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

JUL 3 1 2008

REPLY TO THE ATTENTION OF:

WW-16J

Ms. Marylou Renshaw
Branch Chief, Watershed Planning Branch
Indiana Department of Environmental Management
100 North Senate Avenue
Indianapolis, Indiana 46204

Dear Ms. Renshaw:

The United States Environmental Protection Agency has reviewed the final Total Maximum Daily Loads (TMDLs) submitted by the Indiana Department of Environmental Management (IDEM) for the South Fork Wildcat Creek watershed in Indiana. The TMDLs are for *Escherichia coli (E. coli)*, total phosphorus, total suspended solids, and nitrate + nitrite which address the impairments of *E. coli*, impaired biotic communities, and dissolved oxygen on 31 impaired assessment units in the South Fork Wildcat Creek watershed.

Based on this review, EPA has determined that Indiana's TMDLs for *E. coli*, total phosphorus, total suspended solids, and nitrate + nitrite meet the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations set forth at 40 CFR Part 130. Therefore, EPA hereby approves 79 TMDLs addressing 36 impairments in 31 impaired assessment units in the South Fork Wildcat Creek watershed in Indiana. The statutory and regulatory requirements, and 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 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,

for Tinka G. Hyde
Acting Director, Water Division

Enclosure

cc: Andrew Pelloso, IDEM

Date of Approval: July 31, 2008

DECISION DOCUMENT FOR THE APPROVAL OF *E. coli*, TOTAL PHOSPHORUS, NITRATE+NITRITE, AND TOTAL SUSPENDED SOLIDS TOTAL MAXIMUM DAILY LOADS FOR THE SOUTH FORK WILDCAT CREEK WATERSHED IN INDIANA

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 CFR Part 130 describe the statutory and regulatory requirements for approvable total maximum daily loads (TMDLs). Additional information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) of the CWA 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.

1. Identification of Water body, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the water body as it appears on the State's/Tribe's 303(d) list, the pollutant for which the TMDL is being established, and the priority ranking of the water body. 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 National Pollutant Discharge Elimination System (NPDES) permits within the water body. 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 assumed distribution of land use (e.g., urban, forested, agriculture); (2) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources; (3) present and future growth trends, if taken into consideration in preparing the TMDL; and (4) 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.

Identification of Water Bodies:
Table 1 of this decision identifies the impaired water body segments and associated impairments which are being addressed by these TMDLs. There are a total of 31 impaired water body segments addressed by these TMDLs.

Pollutants of Concern:
The impairments being addressed by these TMDLs are impaired biotic community, *Escherichia coli (E. coli)*, and dissolved oxygen. Table 1 of this decision document identifies which impairments apply

to each of the 31 impaired water body segments. To address the impaired biotic community impairments, IDEM has identified total phosphorus (TP), nitrate + nitrite (NO2NO3), and total suspended solids (TSS) as pollutants of concern. To address the dissolved oxygen impairment the State has identified total phosphorus and nitrate +nitrite as the pollutants of concern. The pollutant of concern for the *E. coli* impairment is *E. coli*. Section 3 of this decision document and Section 3.3 of the TMDL report discuss the linkage between these pollutants of concern and the impairments.

Sources of Pollutant Loads:
Section 5.0 of the TMDL report discusses sources of TP, TSS, NO2NO3, and *E. coli* in the South Fork Wildcat Creek watershed.

The Spreadsheet Tool for the Estimation of Pollutant Loads (STEPL) was used to estimate the magnitude of TP, TSS and total nitrogen[1] sources in the watershed. STEPL uses simple algorithms to calculate nutrient and sediment loads from different land uses and the load reductions that would result from the implementation of various best management practices. Table 10 and Figure 7 in the TMDL report display the STEPL results. Appendix C of the TMDL report provides details on the inputs and outputs used in STEPL for the South Fork Wildcat Creek watershed.

The Simple Method was used to estimate contributions of *E. coli* from sources in the watershed. The Simple Method is an empirical approach developed for estimating pollutant loadings based on drainage area, impervious cover, stormwater runoff pollutant concentrations, and annual precipitation. Table 10 and Figure 7 in the TMDL report display contributions of *E. coli* from sources in the South Fork Wildcat Creek watershed based on the results of the Simple Method. Appendix D of the TMDL report provides details on how these contributions were estimated.

Specific categories of sources discussed in Section 5 of the TMDL report include wastewater treatment plants (WWTP) and permitted industrial facilities; concentrated animal feed operations (CAFOs); municipal separate storm sewer systems (MS4s); combined sewer systems; illicitly connected straight pipe systems; agriculture; streambank erosion; onsite wastewater treatment systems; and confined feeding operations (CFOs). The state identifies WWTPs, industrial facilities, CAFOs, MS4s, combined sewer systems and straight pipes as point sources and agriculture, streambank erosion, onsite wastewater treatment systems, and CFOs as nonpoint sources.

Table 11 in the TMDL report lists the NPDES permitted wastewater dischargers in the watershed. There are four WWTPs, one regional sewer district, and three industrial facilities. The city of Frankfort operates a combined sewer system with one combined sewer outfall (CSO). During heavy precipitation events the capacity of the combined sewer systems can be exceeded thereby causing

[1] Existing total nitrogen loads were estimated in the source assessment even though the pollutant of concern is nitrate + nitrite. Total nitrogen is a measurement of all forms of nitrogen therefore, nitrate + nitrite contributions from sources would be included in any estimates of total nitrogen.

excess wastewater to discharge through the CSO. The Frankfort CSO is only considered a potential source during high flow events. The facilities identified in Table 11 and the Frankfort CSO are subject to NPDES permitting requirements. Figure 5 in the TMDL report displays the location of these NPDES facilities.

In Indiana both CAFOs and CFOs are regulated such that these facilities shall not cause or contribute to an impairment of surface waters, i.e., these facilities should be designed so that no discharges are released from the facilities. These facilities receive zero discharge permits from the State. The most distinguishable regulatory difference between these two sources is that CAFOs meet the federal definition of a confined feeding operation therefore; these facilities are federal point sources, while CFOs do not meet the federal definition but do fall subject to State regulations. Table 12 in the TMDL report lists the eleven CAFOs within the watershed. Figure 8 in the TMDL report displays the location of the eleven CAFOs and the CFOs within the watershed. Appendix E of the TMDL report provides a list of all the CAFOs (permit numbers provided) and CFOs along with the number of animals at these operations. Appendix E also provides a summary of the number of animals associated with CAFOs and CFOs by 14 digit hydrologic unit codes (HUCs) within the watershed. CAFOs are considered point sources and will receive a zero wasteload allocation (WLA) while CFOs are considered nonpoint sources and will receive a zero load allocation (LA).

Two MS4 communities have been identified in the watershed; a portion of the Tippecanoe County MS4 and the City of Frankfort. Both of these communities are subject to NPDES permits which require these communities to establish stormwater management plans. Figure 9 in the TMDL report displays the location of these MS4 communities within the watershed.

The remaining point source identified in the TMDL report is straight pipes. Some households in the watershed are potentially discharging household wastes directly to a stream or directly to tile-drainage pipes in agricultural fields. These systems are commonly referred to as straight pipes. These straight pipes are considered illegal discharges. Although these sources are identified as a potential source these discharges, if the location was known to the State, would not receive a permit to operate. Therefore, these sources receive a zero WLA.

