Decision Matrix for Integrated Assessments of Aquatic Life Use (ALU) Support

Overall ALU Support based on Bioassessment, Dissolved Oxygen, Toxics in Water, and Ambient Toxicity in Water. For three or more lines of evidence, unless otherwise illustrated here, nonattainment of any line of evidence discussed here results in nonsupport of the ALU.

Bioassessment Data	Aquatic Life Use Support Attainment					
	Dissolved Oxygen Data		Toxics in Water Testing		Habitat Assessment	
	Meets Criteria**	DO Not Meet Criteria	All Meet Criteria	Do Not Meet Criteria	Meets Screening Criteria	Does Not Meet Screening Criteria (reported as a concern)
Benthic macroinvertebrate and fish bioassessments done and both attain designated ALU	Fully Supported	Not Supported*	Fully Supported	Not Supported	Fully Supported	Fully Supported *
Benthic macroinvertebrate and fish bioassessments done and one of the two does not attain designated ALU	Fully Supporting with a Concern for fish or benthics	Not Supported	Fully Supporting with a Concern for fish or benthics	Not Supported	Fully Supporting with a Concern for fish or benthics	Fully Supporting with a Concern for fish or benthics
Both benthic macroinvertebrate and fish bioassessment done and both indicate non-	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
Only fish bioassessment done and indicates nonattainment of designated ALU	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
Only benthic macroinvertebrate bioassessment done and indicates nonattainment of designated	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
Only fish bioassessment collected. Fish indicates attainment of designated ALU***	Fully Supported	Not Supported*	Fully Supported	Not Supported	Fully Supported	Fully Supported *
Only benthic macroinvertebrate bioassessment done and indicates attainment of designated	Fully Supported	Not Supported*	Fully Supported	Not Supported	Fully Supported	Fully Supported *
Bioassessment data not available	Fully Supported	Not Supported	Fully Supported	Not Supported	Fully Supported	Not Supported**

Both fish and macroinvertebrate samples are required to make an ALU attainment determination for 305(b)/303(d) assessment purposes. In certain cases where it is only possible to collect one or the other, the ALU determination may be made based on only fish or benthic macroinvertebrates according to the framework presented in this table. Proper justification is required for why only one type of community was sampled.

* Long-term bioassessment monitoring will be conducted to determine if adverse effects to the fish and/or benthic macroinvertebrates are detected.

** When the habitat index indicates nonsupport, the habitat attainment status is reported as a concern.

*** When it is only possible, or appropriate (e.g. due to habitat limitations), to sample either the fish or benthic macroinvertebrate assemblage then the results will be evaluated for support. If samples are collected for only one assemblage but it would be possible or appropriate to sample both the fish and benthic macroinvertebrate assemblage then results will be evaluated as a concern.

Statewide and Regional Benthic IBI Metrics and Scoring Criteria

Statewide Metrics	Scoring Criteria			
	4	3	2	1
Taxa Richness	>21	15–21	8–14	<8
Number of EPT Taxa	>9	7–9	4–6	<4
Biotic Index (HBI)	<3.77	3.77–4.52	4.53–5.27	>5.27
%Chironomidae	0.79–4.10	4.11–9.48	9.49–16.19	<0.79 or >16.19
% Dominant Taxon	<22.15	22.15–31.01	31.02–39.88	>39.88
% Dominant Functional Group	<36.50	36.50–45.30	45.31–54.12	>54.12
% Predators	4.73–15.20	15.21–25.67	25.68–36.14	<4.73 or >36.14
Ratio of Intolerant/Tolerant Taxa	>4.79	3.21–4.79	1.63–3.20	<1.63
% of Total Trichoptera as Hydropsychidae	<25.50	25.51–50.50	50.51–75.50	>75.50 or no Trichoptera
Number of Non-Insect Taxa	>5	4–5	2–3	<2
% Collector/Gatherers	8.00–19.23	19.24–30.46	30.47–41.68	<8.00 or >41.68
% Elmidae	0.88–10.04	10.05–20.08	20.09–30.12	<0.88 or >30.12

Aquatic Life Use Category	Benthic Macroinvertebrate IBI Score Range
Exceptional	>36
High	29-36
Intermediate	22-28
Limited	<22

ER 24 Metrics	Scoring Criteria			
	4	3	2	1
Taxa Richness	>23	18 - 23	6 - 17	<6
Number of Ephemeroptera Taxa	>5	4 - 5	2 - 3	<2
% Trichoptera	4.55 - 20.99	1.85 - 4.54	0.01 - 1.84	>20.99 or 0
%Chironomidae	7.08 - 24.50	0.92 - 7.07	0.01 - 0.91	>24.50 or 0
% Diptera	0.65 - 2.72	2.73 - 7.99	8.00 - 23.59	>23.59 or <0.65
% of Total Trichoptera as Hydropsychidae	0 - 32.14	32.15 - 63.3	63.3 - 99.99	100 or no Trichoptera
% Collector/Gatherers	<4.83	4.83 - 22.33	22.34 - 37.09	>37.09
Biotic Index (HBI)	<2.28	2.28 - 3.94	3.95 - 4.56	>4.56
Number of Taxa with Tolerance Value <8.5	>10	9 - 10	7 - 8	<7

Aquatic Life Use Category	Benthic Macroinvertebrate IBI Score Range
Exceptional	>26
High	21-26
Intermediate	18-20
Limited	<18

