Missouri
Department of
Natural Resources

DRAFT FISHPOT CREEK TMDL
PUBLIC COMMENTS

Public Notice
June 29 – Aug. 13, 2012

Fishpot Creek
WBID # 2186

St. Louis County, Mo.

Missouri Department of Natural Resources
Water Protection Program
PO Box 176
Jefferson City, MO 65102-0176
800-361-4827 / 573-751-1300

U.S. Environmental Protection Agency (EPA) regulations require that total maximum daily loads (TMDLs) be subject to public review (40 CFR 130.7). The Missouri Department of Natural Resources placed the draft Fishpot Creek bacteria TMDL on a 45-day public notice and comment period from June 29, 2012 to Aug. 13, 2012. Comments were received from the following groups or individuals:

Boone County Commission
City of Ellisville
City of Florissant
City of Hazelwood
City of Independence
City of Manchester
City of Winchester
City of Woodson Terrace
Home Builders Association of St. Louis & Eastern Missouri
Metropolitan St. Louis Sewer District

Daniel K. Atwill, Presiding Commissioner
Karen M. Miller, District I Commissioner
Skip Elkin, District II Commissioner

Roger B. Wilson
Boone County Government Center
801 East Walnut, Room 333
Columbia, MO 65201-7732
573-886-4305 • FAX 573-886-4311

Boone County Commission

August 8, 2012

RECEIVED
AUG - 9 2012
WATER PROTECTION PROGRAM

Mr. John Hoke
Chief, Watershed Protection Section
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Subject: Public Comments for Total Maximum Daily Load for Fishpot Creek located in St. Louis City, Missouri

Dear Mr. Hoke:

This comment letter is offered into the administrative record during the public notice period associated with the Fishpot Creek Total Maximum Daily Load ('TMDL').

Boone County is committed to working with the Missouri Department of Natural Resources (Department) to ensure that Missouri's waters are protected through application of good science and **stakeholder input**. It is disturbing to local municipalities and MS4 communities that DNR has not engaged in any public participation prior to the release of several TMDLs for waterways in St. Louis. Boone County requests meaningful public participation be sought and at least one (or as many as may be needed) public meeting be hosted by the Department before any Bacteria Related TMDL involving a municipal separate storm sewer system is released for public comment and again before the TMDL is finalized. These public meetings are essential to provide citizens with background information and an overview of the scientific methods used to establish the TMDL and gather pertintent data from the community.

Boone County appreciates the Department's efforts to protect Missouri's water resources. However, we are concerned about the potential impacts of the currently proposed Fishpot Creek TMDL and several other draft TMDLs for waterbodies within St. Louis City and County. Given the complexity and potential cost of implementing bacteria TMDLs in urban areas, the Department should delay finalizing any St. Louis area TMDLs **until additional public participation activities (e.g., public meetings, workshops, etc.) are completed**. The Department should not use the promulgation of a TMDL as a shocking way to begin a public conversation; rather, a TMDL should be the natural result of a thoughtful public process which engages all appropriate stakeholders. If the Department continues to insist on finalizing a Fishpot Creek TMDL, the following list of technical defects and concerns must be addressed:

- **All mandates and consent decrees established by legal action must be incorporated into TMDLs. It is irresponsible for DNR to set requirements for water quality improvements that are more stringent than federal consent decrees and to promulgate rules as if such consent decrees did not exist.**
- **Use of USEPA 1986 bacteria criteria document must be re-evaluated using studies on flowing water to assess the relative human health risks from exposure to E. coli. The department should reconsider bacteria targets and adjust them as appropriate.**
- **Many urban streams are not used as whole body recreational areas. The department should reconsider bacteria targets and adjust them as appropriate for these streams.**

With this letter, Boone County requests the Missouri Department of Natural Resources ('Department') rescind and/or revise the TMDL because the proposed TMDL contains several technical and implementation issues. We would like to include the technical comments from the Metropolitan St Louis Sewer District as reference. Please contact Georganne Bowman at 573-886-4330 if you have any questions or would like to discuss these issues further.

Sincerely,

Dan Atwill	Karen M. Miller	Skip Elkin
Presiding Commissioner	District I Commissioner	District II Commissioner

Cc: CJ Dykhouse, County Counselor, Boone County
Stan Shawver, Director, Resource Management
Tom Ratterman, Boone County Sewer District
Georganne Bowman, Stormwater Coordinator
Steve Hunt, Columbia Public Works
Todd Houts, MU Deputy Director, EHS
Bill Allen, Principal Engineer, MSD

City of Ellisville

August 10, 2012

Mr. John Hoke
Chief, Watershed Protection Section
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Subject:Public Comments and Request for Public Hearing for Total Maximum Daily Load for Fishpot Creek located in St. Louis County, Missouri

Dear Mr. Hoke:

This comment letter is offered into the administrative record during the public notice period associated with the Fishpot Creek Total Maximum Daily Load ('TMDL') proposal. With this letter, the City of Ellisville requests the Missouri Department of Natural Resources ('Department') rescind and/or revise the TMDL because the proposed approach inadequately addresses several technical and implementation issues that are critical to support a scientifically defensible TMDL.

The City of Ellisville appreciates the Department's efforts to protect Missouri's water resources. However, we are concerned about the potential impacts of the currently proposed Fishpot Creek TMDL and several other draft TMDLs for waterbodies within St. Louis City and County. Given the complexity and potential cost of implementing bacteria TMDLs in urban areas, the Department should delay finalizing any St. Louis area TMDLs until additional public participation activities (e.g., public meetings, hearings, workshops, etc.) are completed. If the Department continues to insist on finalizing a Fishpot Creek TMDL after additional public participation, the following list of technical concerns must be addressed:

- The TMDL approach does not adequately distinguish between bacteria sources within the watershed. Distinguishing between such sources is necessary to ensure that implementation efforts will achieve the water quality target.
- The TMDL components are inconsistent with Missouri's recreational use water quality criterion. The Department must revise the TMDL to employ a daily average bacteria target if use of daily average flows and the load duration curve approach are retained.
- The TMDL incorrectly included an unclassified losing stream segment which bypasses the required public participation process and for which no data is available to determine compliance with the water quality criterion or calculate the TMDL components.

