

Instructions: Bold fields must be completed. Record all measurements in metric units.

**Station Summary**

Stream Name <u>Onion River</u>	Waterbody ID Code <u>51200</u>	SWIMS Station ID <u>603340</u>	FH Database ID <u>11013</u>
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Date (MMDDYYYY) <u>08312017</u>	Station Name <u>@ Cth E of 1</u>
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Latitude - Longitude Determination Method Used <u>SWIMS</u>	Datum Used <u>NAD 1983</u>
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Start Latitude <u>43.71025</u>	Start Longitude <u>-87.9917</u>	End Latitude <u>_____</u>	End Longitude <u>_____</u>	County <u>Sheboygan</u>
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**Water Characteristics**

Time (24-hr clock) <u>1026</u>	Air Temperature (C) <u>_____</u>	Water Temperature (C) <u>14.30</u>	Conductivity (µs/cm) <u>705.9</u>	Transparency (cm) <u>120</u>
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Dissolved Oxygen (mg/l) <u>10.08</u>	Dissolved Oxygen % Saturation <u>100.9 %</u>	pH <u>7.80</u>
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Flow (m³/sec) (from Flow Data sheet) <u>0.273</u>	Water Level (check one - measure distance if Above or Below Normal): <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Below: _____ (m) <input type="checkbox"/> Above: _____ (m)	Water Clarity: <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Turbid <input type="checkbox"/> Stained
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**Channel and Basin Characteristics**

Stream Widths (m) <u>6.0 7.1 7.9 7.2 7.7 7.0 5.8 5.7 5.0 5.6 5.3</u> <u>7.0</u>
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Mean Stream Width (m) <u>(6.44) 6.5 m</u>	Transect Spacing (m) <u>19.5 m</u>	Station Length (m) <u>228 m</u>
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Channel Condition: (check one) <input checked="" type="checkbox"/> Natural <input type="checkbox"/> > 20-year-old Channelization <input type="checkbox"/> 10- to 20-year-old Channelization <input type="checkbox"/> < 10-year-old Channelization <input type="checkbox"/> Concrete Channel
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Percent Channelization <u>0</u>	Sinuosity <u>1.05</u>	Gradient (m/km) <u>0.25</u>	Stream Order <u>3</u>	Basin Area (km²) <u>46.17</u>
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Mean Distance (m) Between:	Bends: <u>93</u>	Riffles: <u>53.5</u>	
Total (Sum) Length (m) of All:	Riffles: <u>17.5</u>	Pools: <u>76.3</u>	Runs: <u>163.2</u>
Mean Length (m) of Individual:	Riffles: <u>8.75</u>	Pools: <u>12.7</u>	Runs: <u>23.3</u>

Person(s) Who Collected Data (Full Names)  
Heller Olson Cox

Comments / Notes  
1 z f      1 z f      1 z f

1.2	.25	.74	12.0	.60	2.11	23.0	.20	1.06
2.4	.3	.86	13.2	.75	1.86	<del>24.2</del>		
3.6	.45	1.05	14.6	.70	1.64	24.2	.25	.18
4.8	.60	1.40	15.8	.60	1.65			
6.0	.65	1.89	17.0	.50	1.37			
7.2	.65	2.17	18.2	.45	0.76			
8.4	.75	2.40	19.4	.30	.98			
9.6	.75	1.74	20.6	.30	.97			
10.8	.70	2.07	21.8	.25	.95			

**Wadable Stream Quantitative Habitat Evaluation**

Form 3600-228 (R 6/07)

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**Flow Data**

**Instructions:** \* In water shallower than 0.8 m, a single velocity measurement is made at a depth of 60% of the distance between the water surface and the bottom of the stream.

In water deeper than 0.8 m, two velocity measurements are made, one at 20% and the other at 80% of the distance between the water surface and the bottom of the stream.

<b>Stream Name</b>	<b>Waterbody ID Code</b>	<b>Date (MMDDYYYY)</b>	<b>Stream Width (ft or m)</b>
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<b>Distance from Left Bank (ft or m)</b>	<b>Depth (ft or m)</b>	<b>Velocity * (ft/sec or m/sec)</b>	<b>Cell Width (ft or m)</b>	<b>Product (Depth x Velocity x Cell Width)</b>

**Flow =  $\Sigma$  Products =** \_\_\_\_\_ <sup>ft<sup>3</sup>/sec</sup> / \_\_\_\_\_ <sup>m<sup>3</sup>/sec</sup>  
If ft<sup>3</sup>/sec, then divide by 35.3 for m<sup>3</sup>/sec  
Report Value to Station Summary \_\_\_\_\_ <sup>m<sup>3</sup>/sec</sup>

Trenches

2	3	4	5	6	7	8	9	10	11	12	
6.5	26	45.5	65	84.5	104	123.5	143	162.5	182	201.5	221

# Wadable Stream Quantitative Habitat Evaluation

Form 3600-228 (R 6/07)

**Map Data**

Stream Name: Onion River @ CTH E      Waterbody ID Code: S1200      Date (MMDDYYYY): 08312017

9.5

Dist. from Start (m)	Stream Feature (Bend, Riffle, Pool, Run, Log Jam, etc.)
0	SOS end riffle / start run
6.5	T1
26	T2
33	End run / start riffle
45.5	T3
48.0	End riffle / start run
65	End run / start pool T4
84.5	T5
86.0	End pool / start run
104	End run / start pool T6
113.7	End pool / start run
122	End run / start riffle
123.5	T7
124.5	End riffle / start pool
143	T8
148.7	End end pool / start run
154	bend (R)
162.5	T9
182	T10
187	End run / start pool
191	End pool / start run
201.5	T11
203	End run / start pool
205.8	End pool / start run
221	T12
231	End run / start pool
247	bend (C) End pool / start run / ED

5.7

11

9

4.3

**Distance Summary**

**Distance Between Riffles (m)**  
Measurements from the Upstream end of one Riffle to the Downstream end of the next Riffle Upstream

