

## Use Attainability Analysis

<b>1 Water Body Name</b>	Unnamed Tributary to Linn Creek
<b>2 Segment Description</b>	Mouth to headwaters
<b>3 Segment Length (mi)</b>	1.5
<b>4 Drainage Area (sq. mi.)</b>	1.45
<b>5 Segment Start Latitude, Longitude (DD)</b>	42.02748, -93.04074
<b>6 Segment End Latitude, Longitude (DD)</b>	42.01317, -93.05415
<b>7 Route of Flow (Next Downstream Adopted Designated Use)</b>	Unnamed Tributary (A2, BWW2, proposed, to A1, BWW2, proposed) to Linn Creek (A2, BWW2)
<b>8 NPDES Facility and Permit Number (If Applicable)</b>	Marshall County Law Center (6400901)
<b>9 Sample Site ID(s)</b>	1389-1, 1389-2
<b>10 Segment County Name(s)</b>	Marshall
<b>11 Field Work Date(s)</b>	8/14/2018

### 12 Aquatic Life Use Attainability Analysis - Conclusion

<b>Recommended Highest Attainable Use: Aquatic Life Use</b>	BWW2
<b>40 CFR 131.10(g)(2) (Flow)</b>	The natural low flow conditions of the stream segment are insufficient to create the habitat necessary to support a viable community of game fish. A lack of age ranges and diversity of game fish species indicates a non-reproducing population (see Site Observations Table). A BWW1 designation requires multiple species and age ranges to be viable. Therefore, the highest attainable aquatic life use for this stream segment is BWW2.
<b>40 CFR 131.10(g)(5) (Physical Conditions)</b>	Physical conditions related to the natural features of the water body are insufficient to support a viable community of game fish. Drainage area, stream width, average depth, and maximum depth for 1389-1 fall within the "consistently negative" game fish indicator responses (see Table 2 in Appendix I). A lack of age ranges and diversity of game fish species indicates a non-reproducing population (see Site Observations Table). A BWW1 designation requires multiple species and age ranges to be viable. Therefore, the highest attainable aquatic life use for this stream segment is BWW2.

### 13 Recreational Use Attainability Analysis - Conclusion

<b>Recommended Highest Attainable Use: Recreational Use</b>	<b>A1</b> (mouth to 230th Street road crossing)
Water levels and flow are sufficient to support full body immersion (see Site Observations Table). Therefore, the highest attainable recreational use for this stream segment is A1.	

<b>Recommended Highest Attainable Use: Recreational Use</b>	A2 (230th Street road crossing to headwaters)
<b>40 CFR 131.10(g)(2) (Flow)</b>	The natural low flow conditions and water levels of the stream segment prevent the attainment of an A1 recreational use (see Site Observations Table). An A1 designation requires the ability for full body immersion. Therefore, the highest attainable recreational use is A2.

### 14 Flow

Field Work Date	Description
8/14/2018	Based on USGS StreamStats, the stream flow at UAA Site ID #1389-1 on this date was 0.121 cfs, which was within the 25th and 75th percentile flow value range (0.029 cfs - 0.205 cfs).
8/14/2018	Based on USGS StreamStats, the stream flow at UAA Site ID #1389-2 on this date was 0.401 cfs, which was within the 25th and 75th percentile flow value range (0.101 cfs - 0.698 cfs).

### Use Attainability Analysis - Data

#### Site Observations

Use	Site parameter	Site ID #1389-1
AL/R	15 Latitude, Longitude (DD)	42.01533, -93.05169
AL/R	16 Average Depth (in)	1
AL/R	17 Maximum Depth (in)	18
AL/R	18 Stream Width (ft)	2.5
AL/R	19 Pools Observed?	Yes
AL only	20 Non-Game Fish Present and Counts (Species: Number)	Bluntnose minnow: 2 Green sunfish: 4
	21 Game Fish Present and Counts (Species (Size Range): Number)	None
	22 Stream Habitat (See also: #29 Site Photos)	Stream substrate was a mix of silt sand and gravel upstream and sand and gravel downstream. Lots of overhanging vegetation. Meandering, decent habitat diversity, no really deep pools.
R only	23 Evidence of Use for Primary Contact Recreation? (Yes*/No)	No
	24 Evidence of Use by Children? (Yes*/No)	No
	25 Evidence of Use for Secondary Contact Recreation? (Yes*/No)	No
AL/R	26 Additional Description	Nearby residence, trampoline and swing set near creek. No signs of recreational use in the creek. Homeowner said kids very rarely play in the creek.

