Missouri
Department of
Natural Resources

Use Attainability Analysis

for

WBID 1445 Little Pomme de Terre River

Submitted by
MEC Water Resources

To
Missouri Department of Natural Resources
Water Protection Program

On
December 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):	L. Pomme De Terre R.
Missouri Water Body Identification (WBID) Number:	1415
8-digit HUC: 10290107	County: Greene and Polk
Upstream Legal Description (from Table H):	25, 31N, 21W
Downstream Legal Description (from Table H):	Mouth
Number of sites evaluated:	4
List all sites numbers, listed consequently upstream to downstream: 1, 2, 3, + 4	

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

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

Facility Name(s) and Permit Number(s): Acres of Shade MHP MO0107646

III. UAA Surveyor (please print legibly)

Name of Surveyor Robert Baron	Telephone Number: (573)634-7078
Organization/Employer: ERC	

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

Signed: Robert R Baron **Date:** 10-12-2007

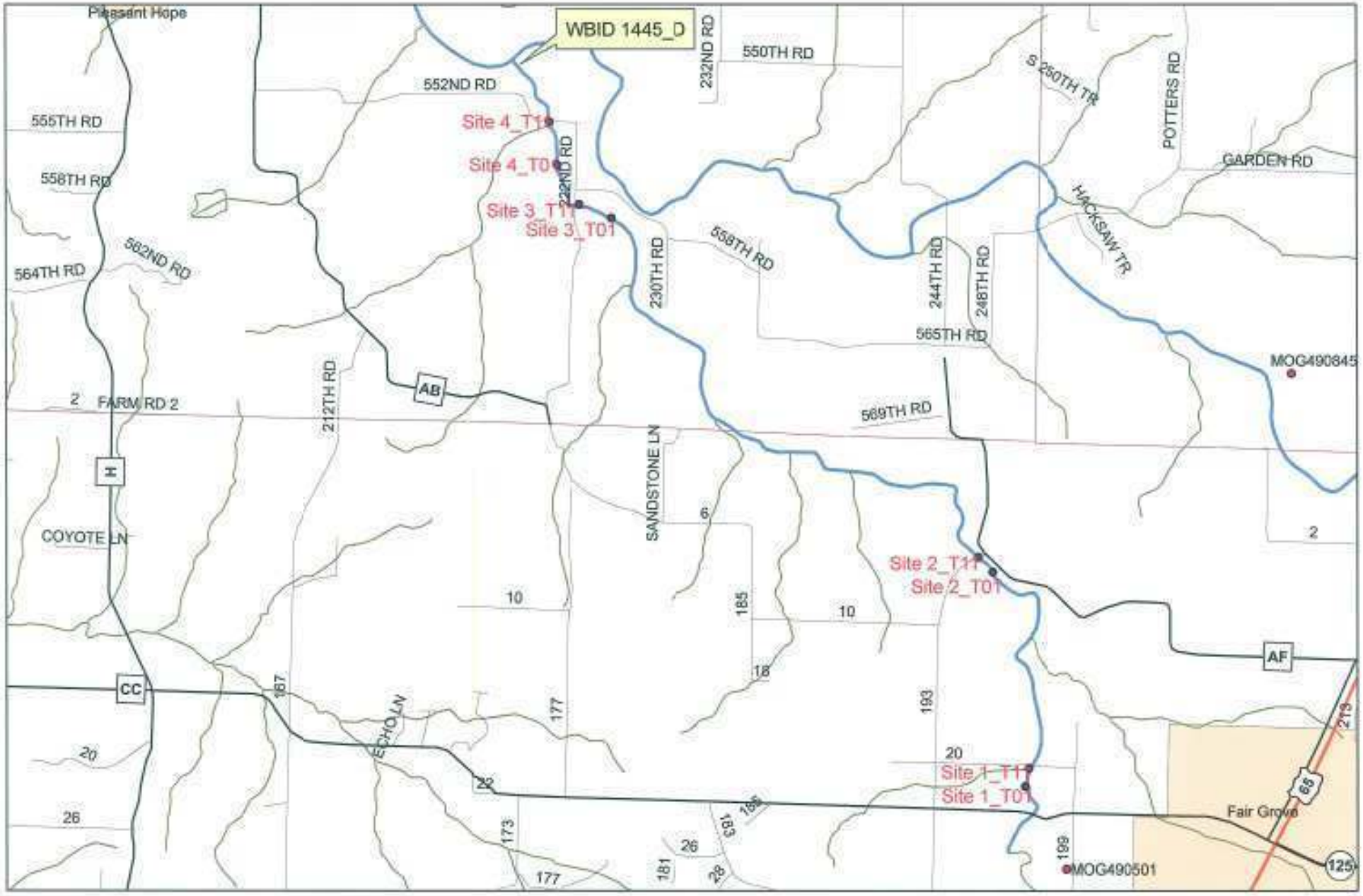
Weather Conditions

Weather conditions ten days pervious to stream assessment are listed in the tables below. The date(s) that the stream was assessed are shaded.

Data from the Midwest Regional Climate Center
Buffalo, Missouri - Station ID: 231087

Date	Precipitation (Inches)	Min. Temp (ºF)	Max. Temp (ºF)	Avg. Temp (ºF)
10/1/2007	0.02	50	84	67
10/2/2007	0	52	79	66
10/3/2007	0.39	52	84	68
10/4/2007	0	52	77	65
10/5/2007	0	65	84	75
10/6/2007	0	67	85	76
10/7/2007	0	67	84	76
10/8/2007	0	65	86	76
10/9/2007	0.08	44	86	65
10/10/2007	-	48	68	58
10/11/2007	0	36	66	51
10/12/2007	0	36	63	50

WBID 1445 L. Pomme de Terre River - Greene and Polk Counties



N
W
E
S

0 850 1,700 3,400 5,100 Meters

Environmental Resources Coalition

WBID # 1445

Site # 01

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 10-12-07 17:18	Site Location Description (e.g., road crossing): upstream of county rd 20
Personnel (Data Collectors): Bob B & Nick N	
Current Weather Conditions: sunny & clear – 72°F	Facility Name: Acres of Shade MHP
Weather Conditions for Past 10 days:	Permit Number: MO0107646