Nonpoint sources included in the source assessment are agriculture, streambank erosion, and onsite wastewater treatment systems (e.g., septic systems). Contributions from these sources were estimated using STEPL and the Simple Method. Rural runoff and onsite wastewater treatment systems were estimated to be a large source of *E. coli* in the watershed. Additionally, rural runoff was estimated to contribute the highest contributions of all pollutants of concern within the watershed. Streambank erosion was estimated to contribute 28% of the TSS loading in the watershed.

Overall, the results of the source assessment through STEPL and the Simple Method suggest that rural runoff is the most significant source of TSS, NO2NO3 and TP, most likely due to the high percentage of agricultural lands in the watershed. Likely sources of *E. coli* include runoff from both rural and urban lands, failing onsite wastewater treatment systems and livestock in close proximity to streams. Streambank erosion was considered a likely potential source of TSS. Wastewater treatment plants, although not significant sources of NO2NO3 or TP on an annual basis, are possible sources during low

flow periods.

Land Use, Population Characteristics, and other Relevant Information:
Section 2 of the TMDL report provides data and information regarding population, topography, land use/land cover, soils, and hydrology of the South Fork Wildcat Creek watershed. The watershed drains approximately 250 square miles in Tipton, Clinton, Howard and Tippecanoe counties (see Figure 1 in the TMDL report). The City of Frankfort, with a population of approximately 16,000, is located in the middle of the watershed. In addition to the city of Frankfort there are several small communities, populations less than 1000, located in the watershed (see Tables 2 and 3 in the TMDL report). Figure 3 and Table 4 in the TMDL report provide land cover and land use data and information. The watershed consists predominantly of cultivated crops (80%). The U.S. Geological Survey (USGS) operates one stream flow gaging station in the watershed near the mouth of the South Fork Wildcat Creek near the city of Lafayette. The period of record for the gage is April 1, 1944 to September 30, 2006. Figure 5 in the TMDL report shows the location of the USGS gage. Figure 6 in the TMDL report shows average flows at the gage for the 16 year period beginning January 1, 1991 and ending September 30, 2006. The 16 years of flow data indicates that, on average, flows are highest from December through April and lowest in August and September.

Future Growth
The State did not specifically account for future growth in these TMDLs.

Priority Ranking:
Indiana's priority ranking is reflected in its schedule for TMDL development. In most situations, *E. coli* impairments have a high priority and are targeted for TMDL development in the short term. Dissolved oxygen and IBC impairments have a medium priority and are scheduled for TMDL development after consideration of amount of available and representative data, ability to characterize the impairment, and local involvement and interest in the watershed. The State's 2008 303(d), Attachment 3, identifies IDEM's two-year TMDL development schedule and Addendum 1 provides a long-term TMDL development schedule. According to the two-year schedule, all the impaired water body segments being addressed by these TMDLs, except for INB0744_T1019, INB0749_00, INB074A_T1048 and INB074E_T1023, were scheduled for TMDL development in 2008. According to Addendum 1, segments INB0744_T1019 had a target date for TMDL completion of 2007; INB0749_00 of 2017; and INB074E_T1023 of 2021. According to Attachment 3 and Addendum 1 of Indiana's 2008 303(d) list, the *E. coli* impairment for the water segment INB074A_T1048 was included on the two-year schedule for TMDL development in 2008 while the dissolved oxygen impairment was scheduled for TMDL development in 2017.

Assessment: EPA finds that the South Fork Wildcat Creek TMDLs and supporting information submitted by the State of Indiana adequately describe the water bodies, pollutants of concern, sources of pollutant loads, priority ranking, land use, population characteristics and other relevant information necessary to fulfill this element of a TMDL.

IDEM's June 6, 2008 correspondence, along with the TMDL report enclosed with this correspondence, asked for review and approval of three water body segments that are not included in EPA's approval.

The correspondence and the TMDL report identified the following three water body segments as impaired due to impaired biotic communities:

INB0742_T1048, Unnamed Stream (Near Avery, IN)
INB0743_02, Prairie Creek (Through Frankfort, IN)
INB0746_T1002, Swamp Creek - Unnamed Tributary

IDEM's 2008 303(d) list of impaired waters which was approved by EPA on May 21, 2008 removed these three water body segments from the list of impaired waters needing a TMDL based on data received since the development of prior list, i.e., the 2006 list, which shows these three water body segments to be full support. Since IDEM has determined these three water body to be full support and no longer included on the 303(d) list of impaired waters needing TMDLs, these three water body segments are not included in EPA's approval of South Fork Wildcat Creek TMDLs.

IDEM's June 6, 2008 correspondence and the TMDL report also identify water body segments INB0745_00 and INB0746_00 as impaired for impaired biotic communities. During the development of the 2008 303(d) list both of these water body segments were resegmented, i.e., the assessment unit associated with the unique identification number was split into new assessment units each with a new unique identification number and the original identification number retired. According to Attachment 1 of the 2008 303(d) list, the new segmentation for both of these water body segments is as follows:

INB0745_00	resegmented into	INB0745_02, Shanty Creek INB0745_03, Kilmore Creek INB0745_T1001, Collier Ditch INB0745_T1001A, Carter Ditch INB0745_T1002, Lydy-Fillerworth Ditch
INB0746_00	resegmented into	INB0746_01, Swamp Creek

The new assessment units and their associated unique identification numbers (or new assessment unit identification as it is called on the 2008 303(d) list) are included in Table 1 of this decision document and included in EPA's approval of the South Fork Wildcat Creek TMDLs.

Although the TMDL did not specifically account for future growth, EPA considered that since the watershed is already predominantly comprised of agricultural lands (80%), nonpoint sources would be an unlikely area of future growth. Rather, future growth would most likely be comprised of expansion of treatment facilities as more communities consider changing to municipal systems versus onsite systems. EPA also considered that as implementation efforts move forward likely nonpoint sources such as failing onsite systems will be reduced or eliminated as these sources are identified and remediation or upgrades occur, and as illicit discharges are identified and eliminated. Over time, as rural areas become more urbanized there may be an increase in point sources, i.e., expanded or new WWTPs and additional MS4 communities. Any future point sources, new or expanded, would be subject to NPDES permit review and approval. The NPDES process provides a mechanism to assure that future growth of point sources remains consistent with this TMDL. If future growth cannot occur within the established allocations in these TMDLs the State would need to consider modifying these

TMDLs. Any future modifications to the elements of these approved TMDLs should be resubmitted to EPA for review and approval.

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 water body, the applicable numeric or narrative water quality criterion, and the antidegradation policy. (40 CFR §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.

Numeric Water Quality Standards:
Indiana's water quality standards for *E. coli* and dissolved oxygen can be found in the Title 327 of the Indiana Administrative Code Article 2 Rule 1-6 (327 IAC 2-1-6). The standards are as follows.

