DECISION DOCUMENT FOR THE PARTIAL APPROVAL/PARTIAL DISAPPROVAL OF INDIANA'S 2010 INTEGRATED REPORT WITH RESPECT TO SECTION 303(d) OF THE CLEAN WATER ACT (CATEGORY 5 WATERS)

The U.S. Environmental Protection Agency has conducted a complete review of Indiana's 2010 Section 303(d) list and supporting documentation and information. Based upon this review, EPA has determined that Indiana's list of Water Quality Limited Segments (WQLS) still requiring total maximum daily loads (TMDLs) partially meets the requirements of Section 303(d) of the Clean Water Act (CWA or Act), and EPA's implementing regulations at 40 C.F.R. § 130.7. EPA finds that Indiana has not considered "applicable water quality standards" pursuant to 40 C.F.R. § 130.7(b)(3), has not evaluated existing and readily available water quality-related metals data and information to develop the 303(d) list pursuant to 40 C.F.R. § 130.7(b)(5), and has not demonstrated good cause for not listing a group of water quality-limited segments impaired for metals pursuant to 40 C.F.R. § 130.7(b)(6). Therefore, EPA hereby partially approves and partially disapproves Indiana's 2010 Section 303(d) list. Indiana's list of WQLS still requiring TMDLs appears in Category 5 of the Indiana 2010 Integrated Water Quality Monitoring and Assessment Report (Integrated Report or IR), and EPA's partial approval extends only to the waterbodies and corresponding impairments in Category 5 of the Integrated Report that are included under Table 1 of Appendix A1 of this decision document. The statutory and regulatory requirements, and EPA's review of Indiana's compliance with each requirement, are described in detail below.

I. Statutory and Regulatory Background

A. Identification of Waters for Inclusion on Section 303(d) List

Section 303(d)(1) of the Act directs states to identify those waters within its jurisdiction for which effluent limitations required by Section 301(b)(1)(A) and (B) are not stringent enough to implement any applicable water quality standards, and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. The Section 303(d) listing requirement applies to waters impaired by point and/or non-point sources, pursuant to EPA's long-standing interpretation of Section 303(d).

EPA regulations provide that states do not need to list waters where the following controls are adequate to implement applicable water quality standards: (1) technology-based effluent limitations required by the Act; (2) more stringent effluent limitations required by state, local, or federal authority; and (3) other pollution control requirements required by state, local, or federal authority.[1] All waters where the above controls are inadequate to implement applicable standards must be listed.[2] The term "applicable water quality standards" refers to standards established under Section 303 of the Act, including numeric criteria, narrative criteria, waterbody uses, and antidegradation requirements.[3]

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1 See 40 C.F.R. §130.7(b)(1).

2 See 40 C.F.R. §130.7(b)(1) and (b)(2).

3 See 40 C.F.R. §130.7(b)(3).

B. Consideration of Existing and Readily Available Water Quality-Related Data and Information

In developing Section 303(d) lists, states are required to assemble and evaluate all existing and readily available water quality-related data and information, including, at a minimum, consideration of existing and readily available data and information about the following categories of water: (1) waters identified as partially meeting or not meeting designated uses, or as threatened, in the state's most recent Section 305(b) report; (2) waters for which dilution calculations or predictive models indicate non-attainment of applicable standards; (3) waters for which water quality problems have been reported by government agencies, members of the public, or academic institutions; and (4) waters identified as impaired or threatened in a non-point assessment submitted to EPA under section 319 of the Act.[4] In addition to these minimum categories, states are required to consider any other data and information that are existing and readily available. EPA's 1991 Guidance for Water Quality-Based Decisions describes categories of water quality-related data and information that may be existing and readily available.[5] While states are required to evaluate all existing and readily available water quality-related data and information, states may decide to rely or not rely on particular data or information in determining whether to list particular waters.

In addition to requiring states to assemble and evaluate all existing and readily available water quality-related data and information, EPA regulations require states to include, as part of their submissions to EPA, documentation to support decisions to rely or not rely on particular data and information in making decisions to list or not list waters. Such documentation needs to include, at a minimum, the following information: (1) a description of the methodology used to develop the list; (2) a description of the data and information used to identify waters; (3) a rationale for any decision to not use any existing and readily available data; and (4) any other reasonable information required by EPA.[6] Upon request by EPA, a state must demonstrate good cause for not including a water or waters on the list. Good cause includes, but is not limited to, more sophisticated water quality monitoring, flaws in the original analysis that led to the listing, or changes in conditions.[7]

C. Priority Ranking

EPA regulations also address the requirement in Section 303(d)(1)(A) of the Act that states establish a priority ranking for listed waters. The regulations require states to prioritize waters on their Section 303(d) lists for TMDL development, to identify the pollutants causing or expected to cause violations of the applicable water quality standards, and also to identify those WQLS targeted for TMDL development in the next two years.[8] In prioritizing and targeting waters, states must, at a minimum, take into account the severity of the pollution and the uses to be made of such waters.[9] States may consider other factors relevant to prioritizing waters for TMDL development, including immediate programmatic needs, vulnerability of particular waters as aquatic habitats, recreational, economic and

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4 See 40 C.F.R. §130.7(b)(5).

5 See *Guidance for Water Quality-Based Decisions: The TMDL Process*, U.S. EPA (April 1991) ("U.S. EPA 1991 Guidance"), Appendix C

5 See 40 C.F.R. §130.7(b)(6).

7 See 40 C.F.R. §130.7(b)(6)(iv).

8 See 40 C.F.R. §130.7(b)(4).

9 See CWA Section 303(d)(1)(A).

aesthetic importance of particular waters, degree of public interest and support, and state or national policies and priorities.[10]

II. Analysis of Indiana's Submission

A. Listing Methodology and Reporting

EPA has issued guidance for integrating the development and submission of Section 305(b) water quality reports and Section 303(d) lists of impaired waters.[11] This Integrated Report Guidance recommends that states develop an integrated report on the quality of their waters by placing all waters into one of five assessment categories, with Category 5 consisting of water quality-limited segments for which available information indicates that at least one designated use is not being supported or is threatened, and for which a TMDL is needed. EPA issued the 2006 Integrated Report Guidance, and Memoranda that provided some clarifications and additional information to assist in the preparation and review of 2010 integrated water quality reports.[12] The Indiana Department of Environmental Management (IDEM) submitted the information outlined in the 2006 Guidance and clarifying Memoranda as requested by EPA. The waterbodies in Category 5 of Indiana's IR constitute the State's Section 303(d) list. EPA Region 5 is only taking action on Category 5 of Indiana's 2010 IR[13]. Table 1 under Section 1 of Appendix A1 of this decision document identifies the waterbody assessment units (AUs) and impairments listed on Indiana's 2010 303(d) (Category 5) list.

In order to assess the quality of Indiana's waters, IDEM developed a surface water quality monitoring strategy which calls for monitoring each of five major water management basins[14] on a 5-year rotating basis using the state's data-collection sampling programs (Watershed Monitoring, Fixed Station Monitoring, *E. coli* Monitoring, Fish Community Monitoring, Fish Tissue Monitoring, Macroinvertebrate Community Monitoring, Special Projects, and Clean Lakes). The water quality assessment process is applied to each data-collection sampling program. The individual assessments are then integrated into a comprehensive assessment for each waterbody by use designation: aquatic life support, fish consumption, drinking water supply, and recreational use.

On November 30, 2010, IDEM submitted its 2010 IR. The IR identifies waterbody assessment units (AUs) that are associated with individual waterbodies within a 12- or 14-digit hydrologic unit code (HUC) watershed that ranges in size from about 12,000 acres or 20 square miles. These AUs are

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[10] See 57 Fed. Reg. 334040, 33045 (July 24, 1992); Also see U.S. EPA's 1991 Guidance.

[11] See Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act (EPA, July 29, 2005).

[12] See Memorandum: *Information Concerning 2008 Clean Water Act Sections 303(d), 305(b) and 314 of the Integrated Reporting and Listing Decisions* (EPA, October 12, 2006). Also see Memorandum: *Information Concerning 2010 Clean Water Act Sections 303(d), 305(b) and 314 of the Integrated Reporting and Listing Decisions* (EPA, May 5, 2009).

[13] See Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal. Also see e-mail to Vilma Rivera-Carrero from Jody Arthur dated September 13, 2011; and email to Peter Swenson from Martha Clark Mettler dated November 2, 2011.