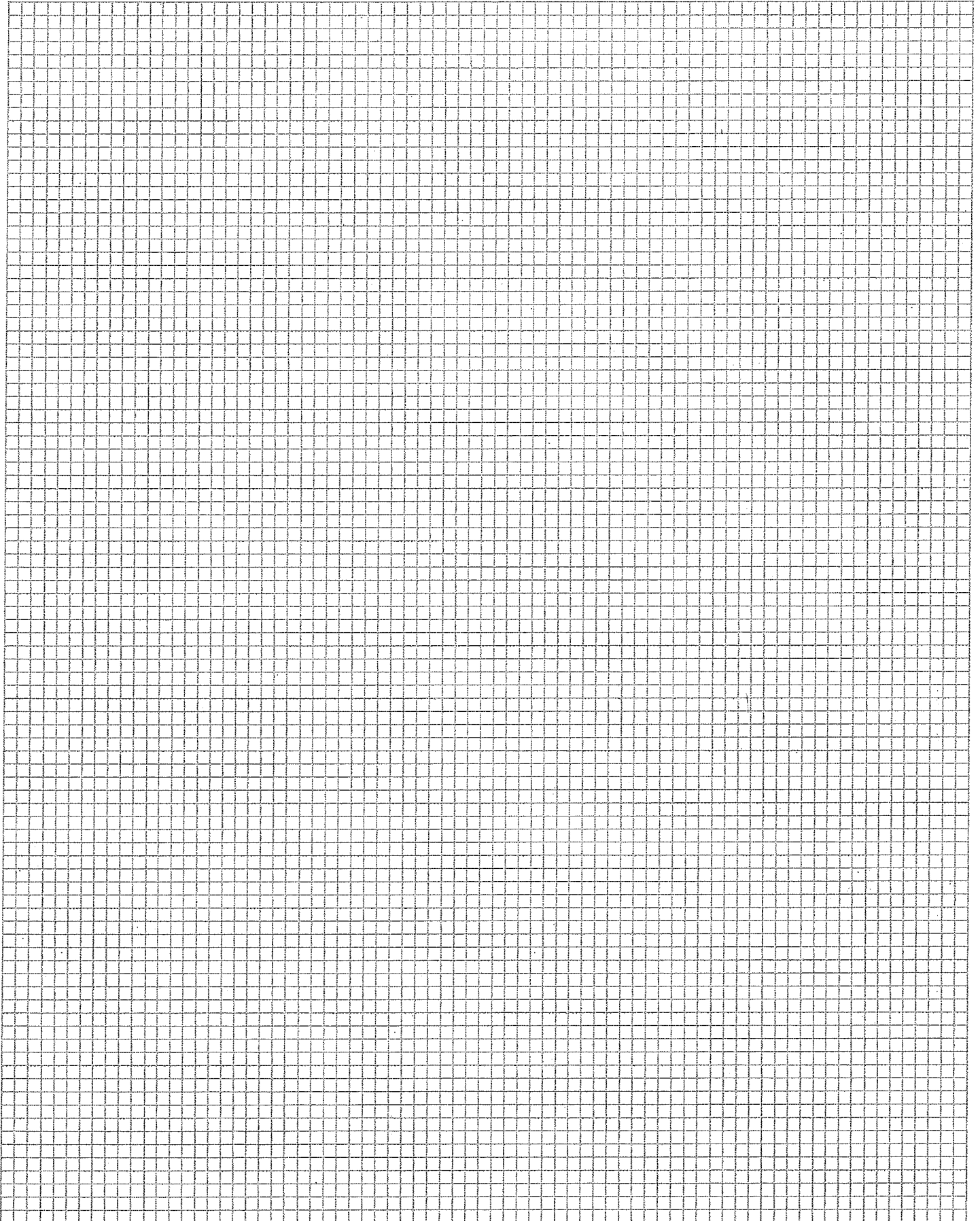
**Distance Between Bends (m)**  
Measured from Center of Bend

Downstream - 1st:	<u>?</u>	Downstream - 1st:	<del>33</del> <u>?</u>
1st - 2nd:	<u>93</u>	1st - 2nd:	<u>33</u>
2nd - 3rd:	<u>        </u>	2nd - 3rd:	<u>74</u>
3rd - 4th:	<u>        </u>	3rd - 4th:	<u>        </u>
4th - 5th:	<u>        </u>	4th - 5th:	<u>        </u>
5th - 6th:	<u>        </u>	5th - 6th:	<u>        </u>
6th - 7th:	<u>        </u>	6th - 7th:	<u>        </u>
7th - 8th:	<u>        </u>	7th - 8th:	<u>        </u>
8th - 9th:	<u>        </u>	8th - 9th:	<u>        </u>
9th - 10th:	<u>        </u>	9th - 10th:	<u>        </u>
10th - 11th:	<u>        </u>	10th - 11th:	<u>        </u>
11th - Upstream:	<u>        </u>	11th - Upstream:	<u>        </u>
Sum:	<u>93</u>	Sum:	<u>107</u>
Mean:	<u>93</u>	Mean:	<u>53.5</u>

**Length (m) of Individual Riffles, Pools and Runs**

1st Riffle:	<u>15</u>	1st Pool:	<u>21</u>	1st Run:	<u>33</u>
2nd Riffle:	<u>2.5</u>	2nd Pool:	<u>8.3</u>	2nd Run:	<u>17</u>
3rd Riffle:	<u>        </u>	3rd Pool:	<u>24.2</u>	3rd Run:	<u>18</u>
4th Riffle:	<u>        </u>	4th Pool:	<u>4</u>	4th Run:	<u>9.7</u>
5th Riffle:	<u>        </u>	5th Pool:	<u>2.8</u>	5th Run:	<u>38.3</u>
6th Riffle:	<u>        </u>	6th Pool:	<u>16</u>	6th Run:	<u>22</u>
7th Riffle:	<u>        </u>	7th Pool:	<u>        </u>	7th Run:	<u>25.2</u>
8th Riffle:	<u>        </u>	8th Pool:	<u>        </u>	8th Run:	<u>        </u>
9th Riffle:	<u>        </u>	9th Pool:	<u>        </u>	9th Run:	<u>        </u>
10th Riffle:	<u>        </u>	10th Pool:	<u>        </u>	10th Run:	<u>        </u>
11th Riffle:	<u>        </u>	11th Pool:	<u>        </u>	11th Run:	<u>        </u>
Sum:	<u>17.5</u>	Sum:	<u>76.3</u>	Sum:	<u>163.2</u>
Mean:	<u>8.75</u>	Mean:	<u>12.7</u>	Mean:	<u>23.3</u>

Draw map of station on back of this sheet (optional)



# Wadable Stream Quantitative Habitat Evaluation

Form 3600-228 (R 6/07)

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## Transect Data

Stream Name: <u>Onion @ E</u>	Waterbody ID Code: <u>51200</u>	Date (MMDDYYYY): <u>08 31 2017</u>	Transect No.: <u>531</u>
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Distance from Start (m): <u>6.5</u>	Stream Width (m): <u>at 6.0</u>	Habitat Type: <input type="checkbox"/> Riffle <input type="checkbox"/> Pool <input checked="" type="checkbox"/> Run	Bankfull Depth (m) (optional): <u>.24</u>	Bankfull Width (m) (optional): <u>6.2</u>
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	Deepest Point	Channel Position (Fifths of Current Stream Width)			
		1.2 1/5	2.4 2/5	3.6 3/5	4.8 4/5
Water Depth (m)	<u>.44</u>	<u>.44</u>	<u>.38</u>	<u>.32</u>	<u>.15</u>
Depth of Fines and Water (m)	<u>.48</u>	<u>.38</u>	<u>.32</u>	<u>.32</u>	<u>.17</u>
Embeddedness (nearest 10%) of Course Gravel and Rubble/Cobble	<u>60</u>	<u>30</u>	<u>10</u>	<u>40</u>	<u>40</u>

