# APPENDIX H:

# COMPREHENSIVE AQUATIC LIFE USE AND RECREATIONAL USE ASSESSMENTS

Comprehensive aquatic life use and recreational use assessments are made with data collected through IDEM'sProbabilistic Monitoring Program.

This report provides IDEM's comprehensive basin aquatic life use assessments, which are based on site-specificassessments using chemical results in combination with fish and macroinvertebrate community data (Table 1). Comprehensive aquatic assessments for each basin were calculated from site-specific assessment results in the following manner:

- Percent attaining = biological assessment results indicating full support (IBI > 35 and/or mIBI > 35) and nocorresponding chemical parameter violations;
- Percent not attaining = biological assessment results indicating non-support (i.e. impairment) (IBI ≤ 35and/or  mIBI ≤ 35) and/or corresponding chemical parameter violations.

IDEM uses independent applicability in its comprehensive basin aquatic life use assessments. Therefore, eitherbiological or chemical results indicating impairment were treated as non-supporting in determining attainment for the basin.

Updated comprehensive basin recreational use assessment results are also provided (Table 2) and werecalculated using site-specific assessments results in a similar manner.

- Percent attaining = E. *coli* assessment results indicating full support (geometric mean < 125 colonyforming units per 100 milliliters);
- Percent not attaining = E. *coli* assessment results indicating non-support (i.e. impairment) (geometricmean > 125 colony forming units per 100 milliliters);

Percent attainment and percent non-attainment values are calculated by IDEM staff using commands providedby U.S. EPA National Health and Environmental Effects Research Laboratory, Corvallis, Oregon as well as the R Development Core Team (R Core Team. 2021. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. https://www.R-project.org/

Table H-1: Comprehensive basin aquatic life use assessments showing attainment results calculated using the probabilistic monitoring design.

| BASIN | TARGET POPULATION | BASIN SIZE (MILES) | YEAR SAMPLED | YEAR ASSESSED | DATA | % ATTAINING | % NOT ATTAINING | CONFIDENCE LEVEL (%) | CONFIDENCE INTERVAL (%) |
|---|---|---|---|---|---|---|---|---|---|
| WEST FORK WHITE RIVER BASIN | 05120201 through 05120203 | 3775 | 2020 | 2021 | Biological | 64% | 36% | 95% n=38 | +/-15% |
| | | | | | Chemical | | | | |
| PATOKA RIVER BASIN | 05120209 | 714 | 2012 | 2014 | Biological | 12% | 88% | 5% n=38 | +/-11% |
| | | | | | Chemical | | | | |
| EAST FORK WHITE RIVER BASIN | 05120204 through 05120208 | 4325 | 2013 | 2014 | Biological | 60% | 40% | 95% n=37 | +/-15% |
| | | | | | Chemical | | | | |
| GREAT MIAMI RIVER BASIN | 05080001 through 05080003 | 1621 | 2014 | 2015 | Biological | 78% | 22% | 95% n=38 | +/-13% |
| | | | | | Chemical | | | | |
| UPPER WABASH RIVER BASIN | 05120101 through 05120107 | 6632 | 2015 | 2016 | Biological | 56% | 44% | 95% n=36 | +/-16% |
| | | | | | Chemical | | | | |

| BASIN | TARGET POPULATION | BASIN SIZE (MILES) | YEAR SAMPLED | YEAR ASSESSED | DATA | % ATTAINING | % NOT ATTAINING | CONFIDENCE LEVEL (%) | CONFIDENCE INTERVAL (%) |
|---|---|---|---|---|---|---|---|---|---|
| LOWER WABASH RIVER BASIN | 05120108 through 05120113 | 5306 | 2016 | 2017 | Biological | 43% | 57% | 95% n=37 | +/-14% |
| | | | | | Chemical | | | | |
| KANKAKEE RIVER BASIN | 07120001 through 07120003 | 3958 | 2017 | 2018 | Biological | 41% | 59% | 95%n=38 | +/-14% |
| | | | | | Chemical | | | | |
| GREAT LAKES TRIBUTARIES | 04040001; 04050001; 04100003; 04100004; 04100005; 04100007 | 3535 | 2018 | 2019 | Biological | 20% | 80% | 95%n=37 | +/-11% |
| | | | | | Chemical | | | | |
| OHIO RIVER TRIBUTARIES | 05090203; 05140101; 05140104; 05140201; 05140202 | 3333 | 2005 | 2007 | Biological | 46% | 54% | 95%n=37 | +/-15% |
| | | | | | Chemical | | | | |

Table H-2: Comprehensive basin recreational use assessments showing attainment results calculated using the probabilistic monitoring design.

| BASIN | TARGET POPULATION | BASIN SIZE (MILES) | YEAR SAMPLED | YEAR ASSESSED | DATA | % ATTAINING | % NOT ATTAINING | CONFIDENCE LEVEL (%) | CONFIDENCE INTERVAL (%) |
|---|---|---|---|---|---|---|---|---|---|
| WEST FORK WHITE RIVER BASIN | 05120201 through 05120203 | 3775 | 2020 | 2021 | Bacteriological | 25.59% | 74.41% | 95% n=38 | +/-13.87% |
| PATOKA RIVER BASIN | 05120209 | 714 | 2012 | 2014 | Bacteriological | 44.99% | 55.01% | 95% n=38 | +/-15.82% |
| EAST FORK WHITE RIVER BASIN | 05120204 through 05120208 | 4325 | 2013 | 2014 | Bacteriological | 15.00% | 85.00% | 95% n=38 | +/-11.35% |
| GREAT MIAMI RIVER BASIN | 05080001 through 05080003 | 1621 | 2014 | 2015 | Bacteriological | 5.16% | 94.84% | 95% n=38 | +/-7.04% |
| UPPER WABASH RIVER BASIN | 05120101 through 05120107 | 6632 | 2015 | 2016 | Bacteriological | 8.99% | 91.01% | 95% n=38 | +/-9.10% |

| BASIN | TARGET POPULATION | BASIN SIZE (MILES) | YEAR SAMPLED | YEAR ASSESSED | DATA | % ATTAINING | % NOT ATTAINING | CONFIDENCE LEVEL (%) | CONFIDENCE INTERVAL (%) |
|---|---|---|---|---|---|---|---|---|---|
| LOWER WABASH RIVER BASIN | 05120108 through 05120113 | 5306 | 2016 | 2017 | Bacteriological | 12.57% | 87.43% | 95% n=38 | +/-10.54% |
| KANKAKEE RIVER BASIN | 07120001 through 07120003 | 3958 | 2017 | 2018 | Bacteriological | 52.12% | 47.88% | 95% n=38 | +/-15.88% |
| GREAT LAKES TRIBUTARIES | 04040001; 04050001; 04100003; 04100004; 04100005; 04100007 | 3535 | 2018 | 2019 | Bacteriological | 28.07% | 71.93% | 95% n=38 | +/-14.29% |
| OHIO RIVER TRIBUTARIES | 05090203; 05140101; 05140104; 05140201; 05140202 | 3333 | 2005 | 2007 | Bacteriological | 21.49% | 78.51% | 95% n=38 | +/-13.06% |