

## Use Attainability Analysis

<b>1 Water Body Name</b>	West Branch Iowa River
<b>2 Segment Description</b>	Mouth to Crystal Lake city limits
<b>3 Segment Length (mi)</b>	39.4
<b>4 Drainage Area (sq. mi.)</b>	150
<b>5 Segment Start Latitude, Longitude (DD)</b>	42.86060, -93.61407
<b>6 Segment End Latitude, Longitude (DD)</b>	43.22513, -93.78759
<b>7 Route of Flow (Next Downstream Adopted Designated Use)</b>	West Branch Iowa River (A2, BWW2, proposed to A2, BWW1, HH, proposed) to Iowa River (A1, BWW1, HH)
<b>8 NPDES Facility and Permit Number (If Applicable)</b>	Crystal Lake, City of STP (4115001)
<b>9 Sample Site ID(s)</b>	1334-1, 1334-2, 813-4, 813-5, 813-6, 813-7, 813-8
<b>10 Segment County Name(s)</b>	Hancock, Wright
<b>11 Field Work Date(s)</b>	8/4/2015 (813-4, 813-5, 813-6, 813-7, 813-8), 9/13/2017 (1334-1, 1334-2), 8/8/2019 (BioNet 1207)

### 12 Aquatic Life Use Attainability Analysis - Conclusion

<b>Extent:</b>	Mouth (42.86060, -93.61407) to 300th St. (43.19833, -93.71741)
<b>Recommended Highest Attainable Use: Aquatic Life Use</b>	BWW1
Physical conditions and flow are sufficient to support a viable community of game fish. Diverse species and age ranges are present, indicating a reproducing population (see Site Observations Table). Therefore, the highest attainable aquatic life use for this stream segment is BWW1.	

<b>Extent:</b>	300th St. (43.19833, -93.71741) to Crystal Lake city limits (43.22513, -93.78759)
<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. Stream width (for 1334-1) and maximum depth (for 1334-1) 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>Extent:</b>	Mouth (41.33635, -92.30831) to to Crystal Lake city limits (43.22513, -93.78759)
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<b>Recommended Highest Attainable Use: Recreational Use</b>	A2
<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.

#### Additional Recommended Designation(s) - Conclusion

<b>Extent:</b>	Mouth (42.86060, -93.61407) to 300th St. (43.19833, -93.71741)
<b>Recommended Highest Attainable Use: Human Health</b>	HH
As this stream segment is receiving a BWW1 designation, an additional Human Health designation shall also be applied.	

#### 14 Flow

Field Work Date	Description
8/4/2015	<a href="#">USGS stream gage data</a> for the area indicated stream flows were normal at the time of the assessment.
9/13/2017	<a href="#">USGS stream gage data</a> for the area indicated stream flows were normal at the time of the assessment.
8/8/2019	<a href="#">USGS stream gage data</a> for the area indicated stream flows were normal at the time of the assessment.

#### Use Attainability Analysis - Data Site Observations

Use	Site parameter	Site ID # 1334-1
AL/R	15 Latitude, Longitude (DD)	43.22698, -93.77297
AL/R	16 Average Depth (in)	4
AL/R	17 Maximum Depth (in)	14.4
AL/R	18 Stream Width (ft)	5
AL/R	19 Pools Observed?	Yes
AL only	20 Non-Game Fish Present and Counts (Species: Number)	Blackside darter: 4 Creek chub: 12 Fathead minnow: 6 Green sunfish: 4 Johnny darter: 3 White sucker: 6
	21 Game Fish Present and Counts (Species (Size Range): Number)	Black bullhead (unknown): 10 Bluegill (unknown): 2 Common carp (unknown): 1
	22 Stream Habitat (See also: #29 Site Photos)	Abundant grass overhanging stream. Few deeper pockets up to one foot depth. Aquatic vegetation present. Drainage ditch. Shallow depths, clear water.
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	No trespassing sign was present.

