-28-07

Organization: SETI **Position:** Environmental Scientist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 391 Site # 5

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect 1	wetted width	.1			1 Channel Feature:	
2	5 m	.2			2 Pool	
3		.2			3	
4	measurements	.2			4 Dissolved Oxygen	
5	5 m	.2			5	
6	apart	.3			6 8.0	ppm
7		.3			7 89	%
8		.3			8	
9		.3			9	
10		.3			10	
Transect 2					11	
1	wetted width	.1			12 Channel Feature:	
2	5 m	.2			13 Run	
3		.2			14	
4	measurements	.2			15 Dissolved Oxygen:	
5	5 m	.3			16	
6	apart	.4			17 8.3	ppm
7		.4			18 92	%
8		.3			19	
9		.2			20	
10		.2			21	
Transect 3					22	
1	wetted width				23 Channel Feature:	
2	m				24	
3					25	
4	measurements				26 Dissolved Oxygen	
5	m				.	
6	apart				.	ppm
7					.	%
8					n	
9						
10						

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Signed: Megan M. Lunt **Date:** 05-28-07

Organization: SETE **Position:** Environmental Scientist

Upstream (Site #1) of Muddy Fork.

Downstream (Site #1) of Muddy Fork.

Upstream (Site #2) of Muddy Fork.

Downstream (Site #2) of Muddy Fork.

Upstream (Site #3) of Muddy Fork.

Downstream (Site #3) of Muddy Fork.

Upstream (Site #4) of Muddy Fork.

Downstream (Site #4) of Muddy Fork.

Upstream (Site 5) of Muddy Fork

Upstream (Site 5) of Muddy Fork

Supplemental photo (Site 4) of Muddy Fork
depicting potential point source pollution.