Dissolved Oxygen:
"This subsection establishes minimum surface water quality for aquatic life. In addition to subsection (a), subdivisions (1) through (5) are established to ensure conditions necessary for the maintenance of a well-balanced aquatic community. The following are applicable at any point in the waters outside of the mixing zone:
(3) Concentrations of dissolved oxygen shall:
(A) average at least five (5.0) milligrams per liter per calendar day; and
(B) not be less than four (4.0) milligrams per liter at any time." [327 IAC 2-1-6(b)(3)]

E. coli:
"(d) This subsection establishes bacteriological quality for recreational uses during the recreational season as follows:
(1) The recreational season is defined as the months of April through October, inclusive.
(2) In addition to subsection (a), the criteria in this subsection are to be used to do the following:
(A) Evaluate waters for full body contact recreational uses.
(B) Establish wastewater treatment requirements.
(C) Establish effluent limits during the recreational season.
(3) For full body contact recreational uses, E. coli bacteria shall not exceed the following:
(A) One hundred twenty-five (125) per one hundred (100) milliliters as a geometric mean based on not less than five (5) samples equally spaced over a thirty (30) day period.
(B) Two hundred thirty-five (235) per one hundred (100) milliliters in any one (1) sample in a thirty (30) day period,

except that in cases where there are at least ten (10) samples at a given site, up to ten percent (10%) of the samples may exceed two hundred thirty-five (235) cfu or MPN per one hundred (100) milliliters where the:
(i) E. coli exceedances are incidental and attributable solely to E. coli resulting from the discharge of treated wastewater from a wastewater treatment plant as defined at IC 13-11-2-258; and
(ii) criterion in clause (A) is met.
However, a single sample shall be used for making beach notification and closure decisions.
If a geometric mean cannot be calculated because five (5) equally spaced samples are not available, then the criterion stated in clause (B) must be met." [327 IAC 2-1-6(d)(3)]

Narrative Water Quality Standards:
Indiana's narrative water quality standard set forth in 327 IAC 2-1-3 and 2-1-9 says,

"(2) All waters, except as described in subdivision (5), will be capable of supporting:
(A) a well-balanced, warm water aquatic community;" [327 IAC 2-1-3(a)(2)]

"(60) "Well-balanced aquatic community" means an aquatic community that:
(A) is diverse in species composition;
(B) contains several different trophic levels; and
(C) is not composed mainly of pollution tolerant species." [327 IAC 2-1-9(60)]

These are the numeric and narrative water quality standards applicable to the impaired water body segments addressed by these TMDLs.

TMDL Target and Linkage Analysis of Target to Water Quality Standards
The goal of these *E. coli* TMDLs is to achieve both the geometric mean and daily *E. coli* numeric water quality standard as set forth in Indiana's administrative code. For purposes of establishing the loading capacities and allocations, the numeric *E. coli* target used is the geometric mean component of the water quality standard, i.e., 125 counts/100mL. Using 125 counts/100mL as the TMDL target ensures that both the daily and geometric mean component of the standard will be met. These TMDLs are establishing daily *E. coli* loads based upon 125 counts/100mL. If the daily loading of *E. coli* is below the loading capacity, i.e., no more than 125 counts/100mL, the daily component of the water quality standard will be attained and the resulting geometric mean calculated on not less than five samples will not exceed the geometric mean component of the water quality standard.

The loading capacities and allocations for *E. coli* found in Table 2 of this decision document and in Tables 16 - 19 and 22 - 25 in the TMDL report were established using 125 count/100mL as the numeric target for *E. coli*.

Indiana's narrative criteria require that a well-balanced aquatic community be maintained however, Indiana does not have numeric water quality criteria defining a well-balanced community. To address the impaired biotic communities impairment TMDLs are developed for TSS, NO2NO3, and TP. Concentrations of these three pollutants are elevated throughout the watershed and data shows that the pollutant targets used in these TMDLs are being exceeded in the watershed. (Water quality data is presented in Section 4 and Appendix B of the TMDL report.) Section 3.3 of the TMDL report links these pollutants to negative impacts to the aquatic community. Additionally, the one dissolved oxygen impairment is being addressed by pollutant loads for NO2NO3 and TP. As discussed below there is an

interrelationship between high nutrient loads, excessive algal growth, and the subsequent impacts of excessive algae on dissolved oxygen. The State does not have numeric criteria developed for TP and NO2NO3 so these TMDLs use benchmarks used by the State to assess potential impairments. The benchmarks used as the TMDL targets are 0.3 mg/L for TP and 10 mg/L for NO2NO3. The State has not yet developed numeric criteria for TSS, however, the State has identified an effluent permit limit of 30 mg/L for NPDES facilities. To ensure consistency with the NPDES program the TMDL target for TSS is the 30 mg/L used in NPDES permits.[2]

High TSS concentrations can reduce the amount of sunlight available to aquatic organisms and decrease water clarity which can lead to a reduction in aquatic plants available for consumption by higher level organisms, lower dissolved oxygen concentrations, and impaired ability of fish to see and catch food. An increase in TSS concentrations can also lead to high water temperatures due to the ability of TSS particles to hold heat. High TSS concentrations can also cause an increase in the amount of TSS that settles to the bottom of the water body. An increase in the amount of TSS settling can cause smothering of fish eggs and invertebrates and suffocation of larvae. All these negative impacts of high TSS concentrations contribute to the lack of a well-balanced aquatic community.

Excess concentrations of NO2NO3 and TP can cause negative effects on the aquatic community by increasing algal growth and the growth of other aquatic plant life. Increased plant growth can cause an increase in turbidity, decrease average dissolved oxygen concentrations and increased fluctuations in diurnal dissolved oxygen levels. These changes and swings provide an inviting environment for a more undesirable aquatic species composition within the water body thus degrading the water body.

The loading capacities and allocations for NO2NO3 found in Table 2 of this decision document and in Tables 17, 19-21 and 23-25 in the TMDL report were established using 10 mg/L as the numeric target.

The loading capacities and allocations for total phosphorus found in Table 2 of this decision document and in Tables 17, 19-21 and 23-25 in the TMDL report were established using 0.30 mg/L as the numeric target.

The loading capacities and allocations for total suspended solids found in Table 2 of this decision document and in Tables 17, 19-21 and 24-25 in the TMDL report were established using 30 mg/L or 75 mg/L[3] as the numeric target.

Assessment:
EPA finds that the TMDL report submitted by the State of Indiana adequately describes the applicable water quality standards, relevant criteria, and numeric TMDL targets. EPA agrees that the State's selection of the geometric mean component of the *E. coli* water quality standard, 125 *E. coli*/100mL, as the numeric TMDL target, when achieved, will attain the recreational use and both the geometric mean

[2] Remaining consistent with NPDES effluent limitations, a TMDL target of 75 mg/L was used instead of 30 mg/L for any 10:1 dilution ratio wastewater systems (in-stream flow must be 1 cfs to allow a 0.1 cfs discharge).
[3] Michigantown Municipal WWTP is a lagoon facility and its NPDES permit only allows discharge to occur when flow in South Fork Wildcat Creek is sufficient to support a 10:1 dilution ratio. This flow threshold is met during all five flow regimes therefore; 75 mg/L was used as the numeric target for TSS.

and daily component of the State's water quality standard. EPA also agrees with the selection of TSS, NO2NO3 and TP as the pollutants to address the impaired biotic community impairments and NO2NO3 and TP to address the dissolved oxygen impairment. The information provided by the State in Section 3.3 of the TMDL report provides adequate linkage of these pollutants to degraded biotic communities and decreases in average dissolved oxygen. The State's use of benchmarks used in assessment of impairments and NPDES permit limits are reasonable targets for the TMDLs. These targets are consistent with other water quality programs in the State and have been associated with acceptable and unacceptable levels of these pollutants. In the future, if the State does adopt numeric water quality criteria for TSS, NO2NO3, and TP different than the targets used in these TMDLs, the State will need to reconsider these TMDL targets, and if needed to attain the new water quality criteria, modifications should be made to these TMDLs.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity of a water body 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 CFR §130.2(f)). 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 steam flow, loading, and water quality parameters as part of the analysis of loading capacity. (40 CFR §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.

