Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 0588 Hickory Creek

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):	Hickory Creek
Missouri Water Body Identification (WBID) Number:	588
8-digit HUC: 10280101	County: Grundy
Upstream Legal Description (from Table H):	9, 60N, 25W
Downstream Legal Description(from Table H):	Mouth
Number of sites evaluated	4
List all sites numbers, listed consequently upstream to downstream: Site-1 - Upstream, Site-2 Mid section, Site-3 downstream, site 4, mid-section	

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) N/A

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)	
Upstream Coordinates: UTM X N 40.01939 Y W 093.71791	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	± 15 Feet or ± _____ Meters	
PDOP		± _____ Feet or ± _____ Meters

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

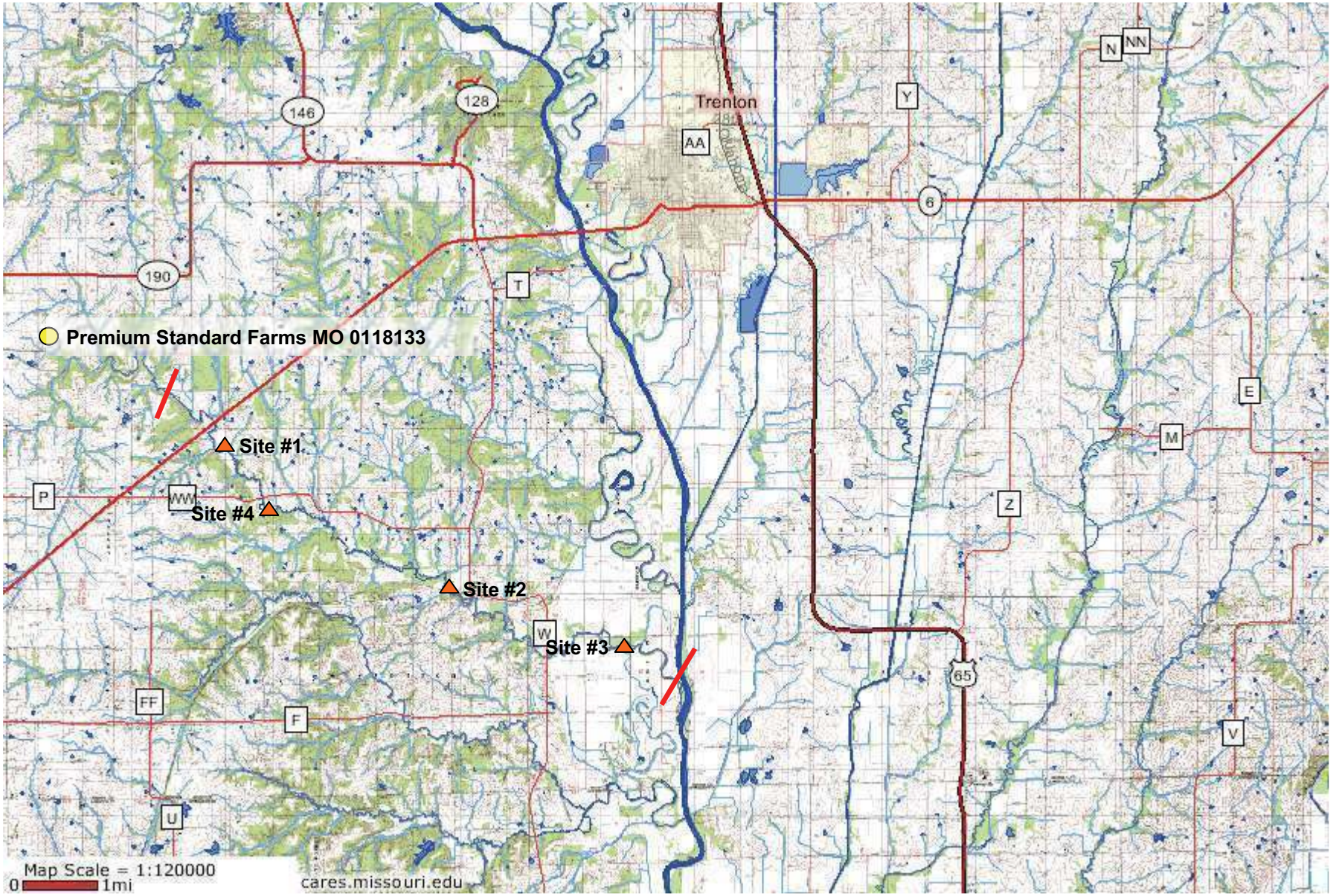
Discharger Facility Name(s):	Premium Standard Farms
Discharger Permit Number(s):	MO 0118133