Use	Site parameter	Site ID # 1334-2
AL/R	15 Latitude, Longitude (DD)	43.19833, -93.71741
AL/R	16 Average Depth (in)	8
AL/R	17 Maximum Depth (in)	27.6
AL/R	18 Stream Width (ft)	16
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)	N/A
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

Use	Site parameter	Site ID #813-4
AL/R	15 Latitude, Longitude (DD)	43.15552, -93.74919
AL/R	16 Average Depth (in)	11
AL/R	17 Maximum Depth (in)	24
AL/R	18 Stream Width (ft)	17
AL/R	19 Pools Observed?	No
AL only	20 Non-Game Fish Present and Counts (Species: Number)	Green sunfish: 2 Johnny darter: 1
	21 Game Fish Present and Counts (Species (Size Range): Number)	Black bullhead (unknown): 3 Bluegill (unknown): 2 Northern Pike: 1
	22 Stream Habitat (See also: #29 Site Photos)	Channelized drainageway. Sheen on water.
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

Use	Site parameter	Site ID #813-5
AL/R	15 Latitude, Longitude (DD)	43.08329, -93.75514
AL/R	16 Average Depth (in)	14
AL/R	17 Maximum Depth (in)	31
AL/R	18 Stream Width (ft)	25
AL/R	19 Pools Observed?	No
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)	N/A
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

Use	Site parameter	Site ID #813-6
AL/R	15 Latitude, Longitude (DD)	42.99522, -93.72367
AL/R	16 Average Depth (in)	15.5
AL/R	17 Maximum Depth (in)	36
AL/R	18 Stream Width (ft)	24
AL/R	19 Pools Observed?	No
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)	Channelized stream.
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	In a rural setting.

Use	Site parameter	Site ID #813-7
AL/R	15 Latitude, Longitude (DD)	42.92307, -93.68699
AL/R	16 Average Depth (in)	10.5
AL/R	17 Maximum Depth (in)	30
AL/R	18 Stream Width (ft)	37
AL/R	19 Pools Observed?	No
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)	N/A
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	Near a busy highway with a gage ruler on the downstream side of the bridge.

Use	Site parameter	Site ID #813-8
AL/R	15 Latitude, Longitude (DD)	42.87765, -93.63217
AL/R	16 Average Depth (in)	9
AL/R	17 Maximum Depth (in)	33
AL/R	18 Stream Width (ft)	44
AL/R	19 Pools Observed?	No
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)	N/A
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

Use	Site parameter	Site ID #813-8
AL/R	26 Additional Description	Sand and gravel pit upstream along the west side. Barbed wire line across river upstream.

AL = Aquatic Life

R = Recreation

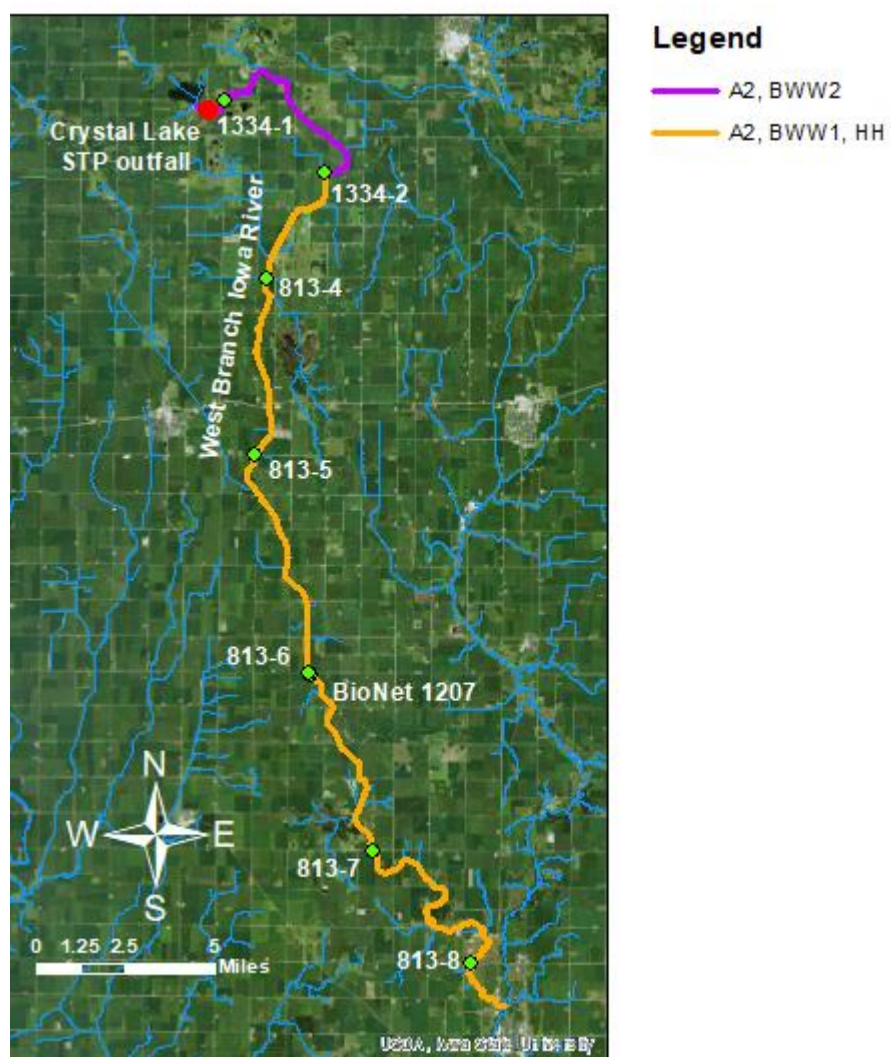
\*If yes, elaborate.