Drought Conditions?: No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 153 0482376	Northing (UTM Y): 4178180	Horizontal Accuracy: (EPE / FOM / PDOP) 6 Meters
Site 11	Easting (UTM X): 153 0482796	Northing (UTM Y): 4178277	Horizontal Accuracy: (EPE / FOM / PDOP) 7 Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
I 90	upstream view @ T11	I 91	downstream view @ T01		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at 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.)

WBID # 1445

Site # 01

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☒ Fence	☐ No trespass sign	☐ Steep slopes	☐ Other:

Comments: woods and pastures

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

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

Comments / Other: None

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

10 % Cobble	25 % Gravel	% Sand	% Silt	% Mud/Clay	65 % Bedrock

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

<15 % aquatic veg cover

Water Characteristics*: (Mark all that apply.)

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

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

WBID # 1445

Site # 01

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

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

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

Comments: (Please record any additional comments here.)

Periphyton on bedrock very slippery

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

Surveyor's Signature: [signature] Date of Survey: 10-12-2007

Organization: ERC Position: Field Manager

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: 1445 Site #: 01

Estimated Channel Incision: .20 (m) (height between low bank width and water)

GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)

01 UTM X: 15 S 0483766 UTM Y: 4138180 +/- 6 (meters)

11 UTM X: 15 S 0483796 UTM Y: 4138337 +/- 7 (meters) 051

Average Stream Width: 7.0 (meters) (To determne Length of Reach)

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

Field Staff: Rob Bacon + Mark Nelson

Dissolved Oxygen

Date: 10-12-07 Time: 17:14

Dissolved Oxygen: 7.16 (mg/L)

Dissolved Oxygen: 73.6 (% sat)

Specific Cond: 462 (µS/cm)

Water Temperature: 16.70 (°C)

