UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:
WW-16J

SEP 22 2006

Ms. Martha Clark Mettler
Office of Water Quality
Indiana Department of Environmental Management
100 N. Senate Ave.
Mail Code IGCN 1315
Indianapolis, IN 46204-2251

Dear Ms. Clark Mettler:

The United States Environmental Protection Agency (U.S. EPA) has reviewed the final Total Maximum Daily Loads (TMDLs) for phosphorus, nitrogen, and total suspended solids in the St. Marys River watershed in Indiana. The segments are listed in Table 1 of the enclosed decision document. The Indiana Department of Environmental Management's (IDEM's) TMDLs address the nutrient and impaired biotic communities in three subwatersheds of the St. Marys River watershed in Adams and Allen Counties. Based on this review, U.S. EPA has determined that Indiana's 11 TMDLs addressing 7 impairments meet the requirements of Section 303(d) of the Clean Water Act and U.S. EPA's implementing regulations at 40 C.F.R. Part 130. Therefore, U.S. EPA hereby approves 11 TMDLs in the St. Marys River watershed in Indiana. The statutory and regulatory requirements, and U.S. EPA's review of Indiana's compliance with each requirement, are described in the enclosed decision document.

We wish to acknowledge Indiana's effort in submitting these TMDLs, addressing 7 impairments, and look forward to future TMDL submissions by the State of Indiana. If you have any questions, please contact Mr. Kevin Pierard, Chief of the Watersheds and Wetlands Branch at 312-886-4448.

Sincerely yours,

Jo Lynn Traub
Director, Water Division

Enclosure

cc: Andrew Pelloso, IDEM

TMDL: St. Marys River, Indiana
Date: SEP 22 2006

DECISION DOCUMENT FOR APPROVAL OF THE ST. MARYS RIVER WATERSHED, INDIANA, NUTRIENT TMDLS

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 C.F.R. Part 130 describe the statutory and regulatory requirements for approvable TMDLs. Additional information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and EPA regulations, and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation. Use of the term "should" below denotes information that is generally necessary for EPA to determine if a submitted TMDL is approvable. These TMDL review guidelines are not themselves regulations. They are an attempt to summarize and provide guidance regarding currently effective statutory and regulatory requirements relating to TMDLs. Any differences between these guidelines and EPA's TMDL regulations should be resolved in favor of the regulations themselves.

1. Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the waterbody as it appears on the State's/Tribe's 303(d) list. The waterbody should be identified/georeferenced using the National Hydrography Dataset (NHD), and the TMDL should clearly identify the pollutant for which the TMDL is being established. In addition, the TMDL should identify the priority ranking of the waterbody and specify the link between the pollutant of concern and the water quality standard (see section 2 below).

The TMDL submittal should include an identification of the point and nonpoint sources of the pollutant of concern, including location of the source(s) and the quantity of the loading, e.g., lbs/per day. The TMDL should provide the identification numbers of the NPDES permits within the waterbody. Where it is possible to separate natural background from nonpoint sources, the TMDL should include a description of the natural background. This information is necessary for EPA's review of the load and wasteload allocations, which are required by regulation.

The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as:

(1) the spatial extent of the watershed in which the impaired waterbody is located;
(2) the assumed distribution of land use in the watershed (e.g., urban, forested, agriculture);
(3) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources;

(4) present and future growth trends, if taken into consideration in preparing the TMDL (e.g., the TMDL could include the design capacity of a wastewater treatment facility); and (5) an explanation and analytical basis for expressing the TMDL through *surrogate measures*, if applicable. *Surrogate measures* are parameters such as percent fines and turbidity for sediment impairments; chlorophyll *a* and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices.

Comment:

Location Description:

The St. Marys River in Indiana is located in Adams and Allen Counties. The river originates in Ohio, flows northwestward into Indiana, and joins with the St. Joseph River in Fort Wayne, Indiana, where it creates the Maumee River, which flows northeastward back into Ohio. The TMDL report addresses three subwatersheds of the St Marys River, specifically Blue Creek/Habegger Ditch, Yellow Creek, and the Unnamed Tributary to the St Marys River (Table 1 below).