IV. UAA Surveyor (please print legibly)

Name of Surveyor: Ryan McLeod	Telephone Number:
Organization/Employer: Seagull Environmental Technologies	
Position: Environmental Scientist	

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

Signed: Ryan M. Lust **Date:** 05-16-07



BWR

Hickory Creek
WBID #588

N

WBID# 588
Site# 1

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

Date & Time: 05-16-07 14:00	Site Location Description (e.g., road crossing): Access off of 62nd Ave; Cinder Blocks along Bank near Transect A. Stream is 4-6m wide
Personnel (Data Collectors): Lunt & Wells	
Current Weather Conditions: Sunny 70-75°F	Facility Name: Premium Standard Farms
Weather Conditions for Past 10 days: Sunny / light Rain	Permit Number: MO 0118133
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: ~~N40.01939~~ W093.21781 Y: ~~W093.21781~~ N40.01939

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
588-6	log Jam for Transects J-K	588-5	Transects C-B	588-1,2,3,4	360° of Transect 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: 62nd Ave off of Hwy WW

*** Page Two – Data Sheet B for WBID # 588 :**

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: Transect C-B

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN	10 m	3 m	15 m		
POOL					

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

15 % Cobble	% Gravel	15 % Sand	35 % Silt	10 % Mud/Clay	25 % Bedrock

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

Limited aquatic vegetation; algal growth along Transects B-D. ~~Log Jam~~ Impassable Log Jam transects J-K, Log Jam is about 30 m length & 10 m wide, Refer to Photo.

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 Lee Date of Survey: 05-16-07

Organization: SCT E Position: Environmental Scientist

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

15 meter Reach

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A 3.0	0.3	0.10			1	
	0.6	0.12			2	
	0.9	0.20			3	
	1.2	0.21			4	
	1.5	0.23			5	
	1.8	0.25			6	
	2.1	0.10			7	
	2.4	0.13			8	
	2.7	0.11			9	
	3.0	0.10			10	
					11	
Transect B 3.6	0.3	0.05			12	
	0.6	0.14			13	
	0.9	0.17			14	
	1.2	0.15			15	
	1.5	0.18			16	
	1.8	0.18			17	
	2.1	0.15			18	
	2.4	0.13			19	
	2.7	0.10			20	
	3.0	0.05			21	
					22	
Transect C 6.0	0.6	0.14			23	
	1.2	0.13			24	
	1.8	0.10			25	
	2.4	0.03			26	
	3.0	0.04			.	
	3.6	0.09			.	
	4.2	0.11			.	
	4.8	0.12			n	
	5.4	0.04				
	6.0	0.04				

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: Ryan McLaurin **Date:** 05-16-07

Organization: SERI Position: Environmental Scientist

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

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 4.0	0.4	0.24			1	
	0.8	0.23			2	
	1.2	0.27			3	
	1.6	0.29			4	
	2.0	0.11			5	
	2.4	0.19			6	
	2.8	0.13			7	
	3.2	0.10			8	
	3.6	0.04			9	
	4.0	0.03			10	
Transect E 4.0					11	
	0.4	0.10			12	
	0.8	0.16			13	
	1.2	0.19			14	
	1.6	0.13			15	
	2.0	0.10			16	
	2.4	0.09			17	
	2.8	0.11			18	
	3.2	0.10			19	
	3.6	0.04			20	
Transect F 4.0	4.0	0.03			21	
					22	
	0.3	0.11			23	
	0.6	0.19			24	
	0.9	0.15			25	
	1.2	0.16			26	
	1.5	0.11			.	
	1.8	0.10			.	
	2.1	0.10			.	
	2.4	0.10			n	
	2.7	0.04				
	3.0	0.04				

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: Ryan McLaut **Date:** 05-16-07