Transect Cross-Section

Station	01 Distance (m)	01 Depth (m)	02 Distance (m)	02 Depth (m)	03 Distance (m)	03 Depth (m)	04 Distance (m)	04 Depth (m)	05 Distance (m)	05 Depth (m)	06 Distance (m)	06 Depth (m)	07 Distance (m)	07 Depth (m)	08 Distance (m)	08 Depth (m)	09 Distance (m)	09 Depth (m)	10 Distance (m)	10 Depth (m)	11 Distance (m)	11 Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	.82	.12	.11	.04	.37	.02	1.27	.10	1.02	.01	1.04	.10	1.40	.18	1.51	.17	.30	.04	.55	.01	.72	.06
2	1.64	.30	.22	.04	.74	.02	2.54	.18	2.04	.19	2.08	.25	2.80	.28	3.02	.25	.60	.02	1.10	.01	1.44	.11
3	2.46	.40	.33	.07	1.11	.01	3.81	.15	3.06	.17	3.12	.36	4.20	.28	4.53	.36	.90	.02	1.65	.06	2.16	.23
4	3.28	.47	.44	.07	1.48	.02	5.08	.19	4.08	.16	4.16	.30	5.60	.28	6.04	.33	1.20	.02	2.20	.25	2.88	.21
5	4.10	.46	.55	.07	1.85	.01	6.35	.12	5.10	.13	5.20	.28	7.00	.34	7.55	.42	1.50	.04	2.75	.29	3.60	.18
6	4.92	.54	.66	.06	2.22	.01	7.62	.22	6.12	.09	6.24	.26	8.40	.39	9.06	.32	1.80	.01	3.30	.28	4.32	.18
7	5.74	.49	.77	.05	2.59	.03	8.89	.23	7.14	.15	7.28	.20	9.80	.19	10.57	.33	2.10	.02	3.85	.44	5.04	.18
8	6.56	.38	.88	.04	2.96	.04	10.16	.24	8.16	.18	8.32	.21	11.20	.17	12.08	.25	2.40	.01	4.40	.32	5.76	.16
9	7.38	.45	.99	.03	3.33	.04	11.43	.26	9.18	.22	9.36	.17	12.60	.18	13.59	.22	2.70	.01	4.95	.21	6.48	.11
Right Bank	8.20	0	1.10	0	3.70	0	12.70	0	10.20	0	10.40	0	14.00	0	15.10	0	3.00	0	5.50	0	7.20	0
Feature Type (riffle, run, or pool)	pool		riffle		riffle		run		run		run		run		run		riffle		run		run	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0, record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

Signed: [signature] Date: 10-12-07

WBID # 1445

Site # 07

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 10-12-07 16:11	Site Location Description (e.g., road crossing): upstream of county road 193
Personnel (Data Collectors): Bob Bevan & Kitt N.	
Current Weather Conditions: Sunny, clear ~ 45°F	Facility Name: Acres of Shade MHP
Weather Conditions for Past 10 days: see table	Permit Number: MO 0107646
Drought Conditions?: No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 1550483485	Northing (UTM Y): 4140045	Horizontal Accuracy: (EPE) / FOM / PDOP) 8	Meters
Site 11	Easting (UTM X): 1550483357	Northing (UTM Y): 4140173	Horizontal Accuracy: (EPE) / FOM / PDOP) 8	Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
I 89	downstream view @ T01	I 88	upstream view @ T11		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at 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.)

WBID # 1445

Site # 02

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☒ Fence	☐ No trespass sign	☐ Steep slopes	☐ Other:

Comments: pasture land, and woods
no trespassing sign downstream

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

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

Comments / Other: None

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

10 % Cobble	20 % Gravel	% Sand	% Silt	% Mud/Clay	70 % Bedrock

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

< 10% aquatic vegetation cover

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:

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WBID # 1445

Site # 02

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

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

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

Comments: (Please record any additional comments here.)

bedrock stepping w/ riffle/pool

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

Surveyor's Signature: [illegible] Date of Survey: 10-12-2007

Organization: ERC Position: Field Manager

T01 I89 down
T11 I88 upstream

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: 1445 Site #: 07

Estimated Channel Incision: ~ .20 (m) (height between low bank width and water)

GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)

01 UTM X: 15 S 0487485 UTM Y: 4140045 +/- 8 (meters) 050

11 UTM X: 15 S 0487357 UTM Y: 4140173 +/- 8 (meters) 049

Average Stream Width: 8.0 (meters) (To determine Length of Reach)

Length of Survey Segment: 160 (meters) (20x average stream width)

Field Staff: Bill Bellon and Matt Nelson

Dissolved Oxygen

Date: 10-12-2007 Time: 16:11

Dissolved Oxygen: 8.65 (mg/L)

Dissolved Oxygen: 90.5 (% sat)

Specific Cond: 291 (µS/cm)

Water Temperature: 17.48 (°C)