The Blue Creek subwatershed is approximately 79 miles in area, and the Yellow Creek subwatershed is approximately 25 miles in area. The TMDL addresses 18 stream miles of Blue Creek/Habegger Ditch, 32 stream miles of Yellow Creek, and 3 miles of the Unnamed Tributary of the St Marys River (page 56 of the TMDL). These waters were listed on the Indiana 2004 and 2006 303d lists as impaired due to impaired biological community (IBC) and excessive nutrients. These segments were also listed as impaired for *E. coli* (Table 1 of the TMDL). During the development of the TMDL, the Indiana Department of Environmental Management (IDEM) determined that the Unnamed Tributary IBC was also the result of low flow as well as excessive nutrients, and therefore calculated nutrient reductions for the waterbody (page 69 of the TMDL). This TMDL decision document will focus on the impairments due to IBC and excessive nutrients. A separate decision document focuses on the *E. coli* impairments.

Topography and Land Use:

The land use in the subwatersheds is mainly agricultural. Each of the three subwatersheds had the land use calculated, and all were at least 90% agricultural, with a small percentage forest. IDEM compared the land use data from 1992 to air photos taken in 2003, and determined that there was little change in the land use in any of the watershed units (Section 3 of the IBC TMDL).

Pollutant of concern:

IDEM has identified four waterbody segments of the St. Marys River watershed as impaired on Indiana's 2004 and 2006 303(d) lists for violations of aquatic life use water quality standard, due to excessive nutrients. The specific pollutants identified by IDEM are nitrogen, phosphorus, and total suspended solids (TSS).

Elevated levels of nutrients have been documented since 1996 in the Blue Creek and Yellow Creek subwatersheds, and more recently in the Unnamed Tributary. A detailed survey was performed by IDEM in 2004, in which 14 sites were sampled once every other week from March 2004 to October 2004 (Page 57 of the TMDL). The City of Fort Wayne sampled 7 of the sites on

alternating weeks from July 2004 to October 2004 (Attachment G of the TMDL; IDEM submittal from Staci Goodwin dated 9/12/06). Both Blue Creek and Yellow Creek subwatersheds showed exceedences of three of the nutrient targets developed by IDEM (phosphorus, nitrogen, and TSS), while the Unnamed Tributary showed exceedences of two targets (phosphorus and TSS).

Pollutant point sources:
IDEM has identified three permitted point source dischargers to the Blue Creek subwatershed, none of which are considered significant potential sources of nutrients or TSS. There is one combined sewer overflow (CSO) in the Blue Creek watershed, as well as a sanitary sewer overflow (SSO) discharge. There is one permitted point source discharger in the Yellow Creek subwatershed, which is not considered a significant potential source of nutrients or TSS, and no permitted dischargers in the Unnamed Tributary subwatershed. IDEM has also identified numerous areas in the watershed where direct septic discharge is known or suspected to be occurring (Section 3 of the IBC TMDL). There are no identified MS4 communities in the watersheds. There are three concentrated animal feeding operations (CAFOs) as defined under the NPDES regulations in the St Marys watershed (Appendix 11 of the TMDL). All these sources are discussed in more detail in Section #5 below.

Pollutant nonpoint sources: The Source Assessment Sections of the TMDL submittal states that the nonpoint sources for nitrogen, phosphorus, and TSS in all three subwatersheds include:

- Wildlife – deer, geese, ducks, raccoons, turkey, and other animals
- Septic systems – those septics systems that are not directly discharging to a waterbody, but effluent can still reach the water (i.e., ponding, etc).
- Small livestock operations not regulated by CAFO regulations, may be a source of *E. coli*. This would include both the facilities and the related operations such as manure spreading on fields, etc.
- Run-off from farm fields

Population and growth trends: IDEM noted that the land use changed little between the 1992 land survey and 2003 revaluation. The State does not anticipate dramatic changes in the near future.

Priority ranking: This TMDL was prioritized by IDEM to be completed at this time due to the water quality monitoring schedule. As stated in IDEM's current listing methodology, the TMDL development schedule corresponds with IDEM's basin-rotation water quality monitoring schedule in order to take advantage of all available resources for TMDL development. The basin-rotation schedule will be used unless there is a significant reason to deviate from it. Priority may be upgraded or downgraded depending on designated uses, magnitude of impairment, implementation practices by other interested parties, or availability of new guidance.