Organization: SETE Position: Environmental Scientist

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

Transect	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
G	0.5	0.14			1	
	1.0	0.29			2	
5.0	1.5	0.30			3	
	2.0	0.20			4	
	2.5	0.19			5	
	3.0	0.12			6	
	3.5	0.10			7	
	4.0	0.09			8	
	4.5	0.10			9	
	5.0	0.05			10	
Transect					11	
	0.5	0.21			12	
H	1.0	0.34			13	
	1.5	0.19			14	
	2.0	0.15			15	
5.0	2.5	0.11			16	
	3.0	0.12			17	
	3.5	0.10			18	
	4.0	0.10			19	
	4.5	0.10			20	
Transect	5.0	0.03			21	
					22	
	1.0	0.59			23	
I	2.0	0.49			24	
	3.0	0.54			25	
5.0	4.0	0.66			26	
	5.0	0.51			.	
	6.0	0.55			.	
	7.0	0.61			.	
	8.0	0.62			n	
	9.0	0.71				
	10.0	0.10				

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: Ryan McLeod **Date:** 05-16-07

Organization: SJTP **Position:** Environmental Scientist

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

Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect J				1	
				2	
				3	
				4	
				5	
				6	
				7	
				8	
				9	
				10	
				11	
Transect K				12	
				13	
				14	
				15	
				16	
				17	
				18	
				19	
				20	
				21	
				22	
				23	
				24	
				25	
				26	
				.	
				.	
				.	
				n	

Impassable Log Jam (30m Length 10m Wide)

- Refer to Photo For Upstream

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: Ryan M. Lust **Date:** 05-16-07

Organization: SETE Position: Environmental Scientist

WBID# 586
Site# 2

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

Date & Time: 05-16-07 15:30	Site Location Description (e.g., road crossing): Transect A 50 m from Bridge Crossing
Personnel (Data Collectors): Lunt & Wells	
Current Weather Conditions: Sunny 65-70	Facility Name: Premium Standard Farms
Weather Conditions for Past 10 days: Sunny / Light Rain	Permit Number: MO0118133
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: ~~N39.99948~~ W093.66897 Y: ~~W093.66897~~ N39.99948

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
586-12	Transect D-K	586-11	Transects C-B	586-7,8,9,10	360° of Transect A UP, Rt, Down, Lt

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: Houses

Comments: Electrical fence near this section, 3 home owners 100m from. Did not want to be part of interview, but gave O.K. to sample

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:

RUN 50%.
POOL 50%.

*** Page Two – Data Sheet B for WBID #** 588 **:**

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: T-L

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
100% POOL	140 m	5 m	15	0.95	1.0 greater

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: Transect C-B

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
25% RIFFLE					
75% RUN	75m	4m	10 m	0.11	0.15
POOL					

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

10	% Cobble	5	% Gravel	15	% Sand	15	% Silt	50	% Mud/Clay	5	% Bedrock

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

limited aquatic Vegetation, ~~detritus~~ Detritus & woody debris in water column
algal growth on substrate

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: 05-16-07

Organization: SBTI Position: Environmental Scientist

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

15 meter Reach

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A 4.0	0.4	0.35			1	
	0.8	0.31			2	
	1.2	0.25			3	
	1.6	0.21			4	
	2.0	0.19			5	
	2.4	0.14			6	
	2.8	0.10			7	
	3.2	0.09			8	
	3.6	0.03			9	
	4.0	0.01			10	
Transect B 6.0					11	
	0.6	0.25			12	
	1.2	0.05			13	
	1.8	0.10			14	
	2.4	0.05			15	
	3.0	0.15			16	
	3.6	0.20			17	
	4.2	0.21			18	
	4.8	0.25			19	
	5.4	0.25			20	
	6.0	0.15			21	
					22	
Transect C 4.0	0.4	0.11	0.09		23	
	0.8	0.15	0.10		24	
	1.2	0.15	0.10		25	
	1.6	0.13	0.11		26	
	2.0	0.11	0.11		.	
	2.4	0.11	0.11		.	
	2.8	0.09	0.12		.	
	3.2	0.12	0.13		n	
	3.6	0.10	0.15			
	4.0	0.10	0.15			

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: Ryan M. Hunt **Date:** 05-16-07

Organization: SEI Position: Environmental Scientist

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

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 3.0	0.5	0.10			1	
	1.0	0.12			2	
	1.5	0.13			3	
	2.0	0.01			4	
	2.5	0.10			5	
	3.0	0.13			6	
	3.5	0.18			7	
	4.0	0.17			8	
	4.5	0.20			9	
	5.0	0.11			10	
Transect E 5.0					11	
	0.5	0.27			12	
	1.0	0.30			13	
	1.5	0.19			14	
	2.0	0.12			15	
	2.5	0.10			16	
	3.0	0.05			17	
	3.5	0.03			18	
	4.0	0.03			19	
	4.5	0.03			20	
Transect F 7.0	5.0	0.05			21	
					22	
	0.7	0.04			23	
	1.4	0.21			24	
	2.1	0.15			25	
	2.8	0.10			26	
	3.5	0.08			.	
	4.2	0.01			.	
	4.9	0.11			.	
	5.6	0.21			n	
	6.3	0.22				
	7.0	0.10				