<u>General Approach to Development of the TMDLs for all Pollutants of Concern and Consideration of Critical Condition</u>

Load duration curves were used to establish the loading capacities. The use of load duration curves allows for the calculation of acceptable loads, i.e., the loading capacities, over the range of flow conditions expected to occur in the impaired water bodies. The first step to establishing loading capacities using load duration curves is to create a flow duration curve. A flow duration curve is generated by creating a flow frequency table and plotting the observed flows in order from highest to lowest, where the left side of the curve represents the highest observed flows. The flow duration curve is then translated into a load duration curve by multiplying each flow value on the curve by the TMDL target concentration and by a conversion factor. The resulting points are then graphed to create a load curve. This load curve represents the loading capacity. Existing data can be plotted on the load duration curve by taking the existing pollutant concentration and multiplying by the average daily flow on the day the sample was collected and by a conversion factor. The resultant is plotted on the graph.

Points plotting above the load curve represent deviations from the water quality standard and loading capacity, while, points plotting below the curve represent attainment of the loading capacity. The load duration curve considers critical conditions associated with flow by establishment of the curve using multiple years of flow data. The flow data used to create the load duration curve uses available flow data for the selected period of record which accounts for seasonal and annual variations in the flow. Section 6 and Figure 10 in the TMDL report discuss and display an example load duration curve for the South Fork Wildcat Creek watershed.

Specific Loading Capacities for the South Fork Wildcat Creek watershed

Nine assessment locations were selected within the watershed for the establishment of load duration curves. Selection of the assessment locations considered the location of impaired water bodies and the availability of existing water quality data to estimate existing loads. Figure 11 in the TMDL report shows the location of the assessment locations with respect to the impaired water bodies. Tables 1 and 2 of this decision document show the relationship between the assessment locations and the impaired water bodies.

Stream flows for each assessment location are needed to create load duration curves. The only continuous stream flow data available in the watershed is from the USGS gage located near the mouth of South Fork Wildcat Creek near Lafayette. Stream flows for each assessment location were extrapolated from the USGS flow data by using a multiplier based upon the ratio of upstream drainage area to the drainage area of the watershed. Table 14 in the TMDL report provides the upstream drainage area and drainage area ratio specific to each assessment location. The aforementioned drainage area ratios do not directly account for upstream point source discharges, therefore, the actual in-stream flows can be underestimated. To minimize underestimation of in-stream flows, design flows for upstream point sources were added to the flows used to establish load duration curves at the following assessment locations: WAW040-0001, WAW040-0037, WAW040-0043, and WAW040-0093.

The load duration curves established for each assessment location were grouped into five flow regimes to help interpret the values on the curve and help connect the loading capacities to implementation and potential sources. Table 13 in the TMDL report provides a connection between the five flow regimes and potential sources. The load duration curves developed at each assessment location can be found in Appendix F of the TMDL report.

Although the entire curve represents the loading capacity one value was selected to be the loading capacity for each of the five flow regimes at each assessment location. The loading capacities were selected to be the mid-point of the curve in each of the five flow regimes. The approved loading capacities for each assessment location can be found in Table 2 of this decision document and Tables 16 - 24 in the TMDL report. Table 2 of this decision document identifies the loading capacities established for each assessment unit. Tables 1 and 2 of this decision document identify the specific impaired water body segments to their corresponding assessment location.

Assessment: EPA finds that the South Fork Wildcat Creek TMDLs submitted by the State of Indiana adequately identify the loading capacities and adequately accounts for critical conditions. Indiana's

use of the five flow intervals adequately takes into account the impact of flow, whether it is high, mid, or low flow, thereby allowing the state to consider critical conditions associated with flow when allocating the loading capacities to point and nonpoint sources.

4. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include wasteload allocations, which identify the portion of the loading capacity allocated to individual existing and future point source(s) (40 CFR §130.2(h), 40 CFR §130.2(i)). In preparing the wasteload allocations, it is not necessary that each individual point source be assigned a portion of the allocation of pollutant loading capacity. When the source is a minor discharger of the pollutant of concern or if the source is contained within an aggregated general permit, an aggregated wasteload allocation can be assigned to the group of dischargers.

Table 2 of this decision document identifies the approved total wasteload allocation at each assessment location and the individual wasteload allocations for the individual facilities. Additionally, Table 25 in the TMDL report identifies the individual wasteload allocations. Tables 16 through 24 identify the wasteload allocations at each assessment location. The wasteload allocation for all CAFOs is zero. The wasteload allocation for all straight pipes is also zero.

Wasteload allocations were established for individual point sources and at each assessment location. In general, wasteload allocations were established by multiplying a facility's design flow by a concentration limit and appropriate conversion factor. The specific design flows used to establish the individual facility wasteload allocations can be found in Table 25 in the TMDL report. The wasteload allocation for the Frankfort CSO was established using the maximum observed daily flow, as reported on the 2006 facility discharge reports. MS4 wasteload allocations were established considering the percentage of the geographic areas of the MS4 upstream of the assessment location. The concentration limits used to establish the wasteload allocations were the TMDL numeric targets discussed in Section 2 of this decision document and in Section 3 of the TMDL report.

Assessment: EPA finds that the wasteload allocations, as set forth in Table 2 of this decision document and Tables 16-25 in the TMDL report, are adequately specified at a level sufficient, when combined with the load allocations, to attain and maintain water quality standards. EPA finds that the State considered all applicable point sources in the watershed in the establishment of wasteload allocations. EPA finds the State's decision to establish zero wasteload allocations to CAFOs and straight pipes reasonable since these facilities are designed for no discharge and are illicit discharges, respectively. EPA also finds it reasonable that the State considers the Frankfort CSO to be potential source during high flow events, thereby establishing a wasteload allocation that is applicable during high flows.

5. 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 CFR §130.2(g)).

Where possible, load allocations should be described separately for natural background and nonpoint sources.

The State established a load allocation for each of the five flow zones for each assessment location. The portion of the loading capacity that was not used as wasteload allocation or explicit margin of safety was assigned to the nonpoint sources as load allocation. The State specifically identifies all CFOs as receiving a zero load allocation.

Assessment: EPA finds that the load allocations specified in Table 2 of this decision document and in Tables 16-24 in the TMDL report are adequate and at a level sufficient, when combined with the wasteload allocations, to attain and maintain water quality standards. The State established gross load allocations for all nonpoint sources except for CFOs. EPA finds that establishing a specific load allocation for one source category and a gross allocation for the other nonpoint sources reasonable. The State has specific permitting requirements applicable to CFOs that support a zero load allocation. 40 CFR §130.2 allows for gross allotments therefore, since no specific regulatory factors apply to the other nonpoint source categories it is reasonable for the State to establish a gross allocation.

6. Margin of Safety (MOS)

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

The State used both an explicit and implicit margin of safety. The explicit margin of safety was established by taking 10% of the loading capacity at each assessment location and setting it aside as margin of safety. According to Section 7.4 of the TMDL report, the uncertainty associated with the TMDLs is minimized by using of the TMDL targets to establish the loading capacities. Section 7.4 also identifies an implicit margin of safety for the *E. coli* TMDLs by not accounting for any pollutant rate of decay. Also identified by the State as components of the implicit margin of safety is the establishment of TMDLs for all pollutants of concern in all water body segments identified as having impaired biotic communities, even if the impaired water body segment only has data indicating one or two of the pollutants of concern were above the TMDL targets. The State points out that achieving the TMDLs for all pollutants of concern in all water body segments, impaired or not, will provide additional load reductions and benefits for the aquatic community. These additional benefits and load reductions were not considered in the establishment of the TMDLs.