EPA finds that the TMDL submittal from IDEM satisfies all requirements concerning this first element.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable State/Tribal water quality standard, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the antidegradation policy (40 C.F.R. §130.7(c)(1)). EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

The TMDL submittal must identify a numeric water quality target(s) – a quantitative value used to measure whether or not the applicable water quality standard is attained. Generally, the pollutant of concern and the numeric water quality target are, respectively, the chemical causing the impairment and the numeric criteria for that chemical (e.g., chromium) contained in the water quality standard. The TMDL expresses the relationship between any necessary reduction of the pollutant of concern and the attainment of the numeric water quality target. Occasionally, the pollutant of concern is different from the pollutant that is the subject of the numeric water quality target (e.g., when the pollutant of concern is phosphorus and the numeric water quality target is expressed as Dissolved Oxygen (DO) criteria). In such cases, the TMDL submittal should explain the linkage between the pollutant of concern and the chosen numeric water quality target.

Comment:
Use Designation: The designated use for the waterbodies in the Blue Creek, Yellow Creek, and Unnamed Tributary subwatersheds is to support a warm water aquatic community (327 IAC 2-1-3(a)(2)).

Numeric Standards/Targets: IDEM does not have any numeric criteria to define an impaired biotic community or for nitrogen, phosphorus or TSS, which are the pollutants of concern. To determine the impairment status of the biologic community, IDEM has developed targets based upon the status of the biological community, specifically, the Index of Biological Integrity (IBI) (*Guide to Appropriate Metric Selection for Calculating the Index of Biotic Integrity (IBI) for Indiana Rivers and Streams,* IDEM). This index is based upon the assemblages of fish present in the sampling site, compared to the assemblage expected in the waterbody. This is also based upon the drainage area and ecoregion (*Guide to Appropriate Metric Selection for Calculating the Index of Biotic Integrity (IBI) for Indiana Rivers and Streams,* IDEM). The target score for the waterbodies is 36 (Indiana Integrated Water Quality Monitoring and Assessment Report (2006 IDEM 303d list), Appendix C).

IDEM also reviewed the nutrient data available for the waterbodies. IDEM has developed targets for nutrients that are based upon several numeric criteria, including dissolved oxygen, pH, as well as other indicators, including total phosphorus, nitrogen, algal condition, and TSS, that are applied on a case-by-case basis to determine the nutrient status of a waterbody (Page 57 of the TMDL; Indiana Integrated Water Quality Monitoring and Assessment Report (2006 IDEM 303d list), Appendix C). To classify a water as impaired for nutrients, two or more of the conditions need to be exceeded. The three subwatersheds (Blue Creek, Yellow Creek, and Unnamed

Tributary) showed relatively high levels of nitrogen, phosphorus, and total suspended solids (Appendix G of the TMDL). The water quality targets for these TMDLs are:

pollutant	target
Total Phosphorus	$\leq$ 0.3 mg/l
Nitrogen	$\leq$ 10 mg/l
TSS	$\leq$ 30 mg/l

Nutrients can impact a biotic community by increasing algal and aquatic plant life. This in turn can lead to an increase in turbidity, lowered overall dissolved oxygen levels, and increase the fluctuations in daily ranges of pH and dissolved oxygen (page 58 of the TMDL). These changes have a negative impact on the biotic community. As the water quality decreases and stressors increase, the fish species present in the waterbody will change, to more tolerant species, and generalists that are present in degraded streams. This change in species is tracked by the IBI score.

TSS are those particles in the water that can be trapped by a filter. High concentrations of TSS can reduce the amount of sunlight available to aquatic organisms and decrease water clarity. This leads to a number of effects including reduction of aquatic plants available for consumption by higher-level organisms, lower dissolved oxygen, and the impaired ability of fish to see and catch food. TSS particles can also hold heat resulting in increased stream temperature. Further, TSS can clog fish gills, retard growth rates, decrease resistance to disease, and prevent egg and larval development. When TSS settles on the bottom of a waterbody, eggs of fish and invertebrates are smothered, larvae can suffocate, and habitat quality is degraded (Page 58 of the TMDL).