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: Ryan McLeod **Date:** 05-16-07

Organization: SEJI **Position:** Environmental Scientist

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

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Treansect G 7.0	0.7	0.30			1	
	1.4	0.41			2	
	2.1	0.42			3	
	2.8	0.45			4	
	3.5	0.44			5	
	4.2	0.40			6	
	4.9	0.38			7	
	5.6	0.31			8	
	6.3	0.41			9	
	7.0	0.21			10	
Treansect H 5.0					11	
	0.5	0.20			12	
	1.0	0.29			13	
	1.5	0.31			14	
	2.0	0.31			15	
	2.5	0.29			16	
	3.0	0.25			17	
	3.5	0.20			18	
	4.0	0.17			19	
	4.5	0.11			20	
	5.0	0.12			21	
					22	
Treansect I 10.0	1.0	0.40			23	
	2.0	0.50			24	
	3.0	0.50			25	
	4.0	0.42			26	
	5.0	0.30			.	
	6.0	0.30			.	
	7.0	0.21			.	
	8.0	0.15			n	
	9.0	0.10				
	10.0	0.05				

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: Ryan M. Lust **Date:** 05-16-07

Organization: SBTI Position: Environmental Scientist

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

Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect J 0.5	0.89	0.21		1	
1.0	0.95	0.30		2	
1.5	1.0 Greater	0.41		3	
2.0	1.0 Greater	0.55		4	
7.0 2.5	0.95	0.79		5	
3.0	0.79	0.89		6	
3.5	0.55	0.95		7	
4.0	0.41	0.95		8	
4.5	0.30	1.0		9	
5.0	0.21	1.0		10	
				11	
Transect K 0.7	0.45			12	
1.4	0.29			13	
7.0 2.1	0.25			14	
2.8	0.00			15	
3.5	0.00			16	
4.2	0.05			17	
4.9	0.17			18	
5.6	0.25			19	
6.3	0.44			20	
7.0	0.22			21	
				22	
				23	
				24	
				25	
				26	
				.	
				.	
				.	
				n	

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: Ryan M. Lunt **Date:** 05-16-07

Organization: SCTI Position: Environmental Scientist

WBID# 588
Site# 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: 05-16-07 16:40	Site Location Description (e.g., road crossing): ~~250~~ Transect A 250 m from Hwy W Bridge Crossing
Personnel (Data Collectors): Hunt & Wells	
Current Weather Conditions: Sunny 60-65	Facility Name: Premium Standard Farms
Weather Conditions for Past 10 days: Sunny / light Rain	Permit Number: MO0118133
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: ~~N38.68166~~ W093.64359 Y: ~~4358761359~~ N 39.98860

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	± 15 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
588-16		588-17		588-13/14/15/16	360° of Transect Up, Rt, Down, Lt

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: Farmland

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: Hwy W South Of Hickory, MO

50% Pool
50% Run

*** Page Two – Data Sheet B for WBID # 588 :**
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: I-J

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
100% POOL	100 m	~~4~~	~~15~~	~~0.3~~ 0.70	~~0.3~~ 0.81

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: B-A

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
100% RUN	250 m	4	15	0.12	0.20
POOL					

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

3 % Cobble	5 % Gravel	~~20~~ 20% Sand	15 % Silt	55 % Mud/Clay	2 % Bedrock

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

Limited Aquatic Vegetation, algal growth on substrate, woody debris & detritus in water column

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. Lust Date of Survey: 05-16-07