1 Weis Avenue • Ellisville, Missouri • 63011
636/227-9660 V/TDD • FAX: 636/227-9486
www.ellisville.mo.us

- The final TMDL must not include requirements that exceed the "maximum extent practicable" provisions within the St. Louis Metropolitan Small Municipal Separate Storm Sewer System (MS4) permit, extending beyond the Phase II stormwater regulations.
- The TMDL must use an adaptive management approach that includes implementation activities based upon achieving the highest water quality improvements at the lowest cost.

We appreciate the opportunity to provide these comments. The City of Ellisville is committed to working with the Department to ensure that Missouri's waters are protected through application of good science and stakeholder input. In support of this approach, the City of Ellisville requests meaningful public participation be sought and that at least one (or as many as may be needed) public meeting be hosted by the Department to determine and justify the need for a TMDL and to further address the issues and concerns noted above, before any TMDL is finalized. Please contact me at 636-227-9660 if you have any questions or would like to discuss these issues further.

Sincerely,

William L. Schwer

William L. Schwer, P.E.
City Engineer/Director of Public Works

CITY OF FLORISSANT

Honorable Thomas P. Schneider, Mayor

August 13, 2012

Mr. John Hoke
Chief, Watershed Protection Section
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Subject: Public Comments and Request for Public Hearing for Total Maximum Daily Load for Fishpot Creek located in St. Louis County, Missouri

Dear Mr. Hoke:

This comment letter is offered into the administrative record during the public notice period associated with the Fishpot Creek Total Maximum Daily Load ('TMDL') proposal. With this letter, the City of Florissant requests the Missouri Department of Natural Resources ('Department') rescind and/or revise the TMDL because the proposed approach inadequately addresses several technical and implementation issues that are critical to support a scientifically defensible TMDL.

The City of Florissant appreciates the Department's efforts to protect Missouri's water resources. However, we are concerned about the potential impacts of the currently proposed Fishpot Creek TMDL and several other draft TMDLs for waterbodies within St. Louis City and County. Given the complexity and potential cost of implementing bacteria TMDLs in urban areas, the Department should delay finalizing any St. Louis area TMDLs until additional public participation activities (e.g., public meetings, hearings, workshops, etc.) are completed. If the Department continues to insist on finalizing a Fishpot Creek TMDL after additional public participation, the following list of technical concerns must be addressed:

- The TMDL approach does not adequately distinguish between bacteria sources within the watershed. Distinguishing between such sources is necessary to ensure that implementation efforts will achieve the water quality target.
- The TMDL components are inconsistent with Missouri's recreational use water quality criterion. The Department must revise the TMDL to employ a daily average bacteria target if use of daily average flows and the load duration curve approach are retained.
- The TMDL incorrectly included an unclassified losing stream segment which bypasses the required public participation process and for which no data is available to determine compliance with the water quality criterion or calculate the TMDL components.

CITY HALL	POLICE DEPARTMENT	PARKS DEPARTMENT	HEALTH DEPARTMENT	MUNICIPAL COURT
955 Rue St. Francois	1700 North Highway 67	#1 James J. Eagan Drive	#1 St. Ferdinand Drive	1055 Rue St. Francois
Florissant, MO 63031	Florissant, MO 63033	Florissant, MO 63033	Florissant, MO 63031	Florissant, MO 63031
314 / 921-5700	314 / 831-7000	314 / 921-4466	314 / 839-7654	314 / 921-3322
Fax: 314 / 921-7111	Fax: 314 / 830-6045	Fax: 314 / 839-7672	Fax: 314 / 839-7656	Fax: 314 / 839-7663
TDD: 314 / 839-5142				

www.florissantmo.com

- The final TMDL must not include requirements that exceed the "maximum extent practicable" provisions within the St. Louis Metropolitan Small Municipal Separate Storm Sewer System (MS4) permit, extending beyond the Phase II stormwater regulations.
- The TMDL must use an adaptive management approach that includes implementation activities based upon achieving the highest water quality improvements at the lowest cost.

We appreciate the opportunity to provide these comments. The City of Florissant is committed to working with the Department to ensure that Missouri's waters are protected through application of good science and stakeholder input. In support of this approach, the City of Florissant requests meaningful public participation be sought and that at least one (or as many as may be needed) public meeting be hosted by the Department to determine and justify the need for a TMDL and to further address the issues and concerns noted above, before any TMDL is finalized. Please contact Tim Barrett, P.E., City Engineer at 314-839-7643 if you have any questions or would like to discuss these issues further.

Sincerely,

Thomas P. Schneider
Mayor

Cc: Mr. Louis B. Jearls, Jr., P.E., Director of Public Works
Mr. Timothy J. Barrett, P.E., City Engineer

The City of Hazelwood

much more than you imagine

August 10 ,2012

Mr. John Hoke
Chief, Watershed Protection Section
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Submitted by email to: john.hoke@dnr.mo.gov

Subject: Public Comments for Total Maximum Daily Load for Fishpot Creek,

Dear Mr. Hoke:

I am submitting comments for Fishpot Creek which has a public comment deadline of 8-13-2012 I am submitting the following:

1. The efforts of DNR to improve our environment in general are always welcome.
2. The costs should largely be the responsibility of those who create the mandates with the exception of flagrant violations.
3. The analysis of causes should meet rigorous scientific standards. Measurements of pollution should be done by trained professionals following rigorous protocols. The causes/sources of the pollution should be clearly related to the measurements in a statistically valid study. I do not believe the creek studies noted above meet reasonable scientific methods, so the conclusions are suspect.
4. The proposed solutions should address the sources. Few, if any MS4s are the cause of bacteria that negatively affects human health. Therefore the study should go beyond MS4/stormwater factors.
5. If any MS4s are scientifically related, they should be ranked in order of importance, as should non-MS4 sources so the public funds can be appropriately aimed at the likely sources.
6. The MS4s in the study have omitted MoDOT. This is worthy of more discussion and likely inclusion for remediation until better science is used overall to determine pollutants that are related to the bacteria.
7. Sanitary Sewer Overflows (SSOs) may be linked to bacteria (along with other causes beyond the scope of MS4s). A massive new multi-BILLION dollar program is just being launched by MSD to reduce SSOs. It is premature to suggest remedies to bacteria without considering the elimination of SSOs. In addition, it could cost BILLIONS more to implement the response to bacteria as a result of the DNR studies focused on MS4s, so it is essential to "get it right". These two efforts (and others) should not be done in isolation. They need to be highly integrated to be environmentally effective and to be cost-effective.

Given these and other implications, I strongly recommend that more stakeholders be involved in a process that involves more rigorous scientific methods and meaningful public input.
We are ready, willing and able to work with DNR on new approaches to real solutions regarding creek issues and would encourage such partnerships.

Sincerely,

Earl Bradfield

Earl Bradfield, City Planner
City of Hazelwood

City of Independence

WATER POLLUTION CONTROL DEPARTMENT

P.O. Box 1019 • INDEPENDENCE, MISSOURI 64051-0519 • (816) 325-7711 • FAX (816) 325-7722

AN EQUAL OPPORTUNITY EMPLOYER

August 10, 2012

Mr. John Hoke
Chief, Watershed Protection Section
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Subject: Public Comments for Total Maximum Daily Load for Fishpot Creek located in St. Louis County and St. Louis City, Missouri

Dear Mr. Hoke:

This comment letter is offered into the administrative record during the public notice period associated with the Fishpot Creek Total Maximum Daily Load (TMDL) proposal. With this letter, the City of Independence Water Pollution Control Department (WPC) requests that the Missouri Department of Natural Resources (Department) rescind and/or revise the TMDL because the proposed approach inadequately addresses several technical and implementation issues that are critical to support a scientifically defensible TMDL. WPC is concerned about the precedent set for future urban area bacteria TMDLs.

WPC appreciates the Department's efforts to protect Missouri's water resources. However, we are concerned about the potential impacts of the currently proposed Fishpot Creek TMDL and several other draft bacteria TMDLs for urban water bodies. Given the complexity and potential cost of implementing bacteria TMDLs in urban areas, the Department should delay finalizing any bacteria TMDLs until additional public participation activities (e.g., public meetings, workshops, etc.) are completed. If the Department continues to insist on finalizing a Fishpot Creek TMDL after additional public participation, the following list of technical concerns must be addressed:

- The TMDL approach does not adequately distinguish between bacteria sources within the watershed. Distinguishing between such sources is necessary to ensure that implementation efforts will achieve the water quality target.
- The TMDL components are inconsistent with Missouri's recreational use water quality criterion. The Department must revise the TMDL to employ a daily average bacteria target if use of daily average flows and the load duration curve approach are retained.
- The TMDL incorrectly included an unclassified losing stream segment which bypasses the required public participation process and for which no data is available to determine compliance with the water quality criterion or calculate the TMDL components.

- The final TMDL must not include requirements that exceed the "maximum extent practicable" provisions for Municipal Separate Storm Sewer System (MS4) permits in the Clean Water Act and storm water regulations.
- The TMDL must use an adaptive management approach that includes implementation activities based upon achieving the highest water quality improvements at the lowest cost.

We appreciate the opportunity to provide these comments. WPC is committed to working with the Department to ensure that Missouri's waters are protected through application of good science and stakeholder input. We appreciate the Department's scheduling of a public meeting to discuss recent bacteria TMDLs in the St. Louis County area. Please contact Dorris Bender at dbender@indepmo.org or (816) 325-7711 if you have any questions or would like to discuss these issues further.

Sincerely,

Dorris L. Bender

Dorris L. Bender
Environmental Compliance Manager

c: Dick Champion, Jr.

HISTORIC MANCHESTER

"A PROUD PAST A BRIGHT FUTURE"

RECEIVED

AUG 13 2012

WATER PROTECTION PROGRAM

CITY ENGINEER
ED BLATTNER, P. E.
City of Manchester
14318 Manchester Road
Manchester, Missouri 63011

(636) 227-1385, ext. 109

August 13, 2012

Mr. John Hoke
Chief, Watershed Protection Section
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Subject: Public Comments and Request for Public Hearing for Total Maximum Daily Load for Fishpot Creek located in St. Louis County, Missouri

Dear Mr. Hoke:

This comment letter is offered into the administrative record during the public notice period associated with the Fishpot Creek Total Maximum Daily Load ('TMDL') proposal. With this letter, the City of Manchester requests the Missouri Department of Natural Resources ('Department')rescind and/orrevise the TMDL becausethe proposed approachinadequately addresses several technical and implementation issues that are critical to support a scientifically defensible TMDL.

The City of Manchester appreciates the Department's efforts to protect Missouri's water resources. However, we are concerned about the potential impacts of the currently proposed Fishpot Creek TMDL and several other draft TMDLs for waterbodies within St. Louis City and County. Given the complexity and potential cost of implementing bacteria TMDLs in urban areas, the Department should delay finalizing any St. Louis area TMDLs until additional public participation activities (e.g., public meetings, hearings, workshops, etc.) are completed. If the Department continues to insist on finalizing a Fishpot Creek TMDL after additional public participation,the following list of technical concerns must be addressed:

- The TMDLapproach does not adequatelydistinguish between bacteria sources within the watershed. Distinguishing between such sources is necessary to ensure that implementation efforts will achieve the water quality target.
- The TMDL components are inconsistent with Missouri's recreational use water quality criterion. The Department must revise the TMDL to employ a daily average bacteria target if use of daily average flows and the load duration curve approach are retained.