Based upon the data, IDEM has determined that the nitrogen, phosphorus, and TSS targets have been exceeded in the three subwatersheds. IDEM believes that by reducing the nutrient loads to meet the water quality targets, the biotic community will improve, and the warm water aquatic community use will be restored. The USEPA agrees that these targets and assumptions are appropriate given the data available.

EPA finds that the TMDL submittal from IDEM satisfies all requirements concerning this second element.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity of a waterbody for the applicable pollutant. EPA regulations define loading capacity as the greatest amount of a pollutant that a water can receive without violating water quality standards (40 C.F.R. §130.2(f)).

The pollutant loadings may be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. §130.2(i)). If the TMDL is expressed in terms other than a daily load, e.g., an annual load, the submittal should explain why it is appropriate to express the TMDL in the unit of measurement chosen. The TMDL submittal should describe the method used to establish the cause-and-effect relationship between the numeric target and the identified

pollutant sources. In many instances, this method will be a water quality model.

The TMDL submittal should contain documentation supporting the TMDL analysis, including the basis for any assumptions; a discussion of strengths and weaknesses in the analytical process; and results from any water quality modeling. EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

TMDLs must take into account *critical conditions* for stream flow, loading, and water quality parameters as part of the analysis of loading capacity. (40 C.F.R. §130.7(c)(1)). TMDLs should define applicable *critical conditions* and describe their approach to estimating both point and nonpoint source loadings under such *critical conditions*. In particular, the TMDL should discuss the approach used to compute and allocate nonpoint source loadings, e.g., meteorological conditions and land use distribution.

Comment:
Loading capacity: IDEM has determined that the loading capacities for the impaired waterbodies are the daily target concentrations of :

Total phosphorus: ≤ 0.30 mg/l
Nitrogen (NO2 + NO3) : ≤ 10 mg/l
TSS: ≤ 30 mg/l

Typically loading capacities are expressed as a mass per time (e.g. pounds per day). For this TMDL, however, IDEM is using concentration to measure loading capacity rather than mass per time, with concentration being the amount of matter in a given volume. This approach is consistent with EPA's regulations which define "load" as "an amount of matter . . . that is introduced into a receiving water. . . ." (40 CFR §130.2). To establish the loading capacities for the Blue Creek, Yellow Creek, and Unnamed Tributary subwatershed, IDEM used the targets discussed above. Thus, the loading capacity is expressed as a concentration, i.e. the amount of pollutant per volume of water. A loading capacity is "the greatest amount of loading that a water can receive without violating water quality standards." (40 CFR §130.2). As discussed in Section #2 above, IDEM believes that achieving these targets will result in the biologic community achieving the desired designated use.

Method for cause and effect relationship: The load duration curve (LDC) approach was used for developing this TMDL, with an explanation found in the TMDL Development, and Allocations Sections (Sections 5 and 6 of the TMDL submittal). A very simplified explanation is provided below.

1. Flow data - First, continuous flow data are required. The gage on the St. Marys River (04182590) provided by U.S. Geological Survey (USGS) was used for the St. Marys River watershed (page 70 of the TMDL). The data reflect a range of natural occurrences from extremely high flows to extremely low flows.
2. Water Quality data - This dataset is the monitored nutrient data. A summary is

provided in Section #1 above, and in Attachment G of the TMDL, and in the IDEM submittal dated 9/12/06.

3. Water Quality Duration Curves (Attachment H of the TMDL submittal) – These plots are derived from the flow data and water quality data described above. Existing monitored water pollutant concentrations, represented by the diamond-shaped points on the plot, are compared to target concentrations, the water quality standard line. If the target line is above (greater than) the existing concentrations, no reduction needs to occur. Conversely, if the existing concentrations are greater than the target load, a reduction is necessary to reach the target.
4. Load Duration Curves (Attachment I of the TMDL submittal) - The final step is to link the geographic locations of load reductions needed to the flow conditions under which the exceedences occur. Specific locations contributing nutrient loads, represented by the graphs, are identified to determine under what flow conditions the nutrient exceedences are occurring. Most of the LDCs in Blue Creek and Yellow Creek show that the greatest exceedences occur under high to moist flow, although exceedences do occur at mid-range and dry conditions for TSS and phosphorus. For the Unnamed Tributary, exceedences only occur for TSS and phosphorus. These exceedences are predominantly under dry conditions, as the concentrations go up as the river goes dry (page 69 of the TMDL). By knowing the flow conditions under which exceedences are occurring, IDEM can focus implementation activities on those sources most likely to contribute loads.