Assessment: EPA finds that the 10% explicit margin of safety submitted by the State of Indiana provides adequate margin of safety. The TMDL is a direct function of stream flow. The State used a

16 year record for stream flow. The use of a long term flow record minimizes uncertainties associated with flow. The use of the TMDL target also minimizes the uncertainty in the relationship between the allocations and the water quality standards. The State linked the TMDL targets to attaining and maintaining the water quality standards. Therefore, use of the TMDL targets in the establishment of the load curve minimizes the uncertainty. Use of a long term flow record and the TMDL targets to establish the load duration curve helps minimize the uncertainty therefore, a 10% explicit margin of safety is reasonable. EPA also finds the State's use of an implicit margin of safety for the *E. coli* TMDLs reasonable. Not using a rate of decay associated with pathogen organisms is conservative because if the State had considered the rate of decay the organism count would be less. Pathogen organisms have a limited capability of surviving outside of their host. So, not applying a rate of decay provides greater protection because it is assumed that there is no die off of the pathogen organisms.

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 CFR §130.7(c)(1)).

Use of the load duration curve accounts for seasonal variation since the load duration curve accounts for loads during the entire range of observed flows and presents loads that vary by flow. Seasonal variation is also considered for the *E. coli* TMDLs because the applicable water quality standard is a seasonal standard.

Assessment: EPA finds the State's use of a seasonal standard a reasonable approach for considering seasonal variation in development of the *E. coli* TMDLs. The State uses the water quality standard, which applies during the recreational season, April through October, to develop the loading capacities and the allocations for the *E. coli* TMDLs. EPA also considered the State's use of multi-year flow data as a mechanism that considers seasonal variation. A 16-year continuous record of flow data was used to develop the loading capacities. Use of multi-year flow data takes into consideration variations in flow due to seasons and annual variations within a season.

8. Reasonable Assurances

When a TMDL is developed for waters impaired by point sources only, the issuance of a NPDES permit(s) provides the reasonable assurance that the wasteload allocations contained in the TMDL will be achieved. This is because 40 CFR §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 wasteload allocation 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.

Section 9 of the TMDL report provides information about both reasonable assurance and implementation. Section 9 of the TMDL report identifies nonpoint sources as the primary sources where implementation efforts will be needed. This section goes on to discuss specific best management practices and outreach efforts planned and already underway in the watershed.

Assessment: EPA finds that the TMDLs for the South Fork Wildcat Creek watershed submitted by the State of Indiana provide reasonable assurances that the wasteload allocations and load allocations will be achieved. The issuance of or the existence of a NPDES permit provides reasonable assurance that the wasteload allocations will be achieved since permitting regulations require that effluent limits in permits be consistent with assumptions and requirements of wasteload allocations in approved TMDLs. In addition to this regulatory assurance, Section 9 of the TMDL report provides information about existing and planned implementation efforts. EPA considered the fact that existing programs are already underway and the ongoing efforts on the development of watershed management plans in its decision that reasonable assurance exists.

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.

Section 7.3 and Table 26 in the TMDL report discuss the need for additional monitoring. In-stream monitoring is recommended downstream of WWTPs, as well as from plant effluent. Monitoring requirements are recommended for the next NPDES permit cycles for all point sources discussed in the TMDL report. Table 26 specifically identifies facilities that should monitor for total phosphorus.

Assessment: EPA finds the TMDL report submitted by the State of Indiana to adequately describe future monitoring needs designed to track the effectiveness of the TMDL and the appropriateness of the allocations, although EPA is not approving any recommendations for monitoring contained in this TMDL report or any other aspect of Indiana's monitoring program through this decision.

10. Implementation

EPA policy[4] 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 load allocations 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.

Assessment: EPA is taking no action on the implementation discussions within the TMDL report but notes that the State appears to have good basis for implementing measures necessary to achieve the allocations in the South Fork Wildcat Creek TMDLs. Section 9 of the TMDL report contains information about the ongoing implementation activities and plans for future activities to implement these TMDLs.

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 CFR §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.

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.

On October 24, 2006, two public meetings were held to announce the start of the TMDL development process and describe the available data and information to be considered in developing the TMDLs. Additionally, the technical approach for developing the TMDLs was proposed. Comments were encouraged and comment forms and IDEM contact information was provided.

On February 13, 2008, two public meetings were held to present the draft TMDL report. Written comments on the draft report were accepted for 30 days, February 4 - March 5, 2008. Five written comments were received. A comment received from Clinton County Soil and Water Conservation District provided information regarding additional CAFOs within the watershed. This comment resulted in more CAFOs being added to the TMDL report thus subjecting these additional CAFOs to the zero wasteload allocation. The Clinton County Health Department provided information regarding the estimates used for existing straight pipe discharges and failing septic systems. The State considered the information presented in the public comment and changed the percentage of straight

[4] Perciasepe, B., EPA, Office of Water, *New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs)*, August 8, 1997.

pipe dischargers in the watershed from 10% to 30%. The State also considered the information presented in the comment and changed the percentage of failing septic systems from 10% to 19%.

Assessment: EPA finds that the State of Indiana's public participation process satisfies the requirement that calculations to establish TMDLs shall be subject to public review thus satisfying the requirement at 40 CFR §130.7(c)(1)(ii). The State provided an opportunity for the public to be involved not only in the review and comment of the draft TMDLs but prior to the development of the TMDLs. The State responded to all the comments received during the public notice and comment period. Changes made to the TMDL report in response to the public comments received did not result in any changes to the loading capacities or allocations. The State provided its mailing list and copies of presentations presented at the four public meetings for EPA's consideration.

12. Submittal Letter

A submittal letter should be included with the TMDL, 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 water body, and the pollutant(s) of concern.

Assessment: IDEM's June 6, 2008 correspondence signed by Marylou Renshaw, Branch Chief, Watershed Planning Branch, addressed to Mr. Kevin Pierard, Chief, Watersheds & Wetlands Branch, U.S. EPA, Region 5, was received by EPA on June 12, 1008. The June 6 correspondence states that the final TMDLs and supporting documentation and information are submitted under Section 303(d) of the Clean Water Act for EPA final review and approval. On July 10, 2008, through an electronic mail message, IDEM sent and EPA received concurrence that the impaired water body segments identified in Table 1 of this decision document should be the water body segments subject to EPA's approval rather than the impaired water body segments identified in the June 6 correspondence and enclosed TMDL report. Information contained in the June 6 and July 10 submittals provided the necessary information to complete EPA's review and approval of the final TMDLs for South Fork Wildcat Creek watershed.

Table 1: Impaired water body segments being addressed by South Fork Wildcat Creek watershed TMDL