- The TMDL incorrectly included an unclassified losing stream segment which bypasses the required public participation process and for which no data is available to determine compliance with the water quality criterion or calculate the TMDL components.
- The finalTMDL must not include requirements that exceed the "maximum extent practicable" provisions within the St. Louis Metropolitan Small Municipal Separate Storm Sewer System (MS4) permit, extending beyond the Phase II stormwater regulations.
- The TMDL must use an adaptive management approach that includes implementation activities based upon achieving the highest water quality improvements at the lowest cost.

We appreciate the opportunity to provide these comments. The City of Manchester is committed to working with the Department to ensure that Missouri's waters are protected through application of good science andstakeholder input. In support of this approach, the City of Manchester requests meaningful public participation be sought and that at least one (or as many as may be needed) public meeting be hosted by the Department to determine andjustify the need for a TMDL and to further address the issues and concerns noted above, before any TMDL is finalized. Please contact Ed Blattner, P.E., City Engineer, at 636-227-1385, ext. 109 if you have any questions or would like to discuss these issues further.

Sincerely,

Ed Blattner

Ed Blattner, P.E.
City Engineer

Cc: Mayor David Willson
The Board of Aldermen
Andy Hixson, City Adminsitrator
Bob Ruck, Public Works Director
Ruth Baker, City Clerk
William Allen, P.E., St. Louis MSD

CITY OF WINCHESTER
109 LINDY BLVD.
WINCHESTER, MISSOURI 63021-5299
(636) 391-0600
FAX (636) 391-6365

THE PLACE TO PLANT YOUR ROOTS

August 10, 2012

Mr. John Hoke
Chief, Watershed Protection Section
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Subject: Public Comments and Request for Public Hearing for Total Maximum Daily Load for Fishpot Creek located in St. Louis County, Missouri

Dear Mr. Hoke:

This comment letter is offered into the administrative record during the public notice period associated with the Fishpot Creek Total Maximum Daily Load ('TMDL') proposal. With this letter, the City of Winchester requests the Missouri Department of Natural Resources ('Department')rescind and/or revise the TMDL because the proposed approach inadequately addresses several technical and implementation issues that are critical to support a scientifically defensible TMDL.

The City of Winchester appreciates the Department's efforts to protect Missouri's water resources. However, we are concerned about the potential impacts of the currently proposed Fishpot Creek TMDL and several other draft TMDLs for waterbodies within St. Louis City and County. Given the complexity and potential cost of implementing bacteria TMDLs in urban areas, the Department should delay finalizing any St. Louis area TMDLs until additional public participation activities (e.g., public meetings, hearings, workshops, etc.) are completed. If the Department continues to insist on finalizing a Fishpot Creek TMDL after additional public participation,the following list of technical concerns must be addressed:

- The TMDLapproach does not adequatelydistinguish between bacteria sources within the watershed. Distinguishing between such sources is necessary to ensure that implementation efforts will achieve the water quality target.
- The TMDL components are inconsistent with Missouri's recreational use water quality criterion. The Department must revise the TMDL to employ a daily average bacteria target if use of daily average flows and the load duration curve approach are retained.

- The TMDL incorrectly included an unclassified losing stream segment which bypasses the required public participation process and for which no data is available to determine compliance with the water quality criterion or calculate the TMDL components.

- The finalTMDL must not include requirements that exceed the "maximum extent practicable" provisions within the St. Louis Metropolitan Small Municipal Separate Storm Sewer System (MS4) permit, extending beyond the Phase II stormwater regulations.
- The TMDL must use an adaptive management approach that includes implementation activities based upon achieving the highest water quality improvements at the lowest cost.

We appreciate the opportunity to provide these comments. The City of Winchester is committed to working with the Department to ensure that Missouri's waters are protected through application of good science andstakeholder input. In support of this approach, the City requests meaningful public participation be sought and that at least one (or as many as may be needed) public meeting be hosted by the Department to determine andjustify the need for a TMDL and to further address the issues and concerns noted above, before any TMDL is finalized. Please contact Barbara Beckett, City Administrator at 636/391-0600 if you have any questions or would like to discuss these issues further.

Sincerely,

Gail M. Winham bb

Gail M. Winham, Mayor
City of Winchester

August 13, 2012

Mr. John Hoke
Chief, Watershed Protection Section
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Public Comments and Request for Public Hearing for Total Maximum Daily Load for Fishpot Creek located in St. Louis County, Missouri

Dear Mr. Hoke:

This comment letter is offered into the administrative record during the public notice period associated with the Fishpot Creek Total Maximum Daily Load ('TMDL') proposal. With this letter, the City of Woodson Terrace requests the Missouri Department of Natural Resources ('Department') rescind and/or revise the TMDL because the proposed approach inadequately addresses several technical and implementation issues that are critical to support a scientifically defensible TMDL.

The City of Woodson Terrace appreciates the Department's efforts to protect Missouri's water resources. However, we are concerned about the potential impacts of the currently proposed Fishpot Creek TMDL and several other draft TMDLs for waterbodies within St. Louis City and County. Given the complexity and potential cost of implementing bacteria TMDLs in urban areas, the Department should delay finalizing any St. Louis area TMDLs until additional public participation activities (e.g., public meetings, hearings, workshops, etc.) are completed. If the Department continues to insist on finalizing a Fishpot Creek TMDL after additional public participation, the following list of technical concerns must be addressed:

- The TMDL approach does not adequately distinguish between bacteria sources within the watershed. Distinguishing between such sources is necessary to ensure that implementation efforts will achieve the water quality target.

- The TMDL components are inconsistent with Missouri's recreational use water quality criterion. The Department must revise the TMDL to employ a daily average bacteria target if use of daily average flows and the load duration curve approach are retained.