Organization: SETE Position: Environmental Scientist

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

15 meter Reach

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A 4.0	0.4	0.12	0.05		1	
	0.8	0.15	0.10		2	
	1.2	0.13	0.10		3	
	1.6	0.15	0.10		4	
	2.0	0.20	0.12		5	
	2.4	0.15	0.13		6	
	2.8	0.10	0.15		7	
	3.2	0.10	0.15		8	
	3.6	0.05	0.15		9	
	4.0	0.10	0.20		10	
Transect B 2.5					11	
	0.25	0.17			12	
	0.50	0.25			13	
	0.75	0.27			14	
	1.0	0.20			15	
	1.25	0.20			16	
	1.50	0.19			17	
	1.75	0.19			18	
	2.0	0.13			19	
	2.25	0.15			20	
	2.50	0.05			21	
Transect C 3.0					22	
	0.3	0.05			23	
	0.6	0.10			24	
	0.9	0.10			25	
	1.2	0.11			26	
	1.5	0.20			.	
	1.8	0.22			.	
	2.1	0.23			.	
	2.4	0.19			n	
	2.7	0.11				
	3.0	0.10				

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: Ryan M. Lunt **Date:** 05-16-07

Organization: SETI Position: Environmental Scientist

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

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 6.0	0.6	0.13			1	
	1.2	0.15			2	
	1.8	0.20			3	
	2.4	0.15			4	
	3.0	0.22			5	
	3.6	0.31			6	
	4.2	0.33			7	
	4.8	0.30			8	
	5.4	0.20			9	
	6.0	0.20			10	
					11	
Transect E 8.0	0.8	0.39			12	
	1.6	0.49			13	
	2.4	0.51			14	
	3.2	0.47			15	
	4.0	0.49			16	
	4.8	0.58			17	
	5.6	0.45			18	
	6.4	0.31			19	
	7.2	0.22			20	
	8.0	0.13			21	
					22	
Transect F 7.0	0.7	0.13			23	
	1.4	0.39			24	
	2.1	0.48			25	
	2.8	0.61			26	
	3.5	0.83			.	
	4.2	0.85			.	
	4.9	0.70			.	
	5.6	0.73			n	
	6.3	0.75				
	7.0	0.61				

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: Ryan M. Zuni **Date:** 05-16-07

Organization: SFTI Position: Environmental Scientist

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

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G	0.4	0.10			1	
	0.8	0.12			2	
	1.2	0.15			3	
	1.6	0.27			4	
4.0	2.0	0.49			5	
	2.4	0.67			6	
	2.8	0.71			7	
	3.2	0.81			8	
	3.6	0.89			9	
	4.0	0.90			10	
Transect					11	
H	0.25	0.05			12	
	0.50	0.10			13	
	0.75	0.07			14	
2.5	1.0	0.18			15	
	1.25	0.18			16	
	1.50	0.21			17	
	1.75	0.22			18	
	2.0	0.20			19	
	2.25	0.14			20	
	2.50	0.08			21	
					22	
Transect	0.8	0.30			23	
	[redacted] 1.6	0.49			24	
	2.4	0.59			25	
I	3.2	0.89			26	
	4.0	0.95			.	
8.0	4.8	0.75			.	
	5.6	0.66			.	
	6.4	0.52			n	
	7.2	0.33				
	8.0	0.17				

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: Ryan M. Hunt **Date:** 05-16-07

Organization: SGTI Position: Environmental Scientist

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

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect J 7.0	0.7	0.47	0.19		1	
	1.4	0.70	0.35		2	
	2.1	0.70	0.47		3	
	2.8	0.75	0.52		4	
	3.5	0.81	0.70		5	
	4.2	0.80	0.70		6	
	4.9	0.71	0.71		7	
	5.6	0.52	0.75		8	
	6.3	0.39	0.80		9	
	7.0	0.19	0.81		10	
					11	
Transect K 3.0	0.3	0.21			12	
	0.6	0.39			13	
	0.9	0.45			14	
	1.2	0.55			15	
	1.5	0.58			16	
	1.8	0.58			17	
	2.1	0.50			18	
	2.4	0.44			19	
	2.7	0.31			20	
	3.0	0.22			21	
					22	
					23	
					24	
					25	
					26	
					.	
					.	
					.	
					n	

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: Ryan McLaurt **Date:** 05-16-07

Organization: SETI Position: Environmental Scientist

WBID# 588
Site# 4

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

Date & Time: 5/25/07	Site Location Description (e.g., road crossing): Bridge crossing @ 02nd Ave Transect A
Personnel (Data Collectors): Ryan Lutt	
Current Weather Conditions: Overcast	Facility Name: Premium Standard Farms
Weather Conditions for Past 10 days: Rainy	Permit Number:

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

1175 m from crossing

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 093.70850°W Y: 40.01000°N ← Transect K