Assessment Location	Impaired Segment	Water Body Segment Name	Cause of Impairment	Pollutant(s)
WAW040-0006[1]	INB0741_02	Talbert Ditch	Impaired Biotic Communities (IBC)	Nitrate +Nitrite (NO2NO3), Total Phosphorus (TP), Total Suspended Solids (TSS)
	INB0741_T1002	Dunn-Ditch-Cripe-Ditch	IBC	NO2NO3, TP, TSS
	INB0741_T1004	South Fork Wildcat Creek	IBC	NO2NO3, TP, TSS
	INB0742_T1001	Jenkins Ditch	IBC	NO2NO3, TP, TSS
	INB0742_T1047	Wildcat Creek, South Fork-Unnamed Tributary	IBC	NO2NO3, TP, TSS
	INB0743_00	Prairie Creek (Headwater)	IBC	NO2NO3, TP, TSS
	INB0743_T1002	Mann Ditch	IBC	NO2NO3, TP, TSS
WAW040-0001	INB0744_T1019	South Fork Wildcat Creek – Mainstem	*Escherichia coli (E. coli)*	*E. coli*
WAW040-0102[2]	INB0745_02[3]	Shanty Creek	IBC	NO2NO3, TP, TSS
	INB0745_03[3]	Kilmore Creek	IBC	NO2NO3, TP, TSS
	INB0745_T1001[3]	Collier Ditch	IBC	NO2NO3, TP, TSS
	INB0745_T1001A[3]	Carter Ditch	IBC	NO2NO3, TP, TSS
	INB0745_T1002[3]	Lydy-Fillerworth Ditch	IBC	NO2NO3, TP, TSS
	INB0746_01[4]	Swamp Creek	IBC	NO2NO3, TP, TSS
	INB0746_T1001	Paris Ditch	IBC	NO2NO3, TP, TSS
	INB0747_T1001	Davis Ditch	IBC	NO2NO3, TP, TSS
	INB0747_T1002	Stump Ditch	IBC	NO2NO3, TP, TSS
WAW040-0028	INB0749_00	Kilmore Creek	*E. coli*	*E. coli*
	INB074A_T1020	South Fork Wildcat Creek – Mainstem	*E. coli*	*E. coli*
	INB0749_T1001	Boyles Ditch-Unnamed Tributary	*E. coli*	*E. coli*
	INB0749_T1002	Boyles Ditch	*E. coli*	*E. coli*
WAW040-0154	INB0749_T1001	Boyles Ditch-Unnamed Tributary	IBC	NO2NO3, TP, TSS
	INB0749_T1002	Boyles Ditch	IBC	NO2NO3, TP, TSS
WAW040-0031	INB074A_T1048	Heavilon Ditch - Headwater	*E. coli* and Dissolved Oxygen	*E. coli,* NO2NO3, TP
WAW040-0037	INB074C_00	Lauramie Creek (Clinton Co)	*E. coli* and IBC	*E. coli,* NO2NO3, TP, TSS
	INB074C_01	Lauramie Creek (Tippecanoe Co)	*E. coli*	*E. coli*

Table 1: Impaired water body segments being addressed by South Fork Wildcat Creek watershed TMDL

	INB074C_T1001	McClellen Fickle Ditch	*E. coli* and IBC	*E. coli,* NO2NO3, TP, TSS
	INB074C_T1002	Hentz Ditch	*E. coli*	*E. coli*
	INB074C_T1003	Anderson Ditch	*E. coli*	*E. coli*
WAW040-0043	INB074D_T1022	South Fork Wildcat Creek	*E. coli*	*E. coli*
	INB074E_00	South Fork Wildcat Creek – Cary Camp	*E. coli*	*E. coli*
WAW040-0093	INB074D_T1050	Unnamed Tributary Basin	IBC	NO2NO3, TP, TSS
	INB074E_T1023	South Fork Wildcat Creek	*E. coli*	*E. coli*

[1] Table 15 in the TMDL report includes segments INB0742_T1048 and INB0743_02 in the TMDLs established at assessment location WAW040-0006. However, according to information submitted by IDEM with the 2008 Integrated Report (IR) these two segments were removed from category 5 because data indicates full support. Therefore, these two segments are not included in EPA's approval. Table 15 in the TMDL report also included segment INB0742_00 in the TMDLs established for assessment location WAW040-0006 with a footnote stating that this segment would be added as impaired due to *E. coli* and impaired biotic communities (IBC) on the 2008 IR. This segment was not included in the 2008 IR as an impaired segment. According to information submitted by IDEM in the 2008 IR this segment was resegmented into three segments, INB0742_01, INB0742_02, and INB0742 _03. These three segments were included in category 5 of the 2008 IR for PCBs in fish tissue but not for *E. coli* or IBC. Since PCBs are not being addressed by these TMDLs, segment INB0742_00, nor any of its resegmentations, is included in EPA's approval.

[2] Table 15 in the TMDL report included segment INB0746_T1002 in the TMDLs established at assessment location WAW040-0102. However, according to information submitted by IDEM with the 2008 IR this segment was removed from category 5 of the IR because data indicates full support. Therefore, this segment is not included in EPA's approval.

[3] Table 15 in the TMDL report identified segment INB0745_00 as being addressed by the TMDLs established at assessment location WAW040-0102. Information provided by IDEM in its 2008 IR says that this segment was resegmented into 5 segments (INB0745_02, INB0745_03, INB0745_T1001, INB0745_T1001A, and INB0745 T1002). Segment INB074500 will not be included in EPA's approval but the five resegmentations will be included.

[4] Table 15 in the TMDL report identified segment INB0746_00 as being addressed by the TMDLs established at assessment location WAW040-0102. Information provided by IDEM in its 2008 IR says that this segment was resegmented into segment INB0746_01. Segment INB0746_00 will not be included in EPA's approval but segment INB0746_01 will be included.

Table 2: Approved South Fork Wildcat Creek TMDLs

Assessment Location	Impaired Water Body Segments		TMDL/Allocations/MOS				
			High flows	Moist conditions	Mid-range flows	Dry conditions	Low flows
WAW040-0001 (see Table 16 of TMDL report)	INB0744_T1019	*E. coli* Loading Capacity (million/day)	331,720	155,210	65,543	40,999	25,903
		E. coli Wasteload Allocation[1] (million/day)	123,109	22,429	22,429	22,429	22,429
		E. coli Load Allocation (million/day)	175,439	117,260	36,560	14,470	884
		E. coli Margin of Safety (million/day)	33,172	15,521	6,554	4,100	2,590
		[1] Frankfort CSO WLA only assigned to high flow regime. Individual WLAs within this assessment location: Frankfort Muncipal WWTP (001A); permit number IN0022934; 22,145 million/day Frankfort CSO; permit number IN0022934; 88,484 million/day Michigantown Municipal WWTP; permit number IN0040355; 284 million/day Skiles Brothers Farms; permit number ING800604; WLA= 0 Stewart Prairie Swine Farms; permit number ING802545; WLA=0 City of Frankfort MS4; permit number INR040020; 12,196 million/day					

Assessment Location	Impaired Water Body Segments		TMDL/Allocations/MOS				
			High flows	Moist conditions	Mid-range flows	Dry conditions	Low flows
WAW040-0006 (see Table 17 of TMDL report)	INB0741_02 INB0741_T1002 INB0741_T1004 INB0742_T1001 INB0742_T1047 INB0743_00 INB0743_T1002	NO2NO3 Loading Capacity (kg/day)	23,469	1,482	291	27	17
		NO2NO3 Wasteload Allocation (kg/day)	2	2	2	2	2
		NO2NO3 Load Allocation (kg/day)	21,120	1,332	260	22	13
		NO2NO3 Margin of Safety (kg/day)	2,347	148	29	3	2
		TP Loading Capacity (kg/day)	704.07	44.48	8.74	0.8	0.51
		TP Wasteload Allocation (kg/day)	0.10	0.10	0.10	0.10	0.10
		TP Load Allocation (kg/day)	633.56	39.93	7.77	0.62	0.36
		TP Margin of Safety (kg/day)	70.41	4.45	0.87	0.08	0.05
		TSS Loading Capacity (kg/day)	70,407	4,448	874	80	51
		TSS Wasteload Allocation (kg/day)	17	17	17	17	17
		TSS Load Allocation (kg/day)	63,349	3,986	770	55	29
		TSS Margin of Safety (kg/day)	7,041	445	87	8	5
		Individual WLAs within this assessment location: Michigantown Municipal WWTP; permit number IN0040355; 2 kg NO2NO3/day; 0.1 kg TP/day; 17 kg TSS/day					