- The TMDL incorrectly included an unclassified losing stream segment which bypasses the required public participation process and for which no data is available to determine compliance with the water quality criterion or calculate the TMDL components.

- The final TMDL must not include requirements that exceed the "maximum extent practicable" provisions within the St. Louis Metropolitan Small Municipal Separate Storm Sewer System (MS4) permit, extending beyond the Phase II stormwater regulations.

- The TMDL must use an adaptive management approach that includes implementation activities based upon achieving the highest water quality improvements at the lowest cost.

We appreciate the opportunity to provide these comments. The City of Woodson Terrace is committed to working with the Department to ensure that Missouri's waters are protected through application of good science and stakeholder input. In support of this approach, the City of Woodson Terrace requests meaningful public participation be sought and that at least one (or as many as may be needed) public meeting be hosted by the Department to determine and justify the need for a TMDL and to further address the issues and concerns noted above, before any TMDL is finalized. Please contact Doug Zaiz at 314-427-2600 if you have any questions or would like to discuss these issues further.

Sincerely,

Doug Zaiz/ Director of Public Works
Woodson Terrace, MO

HOME BUILDERS ASSOCIATION OF ST. LOUIS & EASTERN MISSOURI

10104 OLD OLIVE STREET ROAD

ST. LOUIS, MISSOURI 63141-5908

314 994 7700

FAX 314 432 7185

WEBSITE WWW.STLHBA.COM

August 13, 2012

John Hoke, Chief, Watershed Protection Section
Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, MO 65102

Public Comments for Total Maximum Daily Load for Fishpot Creek, St. Louis County, Missouri

Dear Mr. Hoke:

On behalf of the Home Builders Association of St. Louis and Eastern Missouri (HBA) and its 600 member companies, I thank you for the opportunity to provide comments in response to the Missouri Department of Natural Resources' proposed Total Maximum Daily Load (TMDL) for Fishpot Creek. While the HBA supports the Department in its consistent efforts to preserve the state's natural assets, we respectfully request the proposed Fishpot Creek TMDL be rescinded and/or revised because the proposed approach inadequately addresses several technical and implementation issues that are critical to support a scientifically defensible TMDL.

The HBA finds concerns with draft TMDLs for waterbodies within St. Louis County because these TMDLs can be detrimental to future development. Given the complexity and potential cost of implementing bacteria TMDLs in urban areas, the HBA believes the Missouri Department of Natural Resources should delay finalizing area TMDLs until additional public participation activities (e.g., public meetings, workshops, etc.) have been completed. If, after additional public participation, the Department continues to insist on finalizing a Fishpot Creek TMDL, the following list of technical concerns must be addressed:

- The TMDL approach does not adequately distinguish between bacteria sources within the watershed. Distinguishing between such sources is necessary to ensure that implementation efforts will achieve the water quality target.
- The TMDL components are inconsistent with Missouri's recreational use water quality criterion. The Department must revise the TMDL to employ a daily average bacteria target if use of daily average flows and the load duration curve approach are retained.
- The TMDL incorrectly included an unclassified losing stream segment which bypasses the required public participation process and for which no data is available to determine compliance with the water quality criterion or calculate the TMDL components.
- The final TMDL must not include requirements that exceed the "maximum extent practicable" provisions within the St. Louis Metropolitan Small Municipal Separate Storm Sewer System (MS4) permit, extending beyond the Phase II stormwater regulations.
- The TMDL must use an adaptive management approach that includes implementation activities based upon achieving the highest water quality improvements at the lowest cost.

The HBA appreciates your willingness to consider comments from the home building industry. Like the Missouri Department of Natural Resources, the HBA believes Missouri waters should be protected through the application of sound science and stakeholder input. In support of this approach, the HBA requests meaningful public participation be sought and that at least one (or as many as needed) public meeting be hosted to determine and justify the need for a TMDL. Additionally, before any TMDL is finalized, the HBA believes the concerns noted above must be addressed. Do not hesitate to contact me at 314.994.7700 ext. 116 or SchwartzeE@hbastl.com.

Regards,

Emily Schwartze Post

Emily Schwartze Post
Assistant Staff Vice President for Public Policy

cc: HBA Environmental Affairs Committee
Pat Sullivan, Executive Vice President, HBA
Emily Wineland, Staff Vice President for Public Policy, HBA

WE BUILD NEIGHBORHOODS
HBA

Metropolitan
St. Louis Sewer
District

2350 Market Street
St. Louis, MO 63103-2555
(314) 768-6200

August 13, 2012

Mr. John Hoke
Chief, Watershed Protection Section
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City MO 65102

Subject: Public Comments for and Request for Public Meetings Regarding Total Maximum Daily Load for Fishpot Creek located in St. Louis County, Missouri

Dear Mr. Hoke:

This comment letter is offered into the administrative record during the public notice period associated with the Fishpot Creek Total Maximum Daily Load ('TMDL') proposal. With this letter, the Metropolitan St. Louis Sewer District ('District') requests the Missouri Department of Natural Resources ('Department') withdraw or delay finalizing this TMDL until several technical problems with the proposed draft TMDL are addressed.

The District recognizes the significant technical challenges and complexities in developing accurate TMDLs in urban environments. Further, the District appreciates the ongoing dedication by Department professionals in protecting Missouri's water resources. The focus of this comment letter is to assist the Department's TMDL development process by providing additional information, analysis, and insights associated with the Fishpot Creek watershed system. The District is concerned about the need for and the potential ramifications and implementation feasibility of the Fishpot Creek TMDL as well as several other proposed TMDLs for waterbodies within the MSD service area.