### Percent (nearest 5%) of Stream Bottom Covered Section Total Must = 100%

	1.2 1/5	2.4 2/5	3.6 3/5	4.8 4/5
Bedrock (solid slab)				
Boulder (261 mm - 4.1 m)				
Rubble / Cobble (65 - 260 mm)	<u>20</u>		<u>50</u>	<u>10</u>
Gravel (2 - 64 mm)	<u>30</u>	<u>80</u>	<u>40</u>	<u>10</u>
Sand (0.062 - 1.9 mm)		<u>20</u>	<u>10</u>	<u>25</u>
Silt (0.004 - 0.061 mm)	<u>50</u>			<u>25</u>
Clay				
Detritus				<u>30</u>
Other - Specify: _____				

### Percent (nearest 10%) of Stream Bottom Covered

	1.2 1/5	2.4 2/5	3.6 3/5	4.8 4/5
Algae (attached & fila.)	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Macrophytes	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Canopy / Shading (circle one)	<u>70</u>	<u>40</u>	<u>60</u>	<u>80</u>

### Cover for Adult Gamefish: Length (nearest 0.01 m) of transect within 0.15 m upstream or downstream in water at least 0.20 m in depth

Undercut Banks	Overhanging Vegetation at least 0.20 m overhang	Woody Debris	Other Debris	Boulder	Submerged Macrophytes	Emergent Macrophytes at least 0.20 m deep	Other - Specify:

### Bank Erosion: Length of Continuous Bare Soil (nearest 0.01 m) within 1 m of stream

Left: <u>0</u> (m) Right: <u>0</u> (m)	% of Eroded Bank to the crest or within 5 m of stream edge Left: <u>0</u> (%) Right: <u>0</u> (%)
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### Riparian Land Use: Percent (nearest 10%) of Bank within 5 m of stream edge, along transect Section Total Must = 100%

Cropland	Pasture	Barnyard	Developed	Meadow	Shrubs	Woodland	Wetland	Exposed Rock	Other - Specify:
					<u>20</u>	<u>70</u>	<u>10</u>		

### Riparian Buffer Width: Length (nearest 1.0 m) of Undisturbed Land Uses along transect, within 10 m of stream

Left: 110 (m) Right: 110 (m)

# Wadable Stream Quantitative Habitat Evaluation

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## Transect Data

Stream Name <i>Onion E</i>	Waterbody ID Code <i>51200</i>	Date (MMDDYYYY) <i>08 31 2017</i>	Transect No. <i>2</i>
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Distance from Start (m) <i>26</i>	Stream Width (m) <i>7.1</i>	Habitat Type: <input type="checkbox"/> Riffle <input type="checkbox"/> Pool <input checked="" type="checkbox"/> Run	Bankfull Depth (m) (optional) <i>.38</i>	Bankfull Width (m) (optional) <i>9.1</i>
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	Deepest Point	Channel Position (Fifths of Current Stream Width)			
		1.1 1/5	2.8 2/5	4.2 3/5	5.6 4/5
Water Depth (m)	<i>.56</i>	<i>.56</i>	<i>.37</i>	<i>.31</i>	<i>.19</i>
Depth of Fines and Water (m)		<i>.56</i>	<i>.37</i>	<i>.31</i>	<i>.28</i>
Embeddedness (nearest 10%) of Course Gravel and Rubble/Cobble		<i>30</i>	<i>50</i>	<i>100</i>	<i>100</i>

## Percent (nearest 5%) of Stream Bottom Covered Section Total Must = 100%

	1.1 1/5	2.8 2/5	4.2 3/5	5.6 4/5
Bedrock (solid slab)				
Boulder (261 mm - 4.1 m)				
Rubble / Cobble (65 - 260 mm)	<i>20</i>	<i>50</i>	<i>20</i>	
Gravel (2 - 64 mm)	<i>40</i>	<i>10</i>	<i>30</i>	<i>10</i>
Sand (0.062 - 1.9 mm)	<i>60</i>	<i>40</i>	<i>10</i>	<i>10</i>
Silt (0.004 - 0.061 mm)			<i>40</i>	<i>80</i>
Clay				
Detritus				
Other - Specify:				

## Percent (nearest 10%) of Stream Bottom Covered

	1.1 1/5	2.8 2/5	4.2 3/5	5.6 4/5
Algae (attached & fila.)	<i>0</i>	<i>10</i>	<i>0</i>	<i>0</i>
Macrophytes	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
Canopy / Shading (circle one)	<i>0</i>	<i>0</i>	<i>10</i>	<i>10</i>

## Cover for Adult Gamefish: Length (nearest 0.01 m) of transect within 0.15 m upstream or downstream in water at least 0.20 m in depth

Undercut Banks	Overhanging Vegetation at least 0.20 m overhang	Woody Debris	Other Debris	Boulder	Submerged Macrophytes	Emergent Macrophytes at least 0.20 m deep	Other - Specify:
							<i>Limbs .8</i>

Bank Erosion: Length of Continuous Bare Soil (nearest 0.01 m) within 1 m of stream

Left: *0* (m) Right: *5* (m)      % of Eroded Bank to the crest or within 5 m of stream edge

Left: *0* (%) Right: *0* (%)

## Riparian Land Use: Percent (nearest 10%) of Bank within 5 m of stream edge, along transect Section Total Must = 100%

Cropland	Pasture	Barnyard	Developed	Meadow	Shrubs	Woodland	Wetland	Exposed Rock	Other - Specify:
					<i>10</i>	<i>40</i>	<i>50</i>		<del>Limbs .8</del>

Riparian Buffer Width: Length (nearest 1.0 m) of Undisturbed Land Uses along transect, within 10 m of stream

Left: *40* (m) Right: *110* (m)