Transect Cross-Section

Station	01 Distance (m)	01 Depth (m)	02 Distance (m)	02 Depth (m)	03 Distance (m)	03 Depth (m)	04 Distance (m)	04 Depth (m)	05 Distance (m)	05 Depth (m)	06 Distance (m)	06 Depth (m)	07 Distance (m)	07 Depth (m)	08 Distance (m)	08 Depth (m)	09 Distance (m)	09 Depth (m)	10 Distance (m)	10 Depth (m)	11 Distance (m)	11 Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.68	.05	.70	.01	.66	.07	1.34	.11	1.00	.15	.68	.06	.55	.01	.77	.02	.64	.07	.94	.12	1.02	.02
2	1.36	.17	1.40	0	1.32	.10	2.68	.29	2.00	.21	1.36	.14	1.10	.05	1.54	.02	1.28	.23	1.88	.23	2.04	.02
3	2.04	.36	2.10	0	1.98	.24	4.02	.32	3.00	.24	2.04	.14	1.65	.20	2.31	.17	1.92	.33	2.82	.46	3.06	0
4	2.72	.38	2.80	0	2.64	.22	5.36	.33	4.00	.25	2.72	.10	2.20	.08	3.08	.14	2.56	.21	3.76	.49	4.08	0
5	3.40	.26	3.50	.02	3.30	.10	6.70	.30	5.00	.25	3.40	.10	2.75	.02	3.85	.05	3.20	.19	4.70	.51	5.10	0
6	4.08	.15	4.20	0	3.96	.12	8.04	.25	6.00	.20	4.08	.13	3.30	.01	4.62	.04	3.84	.21	5.64	.38	6.12	.02
7	4.76	.10	4.90	0	4.62	.10	9.38	.21	7.00	.13	4.76	.07	3.85	0	5.39	.15	4.48	.24	6.58	.17	7.14	.04
8	5.44	.13	5.60	.03	5.28	.01	10.72	.20	8.00	.08	5.44	.05	4.40	0	6.16	.07	5.12	.12	7.52	.17	8.16	.07
9	6.12	.10	6.30	.10	5.94	.06	12.06	.12	9.00	.07	6.12	.01	4.95	.01	6.93	.14	5.76	.04	8.46	.19	9.18	.03
Right Bank	6.80	0	7.00	0	6.60	0	13.04	0	10.0	0	6.80	0	5.50	0	7.70	0	6.40	0	9.40	0	10.20	0
Feature Type (riffle, run, or pool)	run		riffle		run		run		run		run		riffle		run		pool		pool		riffle	

Note: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
Mark dry depth measurements as 0, record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

Signed: [signature] Date: 10-12-07

WBID # 1445

Site # 03

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 10-11-2007 18:30	Site Location Description (e.g., road crossing): upstream of co. rd. 222
Personnel (Data Collectors): Bob B. & Matt N	
Current Weather Conditions: sunny 65°F, clear	Facility Name: Acres of Shade MHP
Weather Conditions for Past 10 days: see table	Permit Number: MO 0107646
Drought Conditions?: No drought ☑; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site 01	Easting (UTM X): 153 0479875	Northing (UTM Y): 4143241	Horizontal Accuracy: (EPE / FOM / PDOP) 5 Meters
Site 11	Easting (UTM X): 153 0480157	Northing (UTM Y): 4143121	Horizontal Accuracy: (EPE / FOM / PDOP) 8 Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
I 86	upstream view @ T11	I 87	downstream view @ T01		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at 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.)

WBID # 1445

Site # 03

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☐ Steep slopes	☐ Other:

Comments: woods and farm pastures / hay fields

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

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

Comments / Other: None

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

30 % Cobble	15 % Gravel	% Sand	% Silt	% Mud/Clay	65 % Bedrock

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

~ 5-10% aquatic vegetation cover

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:

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WBID # 1445

Site # OR

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

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

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

Comments: (Please record any additional comments here.)