ER 27-29-32 Metrics	Scoring Criteria			
	4	3	2	1
Taxa Richness	>24	18 - 24	11 - 17	<11
Number of EPT Taxa	>12	8 - 12	3 - 7	<3
% Diptera and Non-Insect Taxa	2.56 - 13.42	13.43 - 24.28	24.29 - 35.14	<2.56 or >35.14
%Chironomidae	4.57 - 0.45	4.58 - 8.70	8.71 - 12.83	<0.45 or >12.83
Number of Ephemeroptera Taxa	>7	5 - 7	2 - 4	<2
% Dominant Taxon	<27.00	27.00 - 42.54	42.55 - 58.08	>58.08
% Dominant Functional Group	<38.04	38.04 - 49.52	49.53 - 61.00	>61.00
% Predators	5.13 - 11.63	11.64 - 18.13	18.14 - 24.63	<5.13 or >24.63
% Collector/Gatherers	10.93 - 20.77	20.78 - 30.61	30.62 - 40.45	<10.93 or >40.45
Biotic Index (HBI)	<3.48	3.48 - 4.41	4.42 - 5.36	>5.36
Number of Taxa with Tolerance Value <8.5	>22	15 - 22	8 - 14	<8

Aquatic Life Use Category	Benthic Macroinvertebrate IBI Score Range
Exceptional	>32
High	29 - 32
Intermediate	22 - 28
Limited	<22

ER 30 Metrics	Scoring Criteria			
	4	3	2	1
Taxa Richness	>24	19 - 24	12 - 18	<12
Number of EPT Taxa	>13	9 - 13	4 - 8	<4
% Diptera and Non-Insect Taxa	1.50 - 20.08	20.09 - 38.66	38.67 - 57.24	>57.24 or <1.50
% Dominant Taxon	<19.98	19.98 - 32.24	32.25 - 44.50	>44.50
% Dominant Functional Group	<38.00	38.00 - 48.80	48.81 - 59.60	>59.60
% Predators	2.53 - 16.63	16.64 - 30.75	30.76 - 45.11	<2.53 or >45.11
% Collector/Gatherers	3.17 - 15.97	15.98 - 28.76	28.77 - 41.57	<3.17 or >41.57
Biotic Index (HBI)	<2.38	2.38 - 3.51	3.52 - 4.65	>4.65
% Tolerant Organisms (Tol. >8.5)	<2.61	2.61 - 5.21	5.22 - 7.82	>7.82
Number of Taxa with Tolerance Value <8.5	>21	16 - 21	10 - 15	<10

Aquatic Life Use Category	Benthic Macroinvertebrate IBI Score Range
Exceptional	>35
High	31-35
Intermediate	25-30
Limited	<25

Statewide and Regional Benthic IBI Metrics and Scoring Criteria

ER 33-35 Metrics	Scoring Criteria			
	4	3	2	1
Taxa Richness	>28	18-28	8-17	<8
Number of EPT Taxa	>13	9-13	4-8	<4
% Diptera and Non-Insect Taxa	1.92-18.92	18.93-35.93	35.93-52.93	<1.92 or >52.93
% Dominant Taxon	<21.46	21.46-32.58	32.59-43.71	>43.71
% Dominant Functional Group	<36.68	36.68-45.68	45.69-54.69	>54.69
% Shredders	0.31-3.84	3.85-7.36	7.37-10.87	<0.31 or >10.87
% Scrapers	0.21-7.92	7.92-15.63	15.64-23.34	<0.21 or >23.34
Biotic Index (HBI)	<4.26	4.26-5.18	5.19-6.12	>6.12
% Tolerant Organisms (Tol. >8.5)	<2.69	2.69-5.38	5.39-8.07	>8.07
Number of Taxa with Tolerance Value <8.5	>28	22-28	15-21	<15

Aquatic Life Use Category	Benthic Macroinvertebrate IBI Score Range
Exceptional	>34
High	30-34
Intermediate	23-29
Limited	<23

ER 34 Metrics	Scoring Criteria			
	4	3	2	1
Taxa Richness	>27	22 - 27	16 - 21	<16
Number of EPT Taxa	>9	6 - 9	2 - 5	<2
% Diptera and Non-Insect Taxa	6.58 - 20.15	20.16 - 33.72	33.73 - 47.29	<6.58 or >47.29
% Ephemeroptera	>48.34	31.65 - 48.34	14.94 - 31.64	<14.94
% Dominant Taxon	<23.25	23.25 - 32.43	32.44 - 41.62	>41.62
% Scrapers	4.95 - 15.96	15.97 - 26.98	26.99 - 38.00	<4.95 or >38.00
% Predators	5.57 - 12.18	12.19 - 18.79	18.80 - 25.40	<5.57 or >25.4
% Collector/Gatherers	27.93 - 37.87	37.88 - 47.81	47.82 - 57.75	<27.93 or >57.75
Biotic Index (HBI)	<5.10	5.10 - 5.90	5.91 - 6.71	>6.71
Number of Taxa with Tolerance Value <8.5	>23	18 - 23	12 - 17	<12

Aquatic Life Use Category	Benthic Macroinvertebrate IBI Score Range
Exceptional	>32
High	29-32
Intermediate	22-28
Limited	<22