[14] See Figure 1 under Attachment 2 of Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

assigned a unique identifier (AUID) in the assessment database (ADB) with which all assessment information for that waterbody is associated. Indiana lakes and reservoirs, including open waters of Lake Michigan, are assigned a single AUID with sizes reported in acres. Indiana's Lake Michigan shoreline is divided and assigned AUIDs in accordance with the 8-digit HUC in which they are located, and are reported in miles. Rivers and streams are assigned AUIDs in accordance with the 12- or 14-digit HUC in which they are located and are reported in miles. For large rivers with more than 1,000 square miles of drainage area, the AUIDs for mainstem nonwadeable reaches within their 12- or 14-digit HUCs are distinguished from those smaller, wadeable streams so that issues such as sampling techniques, which might bias results, can be considered within a class of streams. With regard to Indiana's flowing waters, AU sizes vary widely and a single segment may or may not represent the entire river or stream with which it is associated.

Water quality assessments were done by evaluating and coordinating data from site specific chemical (water, sediment and fish tissue), physical (habitat, flow data), and biological (fish community, macroinvertebrates, and *E. coli*) monitoring of Indiana's rivers, streams, and lakes. Chemical data for toxicants (metals[15], polynuclear aromatic hydrocarbons (PAHs), pesticides, ammonia, and free cyanide), conventional water chemistry parameters (dissolved oxygen, pH, temperature, and anions), and bacteria (*E. coli*) were evaluated for compliance with Indiana's Water Quality Standards, 327 IAC Article 2. EPA 305(b) Guidelines were applied to chemical and biological data as indicated in *Guidelines for Preparation of the State Water Quality Assessments (305(b) Reports) and Electronic Updates: Supplement, Washington, DC: U. S. Environmental Protection Agency. EPA-841-B-97-002A.*[16]

Lake assessments pursuant to Section 314 of the CWA were based on the Indiana Trophic State (or eutrophication) Index, a modified version of the BonHomme Index developed for Indiana lakes in 1972. This multi-metric index combines chemical, physical, and biological data into one overall trophic score for each public lake and reservoir sampled. Scores range from 0 to 75. Lower scores indicate lower levels and effects of nutrients on factors related to lake management and use, including water clarity, nutrients available for plant growth and blue green algae dominance. Declining or extirpated cisco populations and the presence of exotic and toxic algae species were also considered when evaluating lake water quality for aquatic life use. For drinking water reservoirs, taste and odor were also considered as potential indicators of water quality problems.[17]

B. Changes in Assessment and Listing Methodology

The major changes to IDEM's assessment and listing methodology are discussed below.

1. Revisions to IDEM's Reach Index process: IDEM revised its administrative "reach indexing" process of splitting AUs into smaller units to allow for more accurate application of assessment

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[15] See Subsections B-3, B-4 and K under Section II of this decision document for additional information.

[16] See Table 1, Table 2, Table 3, and Table 12 under Attachment 2 of Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal, which identifies specific criteria used for each use support assessment (aquatic life support, fish consumption, drinking water supply, and recreational uses).

[17] See Table 7 and Table 8 under Attachment 2 of Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

data, from mainly consisting of resegmentations on a case-by-case basis at 1:100,000 scale to reach indexing at 1:24,000 scale.

In 2006, IDEM developed an administrative process for splitting AUs into smaller units to allow for more accurate application of assessment data. When Indiana created its Reach Index, most waterbodies in the state were assigned an AUID based on the 14-digit watershed in which they were located. In most cases, each 14-digit watershed was assigned a single AUID regardless of how many individual streams were located in the watershed. Therefore, an assessment of *any* stream would be applied to *all* the streams in the watershed regardless of where the sample was located or its relative representativeness of each stream. Changes in segmentation were considered on a case-by-case basis and were generally made either to accommodate a more accurate assessment or to correct an earlier assessment in which the data were inappropriately applied. When AUs were split, IDEM reevaluated previous assessments of the original AU along with any recent data that were available at the time of resegmentation. This reassessment process ensured that the original assessment information was properly applied to the resulting new AUs. In most cases, the original assessment was applied to only one or two of the resulting AUs with the remaining units unassessed.

IDEM continued using resegmentation through the 2008 listing cycle to more accurately apply assessment data. However, when the National Hydrography Dataset (NHD) became available for the entire state at the high resolution, it was found that a significantly higher number of first and second order streams appear at the 1:24,000 scale than appear at IDEM's 1:100,000 scale Reach Index. These small streams and stream networks are an important component of the hydrology in their watersheds and can have significant effects on water quality in larger streams. Given this, IDEM decided that revising the Reach Index as a whole at 1:24,000 scale, instead of continuing with resegmentation on a case-by-case basis at 1:100,000 scale, would reduce the effort required to track segmentation changes, and would result in a statewide Reach Index with AUs that allow more thorough and representative water quality assessments. IDEM considers that revising the Reach Index using the high resolution NHD better supports the 305(b) assessment and 303(d) listing processes and TMDL development than resegmentation on a case-by-case basis. However, this process requires significant staff resources. Given this, in 2009, IDEM decided to implement a "moratorium" on segmentation changes for the 2010 assessment and listing cycle and to reallocate staff resources to the work of reach indexing at high resolution. Resegmentations are now done on a very limited basis when needed to support National Pollutant Discharge Elimination System (NPDES) permit development or other IDEM Office of Water Quality (OWQ) program needs.

IDEM prioritizes its high resolution indexing work to anticipate TMDL development, focusing indexing efforts in those watersheds (at the 8-digit hydrologic unit, or HUC scale) in which one or more TMDLs are scheduled to be developed within the following 303(d) listing cycle. Once Indiana's high resolution reach indexing is completed, the need to split segments using the segmentation process will be virtually eliminated. Similar to IDEM's original resegmentation process, the high resolution indexing process also involves splitting the original AU into smaller, more representative, units considering a combination of factors including hydrology, similarities in land use and potential sources of impairment. However, IDEM's high resolution indexing process defines new AUs based on small catchment basins (very small watersheds) and then adds the new streams that appear on the map at the 1:24,000 scale NHD to these new AUs. IDEM's

catchment basins are typically very small, which significantly reduces the variability in the water quality expected from one stream or stream reach to another. Grouping tributary systems into smaller catchment basins also allows for better characterization of the larger watershed. IDEM believes that this results in a more accurate representation of Indiana's hydrology, and AUs that are more homogeneous and thus more representative for the purposes of water quality assessment and TMDL development.

For the 2010 cycle, IDEM also began incorporating the new USGS 12-digit hydrologic units into the indexing process to better support the Nonpoint Source Section 319 program, which has adopted this scale for watershed management planning and implementation purposes. Any change in segmentation, whether from resegmentation done on a case-by-case basis or for the purposes of incorporating high resolution NHD data, must be accurately tracked so that 305(b) assessment and 303(d) listing information associated with the original AU are not lost. To this end, IDEM has refined its original methods developed to track segmentation changes to track changes now being made to the Reach Index as a result of high resolution indexing. IDEM still retires the original AUID for any AU that has been reindexed. IDEM also uses the same reassessment process to evaluate existing assessments and listing information on each AU reindexed to ensure that no valuable information is lost, and that assessment information is appropriately applied to the new AU resulting from the reindexing effort.

2. Revisions to IDEM's Use Support Criteria for Biological Data: IDEM revised its assessment methods for evaluating macroinvertebrate data.