Due to the complexity of understanding water quality conditions within urban streams, the TMDL calculation process, and the potential major impacts to the District, local governments, private development, other businesses, and to residents, it was not possible (despite a substantial effort and expenditure of resources) to fully analyze and comment on the TMDL within the 45-day public comment period. Additional time is needed to conduct a thorough and complete review and have constructive dialogue with the Department. The District also believes that the approach to developing the TMDL (use of a load duration curve with existing water quality data, source characterization methods, lack of appropriate implementation planning considerations, etc.) must be corrected and improved in order to establish a scientifically and legally valid TMDL for Fishpot Creek that will achieve Clean Water Act objectives.

Some of our comments of significant concern are summarized by the District in this transmittal letter. Additional and more detailed comments are provided in Attachment A that, when addressed, will significantly improve the TMDL.

1. **The TMDL does not adequately consider all sources of bacteria that may be impacting Whole Body Contact Recreation-Category B (WBCR-B) attainment in Fishpot Creek.** The TMDL discounts bacteria contribution from other permitted stormwater discharges (46 other permitted discharges listed in Table 5). The Missouri Department of Transportation Municipal Separate Storm Sewer System ('MS4'), which was not considered, comprises a significant portion of the watershed (approximately 2 %) and a likely higher percentage of the watershed's impervious area. In addition, there are over 90 unsewered parcels within the watershed which are a significant source of bacteria and must not be ignored. The TMDL must consider all sources of bacteria rather than solely focus on the St. Louis Metropolitan Small MS4 permit. The failure to consider and address all these sources is arbitrary and legally and technically unsupportable.

2. **The TMDL incorrectly included an unclassified losing stream segment of Fishpot Creek which must be removed from the TMDL.** The Department inappropriately included a losing stream segment in the TMDL that is not listed in Category 5 of Missouri's most recently approved impaired waters list and therefore bypassed public participation elements required by law. In addition, the District notes that the TMDL does not include data in the losing stream segment and therefore provides no scientific basis for determining impairment or calculating TMDL components. For these reasons, the Department must remove the arbitrary and capricious addition of the losing stream segment of Fishpot Creek in the TMDL.

3. **The TMDL components are inconsistent with Missouri's recreational use water quality criterion.** Missouri's WBCR Category B criterion (206 colonies/100 mL) is expressed as a recreational season (seven month) geometric mean. According to guidance issued by the U.S. Environmental Protection Agency (USEPA), loading capacity estimates using the Load Duration Curve approach should be developed using criteria with a daily averaging period. For those criteria not expressed as daily values (such as Missouri's bacteria criterion), the USEPA guidance offers multiple options to align averaging periods. The Department must revise the TMDL to employ the correct criterion averaging period if the load duration curve approach is retained.

4. **The District is very concerned that the TMDL could result in stormwater management requirements that go beyond those already adopted for compliance with the MS4 permit and the Federal Consent Decree.** The District's design requirements include capture and treatment of the 90th percentile daily storm depth in water quality best management practices (BMP) to meet the permit requirement of implementing BMPs to the maximum extent practicable (MEP). Additional TMDL requirements would exceed the MEP provisions of the District's MS4 permit and extend beyond the Phase II stormwater regulations. Further, the District has recently entered into the Federal Consent Decree. To avoid arbitrary, duplicative and unnecessary costs and requirements, any TMDL implementation approach must incorporate and take into account the Federal Consent Decree requirements.

5. **The TMDL should include a phased or adaptive management component for implementation and future revisions due to the uncertainties and complexities with this study, as well as the pre-existing legal requirements mentioned above.** A phased or adaptive management approach is imperative given the issues outlined above and the complexity of urban hydrologic processes. The TMDL should prioritize future

implementation activities based upon a recreational use risk analysis that considers limitations induced by high flow conditions and sources of bacteria. For example, human sources of bacteria occurring during baseflow conditions should be the first priority since these sources are of highest risk. Additionally, load reduction requirements should be contingent upon Fishpot Creek not achieving its recreational water quality criterion. The TMDL proposed by the Department acknowledges an adaptive management approach by referring to a future implementation plan; however, this approach should be explicitly set forth within the TMDL. The District requests early involvement of all permitted entities, local governments, and other stakeholders in development of any implementation plan.

The District believes that the Fishpot Creek TMDL approach must be improved if it is to achieve its goals, and if it is to be legally and technically sound and supportable. Further, any revision of the TMDL must be conducted with more stakeholder coordination to ensure that an appropriate and legally compliant TMDL is established. This should include development of a phased TMDL, which would be consistent with USEPA's new Integrated Municipal Stormwater and Wastewater Planning Approach Framework.

We appreciate the opportunity to provide these comments. The District is committed to working with the Department to ensure that Missouri's waters are protected through application of good science and stakeholder input. In support of this approach, the District requests both a technical and a public meeting with the Department to discuss these comments and identify a collaborative path forward prior to finalizing the TMDL. Please contact John Lodderhose, PE at 314-436-8714 if you have any questions and to discuss these issues further.

Sincerely,

Susan M Myers

Susan M. Myers
General Counsel
Metropolitan St. Louis Sewer District

Pc John Lodderhose
Bruce Litzsinger
Bill Allen
Jay Hoskins
Kristol Whatley
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Attachments:
Technical Comments
Map

ATTACHMENT A

TECHNICAL COMMENTS ON TOTAL MAXIMUM DAILY LOAD (TMDL) FOR FISHPOT CREEK ST. LOUIS COUNTY, MISSOURI AND REQUEST FOR A PUBLIC MEETING (PUBLIC NOTICE VERSION, JUNE 29 THROUGH AUGUST 13, 2012)

The Metropolitan St. Louis Sewer District (MSD or the District) has several legal, technical implementation and other concerns with the bacteria total maximum daily load (TMDL) to establish wasteload and load allocations to protect whole body contact recreation - category B (WBCR-B) in Fishpot Creek[1]. The District is concerned about the potential ramifications of the Fishpot Creek TMDL as well as several other TMDLs proposed recently for waterbodies within MSD's service area. Due to the complexity of understanding water quality conditions within urban streams, the TMDL calculation process, and the potential major impacts to the District, local governments, private development, other businesses and to residents, it was not possible (despite a substantial effort and expenditure of resources) to fully analyze and comment on the TMDL within the 45-day public comment period. Additional time is needed to conduct a thorough review and have constructive dialogue with the Missouri Department of Natural Resources (MDNR or the Department).