# Wadable Stream Quantitative Habitat Evaluation

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## Transect Data

Stream Name: <u>Onion @ E</u>	Waterbody ID Code: <u>51200</u>	Date (MMDDYYYY): <u>08312017</u>	Transect No.: <u>3</u>
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Distance from Start (m): <u>45.5</u>	Stream Width (m): <del>8.2</del> <u>7.9</u>	Habitat Type: <input checked="" type="checkbox"/> Riffle <input type="checkbox"/> Pool <input type="checkbox"/> Run	Bankfull Depth (m) (optional): <u>.5</u>	Bankfull Width (m) (optional): <u>9.4</u>
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	Deepest Point	Channel Position (Fifths of Current Stream Width)							
		1/5	1.5	3.0	2/5	4.5	3/5	6.0	4/5
Water Depth (m)	<u>.28</u>	<u>.28</u>	<u>.28</u>	<u>.28</u>	<u>.21</u>	<u>.21</u>	<u>.14</u>	<u>.14</u>	<u>.14</u>
Depth of Fines and Water (m)		<u>.28</u>	<u>.28</u>	<u>.28</u>	<u>.21</u>	<u>.21</u>	<u>.14</u>	<u>.14</u>	<u>.14</u>
Embeddedness (nearest 10%) of Course Gravel and Rubble/Cobble		<u>30</u>	<u>20</u>	<u>20</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>

## Percent (nearest 5%) of Stream Bottom Covered Section Total Must = 100%

Bedrock (solid slab)					
Boulder (261 mm - 4.1 m)				<u>60</u>	
Rubble / Cobble (65 - 260 mm)	<u>70</u>	<u>80</u>	<u>20</u>	<u>80</u>	
Gravel (2 - 64 mm)			<u>20</u>	<u>10</u>	
Sand (0.062 - 1.9 mm)	<u>30</u>	<u>20</u>			
Silt (0.004 - 0.061 mm)					<u>10</u>
Clay					
Detritus					
Other - Specify: _____					

## Percent (nearest 10%) of Stream Bottom Covered

Algae (attached & fila.)	<u>10</u>	<u>20</u>	<u>0</u>	<u>0</u>
Macrophytes	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Canopy / Shading (circle one)	<u>0</u>	<u>0</u>	<u>40</u>	<u>100</u>

## Cover for Adult Gamefish: Length (nearest 0.01 m) of transect within 0.15 m upstream or downstream in water at least 0.20 m in depth

Undercut Banks	Overhanging Vegetation at least 0.20 m overhang	Woody Debris	Other Debris	Boulder	Submerged Macrophytes	Emergent Macrophytes at least 0.20 m deep	Other - Specify:

Bank Erosion: Length of Continuous Bare Soil (nearest 0.01 m) within 1 m of stream	% of Eroded Bank to the crest or within 5 m of stream edge
Left: <u>0</u> (m) Right: <u>1.0</u> (m)	Left: <u>0</u> (%) Right: <u>0</u> (%)

## Riparian Land Use: Percent (nearest 10%) of Bank within 5 m of stream edge, along transect Section Total Must = 100%

Cropland	Pasture	Barnyard	Developed	Meadow	Shrubs	Woodland	Wetland	Exposed Rock	Other - Specify:
					<u>10</u>	<u>40</u>	<u>50</u>		

Riparian Buffer Width: Length (nearest 1.0 m) of Undisturbed Land Uses along transect, within 10 m of stream

Left: 4.0 (m) Right: 4.0 (m) \* 9 - island

# Wadable Stream Quantitative Habitat Evaluation

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## Transect Data

Stream Name: <u>Orion @ E</u>	Waterbody ID Code: <u>51200</u>	Date (MMDDYYYY): <u>08312017</u>	Transect No.: <u>4</u>
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Distance from Start (m): <u>65</u>	Stream Width (m): <u>7.2</u>	Habitat Type: <input type="checkbox"/> Riffle <input checked="" type="checkbox"/> Pool <input type="checkbox"/> Run	Bankfull Depth (m) (optional): <u>.27</u>	Bankfull Width (m) (optional): <u>8.6</u>
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	Deepest Point	Channel Position (Fifths of Current Stream Width)			
		1.4 1/5	2.8 2/5	4.2 3/5	5.6 4/5
Water Depth (m)	<u>.48</u>	<u>.34</u>	<u>.47</u>	<u>.48</u>	<u>.36</u>
Depth of Fines and Water (m)		<u>.34</u>	<u>.49</u>	<u>.49</u>	<u>.36</u>
Embeddedness (nearest 10%) of Course Gravel and Rubble/Cobble		<u>20</u>	<u>80</u>	<u>70</u>	<u>60</u>

## Percent (nearest 5%) of Stream Bottom Covered Section Total Must = 100%

	1.4 1/5	2.8 2/5	4.2 3/5	5.6 4/5
Bedrock (solid slab)				
Boulder (261 mm - 4.1 m)	<u>70</u>			
Rubble / Cobble (65 - 260 mm)				<u>20</u>
Gravel (2 - 64 mm)		<u>50</u>	<u>70</u>	<u>30</u>
Sand (0.062 - 1.9 mm)	<u>10</u>	<u>30</u>		<u>20</u>
Silt (0.004 - 0.061 mm)	<u>10</u>	<u>20</u>	<u>30</u>	<u>30</u>
Clay				
Detritus	<u>10</u>			
Other - Specify: _____				

## Percent (nearest 10%) of Stream Bottom Covered

	1.4 1/5	2.8 2/5	4.2 3/5	5.6 4/5
Algae (attached & fila.)	<u>10</u>	<u>0</u>	<u>0</u>	<u>0</u>
Macrophytes	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Canopy / Shading (circle one)	<u>0</u>	<u>0</u>	<u>40</u>	<u>90</u>

## Cover for Adult Gamefish: Length (nearest 0.01 m) of transect within 0.15 m upstream or downstream in water at least 0.20 m in depth

Undercut Banks	Overhanging Vegetation at least 0.20 m overhang	Woody Debris	Other Debris	Boulder	Submerged Macrophytes	Emergent Macrophytes at least 0.20 m deep	Other - Specify:
				<u>.3</u>			

Bank Erosion: Length of Continuous Bare Soil (nearest 0.01 m) within 1 m of stream

Left: 0 (m) Right: 45 (m)      % of Eroded Bank to the crest or within 5 m of stream edge

Left: 0 (%) Right: 0 (%)

## Riparian Land Use: Percent (nearest 10%) of Bank within 5 m of stream edge, along transect Section Total Must = 100%

Cropland	Pasture	Barnyard	Developed	Meadow	Shrubs	Woodland	Wetland	Exposed Rock	Other - Specify:
						<u>100</u>			

Riparian Buffer Width: Length (nearest 1.0 m) of Undisturbed Land Uses along transect, within 10 m of stream

Left: 410 (m) Right: 410 (m)



# Wadable Stream Quantitative Habitat Evaluation

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## Transect Data

Stream Name: Onion @ E Waterbody ID Code: 51200 Date (MMDDYYYY): 08312017 Transect No.: 5

