

Use Attainability Analysis

1 Water Body Name	Threemile Creek
2 Segment Description	Mouth to Three Mile Lake outlet
3 Segment Length (mi)	12.6
4 Drainage Area (sq. mi.)	56.6
5 Segment Start Latitude, Longitude (DD)	41.03457, -94.11149
6 Segment End Latitude, Longitude (DD)	41.07137, -94.21052
7 Route of Flow (Next Downstream Adopted Designated Use)	Threemile Creek (A1, BWW2, proposed to A2, BWW2, proposed, to A3, BWW2, proposed) to Thompson River (A1, BWW2)
8 NPDES Facility and Permit Number (If Applicable)	Three Mile Lake Campground STP (8800401)
9 Sample Site ID(s)	1217-1, 1217-2, 1217-3
10 Segment County Name(s)	Union
11 Field Work Date(s)	7/29/2014

12 Aquatic Life Use Attainability Analysis - Conclusion

Recommended Highest Attainable Use: Aquatic Life Use	BWW2
40 CFR 131.10(g)(2) (Flow)	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.
40 CFR 131.10(g)(5) (Physical Conditions)	Physical conditions related to the natural features of the water body are insufficient to support a viable community of game fish. Stream width (for 1217-2) and average depth (1217-1 and 1217-2) 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

Recommended Highest Attainable Use: Recreational Use	A1 (confluence with unnamed tributary to Three Mile Lake outlet)
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.	

Recommended Highest Attainable Use: Recreational Use	A2 (confluence with unnamed tributary to confluence with unnamed tributary)
40 CFR 131.10(g)(2) (Flow)	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.

Recommended Highest Attainable Use: Recreational Use	A3 (mouth to confluence with unnamed tributary)
40 CFR 131.10(g)(2) (Flow)	The natural low flow conditions and water levels of the stream segment prevent an A1 recreational use (see Site Observations Table). An A1 designation requires the ability for full body immersion. However, this stream segment is in close proximity to a population center/park. In addition, a resident reported in a survey that children play in the water body. Therefore, the A3 recreational use is recommended.

14 Flow

Field Work Date	Description
7/29/2014	USGS stream gage 06898000 data for the area indicated stream flows were normal at the time of assessment.

Use Attainability Analysis - Data Site Observations

Use	Site parameter	Site ID #1217-1
AL/R	15 Latitude, Longitude (DD)	41.07109, -94.21001
AL/R	16 Average Depth (in)	3
AL/R	17 Maximum Depth (in)	>39
AL/R	18 Stream Width (ft)	29
AL/R	19 Pools Observed?	Yes
AL only	20 Non-Game Fish Present and Counts (Species: Number)	Bluntnose minnow: 20 Fathead minnow: 2 Green sunfish: 5
	21 Game Fish Present and Counts (Species (Size Range): Number)	Black bullhead (juvenile): 5 Bluegill (juvenile): >50 Channel catfish (unknown): 3 Common carp (unknown): 1 Largemouth bass (juvenile): 12
	22 Stream Habitat (See also: #29 Site Photos)	Rocky substrate. Pool for habitat. Transient fish from lake. Fish mostly caught in 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)	Fishing tackle found up and down stream.
AL/R	26 Additional Description	Three Mile State Park and campground up and down from the segment. Fishing at the pool. Rust colored slime at the spillway of Threemile Creek.

Use	Site parameter	Site ID #1217-2
AL/R	15 Latitude, Longitude (DD)	
AL/R	16 Average Depth (in)	
AL/R	17 Maximum Depth (in)	
AL/R	18 Stream Width (ft)	
AL/R	19 Pools Observed?	

Use	Site parameter	Site ID #1217-2
AL only	20 Non-Game Fish Present and Counts (Species: Number)	41.04367, -94.16674
	21 Game Fish Present and Counts (Species (Size Range): Number)	1.5
	22 Stream Habitat (See also: #29 Site Photos)	27
R only	23 Evidence of Use for Primary Contact Recreation? (Yes*/No)	7
	24 Evidence of Use by Children? (Yes*/No)	Yes
	25 Evidence of Use for Secondary Contact Recreation? (Yes*/No)	Not sampled
AL/R	26 Additional Description	Not sampled
		Not sampled
		No
		No
		No
		Bridge site on level b road. Signs of cattle.

Use	Site parameter	Site ID #1217-3
AL/R	15 Latitude, Longitude (DD)	41.03459, -94.11336
AL/R	16 Average Depth (in)	9
AL/R	17 Maximum Depth (in)	27
AL/R	18 Stream Width (ft)	19.5
AL/R	19 Pools Observed?	Yes
AL only	20 Non-Game Fish Present and Counts (Species: Number)	Bigmouth shiner: 6 Bluntnose minnow: 18 Brassy minnow: 1 Hornyhead chub: 1 Red shiner: >50 Sand shiner: 12
	21 Game Fish Present and Counts (Species (Size Range): Number)	Black bullhead (unknown): 1 Bluegill (juvenile): 19 Largemouth bass (unknown): 1
	22 Stream Habitat (See also: #29 Site Photos)	Well shaded. Some debris and pools for habitat. Very steep slopes.
R only	23 Evidence of Use for Primary Contact Recreation? (Yes*/No)	No
	24 Evidence of Use by Children? (Yes*/No)	Yes (reported by resident)
	25 Evidence of Use for Secondary Contact Recreation? (Yes*/No)	Resident reported fishing, wading/walking in the creek.
AL/R	26 Additional Description	Rural bridge site.