Use	Site parameter	Site ID #1389-2
AL/R	15 Latitude, Longitude (DD)	42.02667, -93.04118
AL/R	16 Average Depth (in)	Not measured (too deep to assess)
AL/R	17 Maximum Depth (in)	Not measured (too deep to assess)
AL/R	18 Stream Width (ft)	Not measured
AL/R	19 Pools Observed?	Yes
AL only	20 Non-Game Fish Present and Counts (Species: Number)	Yes (fish observed, too deep to assess)
	21 Game Fish Present and Counts (Species (Size Range): Number)	None (unconfirmed)
	22 Stream Habitat (See also: #29 Site Photos)	Water too deep to assess. Signs of beaver use.
R only	23 Evidence of Use for Primary Contact Recreation? (Yes*/No)	No
	24 Evidence of Use by Children? (Yes*/No)	No

Use	Site parameter	Site ID #1389-2
	25 Evidence of Use for Secondary Contact Recreation? (Yes*/No)	No
AL/R	26 Additional Description	Fish observed.

AL = Aquatic Life

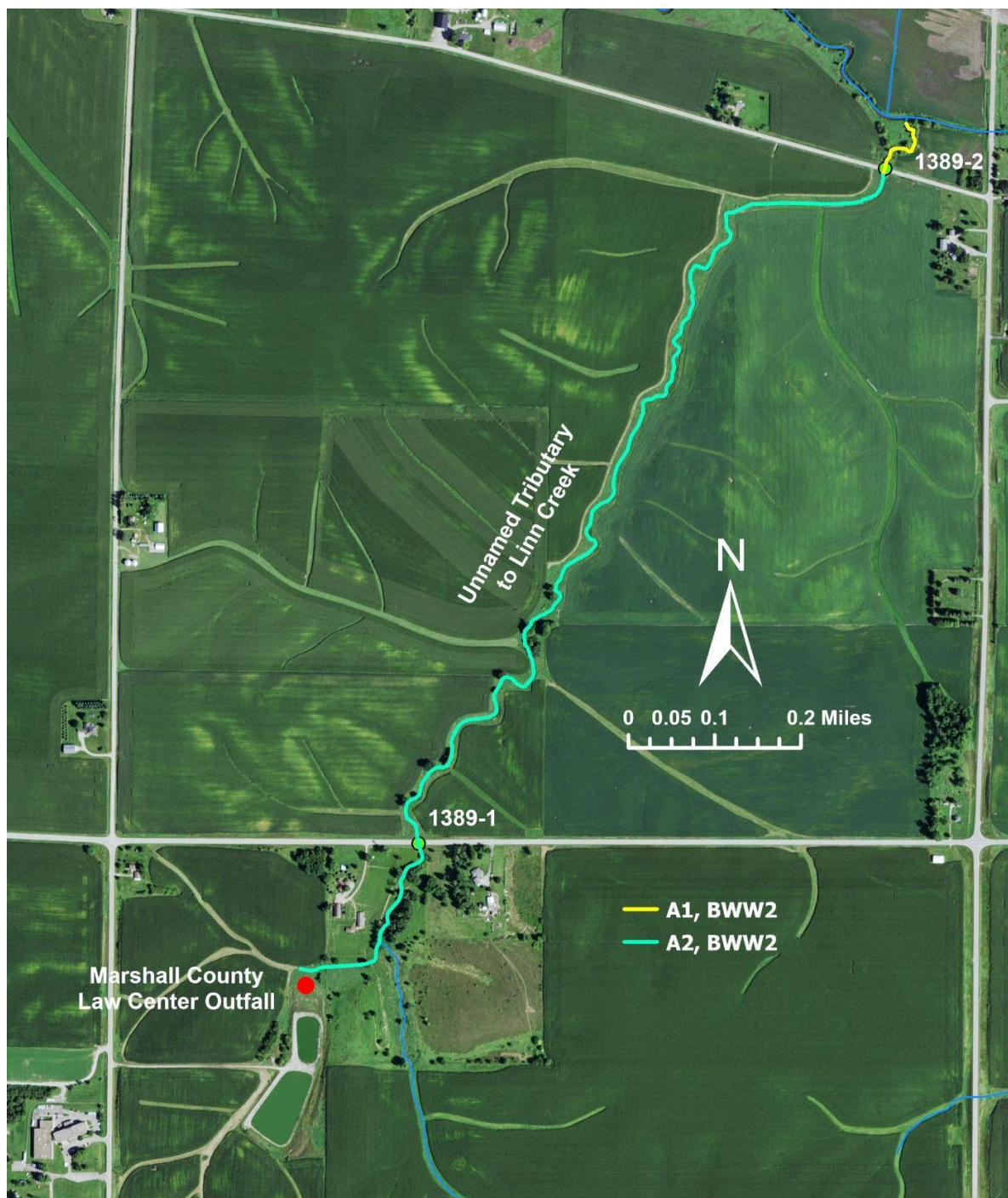
R = Recreation

\*If yes, elaborate.

## 27 Supplemental Data

N/A

## 28 Map of Segment, Outfall, and Site(s)





**29 Site Photos**



**Figure 1. 1389, site not specified.**



**Figure 2. 1389, site not specified.**





**Figure 3. 1389, site not specified.**



**Figure 4. 1389, site not specified.**





**Figure 5. 1389, site not specified.**



**Figure 6. 1389, site not specified.**





**Figure 7. 1389, site not specified.**



**Figure 8. 1389, site not specified.**





**Figure 9. 1389, site not specified.**



**Figure 10. 1389, site not specified.**





**Figure 11. 1389, site not specified.**



**Figure 12. 1389, site not specified.**





**Figure 13. 1389, site not specified.**



**Figure 14. 1389, site not specified.**

## Appendix I.

### c. Stream Flow and Habitat Data

Data analysis results for stream flow and habitat variables were similar to game fish indicator results. Stream width, average thalweg depth, maximum depth, and flow appear to be the characteristics that correlate the best with consistently positive game fish indicators. Stream flow and habitat dimensions (where available) were consistently larger for streams with watershed sizes exceeding 275 square miles. Habitat measurements are not available for the largest sample sites that were sampled by boat instead of the typical wading method.