Distance from Start (m): 84.5 Stream Width (m): 7.7 Habitat Type:  Riffle  Pool  Run Bankfull Depth (m) (optional): 0.34 Bankfull Width (m) (optional): 9.7

	Deepest Point	Channel Position (Fifths of Current Stream Width)			
		1.5 1/5	3 2/5	4.5 3/5	6 4/5
Water Depth (m)	<u>0.46</u>	<u>0.34</u>	<u>0.40</u>	<u>0.45</u>	<u>0.46</u>
Depth of Fines and Water (m)		<u>0.34</u>	<u>0.42</u>	<u>0.45</u>	<u>0.46</u>
Embeddedness (nearest 10%) of Course Gravel and Rubble/Cobble		<u>80</u>	<u>90</u>	<u>30</u>	<u>60</u>

## Percent (nearest 5%) of Stream Bottom Covered Section Total Must = 100%

Bedrock (solid slab)				
Boulder (261 mm - 4.1 m)			<u>20</u>	
Rubble / Cobble (65 - 260 mm)				<u>10</u>
Gravel (2 - 64 mm)	<u>60</u>	<u>50</u>	<u>10</u>	<u>40</u>
Sand (0.062 - 1.9 mm)	<u>10</u>	<u>40</u>	<u>20</u>	<u>20</u>
Silt (0.004 - 0.061 mm)	<u>30</u>	<u>10</u>		<u>30</u>
Clay				
Detritus				
Other - Specify: _____				

## Percent (nearest 10%) of Stream Bottom Covered

Algae (attached & fila.)	<u>0</u>	<u>0</u>	<u>80</u>	<u>0</u>
Macrophytes	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Canopy / Shading (circle one)	<u>0</u>	<u>0</u>	<u>10</u>	<u>10</u>

## Cover for Adult Gamefish: Length (nearest 0.01 m) of transect within 0.15 m upstream or downstream in water at least 0.20 m in depth:

Undercut Banks	Overhanging Vegetation at least 0.20 m overhang	Woody Debris	Other Debris	Boulder	Submerged Macrophytes	Emergent Macrophytes at least 0.20 m deep	Other - Specify:

## Bank Erosion: Length of Continuous Bare Soil (nearest 0.01 m) within 1 m of stream

Left: 0 (m) Right: 0 (m) % of Eroded Bank to the crest or within 5 m of stream edge Left: 0 (%) Right: 0 (%)

## Riparian Land Use: Percent (nearest 10%) of Bank within 5 m of stream edge, along transect Section Total Must = 100%

Cropland	Pasture	Barnyard	Developed	Meadow	Shrubs	Woodland	Wetland	Exposed Rock	Other - Specify:
					<u>80</u>	<u>20</u>			

## Riparian Buffer Width: Length (nearest 1.0 m) of Undisturbed Land Uses along transect, within 10 m of stream

Left: 410 (m) Right: 410 (m)

# Wadable Stream Quantitative Habitat Evaluation

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## Transect Data

Stream Name: <u>Onion @ E</u>	Waterbody ID Code: <u>51200</u>	Date (MMDDYYYY): <u>08312017</u>	Transect No.: <u>6</u>
Distance from Start (m): <u>104</u>	Stream Width (m): <u>7.0</u>	Habitat Type: <input type="checkbox"/> Riffle <input checked="" type="checkbox"/> Pool <input type="checkbox"/> Run	Bankfull Depth (m) (optional): <u>.46</u>
			Bankfull Width (m) (optional): <u>8.1</u>

	Deepest Point	Channel Position (Fifths of Current Stream Width)			
		1/5	2/5	3/5	4/5
Water Depth (m)	<u>.53</u>	<u>.28</u>	<u>.39</u>	<u>.53</u>	<u>.38</u>
Depth of Fines and Water (m)		<u>.29</u>	<u>.41</u>	<u>.53</u>	<u>.41</u>
Embeddedness (nearest 10%) of Course Gravel and Rubble/Cobble		<u>100</u>	<u>80</u>	<u>50</u>	<u>90</u>

## Percent (nearest 5%) of Stream Bottom Covered Section Total Must = 100%

	1/5	2/5	3/5	4/5
Bedrock (solid slab)	<u>1</u>			
Boulder (261 mm - 4.1 m)				
Rubble / Cobble (65 - 260 mm)	<u>10</u>	<u>30</u>	<u>40</u>	
Gravel (2 - 64 mm)	<u>10</u>	<u>30</u>	<u>10</u>	<u>40</u>
Sand (0.062 - 1.9 mm)	<u>30</u>	<u>40</u>	<u>50</u>	<u>10</u>
Silt (0.004 - 0.061 mm)	<u>40</u>			<u>40</u>
Clay				
Detritus	<u>10</u>			
Other - Specify: <u>wood</u>				<u>10</u>

## Percent (nearest 10%) of Stream Bottom Covered

	1/5	2/5	3/5	4/5
Algae (attached & fila.)	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Macrophytes	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Canopy / Shading (circle one)	<u>0</u>	<u>0</u>	<u>0</u>	<u>60</u>

## Cover for Adult Gamefish: Length (nearest 0.01 m) of transect within 0.15 m upstream or downstream in water at least 0.20 m in depth

Undercut Banks	Overhanging Vegetation at least 0.20 m overhang	Woody Debris	Other Debris	Boulder	Submerged Macrophytes	Emergent Macrophytes at least 0.20 m deep	Other - Specify:

Bank Erosion: Length of Continuous Bare Soil (nearest 0.01 m) within 1 m of stream

Left: 0 (m) Right: 0 (m)      % of Eroded Bank to the crest or within 5 m of stream edge

Left: 0 (%) Right: 0 (%)

## Riparian Land Use: Percent (nearest 10%) of Bank within 5 m of stream edge, along transect Section Total Must = 100%

Cropland	Pasture	Barnyard	Developed	Meadow	Shrubs	Woodland	Wetland	Exposed Rock	Other - Specify:
					<u>60</u>	<u>30</u>	<u>10</u>		

Riparian Buffer Width: Length (nearest 1.0 m) of Undisturbed Land Uses along transect, within 10 m of stream

Left: 110 (m) Right: 110 (m)