Assessment Location	Impaired Water Body Segments		TMDL/Allocations/MOS				
			High flows	Moist conditions	Mid-range flows	Dry conditions	Low flows
WAW040-0043	INB074D_T1022	*E. coli* Loading Capacity (million/day)	1,244,374	979,521	204,579	76,134	42,180

Table 2: Approved South Fork Wildcat Creek TMDLs

(see Table 18 of TMDL report)	INB074E_00	*E. coli* Wasteload Allocation[2] (million/day)	152,777	30,252	30,252	30,252	30,252
		E. coli Load Allocation (million/day)	967,160	851,317	153,869	38,269	7,710
		E. coli Margin of Safety (million/day)	124,437	97,952	20,458	7,613	4,218
		[2]Frankfort CSO WLA only assigned to high flow regime. Individual WLAs within this assessment location: Frankfort Muncipal WWTP (001A); permit number IN0022934; 22,145 million/day Frankfort CSO; permit number IN0022934; 88,484 million/day Mulberry Municipal WWTP (001A); permit number IN0031976; 781 million/day Mulberry Municipal WWTP (002Z); permit number IN0031976; 0 million/day Clarks Hill Municipal WWTP; permit number IN0039853; 710 million/day Michigantown Municipal WWTP; permit number IN0040355; 284 million/day CF Industries Inc; permit number IN0044245; 0 million/day Frito Lay Inc (001A); permit number IN0051624; 5,915 million/day Frito Lay Inc (002A); permitnumber IN0051624; 0 million/day Wainwright Middle School; permit number IN0055697; 76 million/day Lauramie Township RSD; permit number IN0061964; 341 million/day Skiles Brothers Farms; permit number ING800604; 0 million/day Thompson Farms of Clinton County; permit number ING800913; 0 million/day Brown Land & Hog Co Inc; permit number ING800919; 0 million/day Michael Beard-Home; permit number ING800920; 0 million/day J&L Crum Farms L.P. #1; permit number ING802456; 0 million/day Stewart Prairie Swine Farms; permit number ING802545; 0 million/day Salsberry Pork Producers Inc-Oly Rayl Farm; permit number ING802777; 0 million/day Paul P Davis Trust Farm #1; permit number ING802853; 0 million/day Burton Russel Farm; permit number ING802867; 0 million/day J & M Pullets; permit number ING806048; 0 million/day Meadowland Farms, Inc; permit number ING806300; 0 million/day City of Frankfort MS4; permit number INR040020; 21,025 million/day Tippecanoe County MS4; permit number INR040129; 13,016 million/day					

Assessment Location	**Impaired Water Body Segments**		**TMDL/Allocations/MOS**				
			High flows	**Moist conditions**	**Mid-range flows**	**Dry conditions**	**Low flows**
WAW040-0093 (see Table 19 of TMDL report)	INB074D_T1050 INB074E_T1023	*E. coli* Loading Capacity (million/day)	3,990,293	1,126,098	326,554	147,836	48,596
		E. coli Wasteload Allocation (million/day)	255,206	30,252	30,252	30,252	30,252
		E. coli Load Allocation (million/day)	3,336,058	983,236	263,647	102,800	13,484
		E. coli Margin of Safety (million/day)	399,029	112,610	32,655	14,784	4,860
		NO2NO3 Loading Capacity (kg/day)	31,922	9,009	1,822	1,521	416
		NO2NO3 Wasteload Allocation (kg/day)	2,042	242	242	242	242
		NO2NO3 Load Allocation (kg/day)	26,688	7,866	1,398	1,127	132
		NO2NO3 Margin of Safety (kg/day)	3,192	901	182	152	42
		TP Loading Capacity (kg/day)	957.67	270.27	54.68	45.63	12.46
		TP Wasteload Allocation (kg/day)	61.27	7.32	7.32	7.32	7.32

Table 2: Approved South Fork Wildcat Creek TMDLs

		TP Load Allocation (kg/day)	800.63	235.92	41.89	33.75	3.89
		TP Margin of Safety (kg/day)	95.77	27.03	5.47	4.56	1.25
		TSS Loading Capacity (kg/day)	95,767	27,027	9,553	4,563	1,246
		TSS Wasteload Allocation (kg/day)	6,135	736	736	736	736
		TSS Load Allocation (kg/day)	80,055	23,588	7,862	3,371	385
		TSS Margin of Safety (kg/day)	9,577	2,703	955	456	125
		Individual WLAs within this assessment location: Frankfort Muncipal WWTP (001A); permit number IN0022934; 22,145 million *E. coli*/day; 177 kg NO2NO3/day; 5.3 kg TP/day; 531 kg TSS/day Frankfort CSO; permit number IN0022934; 88,484 million *E.coli*/day; 708 kg NO2NO3/day; 21.2 kg TP/day; 2124 kg TSS/day Mulberry Municipal WWTP (001A); permit number IN0031976; 781 million *E. coli*/day; 6 kg NO2NO3/day; 0.2 kg TP/day; 19 kg TSS/day Mulberry Municipal WWTP (002Z); permit number IN0031976; all pollutants of concern WLA = 0 Clarks Hill Municipal WWTP; permit number IN0039853; 710 million *E. coli*/day; 6 kg NO2NO3/day; 0.2 kg TP/day; 17 kg TSS/day Michigantown Municipal WWTP; permit number IN0040355; 284 million *E. coli*/day; 2 kg NO2NO3/day; 0.1 kg TP/day; 17 kg TSS/day CF Industries Inc; permit number IN0044245; all pollutants of concern WLA= 0 Frito Lay Inc (001A); permit number IN0051624; 5,915 million *E. coli*/day; 47 kg NO2NO3/day; 1.4 kg TP/day; 142 kg TSS/day Frito Lay Inc (002A); permitnumber IN0051624; all pollutants of concern WLA= 0 Wainwright Middle School; permit number IN0055697; 76 million *E.coli*/day; 1 kg NO2NO3/day; 0 kg TP/day; 2 kg TSS/day Lauramie Township RSD; permit number IN0061964; 341 million *E. coli*/day; 3 kg NO2NO3/day; 0.1 kg TP/day; 8 kg TSS/day Skiles Brothers Farms; permit number ING800604; all pollutants of concern WLA= 0 Thompson Farms of Clinton County; permit number ING800913; all pollutants of concern WLA= 0 Brown Land & Hog Co Inc; permit number ING800919; all pollutants of concern WLA= 0 Michael Beard-Home; permit number ING800920; all pollutants of concern WLA = 0 J&L Crum Farms L.P. #1; permit number ING802456; all pollutants of concern WLA = 0 Stewart Prairie Swine Farms; permit number ING802545; all pollutants of concern WLA= 0 Salsberry Pork Producers Inc-Oly Rayl Farm; permit number ING802777; all pollutants of concern WLA= 0 Paul P Davis Trust Farm #1; permit number ING802853; all pollutants of concern WLA= 0 Burton Russel Farm; permit number ING802867; all pollutants of concern WLA = 0 J & M Pullets; permit number ING806048; all pollutants of concern WLA = 0 Meadowland Farms, Inc; permit number ING806300; all pollutants of concern WLA= 0 City of Frankfort MS4; permit number INR040020; 48,615 million *E. coli*/day; 389 kg NO2NO3/day; 12 kg TP/day; 1,167 kg TSS/day Tippecanoe County MS4; permit number INR040129; 87,855 million *E. coli*/day; 703 kg NO2NO3/day; 21 kg TP/day; 2,109 kg TSS/day					