The statewide macroinvertebrate index of biotic integrity (mIBI) was developed and calibrated using riffle/run samples collected throughout the state from 1990-1994. The riffle/run method was subsequently used by IDEM's Office of Water Quality from 1996 to 2003 to collect samples at some of the same sites sampled for the original calibration of the index randomly selected for follow-up sampling. Beginning in 1998, samples were also collected at probabilistic sites chosen for the Watershed Monitoring Program where a suitable riffle/run habitat was present. Unfortunately, less than half of the probabilistic sites sampled during this time had riffle/run type habitats within the allowed distance, which reduced the effectiveness of the riffle/run method as a monitoring tool. This necessitated the development of a macroinvertebrate sampling method which could be used at all probabilistic sites, regardless of habitat. The new multi-habitat method (MHAB) differs from the riffle/run method primarily in that it samples all habitats available at a stream site using a D-frame net instead of the kick screen used in the riffle/run method. In 2004, 62 sites (a subset selected from all sites previously sampled with the riffle/run method between 1990 and 2003), were re-sampled with the new MHAB method. The purpose was to develop an index calibrated, not to the best possible reference conditions, but to a normal distribution of stream conditions based on mIBI scores obtained at previously sampled sites. It was later determined by IDEM that this was too few samples to develop an efficient statewide index. These samples were combined with probabilistic samples collected in 2005, 2006 and 2007 (a total of 247 samples) to develop the index currently in use. Twelve metrics were chosen from a pool of more than 100 possible metrics in the development of the new mIBI. IDEM determined that these 12 metrics provided the best correlation to the data and describe a diversity of features that characterize the quality of a stream or river. The scores for each individual metric are totaled and can range from 12 to 60. As with the fish community IBI, mIBI scores less than 36 are considered nonsupporting of aquatic life use while those equal to or greater than 36 are

supporting of aquatic life use. Beginning with its 2008 assessments, IDEM incorporated the MHAB methods into its monitoring programs and now uses the mIBI developed for use in evaluating the macroinvertebrate data provided into its 305(b) assessments of aquatic life use support. At this time, IDEM is considering whether a reevaluation of waters previously assessed using the original mIBI is in order. However, due to the differences in sampling methods used to obtain the data for the original mIBI and the new index now in place, such a reassessment may not be necessary or appropriate.[18]

3. IDEM's revised approach for determining aquatic life use support with regards to metal toxicants.

Indiana's Water Quality Standards (WQS) include total recoverable metal criteria (numeric, hardness-based), and dissolved metal criteria (calculated based on total recoverable metal criteria multiplied by the appropriate conversion factor) for certain metals.[19] Indiana's WQS also include narrative criteria and methods[20] for the calculation of a numeric expression (Tier I and Tier II) of the narrative criteria for substances for which numeric criteria are not specified in the WQS ("derived criteria"), to ensure that the concentration of a substance or combination of substances does not become acutely or chronically toxic to aquatic organisms, wildlife and human health.

For its 2010 IR, IDEM revised its assessment methodology for determining aquatic life use support with regard to metal toxicants to assess only for dissolved metals criteria based solely on dissolved metals data. In particular, it chose to 1) exclude the use of total recoverable metals data, and 2) not use derived criteria as a basis for assessment.

a. Revised assessment approach which excludes the use of total recoverable metals data.[21]

Prior to the 2010 listing cycle, all of IDEM's assessments for metal criteria attainment were based on total recoverable metals data because most of the available water quality data are for total recoverable metals as opposed to the dissolved fraction. In its draft 2010 303(d) list,

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[18] See Table 13 under Attachment 2 of Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal for a summary of the evolution of the criteria used in making aquatic life use assessments with biological data.

[19] For waters within the Great Lakes system, Indiana's WQS contain dissolved metal criteria for arsenic (III), cadmium, chromium (III), chromium (VI), copper, nickel, mercury, selenium and zinc (327 IAC 2-1.5-8, Table 8-1). The criterion maximum concentration (CMC) and criterion continuous concentration (CCC) columns of Table 8-1 contain total recoverable metals criteria (numeric and hardness-based). The criterion for the dissolved metal is calculated by multiplying the appropriate conversion factor by the CMC or CCC.
For waters outside the Great Lakes system, Indiana's WQS contain total recoverable metal criteria for mercury and selenium (327 IAC 2-1-6, Table 6-1) and dissolved metal criteria for arsenic (III), cadmium, chromium (III), chromium (VI), copper, lead, nickel, silver and zinc (327 IAC 2-1-6, Table 6-2). The acute aquatic criterion (AAC) and chronic aquatic criterion (CAC) columns of Table 6-2 contain total recoverable metals criteria (numeric and hardness-based). The criterion for the dissolved metal is calculated by multiplying the appropriate conversion factor by the AAC or CAC.

[20] See Methods for deriving Tier I criteria and Tier II values described in: 327 IAC 2-1.5-Sections 11 and 13 through 16 (for Tier I) and Sections 12-16 (for Tier II) for waters within the Great Lakes system; 327 IAC 2-1 Sections 8.2, 8.3 and 8.9 for waters outside the Great Lakes system,

[21] See Table 18, Table 19, and Table 20 under Attachment 1 of Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

IDEM proposed to list a number of water quality-limited segments to Category 5 for waters found to be in non-attainment of metal criteria based on water quality assessments that were based on total recoverable metals data. However in preparing its final 2010 IR, IDEM determined that using the total recoverable metal data for 305(b) assessments and 303(d) listing decisions was not appropriate because doing so may result in an overestimation of toxicity. This revised metals assessment approach affected a set of previously listed water quality-limited segments, as well as water quality-limited segments that IDEM had proposed to include on its 2010 303(d) list due to the nonattainment of dissolved metals criteria for copper, nickel, lead, and zinc.

EPA disagrees with IDEM's revised metals assessment approach which excludes the use of total recoverable metals data. EPA believes that this approach does not take into account assessment of the attainment of total metal criteria included in Indiana's WQS (e.g. mercury and selenium total recoverable metal criteria for waters outside the Great Lakes Basin), and the calculated metal derived criteria whose values are expressed as total recoverable metal. Additionally, EPA believes there is strong scientific rationale supporting the use of currently available total recoverable metals data to assess the attainment of dissolved metal criteria, and considers it appropriate for IDEM to use these data to make 305(b) assessments and 303(d) listing decisions. For the purpose of developing its 2010 303(d) list, EPA believes that Indiana is required to assemble and evaluate all existing and readily available metals data when making listing decisions pursuant to 40 C.F.R. § 130.7(b)(5). Total recoverable metals data should not be dismissed solely because the dissolved metal data are preferable. Additionally, EPA's adoption of its Metals Policy[22] did not change the Agency's position that the existing total recoverable criteria published under Section 304(a) of the CWA, upon which the State's criteria are based, continue to be scientifically defensible.[23] For example, 40 C.F.R. § 122.45(c) requires that permit limits must be expressed in terms of total recoverable metal unless specified exceptions are met.

EPA expressed its concerns regarding IDEM's new approach for assessing whether waters were meeting dissolved metals criteria in a letter dated June 30, 2011.[24] In this letter, EPA outlined the basis for its disagreement, made recommendations on a series of approaches that may be used to make dissolved metal criteria assessments based on available total metals data, and asked IDEM to demonstrate good cause pursuant to 40 C.F.R. § 130.7 for not listing waters based on total recoverable metals data. In a reply letter[25] to EPA, IDEM declined to amend its position regarding the use of total recoverable metal data in its 305(b) assessment and 303(d) listing processes, or to reconsider adding other waterbodies it had proposed to list due to nonattainment of dissolved metals criteria. In a subsequent email message to EPA,[26] while declining to amend its position regarding the use of total recoverable metal data in its

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22 See EPA Memorandum entitled *Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria* ("Metals Policy"), October 1, 1993.

23 See *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion*, June 2006. EPA 823-B-96-007.

24 See Letter from Peter Swenson, Chief of Watersheds and Wetlands Branch at U.S. EPA, to Marylou Poppa Renshaw, Chief of Watershed Assessment and Planning Branch at IDEM, dated June 30, 2011.

25 See Letter from David R. Joest, Assistant Commissioner of the Office of Legal Counsel and Criminal Investigations at IDEM, to Peter Swenson, Chief of Watersheds and Wetlands Branch at U.S. EPA, dated September 12, 2011.

26 See email message to Peter Swenson from Martha Clark Mettler dated November 1, 2011.

305(b) assessment and 303(d) listing processes, IDEM proposed to retain seven waterbody AU/impairment combinations that had been included on its 2008 list due to nonattainment of dissolved metals criteria based on total metals data assessments. In a later phone conversation with EPA,[27] IDEM clarified its position regarding these seven waterbody AU/impairment combinations and restated its original belief that the State does not consider these waters to be impaired for the identified metals and therefore should not be included in the 303(d) list.