# Wadable Stream Quantitative Habitat Evaluation

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## Transect Data

Stream Name: <u>Onion @ E</u>	Waterbody ID Code: <u>51200</u>	Date (MMDDYYYY): <u>08312017</u>	Transect No.: <u>7</u>
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Distance from Start (m): <u>123.5</u>	Stream Width (m): <u>5.8</u>	Habitat Type: <input checked="" type="checkbox"/> Riffle <input type="checkbox"/> Pool <input type="checkbox"/> Run	Bankfull Depth (m) (optional): <u>0.58</u>	Bankfull Width (m) (optional): <u>6.6</u>
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	Deepest Point	Channel Position (Fifths of Current Stream Width)			
		1.2 1/5	2.4 2/5	3.6 3/5	4.8 4/5
Water Depth (m)	<u>0.30</u>	<u>0.24</u>	<u>0.28</u>	<u>0.20</u>	<u>0.3</u>
Depth of Fines and Water (m)		<u>0.24</u>	<u>0.28</u>	<u>0.20</u>	<u>0.39</u>
Embeddedness (nearest 10%) of Course Gravel and Rubble/Cobble		<u>10</u>	<u>10</u>	<u>0</u>	<u>—</u>

### Percent (nearest 5%) of Stream Bottom Covered Section Total Must = 100%

	1.2 1/5	2.4 2/5	3.6 3/5	4.8 4/5
Bedrock (solid slab)				
Boulder (261 mm - 4.1 m)	<u>50</u>		<u>20</u>	
Rubble / Cobble (65 - 260 mm)	<u>50</u>	<u>60</u>	<u>70</u>	
Gravel (2 - 64 mm)		<u>30</u>		
Sand (0.062 - 1.9 mm)	<u>20</u>	<u>10</u>	<u>10</u>	<u>30</u>
Silt (0.004 - 0.061 mm)				<u>40</u>
Clay				
Detritus				
Other - Specify: <u>wood</u>				<u>30</u>

### Percent (nearest 10%) of Stream Bottom Covered

	1.2 1/5	2.4 2/5	3.6 3/5	4.8 4/5
Algae (attached & fila.)	<u>10</u>	<u>30</u>	<u>50</u>	<u>0</u>
Macrophytes	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Canopy / Shading (circle one)	<u>0</u>	<u>0</u>	<u>0</u>	<u>100</u>

### Cover for Adult Gamefish: Length (nearest 0.01 m) of transect within 0.15 m upstream or downstream in water at least 0.20 m in depth

Undercut Banks	Overhanging Vegetation at least 0.20 m overhang	Woody Debris	Other Debris	Boulder	Submerged Macrophytes	Emergent Macrophytes at least 0.20 m deep	Other - Specify:
	<u>1.8</u>						

**Bank Erosion:** Length of Continuous Bare Soil (nearest 0.01 m) within 1 m of stream

Left: 0 (m)   Right: 0 (m)   % of Eroded Bank to the crest or within 5 m of stream edge

Left: 0 (%)   Right: 0 (%)

### Riparian Land Use: Percent (nearest 10%) of Bank within 5 m of stream edge, along transect Section Total Must = 100%

Cropland	Pasture	Barnyard	Developed	Meadow	Shrubs	Woodland	Wetland	Exposed Rock	Other - Specify:
				<u>30</u>	<u>30</u>	<u>10</u>	<u>40</u>		

**Riparian Buffer Width:** Length (nearest 1.0 m) of Undisturbed Land Uses along transect, within 10 m of stream

Left: 110 (m)   Right: 110 (m)

# Wadable Stream Quantitative Habitat Evaluation

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## Transect Data

Stream Name: <u>Onion @ E</u>	Waterbody ID Code: <u>57200</u>	Date (MMDDYYYY): <u>08312007</u>	Transect No.: <u>8</u>
Distance from Start (m): <u>143</u>	Stream Width (m): <u>5.7</u>	Habitat Type: <input type="checkbox"/> Riffle <input checked="" type="checkbox"/> Pool <input checked="" type="checkbox"/> Run	Bankfull Depth (m) (optional): <u>.51</u>
		Bankfull Width (m) (optional): <u>6.1</u>	

	Deepest Point	Channel Position (Fifths of Current Stream Width)			
		1.1 1/5	2.2 2/5	3.3 3/5	4.4 4/5
Water Depth (m)	<u>.90</u>	<u>.9</u>	<u>.62</u>	<u>.45</u>	<u>.33</u>
Depth of Fines and Water (m)		<u>.9</u>	<u>.62</u>	<u>.45</u>	<u>.39</u>
Embeddedness (nearest 10%) of Course Gravel and Rubble/Cobble			<u>40</u>	<u>60</u>	<u>100</u>

## Percent (nearest 5%) of Stream Bottom Covered Section Total Must = 100%

	1.1 1/5	2.2 2/5	3.3 3/5	4.4 4/5
Bedrock (solid slab)				
Boulder (261 mm - 4.1 m)	<u>100</u>			
Rubble / Cobble (65 - 260 mm)		<u>60</u>	<u>10</u>	
Gravel (2 - 64 mm)		<u>10</u>	<u>50</u>	<u>20</u>
Sand (0.062 - 1.9 mm)		<u>30</u>	<u>30</u>	<u>10</u>
Silt (0.004 - 0.061 mm)			<u>10</u>	<u>20</u>
Clay				
Detritus				
Other - Specify: _____				

## Percent (nearest 10%) of Stream Bottom Covered

	1.1 1/5	2.2 2/5	3.3 3/5	4.4 4/5
Algae (attached & fila.)	<u>10</u>	<u>10</u>	<u>20</u>	<u>0</u>
Macrophytes	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Canopy / Shading (circle one)	<u>50</u>	<u>0</u>	<u>0</u>	<u>10</u>

## Cover for Adult Gamefish: Length (nearest 0.01 m) of transect within 0.15 m upstream or downstream in water at least 0.20 m in depth

Undercut Banks	Overhanging Vegetation at least 0.20 m overhang	Woody Debris	Other Debris	Boulder	Submerged Macrophytes	Emergent Macrophytes at least 0.20 m deep	Other - Specify:
				<u>5</u>			

**Bank Erosion:** Length of Continuous Bare Soil (nearest 0.01 m) within 1 m of stream

Left: 0 (m) Right: 0 (m)      % of Eroded Bank to the crest or within 5 m of stream edge

Left: 0 (%) Right: 0 (%)

## Riparian Land Use: Percent (nearest 10%) of Bank within 5 m of stream edge, along transect Section Total Must = 100%

Cropland	Pasture	Barnyard	Developed	Meadow	Shrubs	Woodland	Wetland	Exposed Rock	Other - Specify:
				<u>10</u>	<u>40</u>	<u>50</u>	<u>10</u>		

**Riparian Buffer Width:** Length (nearest 1.0 m) of Undisturbed Land Uses along transect, within 10 m of stream

Left: 410 (m) Right: 410 (m)