- rock and bedrock very slippery w/ periphyton

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

Surveyor's Signature: [signature] Date of Survey: 10-11-2007

Organization: ERC Position: Field Manager

T11 - I96 upstream
T01 - I97 downstream

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: 1445 Site #: 03

Estimated Channel Incision: .20 (m) (height between low bank width and water)

GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)

01 UTM X: 1550479875 UTM Y: 4143241 +/- 5 (meters) 047

11 UTM X: 1550480157 UTM Y: 4143121 +/- 8 (meters) 048

Average Stream Width: 13.5 (meters)
(To determne Length of Reach)

Length of Survey Segment: 270 (meters)
(20x average stream width)

Field Staff: Bob Bacon and Matt Wolum

Dissolved Oxygen

Date: 10-11-2007 Time: 16:20

Dissolved Oxygen: 10.58 (mg/L)

Dissolved Oxygen: 108.8 (% sat)

Specific Cond: 447 (µS/cm)

Water Temperature: 16.68 (°C)

Transect Cross-Section

Station	01 Distance (m)	01 Depth (m)	02 Distance (m)	02 Depth (m)	03 Distance (m)	03 Depth (m)	04 Distance (m)	04 Depth (m)	05 Distance (m)	05 Depth (m)	06 Distance (m)	06 Depth (m)	07 Distance (m)	07 Depth (m)	08 Distance (m)	08 Depth (m)	09 Distance (m)	09 Depth (m)	10 Distance (m)	10 Depth (m)	11 Distance (m)	11 Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1.22	.05	1.71	.28	1.67	.13	0.45	.15	.99	.22	.92	0	1.27	.12	1.00	.01	.78	.07	.56	.04	.79	.37
2	2.46	.28	3.42	.32	3.34	.32	0.90	.19	1.98	.32	1.84	0	2.54	.19	2.00	0	1.56	.07	1.12	.05	1.58	.42
3	3.69	.35	5.13	.35	5.01	.29	1.35	.12	2.97	.33	2.76	.01	3.81	.24	3.00	.01	2.34	.04	1.68	.05	2.37	.37
4	4.92	.39	6.84	.42	6.68	.21	1.80	.12	3.96	.26	3.68	.09	5.08	.15	4.00	.04	3.12	.01	2.24	.05	3.16	.48
5	6.15	.31	8.55	.40	8.35	.14	2.25	.16	4.95	.19	4.60	.04	6.35	.10	5.00	.04	3.90	.04	2.80	.01	3.95	.48
6	7.38	.29	10.26	.37	10.02	.01	2.70	.10	5.94	.17	5.52	.06	7.62	.16	6.00	.03	4.69	.05	3.36	.06	4.74	.48
7	8.61	.24	11.97	.37	11.69	.05	3.15	.02	6.93	.25	6.44	.04	8.89	.11	7.00	.01	5.46	.02	3.92	.06	5.52	.49
8	9.84	.25	13.68	.30	13.36	.01	3.60	.09	7.92	.15	7.36	.09	10.16	.03	8.00	.02	6.24	.02	4.48	.08	6.32	.34
9	11.07	.22	15.39	.18	15.03	.13	4.05	.18	8.91	.14	8.28	.11	11.43	.03	9.00	.05	7.02	.06	5.04	.02	7.11	.26
Right Bank	12.30	0	17.10	0	16.70	0	4.50	0	9.90	0	9.20	0	12.70	0	10.0	0	7.80	0	5.60	0	7.90	0
Feature Type (riffle, run, or pool)	run		run		run		riffle		run		riffle		run		riffle		riffle		riffle		pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

Signed: [signature] Date: 10-11-07

WBID # 1445

Site # 04

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 10-11-2007 16:52	Site Location Description (e.g., road crossing): Whitecreek Rd Co. rd 552
Personnel (Data Collectors): Bob Beran & Matt Nelson	
Current Weather Conditions: Sunny & 65°F	Facility Name: Acres of Glendale MHP
Weather Conditions for Past 10 days: See table	Permit Number: MN0107644
Drought Conditions?: No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 15s 0439619	Northing (UTM Y): 4143963	Horizontal Accuracy: (EPE / FOM / PDOP) 9	Meters
Site 11	Easting (UTM X): 15s 0439686	Northing (UTM Y): 4143586	Horizontal Accuracy: (EPE / FOM / PDOP) 8	Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
T01-I85	Downstream View	T11-I84	Upstream View		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at 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.)

WBID # 1445

Site # 04

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

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

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☐ Steep slopes	☒ Other:

Comments:
Woods & farm pastures

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

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

Comments / Other:

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

10 % Cobble	15 % Gravel	% Sand	% Silt	% Mud/Clay	75 % Bedrock

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

5% max. 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:

*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.

WBID # 1445

Site # 04

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

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

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

Comments: (Please record any additional comments here.)