IDEM's TMDL approach is based upon the premise that all discharges (point and non-point) must meet the water quality targets when entering the waterbody. If all sources are meeting the targets at discharge, then the waterbody should meet the WQS and the designated use. The plots show under what flow conditions the water quality exceedences occur. Those exceedences at the right side of the graph occur during low flow conditions, suspected to be septic systems malfunctions and illicit sewer connections; exceedences on the left side of the graphs occur during higher flow events, such as storm runoff. IDEM has reviewed these load duration curves, and believes that the sources are attributed to mainly wet-weather events.

EPA agrees with this review. Using the load duration curve approach allows IDEM to determine which implementation practices are most effective for reducing nutrient loads based on flow magnitude. For example, if loads are significant during storm events, implementation efforts can target those best management practices (BMPs) that will most effectively reduce storm water runoff. This allows for a more efficient implementation effort. The load duration curve is a cost-effective TMDL approach, to address the reductions necessary to meet the targets for nutrients and ultimately attain the warm water fishery designated use.

Weaknesses of the TMDL analysis are that non-point source (NPS) load allocations were not assigned to specific sources within the subwatersheds, and the identified sources of nutrients were assumed based on the data collected in the subwatersheds, rather than determined by detailed monitoring and sampling efforts. Moreover, specific source reductions were not quantified. However, EPA believes the strengths of the State's proposed TMDL approach outweigh the weaknesses and that this methodology is appropriate based upon the information

available. In the event that nutrient levels do not meet the targets in response to implementation efforts described in the TMDL submittal (pages 72-74 of the TMDL), or the biotic community does not attain its designated use, the TMDL may be amended as new information on the watershed is developed, to better account for contributing sources of the impairment and to determine where reductions in the Blue Creek, Yellow Creek, and Unnamed Tributary subwatersheds are most appropriate.

Critical conditions: IDEM has determined that the critical condition for Blue Creek and Yellow Creek is under wet weather conditions, as most of the loading and exceedences are during wet weather events, generally in the late spring, or during storm events. For the Unnamed Tributary, IDEM identified the critical condition as during dry weather, when the tributary water levels are negligible. By using the LDC method, all these "critical conditions" are accounted for in the loading allocations. IDEM will be able to determine which flow regime (dry, moist, wet, etc.) is best targeted for implementation activities. USEPA agrees with these determinations.

EPA finds that the TMDL submittal from IDEM satisfies all requirements concerning this third element.

4. Load Allocations (LAs)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity attributed to existing and future nonpoint sources and to natural background. Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. §130.2(g)). Where possible, load allocations should be described separately for natural background and nonpoint sources.

Comment:
Load Allocation: The Load Allocation Sections of the TMDL submittal states that the load allocation for the three subwatersheds is the daily target concentrations of:

Total phosphorus: ≤ 0.30 mg/l
Nitrogen (NO2 + NO3) : ≤ 10 mg/l
TSS: ≤ 30 mg/l

IDEM did not determine LAs and related reductions for land use types or source categories; rather, the reductions are based upon subwatersheds. IDEM did not determine a natural background load; however, impacts from wildlife were considered as a source.

As previously discussed, IDEM developed LDCs for the Blue Creek, Yellow Creek, and Unnamed Tributary subwatersheds. These LDCs can be used to determine a daily mass loading, if needed. The daily mass loading will vary depending on stream flow. These curves will be used by IDEM to target those critical flow regimes for implementation (page 71 of the TMDL), and to determine the reduction needed for each subwatershed (Appendices 4 and 8 of the TMDL). Thus, rather than determine reductions based upon land use types or source categories, the reductions are based upon geographical location.

EPA finds that the TMDL submittal from IDEM satisfies all requirements concerning this fourth element.

5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to individual existing and future point source(s) (40 C.F.R. §130.2(h), 40 C.F.R. §130.2(i)). In some cases, WLAs may cover more than one discharger, e.g., if the source is contained within a general permit.