# Wadable Stream Quantitative Habitat Evaluation

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## Transect Data

Stream Name: <u>Onion @ E</u>	Waterbody ID Code: <u>51200</u>	Date (MMDDYYYY): <u>08312011</u>	Transect No.: <u>9</u>
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Distance from Start (m): <u>162.5</u>	Stream Width (m): <u>5</u>	Habitat Type: <input type="checkbox"/> Riffle <input type="checkbox"/> Pool <input checked="" type="checkbox"/> Run	Bankfull Depth (m) (optional): <u>.48</u>	Bankfull Width (m) (optional): <u>6.7</u>
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	Deepest Point	Channel Position (Fifths of Current Stream Width)			
		1 1/5	2 2/5	3 3/5	4 4/5
Water Depth (m)	<u>.70</u>	<u>.7</u>	<u>.54</u>	<u>.40</u>	<u>.35</u>
Depth of Fines and Water (m)		<u>.7</u>	<u>.54</u>	<u>.40</u>	<u>.35</u>
Embeddedness (nearest 10%) of Course Gravel and Rubble/Cobble		<u>10</u>	<u>50</u>	<u>20</u>	<u>70</u>

### Percent (nearest 5%) of Stream Bottom Covered Section Total Must = 100%

	1 1/5	2 2/5	3 3/5	4 4/5
Bedrock (solid slab)				
Boulder (261 mm - 4.1 m)	<u>80</u>			
Rubble / Cobble (65 - 260 mm)		<u>60</u>	<u>40</u>	
Gravel (2 - 64 mm)		<u>10</u>	<u>20</u>	<u>70</u>
Sand (0.062 - 1.9 mm)	<u>10</u>	<u>30</u>	<u>30</u>	
Silt (0.004 - 0.061 mm)			<u>10</u>	<u>30</u>
Clay				
Detritus				
Other - Specify: <u>wood</u>	<u>10</u>			

### Percent (nearest 10%) of Stream Bottom Covered

	1 1/5	2 2/5	3 3/5	4 4/5
Algae (attached & fila.)	<u>20</u>	<u>20</u>	<u>20</u>	<u>0</u>
Macrophytes	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Canopy / Shading (circle one)	<u>10</u>	<u>0</u>	<u>0</u>	<u>0</u>

### Cover for Adult Gamefish: Length (nearest 0.01 m) of transect within 0.15 m upstream or downstream in water at least 0.20 m in depth

Undercut Banks	Overhanging Vegetation at least 0.20 m overhang	Woody Debris	Other Debris	Boulder	Submerged Macrophytes	Emergent Macrophytes at least 0.20 m deep	Other - Specify:
	<u>.5</u>			<u>.35</u>			<u>.8 Lunker</u>

Bank Erosion: Length of Continuous Bare Soil (nearest 0.01 m) within 1 m of stream	% of Eroded Bank to the crest or within 5 m of stream edge
Left: <u>0</u> (m)   Right: <u>0</u> (m)	Left: <u>0</u> (%)   Right: <u>0</u> (%)

### Riparian Land Use: Percent (nearest 10%) of Bank within 5 m of stream edge, along transect Section Total Must = 100%

Cropland	Pasture	Barnyard	Developed	Meadow	Shrubs	Woodland	Wetland	Exposed Rock	Other - Specify:
					<u>60</u>	<u>10</u>	<u>30</u>		

Riparian Buffer Width: Length (nearest 1.0 m) of Undisturbed Land Uses along transect, within 10 m of stream

Left: 710 (m)   Right: 710 (m)

Wadable Stream Quantitative Habitat Evaluation

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**Transect Data**

Stream Name: Onion @ E Waterbody ID Code: 51200 Date (MMDDYYYY): 08312017 Transect No.: 10

Distance from Start (m): 182 Stream Width (m): 5.6 Habitat Type:  Riffle  Pool  Run Bankfull Depth (m) (optional): .36 Bankfull Width (m) (optional): 6.2

	Deepest Point	Channel Position (Fifths of Current Stream Width)			
		1.1 1/5	2.2 2/5	3.3 3/5	4.4 4/5
Water Depth (m)	<u>.44</u>	<u>.44</u>	<u>.44</u>	<u>.42</u>	<u>.36</u>
Depth of Fines and Water (m)		<u>.44</u>	<u>.44</u>	<u>.42</u>	<u>.38</u>
Embeddedness (nearest 10%) of Course Gravel and Rubble/Cobble		<u>50</u>	<u>40</u>	<u>90</u>	<u>100</u>

**Percent (nearest 5%) of Stream Bottom Covered** Section Total Must = 100%

Bedrock (solid slab)					
Boulder (261 mm - 4.1 m)					
Rubble / Cobble (65 - 260 mm)		<u>50</u>	<u>20</u>	<u>10</u>	<u>20</u>
Gravel (2 - 64 mm)		<u>20</u>	<u>30</u>	<u>30</u>	
Sand (0.062 - 1.9 mm)		<u>30</u>	<u>50</u>	<u>30</u>	<u>30</u>
Silt (0.004 - 0.061 mm)				<u>30</u>	<u>30</u>
Clay					
Detritus					
Other - Specify: <u>wood</u>					<u>20</u>

**Percent (nearest 10%) of Stream Bottom Covered**

Algae (attached & fila.)	<u>10</u>	<u>10</u>	<u>0</u>	<u>20</u>
Macrophytes	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Canopy / Shading (circle one)	<u>0</u>	<u>10</u>	<u>10</u>	<u>10</u>

**Cover for Adult Gamefish: Length (nearest 0.01 m) of transect within 0.15 m upstream or downstream in water at least 0.20 m in depth**

Undercut Banks	Overhanging Vegetation at least 0.20 m overhang	Woody Debris	Other Debris	Boulder	Submerged Macrophytes	Emergent Macrophytes at least 0.20 m deep	Other - Specify:
	<u>3</u>						

**Bank Erosion: Length of Continuous Bare Soil (nearest 0.01 m) within 1 m of stream** % of Eroded Bank to the crest or within 5 m of stream edge

Left: 0 (m) Right: 0.6 (m) Left: 0 (%) Right: 0 (%)

**Riparian Land Use: Percent (nearest 10%) of Bank within 5 m of stream edge, along transect** Section Total Must = 100%

Cropland	Pasture	Barnyard	Developed	Meadow	Shrubs	Woodland	Wetland	Exposed Rock	Other - Specify:
				<u>10</u>	<u>30</u>	<u>50</u>	<u>10</u>		

**Riparian Buffer Width: Length (nearest 1.0 m) of Undisturbed Land Uses along transect, within 10 m of stream**

Left: 7.0 (m) Right: 4.0 (m)

**Transect Data**

Stream Name	<i>Omoia @ E</i>	Waterbody ID Code	<i>51200</i>	Date (MMDDYYYY)	<i>08312017</i>	Transect No.	<i>11</i>
Distance from Start (m)	<i>201.5</i>	Stream Width (m)	<i>7.0</i>	Habitat Type:	Bankfull Depth (m) (optional)	Bankfull Width (m) (optional)	
				<input type="checkbox"/> Riffle <input type="checkbox"/> Pool <input checked="" type="checkbox"/> Run	<i>.31</i>	<i>7.9</i>	