EPA disagrees that the lack of dissolved metals data precludes IDEM from making 305(b) assessments, 303(d) listing decisions, and developing TMDLs based on available total recoverable metals data. EPA finds that IDEM has not evaluated existing and readily available water quality-related metals data and information to develop the 303(d) list pursuant to 40 C.F.R. § 130.7(b)(5), and has not demonstrated good cause for not listing a group of water quality-limited segments impaired for metals pursuant to 40 C.F.R. § 130.7(b)(6). Therefore, EPA is disapproving IDEM's decision to not list waters as impaired where total recoverable metals data indicate dissolved metals criteria are exceeded.[28] EPA is proposing to list a series of water quality-limited segments impaired for copper, lead, and zinc on the 2010 303(d) list based on the existing and readily available total recoverable metals data provided by IDEM. EPA's proposed list consists of certain impairments included on IDEM's draft 2010 list. The proposed additions (Table 12 under Section 7 of Appendix A1 of this decision document) are based on EPA's assessment of the available total metals data provided by IDEM[29]. EPA utilized metal translators[30] in comparing total recoverable metals data for the subject waters to Indiana's dissolved metals water quality criteria to develop its list of proposed additions to Indiana's 2010 303(d) list. Since the waters in question were outside the Great Lakes Basin, EPA applied the conversion factors found in Table 6-2 of 327 IAC 2-1-6 as metal translators to estimate dissolved metals concentrations in waterbodies based upon the total recoverable metals data. This approach is comparable to what IDEM does in setting NPDES permit limits.[31]

EPA is partially disapproving Indiana's 2010 303(d) list pursuant to Section 303(d) of the Clean Water Act and 40 C.F.R. § 130.7(d)(2) for not considering all existing and readily available metals data in its assessment of whether waters are attaining dissolved metals criteria. EPA will provide public notice and an opportunity to comment on the decision to add to Indiana's 303(d) list the waters identified in Table 12 in Appendix A1 of this decision document. After considering the public comments EPA will make any appropriate revisions to the list of waters to be added and transmit the final determination to IDEM pursuant to 40 C.F.R. § 130.7(d)(2).

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27 See phone conversation record between Peter Swenson and Martha Clark Mettler dated October 17, 2012.

28 See EPA's Metal Assessments Tables in the Administrative Record file.

29 See Compilation of emails from IDEM to EPA with attached metal assessment data.

30 See *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion*, June 2006. EPA 823-B-96-007.

31 See Conversation Record dated November 23, 2011.

b. Revised assessment methodology regarding the use of derived criteria (Tier I criteria and Tier II values).[32]

In its draft 2010 303(d) list, IDEM proposed to add a number of water quality-limited segments to Category 5 based on water quality assessments for waters found to be in non-attainment based on exceedances of criteria IDEM had previously derived for metals. In preparing its final list IDEM determined, primarily in response to comments[33] received during the public comment period, that using the derived metals criteria for 305(b) assessments, 303(d) listing decisions and TMDL development is not appropriate until these criteria go through the rulemaking process described in IC 4-22-2. Based on this rationale, IDEM removed from the final 2010 303(d) list those water quality-limited segments that had been listed on the draft 2010 303(d) list based on exceedances of the derived criteria and values for metals. IDEM took this action despite the fact that the methods for calculating Tier I criteria and Tier II values are contained in Indiana's WQS rules adopted pursuant to IC 13-14-9 and approved by EPA as the applicable WQS for CWA purposes. Additionally, IDEM's NPDES Program uses calculated derived metals criteria values based on narrative criteria to establish permit effluent limits to ensure that discharges do not cause or contribute to water quality impairment. IDEM's revised 2010 assessment methodology for metal toxicants is based solely on assessing attainment of promulgated numeric criteria, primarily for dissolved metals criteria. IDEM's new approach regarding derived criteria affected a series of newly proposed metal impairment listings for aluminum, iron and manganese in its 2010 303(d) list.

EPA disagrees with IDEM's new approach regarding derived criteria, and believes that it is appropriate for IDEM to use derived criteria for 305(b) assessments, 303(d) listing decisions, and TMDL development. In response to public comments on the draft 2010 303(d) list, IDEM stated: "the derived criteria used in making impairment decisions were developed in accordance with 327 IAC 2-1-8.1 and 8.2. These rules are part of Indiana's WQS and as such, have been promulgated in accordance with Indiana law."[34] The State of Indiana adopted WQS with procedures for deriving criteria, which were promulgated in accordance with Indiana law (IC 13-14-9) and EPA approved those WQS as the applicable WQS for CWA purposes. As a result, EPA believes that any criteria derived using these procedures are "applicable water quality standards"[35] for CWA purposes, including developing NPDES permit limits, performing 305(b) assessments, making 303(d) listing decisions, and developing TMDLs.

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[32] See Table 21 and Table 22 under Attachment 1 of Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

[33] See Attachment 5 of Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

[34] See Page 3 in Attachment 5 of Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

[35] See 40 C.F.R. §131.21(c), (d); Also see 40 C.F.R. §130.7(b)(3).

EPA made its concerns regarding IDEM's new interpretation regarding the limited uses of derived criteria known to IDEM in a June 30, 2011 letter.[36] In its letter, EPA outlined the bases for its disagreement, and asked IDEM to demonstrate good cause pursuant to 40 C.F.R. § 130.7 for not using derived criteria for performing 305(b) assessments, making 303(d) listing decisions, or developing TMDLs. In a reply letter to EPA, IDEM stated that "The legal determination that derived criteria could not be used for the listing of waters ... was based on considerations of due process and Indiana administrative rulemaking law. The fact that IDEM is legally authorized by its governing statute and rules to calculate derived WQS criteria, or that the methodologies for doing so have been approved by EPA, are not relevant to these concerns".[37]

EPA believes that IDEM's derived criteria should be used for making 305(b) assessments, 303(d) listing decisions, and developing TMDLs. EPA finds that IDEM has not considered "applicable water quality standards" pursuant to 40 C.F.R. § 130.7(b)(3), has not evaluated existing and readily available water quality-related metals data and information to develop the 303(d) list pursuant to 40 C.F.R. §130.7(b)(5), and has not demonstrated good cause for not listing a group of water quality-limited segments impaired for metals pursuant to 40 C.F.R. § 130.7(b)(6). Therefore, EPA is partially disapproving Indiana's 2010 303(d) list pursuant to Section 303(d) of the Clean Water Act and 40 C.F.R. § 130.7(d)(2) for not listing waters where available data indicates the exceedance of derived metals criteria.[38] EPA is proposing to add to Indiana's 303(d) list (Category 5 of the IR) a series of water quality-limited segments for aluminum and iron (Table 12 under Section 7 of Appendix A1 of this decision document) based on metals data provided by IDEM. EPA will provide public notice and an opportunity to comment on the decision to list these waters. After considering the public comments EPA will make any appropriate revisions to the waters to be listed and transmit the final determination to IDEM pursuant to 40 C.F.R. § 130.7(d)(2).

C. Identification of Waters and Consideration of Existing and Readily Available Water Quality-Related Data and Information

EPA has reviewed Indiana's description of the data and information it considered in developing the IR and its 2010 303(d) list, its methodology for identifying waters, and considered other relevant information, including information the State submitted in response to EPA requests. EPA concludes that the State of Indiana properly assembled and evaluated all existing and readily available data and information, including data and information relating to the categories of waters specified in 40 C.F.R. § 130.7(b)(5), except with respect to the data and information related to metals as discussed above. In addition, EPA concludes that the State provided appropriate rationale for not relying on particular existing and readily available water quality-related data and information as a basis for listing waters, except in the case of the total recoverable metals data and derived metals criteria listings as discussed above.

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[36] See Letter from Peter Swenson, Chief of Watersheds and Wetlands Branch at U.S. EPA, to Marylou Poppa Renshaw, Chief of Watershed Assessment and Planning Branch at IDEM, dated June 30, 2011.

[37] See Letter from David R. Joest, Assistant Commissioner of the Office of Legal Counsel and Criminal Investigations at IDEM, to Peter Swenson, Chief of Watersheds and Wetlands Branch at U.S. EPA, dated September 12, 2011.

[38] See EPA's Metal Assessments Tables in the Administrative Record file.

Indiana solicited data from federal and state agencies, volunteer groups and municipalities. Several entities submitted data to IDEM in response to the 305(b)/303(d) solicitations in 2007 and 2009.[39] IDEM used the data submitted from these entities[40] where it met IDEM's QA/QC requirements as identified in the State's QA/QC manual.[41] Data that IDEM was unable to review completely due to formatting or geospatial coordinate issues will be considered for IDEM's 2012 IR.[42]

In developing the 2010 IR, the State placed waters in Category 5 where monitored data demonstrated the water was partially supporting, non-supporting, or threatened for one or more uses. Waterbodies were classified as monitored if surface water quality data used for assessments were no more than five years old, or were otherwise considered representative of current water quality conditions. Data from a given monitoring site are considered representative of the waterbody for that distance upstream and downstream in which there are no significant influences to the waterbody that might cause a change in water quality. Data may also be extrapolated to some distance into tributaries upstream of a given sampling location. Waterbody AUs with monitoring site(s) upstream and downstream and those for which reliable assessments can be made based on extrapolation of representative data are classified as monitored. Only waterbodies designated as monitored were considered for 303(d) listing purposes. IDEM takes into consideration data quality issues, past assessment methodologies, land use data, and historical information from the public, when making waterbody assessments. Regardless of the situation, no assessment is dismissed as invalid based solely on the age of the data.