The individual WLAs may take the form of uniform percentage reductions or individual mass based limitations for dischargers where it can be shown that this solution meets WQSs and does not result in localized impairments. These individual WLAs may be adjusted during the NPDES permitting process. If the WLAs are adjusted, the individual effluent limits for each permit issued to a discharger on the impaired water must be consistent with the assumptions and requirements of the adjusted WLAs in the TMDL. If the WLAs are not adjusted, effluent limits contained in the permit must be consistent with the individual WLAs specified in the TMDL. If a draft permit provides for a higher load for a discharger than the corresponding individual WLA in the TMDL, the State/Tribe must demonstrate that the total WLA in the TMDL will be achieved through reductions in the remaining individual WLAs and that localized impairments will not result. All permittees should be notified of any deviations from the initial individual WLAs contained in the TMDL. EPA does not require the establishment of a new TMDL to reflect these revised allocations as long as the total WLA, as expressed in the TMDL, remains the same or decreases, and there is no reallocation between the total WLA and the total LA.

Comment:
Wasteload Allocation: Wasteload allocations are discussed in the Wasteload Allocation Sections and the Reasonable Assurance Activities Sections of the TMDL submittal. The wasteload allocation for all facilities subject to NPDES regulation is equal to the water quality targets for nutrients:

Total phosphorus: $\leq$0.30 mg/l
Nitrogen (NO2 + NO3) : $\leq$ 10 mg/l
TSS: $\leq$ 30 mg/l

There are three individual NPDES permitted dischargers in the watershed (page 71 and Appendix 9 of the TMDL). None of these three are considered by IDEM to be contributing a significant amount of nutrients to the impaired subwatersheds. One, the City of Berne, has a CSO discharge, but the wastewater treatment plant discharges to another watershed (page 71 of the TMDL submittal). The WLA for the CSO is also the water quality targets stated above. There are no MS4 communities in the subwatersheds. IDEM has identified 3 CAFOs in Blue Creek, and none in Yellow Creek or the Unnamed Tributary (Appendix 11 of the TMDL submittal). IDEM assigned a WLA of 0 as these facilities are required to manage manure, litter, and process wastewater pollutants in a manner that does not cause or contribute to the impairment of a WQS. IDEM noted that there have been isolated sanitary sewer overflows (SSOs) in the Blue Creek

subwatershed from the City of Berne. The WLA for these prohibited discharges is set at 0. IDEM determined a WLA for waste stabilization lagoons for TSS of 75 mg/l. No such lagoons are present in the watersheds, but IDEM determined this allocation in case of future facilities. IDEM also noted that there are numerous septic systems in the three subwatersheds that have direct discharge to streams. IDEM, Adams County, Allen County, and other governmental entities are working to locate and address these sites. IDEM has determined a WLA of 0 for these facilities.

EPA finds that the TMDL submittal from IDEM satisfies all requirements concerning this fifth element.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety (MOS) to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)). EPA's 1991 TMDL Guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

Comment:
IDEM determined an implicit and explicit MOS for these subwatersheds. Appendix 12 of the TMDL contains percent reductions that IDEM will use to develop implementation activities. These reductions are over-estimated, as IDEM based the reductions only on exceedences of the water quality targets, a more conservative assumption. In addition, IDEM added an additional 5% to the reduction target.

The EPA agrees that this MOS is appropriate, as the LDC method has few assumptions in it, compared to more complex models. Over 25 years of flow data were used in developing the loads. This would account for the wide range of flows, thus reducing the uncertainty in the flows (and related loads). By using the LDC method, IDEM also calculated loads at various flows in the waterbody, thus having a better understanding of when the exceedances occur, and under what conditions. This will help reduce uncertainty in the effectiveness of the implementation efforts, and the likelihood of meeting the appropriate WQS/designated use.

EPA finds that the TMDL submittal from IDEM contains an appropriate MOS satisfying all requirements concerning this sixth element.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The TMDL must describe the method chosen for including seasonal variations. (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1))

Comment:
The Seasonality Section of the TMDL addresses seasonality by using the load duration curve method to determine loadings. For this TMDL, daily flow values were used over a multi-year period to develop the water quality and load duration curves. Any high or low flows are addressed within the TMDL because this is a concentration-based TMDL, and IDEM has analyzed impacts based upon the LDC method, which accounts for seasonal variations in flows and thus in loads. Therefore all the standards will be met regardless of the season or flow events.