## 27 Supplemental Data

Use	Site parameter	BioNet Site ID #1207
AL/R	Latitude, Longitude (DD)	42.99470, -93.72281
AL/R	Field Work Date	8/8/2019
AL/R	Average Depth (in)	11.28
AL/R	Maximum Depth (in)	26.4
AL/R	Stream Width (ft)	38.75
AL only	Pools Observed?	No
	Non-Game Fish Present and Counts (Species: Number)	Blackside darter: 4 Bluntnose minnow: 2 Fathead minnow: 6 Golden redhorse: 4 Golden shiner: 1 Green sunfish: 11 Johnny darter: 2 Shorthead redhorse: 4 Spotfin shiner: 3 White sucker: 8
AL/R	Game Fish Present and Counts (Species (Size Range): Number)	Black bullhead (unknown): 6 Common carp (unknown): 7 Northern pike (10-12"): 1 Northern pike (22-24"): 1
	Additional Description	<a href="https://programs.iowadnr.gov/bionet/Sites/1207">https://programs.iowadnr.gov/bionet/Sites/1207</a>

The mouth to confluence with Drainage Ditch 1 is currently A1 presumed, BWW2 in the SWC. However, given the presence of multiple species and age classes of game fish, it is being redesignated as BWW1, HH.

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





## 29 Site Photos



**Figure 1. 1334-1 Recreational use assessment midpoint looking upstream.**



**Figure 2. 1334-1 Recreational use assessment midpoint looking downstream.**



**Figure 3. 1334-1 Recreational use assessment upstream looking upstream.**



**Figure 4. 1334-1 Recreational use assessment upstream looking downstream.**





**Figure 5. 1334-1 Recreational use assessment downstream looking upstream.**



**Figure 6. 1334-1 Recreational use assessment downstream looking downstream.**



**Figure 7. 1334-1 Start of aquatic use assessment looking upstream.**



**Figure 8. 1334-1 Start of aquatic use assessment looking downstream.**





**Figure 9. 1334-1 End of aquatic use assessment looking upstream.**



**Figure 10. 1334-1 End of aquatic use assessment looking downstream.**





Figure 11. 1334-1 Wildlife management area sign immediately east of stream.



Figure 12. 1334-2 Recreational use assessment midpoint looking upstream.





**Figure 13. 1334-2 Recreational use assessment midpoint looking downstream.**



**Figure 14. 1334-2 Recreational use assessment upstream looking upstream.**



**Figure 15. 1334-2 Recreational use assessment upstream looking downstream.**



**Figure 16. 1334-2 Recreational use assessment downstream looking upstream.**





**Figure 17. 1334-2 Recreational use assessment downstream looking downstream.**



**Figure 18. 813-4 Recreational use assessment midpoint looking upstream.**



**Figure 19. 813-4 Recreational use assessment midpoint looking downstream.**



**Figure 20. 813-4 Recreational use assessment upstream looking upstream.**





**Figure 21. 813-4 Recreational use assessment upstream looking downstream.**



**Figure 22. 813-4 Recreational use assessment downstream looking upstream.**



**Figure 23. 813-4 Recreational use assessment downstream looking downstream.**



**Figure 24. 813-4 End of aquatic use assessment view upstream.**





**Figure 25. 813-4 End of aquatic use assessment view downstream.**



**Figure 26. 813-4 Green sunfish.**



Figure 27. 813-4 Small northern.