EPA has also determined that the State properly listed waters with non-point sources causing or expected to cause impairment, consistent with Section 303(d) of the Act and EPA guidance. Section 303(d) lists are to include all WQLS still needing TMDLs, regardless of whether the source of the impairment is a point and/or non-point source. EPA's long-standing interpretation is that Section 303(d) applies to waters impacted by point and/or non-point sources. In *Pronsolino v. Nastri*, the Ninth Circuit Court of Appeals held that Section 303(d) of the CWA authorizes EPA to identify and establish TMDLs for waters impaired by non-point sources.[43]

D. Removal of Waters from the 303(d) List

States must provide documentation to support the decision not to list waters.[44] States should highlight those segment/pollutant combinations that have been removed from their previous 303(d)

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[39] See Table 1 under Attachment 1 of Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

[40] See Table 2 under Attachment 1 of Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

[41] See IDEM's QA/QC manual: *Quality Assurance Project Plan for Indiana Surface Water Quality Monitoring and TMDL Programs*, October 2004.

[42] See Pages 4 - 7 of Attachment 1 of Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

[43] Pronsolino et al. V. Nastri et. al., 291 F. 3d 1123 (9th Cir, 2002); see also U.S. EPA's 1991 Guidance; and National Clarifying Guidance for 1998 Section 303(d) Lists, August 27, 1997.

[44] See 40 C.F.R. § 130.7(b)(6); and Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act (EPA, July 29, 2005).

lists and provide detailed rationales for each delisting. Upon request from EPA, States must demonstrate "good cause" for not including waters on the list.[45] Good cause includes, but is not limited to: more recent or accurate data; more sophisticated water quality monitoring; flaws in the original analysis that led to listing of the water; or changes in conditions.

IDEM identified the following reasons for the waterbody AU and impairment delistings under the 2010 listing cycle:[46]

1) New data indicates that WQS are now being met and the waterbody AU under consideration is in full support of the assessment criteria.

2) The assessment and/or listing methodology has changed, and the AU under consideration would not be considered impaired under the new listing methodology. This includes changes to biological assessment criteria.

3) An error is discovered in the sampling, testing, or reporting of data that led to an inappropriate AU and/or impairment listing.

4) It has been determined that another program, besides the TMDL program, is better suited to address the water quality problem (Category 4B).

5) It has been determined that the water quality problem is caused by pollution and not by a pollutant (Category 4C).

6) A TMDL has been completed, and the waterbody AU is expected to meet WQS after implementation of the TMDL (Category 4A).

In its 2010 IR submittal, IDEM identified the waterbody AUs and impairments previously listed on Indiana's 2008 303(d) list (Category 5) that are being delisted.[47] Table 2 under Section 2 of Appendix A1 of this decision document identifies waterbody AUs that no longer appear in Category 5 for any impairment. Table 3 under Section 2 of Appendix A1 of this decision document identifies waterbody AUs that remain in Category 5 but for which certain impairments are being delisted. There are a total of 96 waterbody AUs with 107 impairments being entirely delisted from Category 5, and 176 impairments being delisted from 147 waterbody AUs that remain in Category 5 for other impairments. EPA considers that IDEM's delistings identified in Tables 2 and 3 of Appendix A1 are appropriate given the associated delisting rationales, and that good cause has been demonstrated for not including these waterbody AU/impairment combinations.

In an email message to EPA,[48] in which it declined to amend its position regarding the use of total recoverable metal data in its 305(b) assessment and 303(d) listing processes, IDEM proposed to relist seven waterbody AU/impairment combinations that had been included on its 2008 list due to

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[45] See 40 C.F.R. § 130.7(b)(6)(iv)

[46] See Table 2 under Section 2 in Appendix A1 of this decision document for individual delisting rationales.

[47] See Table A4, Table A5, & Table A6 under Attachment 1 of Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

[48] See email message to Peter Swenson from Martha Clark Mettler dated November 1, 2011.

nonattainment of dissolved metals criteria based on total metals data assessments. In a later phone conversation with EPA,[49] IDEM clarified its position regarding these seven waterbody AU/impairment combinations and restated its original belief that the State does not consider the waters to be impaired for the identified metals and should therefore not be included in the 303(d) list. EPA concurs with IDEM's delisting of five of the seven waterbody AU/metal impairments combinations (***shown in bold italic font*** in Table 3 in Appendix A1 of this decision document), but disagrees with IDEM's delisting of two of the seven waterbody AU/metal impairments combinations (***shown in bold italic font*** in Table 12 in Appendix A1 of this decision document). However, the rationales for these five delistings are based on EPA's own assessment determinations of the metal data rather than the delisting justifications originally provided by IDEM as a result of the State's revised metals assessment methodology. EPA is proposing to add the other two waterbody AU/metal impairment combinations, which IDEM proposed to delist, to Indiana's 2010 303(d) list (Category 5 of the IR) based on EPA's assessment of the available metals data provided by IDEM.

E. Waterbodies added to Category 5

The State has added certain waters to its 2010 Section 303(d) list. As provided in 40 C.F.R. § 130.7(b)(4), for each WQLS, states are required to identify the "pollutants causing or expected to cause violations of the applicable water quality standards." IDEM has collected new data, primarily macroinvertebrate data collected for the development of IDEM's new mIBI and rotating basin monitoring, which show many waterbodies are impaired for one or more parameters and have therefore been added to the 2010 Section 303(d) list (Category 5). Based on this new information, 255 waterbody AUs with 348 impairments were newly listed in Category 5, and 258 impairments were added to waterbody AUs previously listed in Category 5 for other impairments.[50] Table 4 under Section 3 of Appendix A1 of this decision document identifies new waterbody AUs added to Category 5. Table 5 under Section 3 of Appendix A1 of this decision document identifies new impairments added to waterbody AUs previously listed in Category 5. Table 7 under Section 4 of Appendix A1 of this decision document also identifies new impairments added to waterbody AUs previously listed in Category 5, with the distinction that these waterbody AUs have been resegmented. EPA considers that IDEM's additions, identified in Table 4, Table 5 and Table 7 of Appendix A1 of this decision document, are appropriate.

Because of disagreements with IDEM's new assessment methodology regarding the use of "derived criteria" and total recoverable metals data, EPA is proposing to add a series of waterbody AUs for certain metal impairments (aluminum, iron, copper, lead, and zinc) to Indiana's 2010 Section 303(d) list (Category 5) (Table 12 in Appendix A1 of this decision document). EPA's proposed additions are based on its evaluation[51] of the available metal assessment data provided by IDEM[52]. For additional information, refer to Items 3 & 4 in Subsection B, and Subsection K under Section II of this decision document.

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[49] See phone conversation record between Peter Swenson and Martha Clark Mettler dated October 17, 2012.

[50] See Table A8, Table A9, & Table A10 under Attachment 1 of Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

[51] See EPA's Metal Assessments Tables in the Administrative Record file.

[52] See Compilation of emails from IDEM to EPA with attached metal assessment data.

F. Waterbody AU Segmentation Changes in Indiana's 2010 Integrated Report

IDEM developed a high resolution indexing process to identify more representative stream reaches for assessment purposes. IDEM's high resolution indexing process defines new AUs based on small catchment basins (very small watersheds) and then adds the new streams that appear on the map at the 1:24,000 scale NHD to these new AUs. This process leads to grouping tributary streams into smaller catchment basins of similar hydrology, land use, and other characteristics such that all tributaries within the catchment basin can be expected to have similar potential impacts. All tributaries within a catchment basin are assigned a single AUID.

High resolution indexing using the catchment basin approach is guided by the hydrology of a system, the land uses within a watershed, the presence and location of any permitted facilities, and any other known factors that might reasonably be expected to impact hydrology, water quality, or both (e.g. dams, channelization, wetlands). Also as part of this high resolution indexing/ catchment basin process, IDEM conducts a reassessment of each AU indexed to evaluate any existing information for all designated uses assessed to ensure that no valuable information is lost, and that assessment information is appropriately applied to the new AU. Once resegmentation is completed, the AUIDs of all the original waterbody AUs are retired.