EPA finds that the TMDL submittal from IDEM satisfies all requirements concerning this seventh element.

8. Reasonable Assurances

When a TMDL is developed for waters impaired by point sources only, the issuance of a National Pollutant Discharge Elimination System (NPDES) permit(s) provides the reasonable assurance that the wasteload allocations contained in the TMDL will be achieved. This is because 40 C.F.R. 122.44(d)(1)(vii)(B) requires that effluent limits in permits be consistent with "the assumptions and requirements of any available wasteload allocation" in an approved TMDL.

When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, EPA's 1991 TMDL Guidance states that the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards.

EPA's August 1997 TMDL Guidance also directs Regions to work with States to achieve TMDL load allocations in waters impaired only by nonpoint sources. However, EPA cannot disapprove a TMDL for nonpoint source-only impaired waters, which do not have a demonstration of reasonable assurance that LAs will be achieved, because such a showing is not required by current regulations.

Comment:
There are several reasonable assurance actions that will be taken in the three subwatersheds to help implement the TMDL. They are in the Reasonable Assurance Activities Sections of the TMDL submittal and include, briefly:

- For point sources in the subwatersheds, phosphorus monitoring may be requested if the other implementation efforts show that point sources are a contributing source;
- The CSO community in the subwatershed is currently in the Long-Term Control Plan permitting process;
- CFO and CAFO management of manure, litter, and process wastewater;
- Watershed projects – 319 grants, and the hiring of a Watershed Specialist as a liaison

between planning and activities.

- Two 319 grants were awarded to the Adams County soil and Water Conservation District in 1999 and 2000, to address nutrient management;
- Allen and Adams Counties along with the City of Fort Wayne are working to form a watershed group in the St. Marys River watershed to address the impairments in the watershed; and
- IDEM identified a number of non-point source best management practices (BMPs) that could be used to reduce nutrient and TSS loads, including riparian area management, manure collection and storage, contour row cropping, and septic tank management/education.

EPA finds that this criterion has been adequately addressed.

9. Monitoring Plan to Track TMDL Effectiveness

EPA's 1991 document, Guidance for Water Quality-Based Decisions: The TMDL Process (EPA 440/4-91-001), recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions and, such TMDL should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDL are occurring and leading to attainment of water quality standards.

Comment:
The Monitoring Sections of the TMDL submittal states that monitoring in the subwatersheds will occur on the five-year rotating basin schedule and/or when some of the TMDL implementation is in place. IDEM will also be working with the City of Fort Wayne, the Adams County Soil and Water Conservation District, and the Allen County Health Department to coordinate monitoring efforts both currently underway and planned by those entities. Monitoring will be adjusted as needed for continued source identification and determination whether standards are being met.

EPA finds that this criterion has been adequately addressed.

10. Implementation

EPA policy encourages Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired by nonpoint sources. Regions may assist States/Tribes in developing implementation plans that include reasonable assurances that nonpoint source LAs established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. In addition, EPA policy recognizes that other relevant watershed management processes may be used in the TMDL process. EPA is not required to and does not approve TMDL implementation plans.

Comment:

Implementation is discussed in the Potential Future Activities section of the TMDL submittal. As discussed in Section 8 of this document, IDEM is working to form a watershed group to address the nutrient loads in the Blue Creek, Yellow Creek, and Unnamed Tributary subwatersheds.

The Potential Future Activities sections of the TMDL submittal also focuses on various BMPs that could be implemented to reduce loadings in the watersheds. These include riparian area management, manure collection and storage, contour row crops, manure nutrient-testing, drift fences, pet clean-up and education, and septic management /public education.

EPA reviews, but does not approve, implementation plans. EPA finds that this criterion has been adequately addressed.