Figure 28. 813-4 Sheen on water.





**Figure 29. 813-4 Additional sheen on water.**



**Figure 30. 813-4 Wildlife management area.**





**Figure 31. 813-5 Recreational use assessment upstream looking upstream.**



**Figure 32. 813-5 Recreational use assessment upstream looking downstream.**





**Figure 33. 813-5 Recreational use assessment downstream looking upstream.**



**Figure 34. 813-5 Recreational use assessment downstream looking downstream.**



**Figure 35. 813-6 Recreational use assessment midpoint looking upstream.**



**Figure 36. 813-6 Recreational use assessment midpoint looking downstream.**





**Figure 37. 813-6 Recreational use assessment upstream looking upstream.**



**Figure 38. 813-6 Recreational use assessment upstream looking downstream.**



**Figure 39. 813-6 Recreational use assessment downstream looking upstream.**

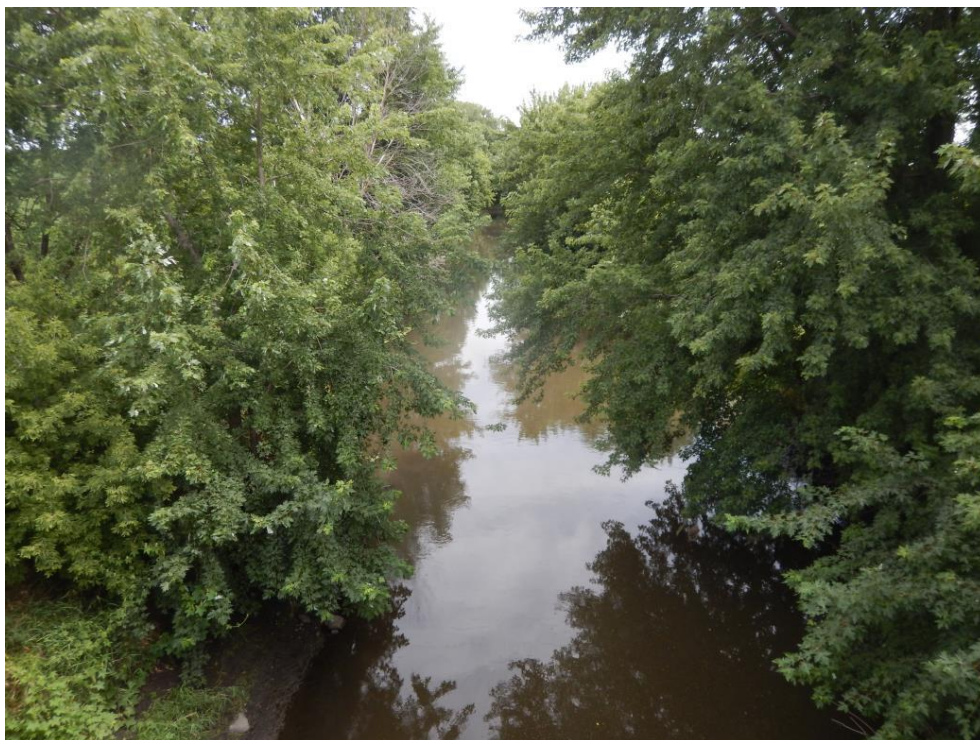


**Figure 40. 813-6 Recreational use assessment downstream looking downstream.**





**Figure 41. 813-7 Recreational use assessment midpoint looking upstream.**



**Figure 42. 813-7 Recreational use assessment midpoint looking downstream.**



**Figure 43. 813-7 Recreational use assessment upstream looking upstream.**



**Figure 44. 813-7 Recreational use assessment upstream looking downstream.**





**Figure 45. 813-7 Recreational use assessment downstream looking upstream.**



**Figure 46. 813-7 Recreational use assessment downstream looking downstream.**



**Figure 47. 813-7 Stream gage.**



**Figure 48. 813-8 Recreational use assessment midpoint looking upstream.**





**Figure 49. 813-8 Recreational use assessment midpoint looking downstream.**



**Figure 50. 813-8 Recreational use assessment upstream looking upstream.**



**Figure 51. 813-8 Recreational use assessment upstream looking downstream.**



**Figure 52. 813-8 Recreational use assessment downstream looking upstream.**





**Figure 53. 813-8 Recreational use assessment downstream 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.**

<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.