Because IDEM has prioritized its high resolution indexing based on TMDL development, segmentation changes considered during the 2010 listing cycle were done on a very limited basis when needed to support NPDES permit development or other OWQ program needs. Table 6[53] and Table 7[54] under Section 4 of Appendix A1 of this decision document identify all of the waterbody AUs and impairments that resulted from changes in segmentation during the 2010 listing cycle.

G. Waters Subject to Other Pollution Control Requirements Stringent Enough to Implement any Water Quality Standards, 40 CFR 130.7(b)(1)(iii) Category 4B

Under 40 C.F.R. §130.7(b)(1), states are not required to list WQLS still requiring TMDLs where effluent limitations required by the CWA, more stringent effluent limitations required by state or local authority, or other pollution control requirements required by state, local, or federal authority are stringent enough to implement applicable water quality standards. The regulation does not specify the time frame in which these various requirements must meet applicable water quality standards to support a state's decision not to list particular waters.

In keeping with the IR approach as provided by the 2006 IR Guidance, and 2008 and 2010 IR Memoranda, the State placed waters in Category 4B where other required control measures are expected to result in the attainment of an applicable water quality standard in a reasonable period of

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[53] The waterbody AUs and impairments listed in Table 6 were not included in the calculations of the number counts reported for "newly added waterbody AUs" and "newly added impairments" to Category 5. These waterbody AUs and impairments are a product of the resegmentations of previously listed waterbody AUs and therefore are not considered to be true additions.

[54] The impairments listed in Table 7 were included in the calculations of the number counts reported for "newly added impairments" to Category 5. These impairments were not formerly listed under the previous listed waterbody AUs that were resegmented. Therefore these impairments are considered to be true additions.

time.[55] The State has demonstrated good cause for not listing the seven (7) waterbody AUs and ten (10) impairments listed in Table 8 under Section 5 of Appendix A1 of this decision document. All of these waterbody AUs and impairments were previously listed in Category 4B in2008. No waterbody AUs or impairments were removed or added to Category 4B during the 2010 listing cycle.

IDEM determined that the water quality concerns listed for these segments were due solely to point sources. All of the waterbody AUs identified in Table 8 of Appendix A1 have some type of enforceable mechanism that will result in attainment of water quality standards for these seven waterbody AUs within a reasonable time, and EPA continues to agree these designations are appropriate.

The impairments to the Salt Fork Creek and Camp Ground Branch waterbody AUs were attributed to the Picnic Wood Wastewater Treatment Plant, owned by LMH Utilities Corporation, and are presently being addressed through IDEM's NPDES program. The plant has maintained an approximately 95% compliance record since the enforcement case was closed in 1996. In addition, LMH Utilities completed upgrades to its existing treatment facility at Picnic Wood, located in Bright, Indiana in 2007, and IDEM inspectors report no recent compliance issues. IDEM anticipates that these upgrades will result in the attainment of water quality standards within a few years. However, these waterbody AUs will remain in Category 4B through the 2012 listing cycle to allow time for IDEM to conduct the subsequent monitoring necessary to verify that these impairments no longer exist.

The impairments to the Wabash River waterbody AUs and the Turtle Creek Reservoir waterbody AU were attributed to three electric generating facilities discharging to these waters. The facilities in question have NPDES permits for thermal discharge limits based on site-specific standards and have contested IDEM's claims of permit violations based on annual reports which indicated no detrimental effects from their discharges. IDEM determined that an additional study was needed to determine whether the monitoring and reporting requirements under Section 316(a) of the Act, 33 U.S.C. § 1326, were sufficient to ensure the protection of aquatic life in the waters outside of the mixing zone. As of the 2004 303(d) listing cycle, IDEM was working with the US Fish and Wildlife Service to develop a protocol to determine if modifications are needed to existing permits to maintain WQS for critical times of the year. In December, 2005, the US Fish and Wildlife Service, through an Interagency Agreement with IDEM, completed a report entitled, *Evaluation and Assessment of Fish Assemblages Near Electric Generating Facilities: with Emphasis on Review of Discharge Submitted Data, Development of the Standard Operation Procedures, and Traveling Zone Assessment* (Simon, 2005). The objectives of this study were to evaluate the information submitted by the industry for compliance with Section 316(a) requirements; to develop standard methods that would provide industrial contractors specific protocols for use in meeting permit monitoring requirements for their heated effluents; and to conduct traveling zone studies of discharge relationships from selected thermal generating facilities, including two of the three facilities to which the above impairments were attributed. Following completion of the study, IDEM reviewed the results and determined that additional monitoring and reporting requirements are necessary under Section 316(a) to ensure a well- balanced aquatic community in waters outside the mixing zone. In 2006 and 2007, IDEM renewed permits for most electric generating facilities in the State, which include requirements for

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[55] See Attachment 3 (*Status of Category 4 Waters)* under Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

permittees to submit new Section 316(a) demonstration/variance requests with their NPDES renewal applications. In order to be granted a Section 316(a) variance, these facilities must include a site-specific biological study plan in their request which demonstrates that the variance will not result in biological impairment outside the mixing zone. In keeping with IDEM's five-year permit cycle, these facilities were expected to submit their variance requests to IDEM in 2011 and 2012 with their NPDES renewal applications.

Monitoring will be scheduled for these waters to verify that the thermal water quality standard is attained as expected in a reasonable time frame. In subsequent list submissions, EPA may determine that a segment included in Category 4b should be returned to Category 5 if circumstances have changed such that the State can no longer support its original 4b demonstration, and water quality standards will not be attained in a reasonable time through implementation of the requirements listed in 40 C.F.R. § 130.7(b)(1). Alternatively, if the State later determines that these Category 4B waters are meeting applicable standards when the next Section 303(d) list is developed, it would be appropriate for the State to remove the waters from the Category 4B list at that time and place them into Category 1 or Category 2 as suitable.

H. Waters listed on section 4C of the Integrated Report; Pollution not Pollutant

In keeping with the IR approach as provided by the 2006 IR Guidance, and 2008 and 2010 IR Memoranda, waters that were identified in this listing cycle as being impaired due to non-pollutant stressors are now listed in Category 4C of the IR.[56] Indiana listed twenty-two (22) waterbody AUs and twenty five (25) impairments in Category 4C, which are identified in Table 9 under Section 5 in Appendix A1 of this decision document. All of these waterbody AUs and impairments were previously listed in 2008. No waterbody AUs and impairments were removed or added to Category 4C during the 2010 listing cycle, and EPA continues to agree these designations are appropriate.

The waters identified in Category 4C have a low Index of Biological Integrity (IBI) score which indicates poor biology. However, IDEM has sampled the same locations for chemistry data and has found no violations of the applicable water quality standards. Thus habitat is impaired, but it is not caused by a pollutant. The pollution sources for these waters fall into the following categories:[57]

a) Hydromodification (Channelization), which refers to the straightening of a channel and/or destruction of instream habitat. This source is typically attributed to waters with impaired biotic communities where the chemical data reveals no pollutant loadings that are driving the impairment, and the primary source of the impairment is straightening of the channel and/or the destruction of instream habitat. This source may or may not be associated with continual drain maintenance and is determined on a case-by-case basis at the time assessments are made.

b) Habitat Modification, which refers to destruction or removal of instream habitat due to activities other than hydromodification. This source is analogous to hydromodification in that it is typically attributed to waters with impaired biotic communities where the chemical data reveal no pollutant

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[56] See Attachment 3 under Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

[57] See Table 9 under Section 5 in Appendix A1 of this decision document for the specific rational for each 4C listed waterbody AU.

loadings that are driving the impairment, and the primary source of the impairment is the destruction of instream habitat. This source is commonly associated with continual drain maintenance.

c) Natural Sources, which refers to naturally intermittent streams with flow regimes such that they cannot achieve oxygenation sufficient to meet Indiana's water quality standards for dissolved oxygen or sustain a healthy aquatic community. This source is typically associated with low dissolved oxygen impairments or impaired biotic communities.

The waters in Category 4C will remain candidates for future monitoring through IDEM's probabilistic sampling program of each basin once every five years according to the IDEM's Monitoring Strategy planning schedule.

I. Priority Ranking and Targeting

EPA also reviewed the State's priority ranking of listed waters for TMDL development, and concludes that the State properly took into account the severity of pollution and the uses to be made of such waters, as well as other relevant factors such as areas where other interested parties are working on alleviating the water quality problem. Waterbodies were given a priority ranking for TMDL development based on specific designated uses, the magnitude of the impairment, and other relevant factors such as 1) the amount of readily available and representative data; 2) relative complexity and ability to characterize the impairment; and 3) local interest in the watershed (e.g. active watershed groups). IDEM has ranked all pathogen impairments as high priority for TMDL development. IDEM has ranked all fish tissue impairments as low priority for TMDL development. IDEM has ranked all other impairments as medium priority for TMDL development.