Bedrock slippery b/c of periphyton.

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

Surveyor's Signature: [illegible] Date of Survey: 10-11-2007

Organization: ERC Position: Field Tech

T01 _ I85 downstream
T11 _ I84 upstream

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: 1445 Site #: 04

Estimated Channel Incision: .16 (m) (height between low bank width and water)

GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM)

01 UTM X: 155 0479519 UTM Y: 4143963 +/- 9 (meters) 045

11 UTM X: 155 0479686 UTM Y: 4143586 +/- 8 (meters) 0

Average Stream Width: 15.0 (meters) (To determine Length of Reach)

Length of Survey Segment: 300 (meters) (20x average stream width)

Field Staff: Bob Bu[illegible] and Matt Nolan

Dissolved Oxygen

Date: 10-11-07 Time: 16:52

Dissolved Oxygen: 8.61 (mg/L)

Dissolved Oxygen: 91.7 (% sat)

Specific Cond: 439 (µS/cm)

Water Temperature: 18.42 (°C)

Transect Cross-Section

Station	01 Distance (m)	01 Depth (m)	02 Distance (m)	02 Depth (m)	03 Distance (m)	03 Depth (m)	04 Distance (m)	04 Depth (m)	05 Distance (m)	05 Depth (m)	06 Distance (m)	06 Depth (m)	07 Distance (m)	07 Depth (m)	08 Distance (m)	08 Depth (m)	09 Distance (m)	09 Depth (m)	10 Distance (m)	10 Depth (m)	11 Distance (m)	11 Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1.49	.40	1.82	.29	1.45	.50	.45	.10	1.10	.04	2.10	.63	1.86	.47	1.95	.54	1.35	.44	1.22	.19	1.49	.23
2	2.98	.67	3.64	0	2.90	.57	.90	.24	2.20	.13	4.20	.59	3.72	.65	3.90	.64	2.70	.40	2.64	.24	2.98	.20
3	4.47	.75	5.46	.05	4.35	.70	1.35	.28	3.30	.17	6.30	.66	5.58	.70	5.85	.68	4.05	.32	3.96	.25	4.47	.10
4	5.96	1.12	7.28	.39	5.80	.86	1.80	.27	4.40	.21	8.40	.81	7.44	.63	7.80	.76	5.40	.41	5.28	.26	5.96	.07
5	7.45	.90	9.10	.50	7.25	.82	2.25	.38	5.50	.22	10.50	.70	9.30	.67	9.75	.70	6.75	.57	6.60	.38	7.45	.01
6	8.94	.78	10.92	.61	8.70	.81	2.70	.35	6.60	.10	12.60	.59	11.16	.59	11.70	.68	8.10	.53	7.92	.57	8.94	.08
7	10.43	.70	12.74	1.00	10.15	.74	3.15	.36	7.70	.10	14.70	.53	13.02	.46	13.65	.48	9.45	.48	9.24	.44	10.43	.28
8	11.92	.70	14.56	.84	11.60	.73	3.60	.34	8.80	.13	16.80	.51	14.88	.32	15.60	.42	10.80	.36	10.56	.30	11.92	.28
9	13.41	.50	16.38	.71	13.05	.62	4.05	.27	9.90	.03	18.90	.56	16.74	.36	17.55	.21	12.15	.19	11.88	.28	13.41	.18
Right Bank	14.9	0	18.2	0	14.5	0	4.50	0	11.00	0	21.00	0	18.60	0	19.50	0	13.50	0	13.20	0	14.90	0
Feature Type (riffle, run, or pool)	pool		pool		pool		run		run		run		run		run		run		run		riffle	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width.
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All measurements to be taken to the nearest 0.01 meter.

Signed: Bob R Bu[illegible] Date: 10-11-07

WBID# 1445 L. Pomme de Terre River

Site# 1 Photo ID# 1-I90 Upstream

Site# 1 Photo ID# 1-I91 Downstream

Site# 2 Photo ID# 2-I89 Upstream

Site# 2 Photo ID# 2-I88 Downstream

WBID# 1445 L. Pomme de Terre River

Site# 3 Photo ID# 3-I86 Downstream

Site# 3 Photo ID# 3-I87 Upstream

Site# 4 Photo ID# 4-I85 Downstream

Site# 4 Photo ID# 4-I84 Upstream