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
100-07	Transect K	100-08	Transect B (no photo upstrm)		

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 - 100%
RIFFLE -
POOL -

*** Page Two – Data Sheet B for WBID #** 588 : 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%.)

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

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

Floating detritus; riparian corridor
log jam above trans. K

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 Lint Date of Survey: 05-25-07

Organization: GETR Position: Environmental Scientist

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

WBID # 588 Site # 4

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A 1	wetted width	.1			1 Channel Feature:	
2	0 m	.1			2 Run	
3		.2			3	
4	measurements	.4			4 Dissolved Oxygen	
5	10 m	.5			5	
6	apart	.5			6 8.6 ppm	
7		.4			7 93 %	
8		.4			8	
9		.2			9	
10		.2			10	
					11	
Transect B 1	wetted width	.5			12 Channel Feature:	
2	8.5 m	.10			13 Pool	
3		.10			14	
4	measurements	.10			15 Dissolved Oxygen:	
5	8.5 m	.10			16	
6	apart	.9			17 8.5 ppm	
7		1			18 92 %	
8		1			19	
9		.4			20	
10		.3			21	
					22	
Transect C 1	wetted width	.1			23 Channel Feature:	
2	4.5 m	.1			24 Run	
3		.2			25	
4	measurements	.2			26 Dissolved Oxygen	
5	4.5 m	.2			.	
6	apart	.2			. 8.6 ppm	
7		.2			. 94 %	
8		.3				
9		.2			n	
10		.2				

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. Hunt **Date:** 05-25-07

Organization: SCTI **Position:** Environmental Scientist

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

WBID # 588 Site # 4

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 1	wetted width	.1			1 Channel Feature:	
2	3 m	.1			2 Run	
3		.1			3	
4	measurements	.1			4 Dissolved Oxygen	
5	1 m	.1			5	
6	apart	.1			6 8.8	ppm
7		.1			7 91	%
8		.1			8	
9		.1			9	
10		.1			10	
					11	
Transect E 1	wetted width	.1			12 Channel Feature:	
2	2.5 m	.1			13 Run	
3	.35	.2			14	
4	measurements	.3			15 Dissolved Oxygen:	
5	m	.2			16	
6	apart	.1			17 8.8	ppm
7		.1			18 91	%
8		.1			19	
9		.1			20	
10		.1			21	
					22	
Transect F 1	wetted width	.1			23 Channel Feature:	
2	4 m	.2			24 Run	
3		.2			25	
4	measurements	.2			26 Dissolved Oxygen	
5	4 m	.2			.	
6	apart	.3			. 8.7	ppm
7		.2			. 95	%
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. Lynch **Date:** 05-25-07

Organization: SCCF **Position:** Environmental Scientist

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

WBID # 588 Site # 4

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G 1	wetted width	.1			1 Channel Feature:	
2	6 m	.2			2 Run	
3		.3			3	
4	measurements	.4			4 Dissolved Oxygen	
5	.6 m	.3			5	
6	apart	.3			6 8.10 ppm	
7		.4			7 94 %	
8		.4			8	
9		.4			9	
10		.2			10	
					11	
Transect H 1	wetted width	.1			12 Channel Feature:	
2	3 m	.2			13 Run	
3		.3			14	
4	measurements	.4			15 Dissolved Oxygen:	
5	.3 m	.6			16	
6	apart	.5			17 8.2 ppm	
7		.4			18 96 %	
8		.3			19	
9		.2			20	
10		.1			21	
					22	
Transect I 1	wetted width	.2			23 Channel Feature:	
2	2 m	.3			24 Run	
3		.3			25	
4	measurements	.4			26 Dissolved Oxygen	
5	.2 m	.4			.	
6	apart	.4			. 8.2 ppm	
7		.4			. 94 %	
8		.4			n	
9		.3				
10		.2				

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 McLeod **Date:** 05-25-07

Organization: SCCT **Position:** Environmental Scientist

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

WBID # 588 Site # 4

		Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect 1	1	wetted width	<.1			1 Channel Feature:	
	2	1m m	<.1			2 Run	
	3		.1			3	
	4	measurements	.1			4 Dissolved Oxygen	
	5	.1 m	.1			5	
	6	apart	.1			6 8.3 ppm	
	7		.1			7 90.1 %	
	8		.2			8	
	9		.2			9	
	10		.1			10	
						11	
Transect 2	1	wetted width	.1			12 Channel Feature:	
	2	5 m	.21			13 Run	
	3		.25			14	
	4	measurements	.24			15 Dissolved Oxygen:	
	5	.5 m	.22			16	
	6	apart	.20			17 8.1 ppm	
	7		.25			18 81.6 %	
	8		.27			19	
	9		.20			20	
	10		.20			21	
						22	
Transect 3	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 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 McLaurs **Date:** 05-25-07