1. Two Year Schedule

EPA reviewed the State's identification of WQLSs targeted for TMDL development in the next two years and concludes that the targeted waters are appropriate for TMDL development in this time frame. Table 10 under Section 6 of Appendix A1 of this decision document identifies Indiana's targeting of waters for TMDL development over the next two years.[58]

2. Long Term Schedule

EPA has received Indiana's long-term schedule for TMDL development, identified in Table 11 under Section 6 of Appendix A1 of this decision document, of all waters on the State's 2010 303(d) list (Category 5 of the IR).[59] As a policy matter, EPA has requested that States provide

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[58] See Attachment 4 (*IDEM's TMDL Development Schedule for 2010-2012*) under Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

[59] See Attachment 7 (*IDEM's Long Term TMDL Development Schedule*) under Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

such schedules, but is not taking any action to approve or disapprove this schedule pursuant to Section 303(d).[60] EPA will work with the State to expedite the development of TMDLs.

J. Public Comments on Listing Decisions

On October 26, 2009, Indiana public noticed a draft 303(d) list in the Indiana Register and on IDEM's website for a 120-day period that ended on February 26, 2010. IDEM held two public meetings to discuss the list: On December 9, 2009 at the Indiana Government Center South Building in Indianapolis, Indiana; and on January 11, 2010 at the Northwest Indiana Regional Planning Commission office in Portage, Indiana. IDEM notified specific stakeholders and interested parties, and announcements were made to the general public before the meetings.

IDEM's list submittal package to EPA included the following information:

- Submission Cover Letter dated November 16, 2010
- Indiana's 2010 Integrated Water Monitoring and Assessment Report (IR) narrative
- Appendix A: Indiana's 2010 IR – Tables
- Appendix B: Indiana's 2010 IR – Metadata and Definitions
- Appendix C: Indiana's 2010 IR – Figures
- Appendix D: Indiana's 2010 IR – Listing Schedule
- Appendix E: Indiana's 2010 IR – Comprehensive Use Assessments
- Appendix F: Indiana's 2010 IR – Consolidated List (Categories 1-5)
- Appendix G: Indiana's 2010 303(d) List of Impaired Waters narrative
  - Attachment 1: Indiana's 2010 303(d) related tables
    - — Table A1: Waterbody AU IDs retired for the 2010 cycle because of resegmentation.
    - — Table A2: Segmentation tracking table for waterbody AUs that were split and retired for the 2010 cycle.
    - — Table A3: Waterbody AUs and impairments previously listed in Category 5 that have been resegmented.
    - — Table A4: Waterbody impairments moved from Category 5 to Category 4A.
    - — Table A5: Waterbody impairments removed from Category 5 because of rotating basin assessments and assessment of new statewide macroinvertebrate data.
    - — Table A6: Waterbody impairments moved from Category 5 to Category 1, Category 2 or Category 3 based on new information.
    - — Table A7: Waterbody impairments added to Category 5 based on resegmentation and reassessment.
    - — Table A8: Waterbody impairments added to Category 5 based on pending TMDL approval.
    - — Table A9: Waterbody impairments added to Category 5 because of rotating basin assessments and assessment of new statewide macroinvertebrate data.
    - — Table A10: Waterbody impairments added to Category 5 based on new information.
    - — Table A11: IDEM's Finalized 303(d) List of Impaired Waters (Category 5) for the 2010 cycle.
  - Attachment 2: IDEM's Consolidated Assessment and Listing Methodology (CALM)

[60] See Memorandum from Robert Perciasepe, Assistant Administrator for Water, to Regional Administrators and Regional Water Division Directors, "New Policies for Developing and Implementing TMDLs," dated August 8, 1997.

- Attachment 3: Status of Category 4 waters
- Attachment 4: TMDL Schedule for 2010 – 2012
- Attachment 5: Public comments and IDEM's responses to public comments on the draft 2010 303(d) List of Impaired Waters.
- Attachment 6: USEPA comments and IDEM's responses to USEPA comments, received during public comment period on the draft 2010 303(d) List of Impaired Waters.

- Appendix H: Indiana's 2010 IR – Lake Trophic Status and Trends

During the public comment period, IDEM received comments from eleven (11) interested parties. Copies of the public comments and a responsiveness summary of the comments received and the State's responses were included in the submittal package to EPA.[61] Some of the interested parties (Alcoa Incorporated, and Indiana Coal Council) raised questions regarding IDEM's proposed metal listings, mainly concerning the use of derived criteria.[62] In response to these public comments, IDEM decided against using "derived criteria" and total recoverable metals monitoring results for the purposes of making 305(b) assessments and 303(d) listing decisions, or for TMDL development.[63] As a result, IDEM did not include a series of waterbody impairments that were on its draft list for certain metals (copper, zinc, nickel, lead, aluminum, iron, and manganese) in the state's final 303(d) list submittal.

After IDEM submitted its final 303(d) list, EPA sent a letter to IDEM expressing disagreement with IDEM's new assessment approach, and the decision not to include waters impaired by certain metals (copper, zinc, nickel, lead, aluminum, iron, and manganese) on its 303(d) list. [64]

With the exception of comments related to the proposed waterbody listings for certain metals (copper, zinc, nickel, lead, aluminum, iron, and manganese) discussed elsewhere in this document, EPA believes that IDEM appropriately addressed the other public comments received.

K. EPA's Proposed Changes to Indiana's 2010 303(d) List

Indiana's final 2010 Section 303(d) list submitted to EPA on November 30, 2010 contained a number of changes that were made in response to public comments. Among these changes, IDEM did not include a series of waterbody impairment listings for certain metals (copper, zinc, nickel, lead, aluminum, iron, and manganese) based on its decision to no longer use derived criteria and total

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61 See Attachment 5 (*Public Comments on the Draft 2010 303(d) List of Impaired Waters and IDEM's Responses*) and Attachment 6 (*U.S. EPA Comments on the 2008 303(d) Draft List and IDEM's Responses*) under Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

62 See Full text of public comment letters from Alcoa and the Indiana Coal Council dated February 26, 2010 in Attachment 5 under Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

63 See Table 18, Table 19, Table 20, Table 21 and Table 22 in Attachment 1, and Attachment 5 under Appendix G of the *Indiana Integrated Water Monitoring and Assessment Report 2010: Section 305(b) Water Quality Report and Consolidated List, Including Section 303(d) List of Impaired Waters (Category 5)* submittal.

64 See Letter from Peter Swenson, Chief of Watersheds and Wetlands Branch at U.S. EPA, to Marylou Poppa Renshaw, Chief of Watershed Assessment and Planning Branch at IDEM, dated June 30, 2011.

recoverable metals monitoring results for making 305(b) assessments and 303(d) listing decisions, or for TMDL development. Some of these waterbody impairments had been carried forward to the proposed draft 2010 list from the final 2008 list, but most had been newly proposed in the draft 2010 list.

The waterbody impairment listings proposed during the public comment period but removed by IDEM from the final 2010 303(d) list fall into two categories, affecting separate metals:

a) Waters proposed to be listed because ambient concentrations of aluminum, iron and/or manganese exceeded "derived criteria".

b) Waters listed because ambient concentrations of total recoverable metals exceeded dissolved metals criteria for copper, nickel, lead and/or zinc.

IDEM's arguments for not including the waterbody impairments listings at issue in the final 2010 303(d) list consisted of the following:

a) Using derived criteria for 305(b) assessments, 303(d) listing decisions, or TMDL development is not appropriate because derived criteria have not undergone Indiana's full rule making process prescribed by IC 13-14-9 and IC 4-22-2, and therefore there has not been adequate due process and public participation provided.

b) Using the total recoverable metals results for 305(b) assessments, 303(d) listing decisions or TMDL development is not appropriate because doing so may result in an overestimation of toxicity.

EPA disagrees with IDEM's decision to not include waterbody metal impairments listings based on the justifications provided, and made these concerns known to IDEM in a letter sent on June 30, 2011.[65] In its letter, EPA outlined its rationale for why the waters should be listed and requested that IDEM include the waterbody impairments in the 303(d) list or provide "good cause" for not doing so.