AL = Aquatic Life

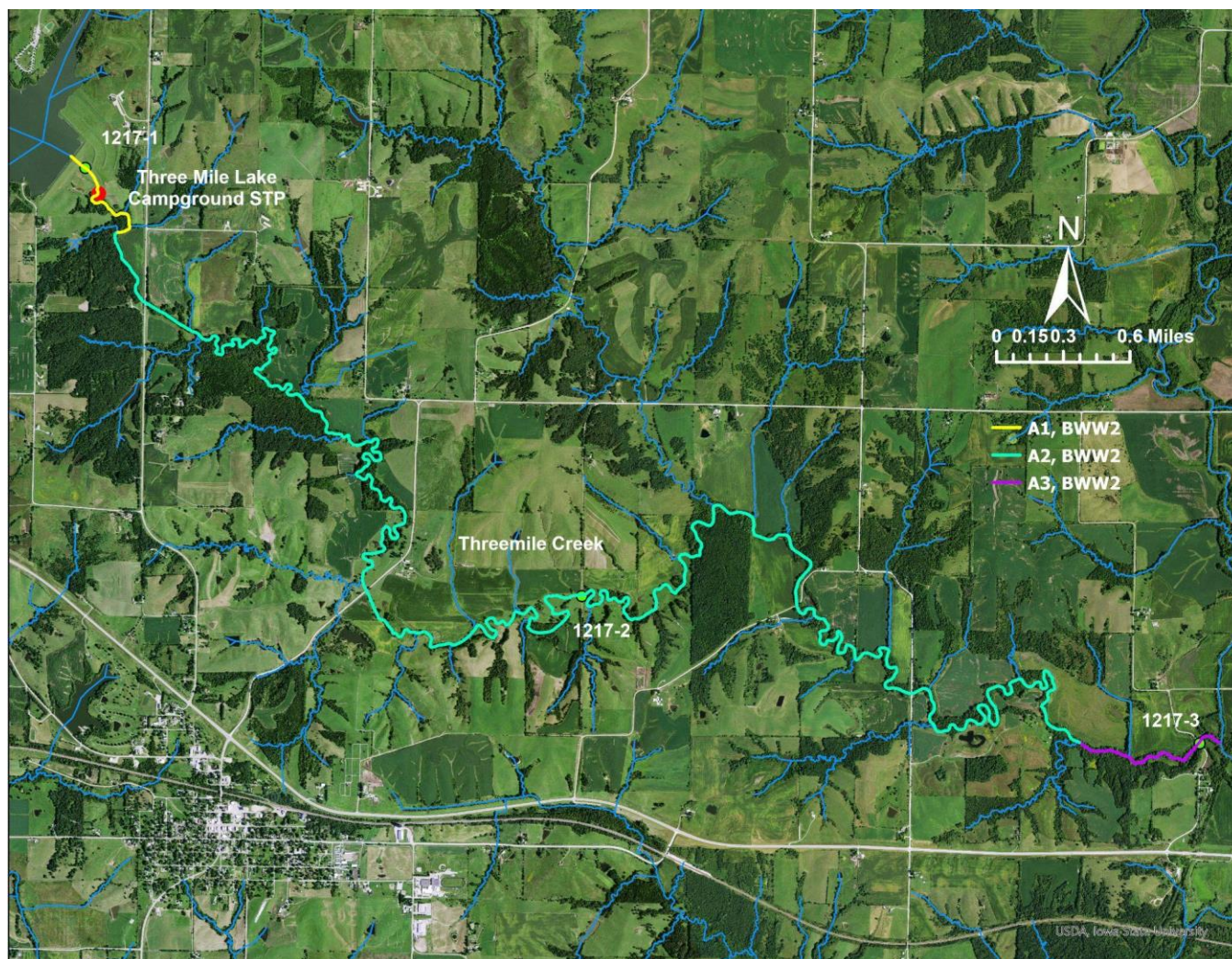
R = Recreation

*If yes, elaborate.

27 Supplemental Data

Desktop review verified that the UAA field work is still valid.

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



29 Site Photos



Figure 1. 1217-1 Recreational use assessment upstream looking upstream.



Figure 2. 1217-1 Recreational use assessment upstream looking downstream.



Figure 3. 1217-1 Recreational use assessment downstream looking upstream.



Figure 4. 1217-1 Recreational use assessment downstream looking downstream.



Figure 5. 1217-1 Rocks in stream.



Figure 6. 1217-1 Sheen on water.



Figure 7. 1217-1 Start of aquatic use assessment view downstream.



Figure 8. 1217-2 Recreational use assessment midpoint looking upstream.



Figure 9. 1217-2 Recreational use assessment midpoint looking upstream - debris.



Figure 10. 1217-2 Recreational use assessment midpoint looking downstream.



Figure 11. 1217-2 Recreational use assessment downstream looking upstream.



Figure 12. 1217-2 Recreational use assessment downstream looking downstream.



Figure 13. 1217-3 Recreational use assessment midpoint looking upstream.



Figure 14. 1217-3 Recreational use assessment upstream looking upstream.



Figure 15. 1217-3 Recreational use assessment upstream looking downstream.



Figure 16. 1217-3 Start of aquatic use assessment looking upstream.



Figure 17. 1217-3 End of aquatic use assessment looking upstream.



Figure 18. 1217-3 End of aquatic use assessment looking downstream.



Figure 19. 1217-3 Brassy minnow.



Figure 20. 1217-3 Largemouth bass.



Figure 21. 1217-3 Quillback.



Figure 22. 1217-3 Red shiner.



Figure 23. 1217-3 Red shiner in breeding colors.

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.

Game Fish Indicator Responses	Stream Watershed Area (sq.mi.)	Stream Flow (typical base flow - cfs)	Stream Width Average (ft)	Average Depth (ft)	Avg. Thalweg Depth (ft)	Maximum Depth (ft)
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.