Assessment Location	**Impaired Water Body Segments**		**TMDL/Allocations/MOS**				
			High flows	**Moist conditions**	**Mid-range flows**	**Dry conditions**	**Low flows**
WAW040-0102 (see Table 20 of TMDL report)	INB0745_02 INB0745_03 INB0745_T1001 INB0745_T1001A INB0745_T1002 INB0746_01 INB0746_T1001 INB0747_T1001 INB0747_T1002	NO2NO3 Loading Capacity (kg/day)	5,709	361	71	6.98	4.17
		NO2NO3 Wasteload Allocation (kg/day)	No Point Sources				
		NO2NO3 Load Allocation (kg/day)	5,138	325	64	6.28	3.75
		NO2NO3 Margin of Safety (kg/day)	571	36	7	0.70	0.42
		TP Loading Capacity (kg/day)	171.26	10.82	2.12	0.21	0.12
		TP Wasteload Allocation (kg/day)	No Point Sources				
		TP Load Allocation (kg/day)	154.13	9.74	1.91	0.19	0.11
		TP Margin of Safety (kg/day)	17.13	1.08	0.21	0.02	0.01
		TSS Loading Capacity (kg/day)	17,126	1,082	212	21	12

Table 2: Approved South Fork Wildcat Creek TMDLs

		TSS Wasteload Allocation (kg/day)	No Point Sources				
		TSS Load Allocation (kg/day)	15,413	974	191	19	11
		TSS Margin of Safety (kg/day)	1,713	108	21	2	1
Assessment Location	**Impaired Water Body Segments**		**TMDL/Allocations/MOS**				
			High flows	**Moist conditions**	**Mid-range flows**	**Dry conditions**	**Low flows**
WAW040-0154 (see Table 21 of TMDL report)	INB0749_T1001 INB0749_T1002	NO2NO3 Loading Capacity (kg/day)	317.14	20.03	3.93	0.43	0.23
		NO2NO3 Wasteload Allocation (kg/day)	No Point Sources				
		NO2NO3 Load Allocation (kg/day)	285.43	18.03	3.54	0.39	0.21
		NO2NO3 Margin of Safety (kg/day)	31.71	2.00	0.39	0.04	0.02
		TP Loading Capacity (kg/day)	9.514	0.601	0.118	0.013	0.007
		TP Wasteload Allocation (kg/day)	No Point Sources				
		TP Load Allocation (kg/day)	8.563	0.541	0.106	0.012	0.006
		TP Margin of Safety (kg/day)	0.951	0.060	0.012	0.001	0.001
		TSS Loading Capacity (kg/day)	951.44	60.11	11.81	1.29	0.70
		TSS Wasteload Allocation (kg/day)	No Point Sources				
		TSS Load Allocation (kg/day)	856.30	54.10	10.63	1.16	0.63
		TSS Margin of Safety (kg/day)	95.14	6.01	1.18	0.13	0.07
Assessment Location	**Impaired Water Body Segments**		**TMDL/Allocations/MOS**				
			High flows	**Moist conditions**	**Mid-range flows**	**Dry conditions**	**Low flows**
WAW040-0028 (see Table 22 of TMDL report)	INB0749_00 INB074A_T1020 INB0749_T1001 INB0749_T1002	*E. coli* Loading Capacity (million/day)	312,772	244,544	44,907	11,818	3,072
		E. coli Wasteload Allocation (million/day)	0	0	0	0	0
		E. coli Load Allocation (million/day)	281,495	220,090	40,416	10,636	2,765
		E. coli Margin of Safety (million/day)	31,277	24,454	4,491	1,182	307
		Individual WLAs within this assessment location: Thompson Farms of Clinton County; permit number ING800913; 0 million/day Michael Beard-Home; permit number ING800920; 0 million/day J&L Crum Farms L.P. #1; permit number ING802456; 0 million/day Salsberry Port Producers Inc-Old Rayl Farm; permit number ING802777; 0 million/day Paul P Davis Trust Farm #1; permit number ING802853; 0 million/day Burton Russel Farm; permit number ING802867; 0 million/day Meadowland Farms, Inc.; permit number ING806300; 0 million/day					
Assessment	**Impaired Water**		**TMDL/Allocations/MOS**				

Table 2: Approved South Fork Wildcat Creek TMDLs

Location	Body Segments		High flows	Moist conditions	Mid-range flows	Dry conditions	Low flows
WAW040-0031 (see Table 23 of TMDL report)	INB074A_T1048	*E. coli* Loading Capacity (million/day)	166,502	8,203	1,666	167	103
		E. coli Wasteload Allocation (million/day)	17,982	0	0	0	0
		E. coli Load Allocation (million/day)	131,870	7,383	1,499	150	93
		E. coli Margin of Safety (million/day)	16,650	820	167	17	10
		NO2NO3 Loading Capacity (kg/day)	1,332	84.1	12.2	5.7	1
		NO2NO3 Wasteload Allocation (kg/day)	143.9	0	0	0	0
		NO2NO3 Load Allocation (kg/day)	1,055	75.7	11.0	5.1	0.9
		NO2NO3 Margin of Safety (kg/day)	133.2	8.4	1.2	0.6	0.1
		TP Loading Capacity (kg/day)	39.961	2.524	0.368	0.040	0.029
		TP Wasteload Allocation (kg/day)	4.316	0	0	0	0
		TP Load Allocation (kg/day)	31.649	2.272	0.331	0.036	0.026
		TP Margin of Safety (kg/day)	3.996	0.252	0.037	0.004	0.003
		Individual WLAs within this assessment location: Frito Lay Inc (002A); permit number IN0051624; all pollutants of concern = 0 City of Frankfort MS4; permit number INR040020 = 17,982 million *E. coli*/day; 4.316 kg TP/day; 143.9 kg NO2NO3/day					

Assessment Location	Impaired Water Body Segments	TMDL/Allocations/MOS	High flows	Moist conditions	Mid-range flows	Dry conditions	Low flows
WAW040-0037 (see Table 24 of TMDL report)	INB074C_00 INB074C_01 INB074C_T1001 INB074C_T1002 INB074C_T1003	*E. coli* Loading Capacity (million/day)	23,131	6,020	2,780	966	866
		E. coli Wasteload Allocation (million/day)	710	710	710	710	710
		E. coli Load Allocation (million/day)	20,108	4,708	1,792	159	69
		E. coli Margin of Safety (million/day)	2,313	602	278	97	87
		NO2NO3 Loading Capacity (kg/day)	2,099	138	31	8	7
		NO2NO3 Wasteload Allocation (kg/day)	6	6	6	6	6
		NO2NO3 Load Allocation (kg/day)	1,883	118	22	1	0
		NO2NO3 Margin of Safety (kg/day)	210	14	3	1	1
		TP Loading Capacity (kg/day)	62.97	4.13	0.94	0.24	0.22
		TP Wasteload Allocation (kg/day)	0.20	0.20	0.20	0.20	0.20
		TP Load Allocation (kg/day)	56.47	3.52	0.65	0.02	0
		TP Margin of Safety (kg/day)	6.30	0.41	0.09	0.02	0.02
		TSS Loading Capacity (kg/day)	6,297	413	94	24	21
		TSS Wasteload Allocation (kg/day)	17	17	17	17	17
		TSS Load Allocation (kg/day)	5,650	355	68	5	2
		TSS Margin of Safety (kg/day)	630	41	9	2	2

Table 2: Approved South Fork Wildcat Creek TMDLs

		Individual WLAs within this assessment location: Clarks Hill Muncipal WWTP; permit number IN0039853; 710 million *E. coli*/day; 6 kg NO2NO3/day; 0.2 kg TP/day; 17 kg TSS/day