	Deepest Point	Channel Position (Fifths of Current Stream Width)			
		<i>1.4</i> 1/5	<i>2.7</i> 2/5	<i>4.2</i> 3/5	4/5 <i>5.6</i>
Water Depth (m)	<i>.90</i>	<i>.47</i>	<i>.42</i>	<i>.9</i>	<del><i>.70</i></del> <i>.3</i>
Depth of Fines and Water (m)		<i>.47</i>	<i>.42</i>	<i>.9</i>	<del><i>.70</i></del> <i>.3</i>
Embeddedness (nearest 10%) of Course Gravel and Rubble/Cobble		<i>50</i>	<i>50</i>	<i>—</i>	<i>20</i>

**Percent (nearest 5%) of Stream Bottom Covered** Section Total Must = 100%

Bedrock (solid slab)				
Boulder (261 mm - 4.1 m)				
Rubble / Cobble (65 - 260 mm)	<i>50</i>	<i>50</i>		<i>20</i>
Gravel (2 - 64 mm)	<i>10</i>	<i>20</i>		<i>10</i>
Sand (0.062 - 1.9 mm)	<i>40</i>	<i>30</i>	<i>10</i>	<i>30</i>
Silt (0.004 - 0.061 mm)			<i>50</i>	<i>20</i>
Clay				
Detritus			<del><i>40</i></del>	
Other - Specify: <i>wood</i>				<i>20</i>

**Percent (nearest 10%) of Stream Bottom Covered**

Algae (attached & fila.)	<i>20</i>	<i>20</i>	<i>0</i>	<i>0</i>
Macrophytes	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
Canopy / Shading (circle one)	<i>0</i>	<i>30</i>	<i>100</i>	<i>100</i>

**Cover for Adult Gamefish: Length (nearest 0.01 m) of transect within 0.15 m upstream or downstream in water at least 0.20 m in depth:**

Undercut Banks	Overhanging Vegetation at least 0.20 m overhang	Woody Debris	Other Debris	Boulder	Submerged Macrophytes	Emergent Macrophytes at least 0.20 m deep	Other - Specify:
		<i>20</i>	<del><i>20</i></del>				<i>.6unker</i>

Bank Erosion: Length of Continuous Bare Soil (nearest 0.01 m) within 1 m of stream

Left: *0* (m) Right: *1.0* (m)

% of Eroded Bank to the crest or within 5 m of stream edge

Left: *0* (%) Right: *0* (%)

**Riparian Land Use: Percent (nearest 10%) of Bank within 5 m of stream edge, along transect** Section Total Must = 100%

Cropland	Pasture	Barnyard	Developed	Meadow	Shrubs	Woodland	Wetland	Exposed Rock	Other - Specify:
				<i>10</i>	<i>30</i>	<i>30</i>	<i>30</i>		

Riparian Buffer Width: Length (nearest 1.0 m) of Undisturbed Land Uses along transect, within 10 m of stream

Left: *410* (m) Right: *410* (m)

# Wadable Stream Quantitative Habitat Evaluation

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## Transect Data

Stream Name: <u>Onion @ E</u>	Waterbody ID Code: <u>51200</u>	Date (MMDDYYYY): <u>08 31 2017</u>	Transect No.: <u>12</u>
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Distance from Start (m): <u>221</u>	Stream Width (m): <u>5.3</u>	Habitat Type: <input type="checkbox"/> Riffle <input type="checkbox"/> Pool <input checked="" type="checkbox"/> Run	Bankfull Depth (m) (optional): <u>.34</u>	Bankfull Width (m) (optional): <u>7.8</u>
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	Deepest Point	Channel Position (Fifths of Current Stream Width)			
		1 1/5	2 2/5	3 3/5	4 4/5
Water Depth (m)	<u>.56</u>	<u>.41</u>	<u>.52</u>	<u>.56</u>	<u>.52</u>
Depth of Fines and Water (m)		<u>.41</u>	<u>.53</u>	<u>.56</u>	<u>.52</u>
Embeddedness (nearest 10%) of Course Gravel and Rubble/Cobble		<u>—</u>	<u>100</u>	<u>30</u>	<u>80</u>

## Percent (nearest 5%) of Stream Bottom Covered Section Total Must = 100%

	1 1/5	2 2/5	3 3/5	4 4/5
Bedrock (solid slab)				
Boulder (261 mm - 4.1 m)				
Rubble / Cobble (65 - 260 mm)			<u>10</u>	
Gravel (2 - 64 mm)		<u>60</u>	<u>20</u>	<u>40</u>
Sand (0.062 - 1.9 mm)		<u>10</u>	<u>20</u>	<u>30</u>
Silt (0.004 - 0.061 mm)	<u>10</u>	<u>10</u>		<u>10</u>
Clay				
Detritus	<u>10</u>			<u>20</u>
Other - Specify: <u>Wood</u>	<u>80</u>	<u>20</u>		

## Percent (nearest 10%) of Stream Bottom Covered

	1 1/5	2 2/5	3 3/5	4 4/5
Algae (attached & fila.)	<u>10</u>	<u>0</u>	<u>10</u>	<u>0</u>
Macrophytes	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Canopy / Shading (circle one)	<u>0</u>	<u>0</u>	<u>0</u>	<u>10</u>

## Cover for Adult Gamefish: Length (nearest 0.01 m) of transect within 0.15 m upstream or downstream in water at least 0.20 m in depth

Undercut Banks	Overhanging Vegetation at least 0.20 m overhang	Woody Debris	Other Debris	Boulder	Submerged Macrophytes	Emergent Macrophytes at least 0.20 m deep	Other - Specify:
	<u>.6</u>						<u>Log 5</u> <u>- 3.20 ft</u>

Bank Erosion: Length of Continuous Bare Soil (nearest 0.01 m) within 1 m of stream

Left: 0 (m) Right: 0 (m)      % of Eroded Bank to the crest or within 5 m of stream edge

Left: 0 (%) Right: 0 (%)

## Riparian Land Use: Percent (nearest 10%) of Bank within 5 m of stream edge, along transect Section Total Must = 100%

Cropland	Pasture	Barnyard	Developed	Meadow	Shrubs	Woodland	Wetland	Exposed Rock	Other - Specify:
					<u>50</u>		<u>50</u>		

Riparian Buffer Width: Length (nearest 1.0 m) of Undisturbed Land Uses along transect, within 10 m of stream

Left: 110 (m) Right: 110 (m)