11. Public Participation

EPA policy is that there should be full and meaningful public participation in the TMDL development process. The TMDL regulations require that each State/Tribe must subject calculations to establish TMDLs to public review consistent with its own continuing planning process (40 C.F.R. §130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval should describe the State's/Tribe's public participation process, including a summary of significant comments and the State's/Tribe's responses to those comments. When EPA establishes a TMDL, EPA regulations require EPA to publish a notice seeking public comment (40 C.F.R. §130.7(d)(2)).

Provision of inadequate public participation may be a basis for disapproving a TMDL. If EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by EPA.

Comment:
A stakeholder meeting was held in December 2004, to introduce stakeholders in the subwatersheds to the project, and a second public meeting was held in April 2005, to discuss data collection. IDEM public noticed this TMDL from August 3, 2005, to September 5, 2005, to provide an overview of the draft TMDL and provide an opportunity for public comments. Two public meetings were held on August 3 and 4, 2005, to discuss the draft TMDL. The meetings were held at the Decatur Public Library in Decatur, Indiana, and at the Hessen Cassel Library in Fort Wayne, Indiana. The presentations for all the public meetings were included in the final TMDL submittal. The draft TMDL documents were posted at: http://www.in.gov/idem/water/planbr/wqs/tmdl/documents.html, the IDEM TMDL Web site. U.S. EPA sent IDEM comments on the draft and final TMDL, and the comments were adequately addressed in the final TMDL. Comments on this TMDL project were received from one commentor, and the comment was addressed appropriately by IDEM.

EPA finds that the TMDL submittal from Indiana satisfies all requirements concerning this eleventh element.

12. Submittal Letter

A submittal letter should be included with the TMDL submittal, and should specify whether the TMDL is being submitted for a *technical review* or *final review and approval.* Each final TMDL submitted to EPA should be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State's/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final review and approval, should contain such identifying information as the name and location of the waterbody, and the pollutant(s) of concern.

Comment:
EPA received the St. Marys River and Maumee River TMDL submittal on June 19, 2006, accompanied by a submittal letter dated June 14, 2006. In the submittal letter, IDEM stated this TMDL is "the Final TMDL submission from the State of Indiana." 4 segments are addressed in the TMDL, as listed in Table 1 below. The submittal addressed TMDLs for both *E. coli* and nutrients. For clarity reasons, the USEPA has developed two separate decision documents, one addressing the *E. coli* impairments, and one addressing the nutrient impairments. This is the document addressing the nutrient impairments. The Blue Creek, Yellow Creek, and unnamed Tributary subwatersheds are impaired for Aquatic Life Use on Indiana's 303(d) list due to excessive nutrients as listed below in Table 1.

13. Conclusion

After a full and complete review, EPA finds that the IDEM TMDL submittal for the Blue Creek, Yellow Creek, and Unnamed Tributary of the St Marys River watershed satisfy all of the elements of approvable TMDLs. This approval concerns the waterbody segments, pollutants, and impairments set forth in Table 1 below. This approval is for a total of 11 TMDLs addressing 7 impairments in 4 segments. Impairments addressed in this TMDL are from the pollutants phosphorus, nitrogen, and TSS.

Table 1 St Marys River Watershed

Waterbody Name	Segment ID Number(s)*	Pollutant	Impairment
Blue Creek	INA0445_T1006	Phosphorus, nitrogen, TSS	IBC, nutrients
Habegger Ditch	INA0443_T1008	Phosphorus, nitrogen, TSS	IBC, nutrients
Yellow Creek/Martz Ditch	INA0047_00	Phosphorus, nitrogen, TSS	IBC, nutrients
Unnamed trib to St Marys River	INA0454_T1012	Phosphorus, TSS	IBC

IBC = impaired biological community; TSS = total suspended solids

Table 2: NPDES Permits in the Blue Creek, Yellow Creek, Unnamed Tributary subwatersheds

Permit No.	Facility Name	Receiving Waters	Sub-Watershed
IN0021369	Berne STP	Wabash River	Blue Creek
IN0048151	Monroe Water Department	Yellow Creek	Yellow Creek
IN0058980	Bing-Lear Manufacturing Group, Berne	Habegger Ditch	Blue Creek
ING490084	Meshberger Bros Stone Plt #2	Blue Creek	Blue Creek
INP000069	Bing-Lear Manufacturing Group, Berne	Berne STP	Blue Creek