EPA disagrees with IDEM's revised assessment approach regarding "derived criteria" for the following reasons:

- EPA disagrees that only promulgated numeric water quality criteria can be used for 305(b) assessments, 303(d) listing decisions, or TMDL development. Indiana WQS include procedures for deriving criteria that were promulgated in accordance with Indiana law and approved by EPA. Any criteria derived using those procedures are "applicable water quality standards" that can be used for 305(b) assessments, 303(d) listing decisions, and TMDL development. Additionally, EPA believes that there has been adequate notice of, and opportunity for public comment provided on the use of derived criteria. First, the public had opportunity to comment on the derived criteria methodology when IDEM proposed to adopt it into the State's WQS. Second, the public had the opportunity to comment on the use of the derived criteria when the State noticed its proposed 303(d) list of impaired waters. Third, the public will have additional opportunity to comment when the State develops TMDLs for those impaired waters. Finally, individual

[65] See Letter from Peter Swenson, Chief of Watersheds and Wetlands Branch at U.S. EPA, to Marylou Poppa Renshaw, Chief of Watershed Assessment and Planning Branch at IDEM, dated June 30, 2011.

permittees can comment and challenge any proposed effluent limits based upon the derived criteria.

EPA disagrees with IDEM's revised assessment approach regarding total recoverable metals data for the following reasons:

- While EPA agrees that the dissolved metal fraction more closely approximates the bioavailable fraction of metal in the water column, EPA does not agree that available total recoverable metals data should be dismissed solely on the grounds that dissolved metals data are preferable. The lack of dissolved metals data should not preclude the State from making 305(b) assessments, 303(d) listing decisions, or developing TMDLs based on total recoverable metals data. IDEM has continued to rely on total recoverable metals in its water quality program. NPDES permit limits are typically expressed as total recoverable metals, and IDEM's ambient monitoring program has continued to rely on total recoverable metals data, rather than dissolved metals data. EPA recommended to IDEM several options for comparing total recoverable metals data to WQS to make listing decisions. One option involves estimating the ambient dissolved metal fraction of the total recoverable metal by using the same conversion factor used in IDEM's WQS rule for converting total recoverable metals criteria to dissolved metals criteria as a metal translator. This approach is comparable to what IDEM does in setting NPDES permit limits.[66]

On September 20, 2011, EPA received a response letter from IDEM in which IDEM reiterated its previous position and stated its intention not to reconsider listing the pertinent waterbody metal impairments.[67] IDEM acknowledged its use of derived criteria in setting permit limits but argued that the permitting process is not subject to state law requirements applicable to rulemaking and affords due process protection to potentially affected parties. IDEM insisted that the 303(d) listing process differs from the permitting process in that it results in TMDLs and WLAs that affect NPDES permitting decisions, and affected parties do not have advance notice or an opportunity to dispute these determinations. In addition, IDEM dismissed all suggestions and options recommended by EPA for comparing total recoverable metals data to dissolved metals criteria in making listing decisions.

In a November 1, 2011 email message[68], in which it declined to amend its position regarding the use of total recoverable metal data in its 305(b) assessment and 303(d) listing processes, IDEM proposed to relist seven waterbody AU/metal impairment combinations that had been included on its 2008 list due to nonattainment of dissolved metals criteria based on total metals data assessments. In a later phone conversation with EPA[69], IDEM clarified its position regarding these seven waterbody AU/impairment combinations and restated its original belief that the state does not consider these waters to be impaired for the identified metals and that they should therefore not be included in the 303(d) list. EPA concurs with IDEM's delisting of five of the seven waterbody AU/metal impairments combinations (***shown in bold italic font*** in Table 3 in Appendix A1 of this decision document). However, the rationales for these delistings are based on EPA's own assessment determinations of the metal data rather than the delisting justifications originally provided by IDEM

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66 See Conversation Record dated November 23, 2011.

67 See Letter from David R. Joest, Assistant Commissioner of the Office of Legal Counsel and Criminal Investigations at IDEM, to Peter Swenson, Chief of Watersheds and Wetlands Branch at U.S. EPA, dated September 12, 2011.

68 See email to Peter Swenson from Martha Clark Mettler dated November 1, 2011.

69 See phone conversation record between Peter Swenson and Martha Clark Mettler dated October 17, 2012.

as a result of the State's revised metals assessment methodology. EPA disagrees with IDEM's delisting of two of the seven waterbody AU/metal impairments combinations (***shown in bold italic font*** in Table 12 in Appendix A1 of this decision document). EPA is proposing to add these two waterbody AU/metal impairment combinations to Indiana's 2010 303(d) list (Category 5 of the IR) based on EPA's assessment of the available metals data provided by IDEM.

EPA is not persuaded by IDEM's arguments for not listing waters based on derived criteria and total recoverable metals data, and as discussed above, continues to believe that it is appropriate for IDEM to use derived criteria and total recoverable metals data for 305(b) assessments, 303(d) listing decisions, and TMDL development.[70] EPA finds that Indiana has not considered "applicable water quality standards" pursuant to 40 C.F.R. § 130.7(b)(3), has not evaluated existing and readily available water quality-related metals data and information to develop the 303(d) list pursuant to 40 C.F.R. § 130.7(b)(5), and has not demonstrated good cause for not listing a group of water quality-limited segments impaired for metals pursuant to 40 C.F.R. § 130.7(b)(6). Therefore, EPA is partially disapproving Indiana's 2010 303(d) list pursuant to Section 303(d) of the Clean Water Act and 40 C.F.R. § 130.7(d)(2) for not listing waters based on total recoverable metals data and derived metal criteria. EPA is proposing a series of waterbody listings (Table 12 under Section 7 of Appendix A1 of this decision document), which are based on EPA's re-evaluation[71] of the metal assessment data[72] supplied by IDEM. EPA will be providing the public an opportunity to comment on our proposed decision, and will consider comments received prior to making a final decision.

EPA performed water quality assessments for determining the designated use (aquatic life) support status for the waters at issue with regard to metals, based on the water quality sampling data supplied by IDEM. These data were evaluated on a site-by-site basis and assessed according to the magnitude and frequency of the exceedance(s) of Indiana's WQS. Generally, waterbody AUs were considered to be impaired for metals in instances where more than one exceedance of the chronic criteria for aquatic life was found to occur in the sampled data set within a three-year period. In some rare instances, best professional judgment was used to consider waterbody AUs impaired for metals in instances when a high magnitude exceedance of both the chronic and acute criteria for aquatic life within a three-year period were found to occur in sampled data sets consisting of three or fewer measurements.[73] In general, this approach for evaluating the data is consistent with IDEM's assessment methodology.

EPA utilized Indiana's derived criteria values in order to assess waterbody listings for iron, aluminum and manganese, which IDEM had included on its draft 303(d) list. EPA reviewed Indiana's derived criteria values for these metals, and found that IDEM properly followed the State's regulation for interpreting narrative standards (derived criteria methodology under 327 IAC 2-1-8.2 and 327 IAC 2-1-8.3) in calculating these values. This approach is also consistent with EPA's guidance for deriving numeric aquatic life criteria.[74] Therefore, EPA considered these values to be appropriate

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70 In contrast to Indiana's expressed position that is not appropriate to use total recoverable metals data and derived criteria for TMDL development, IDEM submitted the Busseron Creek watershed TMDL final report to EPA on February 28, 2012; the TMDL was established using total recoverable metals data and derived criteria. EPA's review of the TMDL report is ongoing.

71 See EPA's Metal Assessments Tables in the Administrative Record file.

72 See Compilation of emails from IDEM to EPA with attached metal assessment data.

73 See EPA's Metal Assessments Tables in the Administrative Record file.

74 See email to Vilma Rivera-Carrero from Brian Thompson dated December 7, 2011.

interpretations of Indiana's narrative WQS, and proceeded to use these criteria values in its waterbody metal assessments.

EPA used metal translators, the conversion factors in 327 IAC 2-1-6, to estimate the ambient dissolved metal fraction based upon available total recoverable metal data in order to assess the "dissolved metal criteria" attainment status of waterbodies for copper, lead, nickel and zinc, which were originally proposed on the State's draft 303(d) list.

Table 12 under Section 7 of Appendix A1 of this decision document identifies the waterbody impairment listings for metals (aluminum, iron, copper, lead, and zinc) that EPA is proposing to add to Indiana's 2010 303(d) list (Category 5 of the IR) based on EPA's assessment of the available metals data. These proposed additions include 66 new impairments to 59 waterbody AUs previously listed in Category 5 for other impairments, and 66 waterbody AUs with 73 impairments newly listed in Category 5.