Ranges of stream size, habitat and flow associated with varying levels of game fish indicator responses are listed in Table 2. These are general statewide values, which may assist in decision making related to the recommendation of warm water aquatic life use designations. In general terms, stream segments that have watershed area, flow and habitat characteristics in the green shaded boxes have a greater probability that game fish indicators will be consistently positive (i.e., consistent with Class B(WW-1)), while stream habitat and flow levels that equate to the red boxes are much less likely to support game fish populations (i.e., Class B(WW-2) or Class B(WW-3)). Stream segments that have a mixture of characteristics, mainly in the yellow range, may require consideration of the additional habitat features collected during the field assessment, to determine the appropriate aquatic life use designation.

**Table 2. Generalized statewide ranges of stream habitat indicator levels and associated game fish indicator responses.**

<b>Game Fish Indicator Responses</b>	<b>Stream Watershed Area (sq.mi.)</b>	<b>Stream Flow (typical base flow - cfs)</b>	<b>Stream Width Average (ft)</b>	<b>Average Depth (ft)</b>	<b>Avg. Thalweg Depth (ft)</b>	<b>Maximum Depth (ft)</b>
Consistently Positive	>275	>30	>65	>1.2	>2.2	>4.4
Mixed	25-275	0.8-30	11-65	0.2-1.2	0.8-2.2	1.8-4.4
Consistently Negative	<25	<0.8	<11	<0.2	<0.8	<1.8

Iowa uses U.S. EPA's Level IV Ecoregions as a template for wadeable stream biological condition assessment. Stream flow and habitat characteristics can vary from ecoregion to ecoregion. To provide additional insight into where the area of overlap exists between Class B(LR/WW-2) and Class B(WW/WW-1) streams, a query of Iowa's bioassessment database produced 476 habitat assessment records from which a summary of habitat characteristics was prepared (Table 3a-f) (see appendix for full spreadsheet). The summary is grouped by ecoregion and former designated uses in order to illustrate the extremes and ranges of overlap in habitat characteristics.