Organization: SETE **Position:** Environmental Scientist

DISSOLVED OXYGEN DATA ENTRY SHEET

Stream ID	WBID	Date	Time	Cross - Section #	Transect #	DO Reading (mg/L)
Hickory Creek		05-16-09	14.00	1	1	11.15
			14.10		2	10.87
			14.20		3	10.43
			14.25		4	10.17
			14.30		5	10.85
			14.35		6	10.57
			14.40		7	10.28
			14.45		8	10.42
			14.50		9	9.30
				Log Jam	10	
					11	
			15.30	2	1	9.69
			15.35		2	9.63
			15.40		3	9.75
			15.45		4	9.78
			15.50		5	9.56
			15.55		6	9.44
			16.00		7	9.02
			16.05		8	9.21
			16.10		9	9.20
			16.15		10	9.13
			16.20		11	9.93
			16.45	3	1	9.06
			16.55		2	9.02
			17.00		3	9.06
			17.05		4	8.94
			17.10		5	8.54
			17.15		6	8.81
			17.25		7	8.78
			17.30		8	9.10
			17.36		9	8.68
			17.45		10	8.56
			17.55		11	9.01

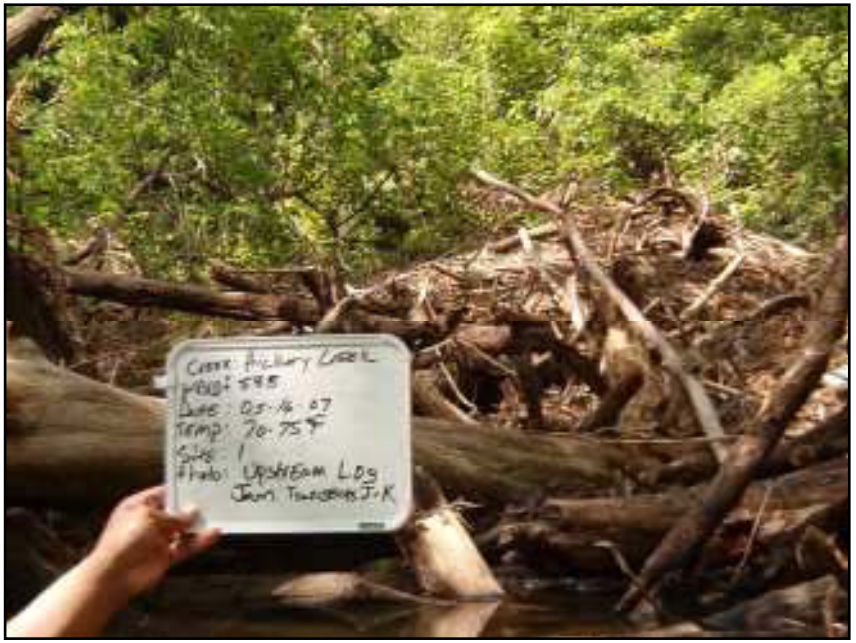
Transect A (Site 1) of Hickory Creek.

Transect A (Site 1) of Hickory Creek.

Transect A (Site 1) of Hickory Creek.

Transect A (Site 1) of Hickory Creek.

Downstream (Site 1) of Hickory Creek.



Upstream (Site 1) of Hickory Creek.

Upstream (Site 1) of Hickory Creek.

Transect A (Site 2) of Hickory Creek.

Transect A (Site 2) of Hickory Creek.

Transect A (Site 2) of Hickory Creek.

Transect A (Site 2) of Hickory Creek.

Downstream (Site 2) of Hickory Creek.

Upstream (Site 2) of Hickory Creek.

Transect A (Site 3) of Hickory Creek.

Transect A (Site 3) of Hickory Creek.

Transect A (Site 3) of Hickory Creek.

Transect A (Site 3) of Hickory Creek.

Downstream (Site 3) of Hickory Creek.

Upstream (Site 3) of Hickory Creek.

Upstream (Site 4) of Hickory Creek.