The analysis that has been completed, however, finds that discussion of 'impairment' of the losing stream segment must be removed due to several factors. These factors include but are not limited to: (1) absence of data in the losing stream segment to justify impairment or calculate TMDL components and (2) very limited scientific or regulatory linkage between the criterion that MDNR applied to the segment and a designated beneficial use. In addition, this losing stream segment was not included on any previous 303(d) list of impaired waters. Therefore, the Department should not bypass the public participation process associated with 303(d) listing and listing methodology process when issuing the TMDL.

The District believes that the basic approach to developing the TMDL (use of a load duration curve with existing water quality data, lack of appropriate implementation planning considerations, unsupported conclusions regarding 303(d) listing of unclassified losing stream, etc.) is not scientifically or legally sound and must be improved. The District requests revision of the TMDL with more stakeholder coordination to ensure that the most appropriate TMDL is established based on sound, current, and defensible science. Any TMDL should also include development of a phased TMDL, which would be consistent with the U.S. Environmental Protection Agency's (USEPA) new Integrated Municipal Stormwater and Wastewater Planning Approach Framework (USEPA, 2012).

Furthermore, the District requests meeting with the Department to discuss the technical implementation and other comments provided below with respect to not only the Fishpot Creek TMDL but all other TMDLs for waters within the District. We believe resolution of the comments below will allow the Department to develop legally compliant, more appropriate TMDLs for urban streams.

[1] The draft TMDL is located at http://www.dnr.mo.gov/env/wpp/docs/2186-fishpot-ck-pn.pdf

1. LAND USE AND WATERSHED INFORMATION

a. The TMDL land use and watershed information must be supplemented with more accurate, local data.

The land use statistics presented in Section 2.4 of the draft TMDL are based on data collected at 30-meter resolution obtained from Thematic Mapper imagery (MoRAP, 2005). At this resolution the data are insufficient for purposes of providing accurate land use statistics (e.g., impervious area). Additionally, the metadata file states the following:

- "Data only appropriate for regional scale assessments."
- "Data has not been subjected to accuracy assessment. No accuracy stated or implied."

Therefore, with these comments the District is providing the Department with more detailed GIS layer of land use data in the St. Louis area. The attached figure provides several key findings that may aid subsequent revisions to all TMDLs in the District's service area, which are discussed below.

First, this assessment demonstrates that more than 90 parcels along Fishpot Creek are not served by the District's sewer system. Therefore, wastewater generated at the developed portion of these parcels is likely managed with on-site systems (e.g., septic systems or lagoons). Obviously, these point or non-point sources could significantly impact the water quality of Fishpot Creek. Second, highway corridors (Hwy. 100, 340, 141 and Route HH) are significant portions of the watershed area (approximately 2 %) and must be included in the TMDL as these are managed under the Missouri Department of Transportation municipal separate storm sewer system (MS4) permit.

These datasets can and must be considered, accounted for, and used in the TMDL (and in revisions to the TMDL) and implementation plan, including for such purposes as source identification and characterization, load and wasteload allocation calculations, and prioritization of implementation actions. The District requests that MDNR consider such data with subsequent revisions to the TMDLs.

2. DEFINING THE PROBLEM (WATER QUALITY DATA ANALYSIS)

a. Recreational season datasets that are skewed, predominantly composed of wet-weather samples, or are greater than 7 years old are not representative and therefore should not be used to calculate TMDL components.

The TMDL indicates that 57 *E. coli* samples were used in the loading analysis (Table 4 in the TMDL) collected from 1996 to 2010 by MSD and USGS. According to the TMDL, data from years with greater than five samples were assessed against the WBCR-B criterion; the remaining samples were used to supplement existing load calculations in the TMDL. Given the rationale for the data age requirement in Missouri's Listing Methodology Document is representativeness (i.e., reduce potential influence of temporal trends), only data collected from 2005 onward and having at least five samples per recreational season should be used to develop TMDL components.

b. Discrete bacteria samples are not representative of daily average *E. coli* loads in the Fishpot Creek watershed.

It appears as though the Department applied daily average flows measured at USGS Station 07019120 (adjusted upwards by a factor of 1.12) to the discrete bacteria samples from the classified segment to calculate existing loads for both the classified segment and losing stream segment. We are concerned that the discrete bacteria samples are not representative indicators of daily average bacteria loads in the watershed. Discrete bacteria samples collected early in the data record may be skewed towards wet-weather events. These sampling data likely represented "first flush" conditions due to the sampling protocols used early in the USGS and District monitoring efforts. Concentrations measured during these events likely represent the highest bacteria levels that would have occurred on the sampling date and therefore are not accurately reflecting daily average bacteria concentrations in the stream. As a result, applying first flush sampling results as a daily average value overestimates existing loading in Fishpot Creek. The Department should use an alternative modeling approach which appropriately translates discrete bacteria and instantaneous flow samples to daily or seasonal values that can be compared to the WBCR-B criterion for the classified segment of Fishpot Creek.

c. The flow adjustment approach over-estimates current bacteria loads within the classified segment of Fishpot Creek.

