Use Attainability Analysis

1 Water Body Name	Sevenmile Creek
2 Segment Description	Confluence with Fourmile Creek to confluence with Pettitts Branch
3 Segment Length (mi)	10.5
4 Drainage Area (sq. mi.)	68.5
5 Segment Start Latitude, Longitude (DD)	41.25752, -94.99572
6 Segment End Latitude, Longitude (DD)	41.29397, -94.87218
7 Route of Flow (Next Downstream Adopted Designated Use)	Sevenmile Creek (A1, BWW2, proposed to A1, pending, BWW2, existing) to the West Nodaway River (A2, BWW1)
8 NPDES Facility and Permit Number (If Applicable)	Cumberland, City of STP (1516001)
9 Sample Site ID(s)	1379-2
10 Segment County Name(s)	Cass
11 Field Work Date(s)	8/15/2018

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 Supplemental Data Tables). 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. A lack of age ranges and diversity of game fish species indicates a non-reproducing population (see Supplemental Data Tables). 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
40 CFR 131.10(g)(2) (Flow)	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.

14 Flow

Field Work Date	Description
6/28/2006	Based on USGS StreamStats, the stream flow at BioNet Site ID #619 on this date was 4.27 cfs, which was within the 25th and 75th percentile flow value range (2.265 cfs - 17.4 cfs).
8/15/2018	USGS stream gage 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 #1379-2
AL/R	**15 Latitude, Longitude (DD)**	41.27324, -94.90021
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 (too deep to assess)
AL/R	**19 Pools Observed?**	Yes
AL only	**20 Non-Game Fish Present and Counts (Species: Number)**	Not sampled
	21 Game Fish Present and Counts (Species (Size Range): Number)	Not sampled
	22 Stream Habitat (See also: #29 Site Photos)	Low head dam at this bridge and next bridge down. Too deep to assess.
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**	N/A

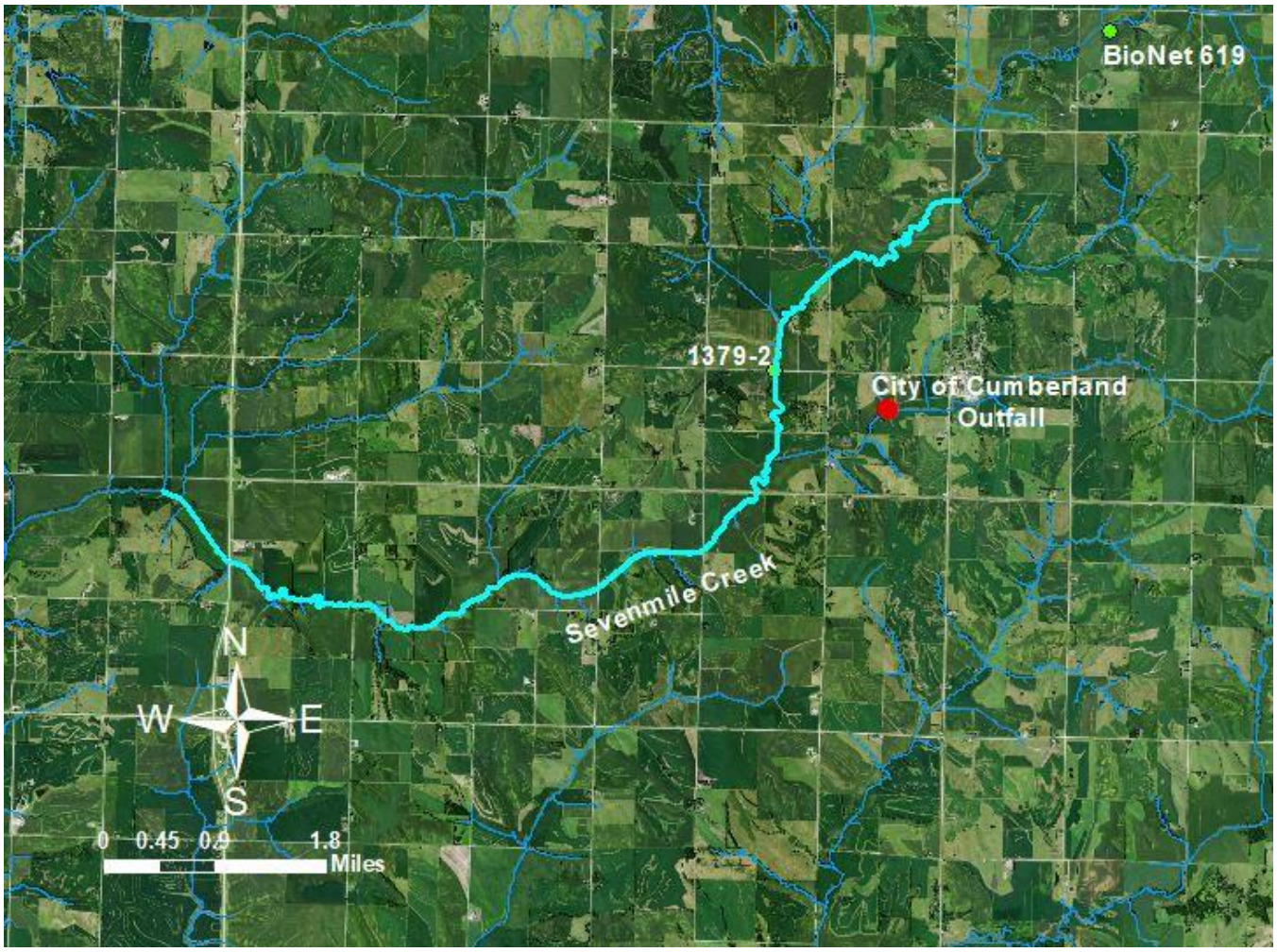
AL = Aquatic Life
R = Recreation
*If yes, elaborate.

27 Supplemental Data

Use	Site parameter	BioNet Site ID #619
AL/R	**Latitude, Longitude (DD)**	41.31454, -94.84956
AL/R	**Field Work Date**	6/28/2006
AL/R	**Flow (cfs)**	4.5
AL only	**Non-Game Fish Present and Counts (Species: Number)**	Bigmouth shiner: 13 Creek chub: 113 Fathead minnow: 236 Green sunfish: 11 Red shiner: 224 Sand shiner: 257 Stonecat: 1 Suckermouth minnow: 15
	Game Fish Present and Counts (Species (Size Range): Number)	Black bullhead (unknown): 1
AL/R	**Additional Description**	https://programs.iowadnr.gov/bionet/Sites/619 BioNet 619 is located upstream of the proposed segment.

All of the stream characteristic indicators were in the “mixed” category. While no aquatic life data was collected for this stream segment itself, the aquatic life data collected at BioNet Site #619 upstream of this stream segment and the fact that the stream is currently designated as BWW2 directly downstream of this stream segment indicate that the highest attainable aquatic life use for this stream segment is BWW2.

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



29 Site Photos

Figure 1. 1379-2 Recreational use assessment midpoint looking upstream.

Figure 2. 1379-2 Recreational use assessment midpoint looking downstream.

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.