The Department apparently applied a single linear adjustment factor (1.12) to correct flow data measured from USGS station 07019120 for the drainage area of the classified segment. These corrected flows were then applied to sample data collected from two monitoring sites, regardless of the watershed area upstream of the sampling site. This flow correction approach is not appropriate due to non-linear hydrologic scaling relationships and non-uniform distribution of outfalls often found in urban watershed. In addition, by using a single flow adjustment factor, bacteria loading is overestimated. A correct approach for estimating load would be to develop a unique non-linear adjustment factor for each sample site. If a linear adjustment factor is retained in the TMDL evaluation, a unique adjustment factor should be calculated for each monitoring location based on the ratio of its watershed area to the watershed area at the USGS gaging station. The Department must reevaluate the linear flow adjustments in the Fishpot Creek TMDL.

d. The TMDL does not include data that demonstrates the unclassified losing stream segment of Fishpot Creek is impaired, which bypassed 303(d) listing public participation requirements and forces TMDL calculations based on assumptions.

As depicted in Figure 1 of the TMDL, there are no monitoring locations or sampling data within the unclassified losing stream segment of Fishpot Creek. Given that karstic losing streams are dynamic and lose or exchange at least 30% of flow with groundwater, it is highly speculative that data collected elsewhere in the watershed can be extrapolated to losing stream segments. This proposed action essentially bypasses the public participation process required for developing Missouri's list of impaired waters. The Department must remove the unclassified losing stream segment from the TMDL until or unless data collected within this segment demonstrates impairment. Lastly, the TMDL calculation for the losing stream segment is flawed given the lack of water quality data to support derivation of the TMDL components.

3. SOURCE INVENTORY AND ASSESSMENT

a. The TMDL should analyze, consider, and take into account the importance of bacterial sources in the context of human health risks and this factor should be an important aspect of TMDL development and implementation planning.

Recent quantitative microbial risk assessments (QMRAs) conducted by USEPA contractors have shown that setting appropriate recreational indicator bacteria limits (i.e., corresponding to illness rates of 8-9 per 1,000 WBCR exposures) requires an understanding of bacteria sources (Schoen and Ashbolt, 2010 and Soller et al., 2010). These studies illustrate that some non-human sources of bacteria pose a lower risk than human sources of bacteria. These studies are discussed in more detail in Item 4.b below. Due to these new research findings, the Department must either defer TMDL adoption until after additional source identification studies can be conducted or adopt a phased TMDL. A phased TMDL should include source identification studies to be conducted prior to the implementation of load reduction activities, and provides a mechanism to incorporate the findings of those studies into the TMDL and implementation approach.

b. The source assessment should distinguish between natural or background sources of bacteria versus anthropogenic sources.

Sources of bacteria indicator organisms, particularly *E. coli*, are complicated in urban environments. The Fishpot Creek watershed has some areas of dense development but also large areas of forested or undeveloped land covers, particularly along the riparian corridor. These more naturalized environments support a significant amount of wildlife that could be significant sources of bacteria indicators. In addition, *E. coli* has been associated with soil, plants, and stream sediments, which complicates source assessment. Stream sediments have been viewed as a significant source of *E. coli* through regrowth and resuspension processes. These natural or background sources of bacteria are often uncontrollable and likely do not pose significant risk to human health. The Department must evaluate these sources and the lower risk to human health in the TMDL source inventory and assessment.

c. The TMDL should not use or reference the USGS microbial source tracking study because results are likely not representative of conditions in Fishpot Creek.

The referenced USGS study was funded by the District in an effort to better understand the influence of sanitary sewer overflows (SSOs), combined sewer overflows (CSOs), and treated wastewater discharges on local receiving waters. The sources as well as the fate and transport behavior of indicator organisms in the USGS study are so different from those found in Fishpot Creek that the results of the USGS studies should not be applied to Fishpot Creek. The District also opposes the use of the regression between bacteria concentrations and upstream SSOs since this relationship is only strong due to the inclusion of the Missouri and Mississippi Rivers in the dataset. These rivers, due to their watershed size and associated land uses, are not representative of receiving waters such as Fishpot Creek that are influenced by SSOs and not CSOs. The District supports the potential use of microbial source tracking for future phases of the TMDL or implementation planning, particularly using new techniques that are more suitable for sanitary surveys.

d. More detailed, local information must be used in assessing bacteria sources.

The District and local governments have extensive data that can be mined to more accurately assess bacteria sources in the watershed. The District's data were discussed briefly under comments related to land use and land cover. These data also include sanitary and storm sewer information that must be used to assess potential locations of on-site wastewater management system and stormwater outfalls. The District requests that the Department incorporate these data in the TMDL source assessment. In addition, local information related to on-site wastewater management system inspections must be included in the TMDL rather than relying on national performance data. Further, there needs to be characterization of specific general and stormwater permit holders and discharges from their facilities. Specifically, additional analysis of potential *E. coli* contributions from the Veolia Environmental Services Landfill is warranted.

Landfills, whether active or inactive, are clear potential sources of bacteria, both from nuisance wildlife attracted to the landfill and from solid waste handled and disposed of within the landfill. The TMDL states that the permit does not permit discharges of stormwater from the open face of the landfill or from untreated leachate, but is silent on the specifics of how stormwater on the closed portions of the landfill is stored or treated. In addition, there is no mention of how the landfill's stormwater controls handle significant storm events. In other words, the TMDL does not provide storage and treatment information that supports the conclusion that discharges from the site do not cause or contribute to the impairment. The District requests that the Department conduct additional water quality sampling to adequately characterize bacteria contributions from the Veolia Landfill rather than arbitrarily omit a potentially obvious source from the TMDL study. At a minimum, the TMDL must include a wasteload allocation for this permitted point source.

e. The water quality improvements and load reduction by the District's upcoming elimination of constructed SSOs and other sanitary sewer improvements must be taken into account.

The TMDL source inventory and assessment suggests that SSO contributions to the potential water quality impairment are significant. The District has been aggressively implementing actions to reduce SSOs and improve sanitary sewer systems within its service area, including committing in a Federal Consent Decree to eliminate all constructed SSOs (including those in Fishpot Creek) and to continue to develop and implement a Capacity, Management, Operations, and Maintenance (CMOM) program[2]. MDNR is a party to the Federal lawsuit and will receive copies of MSD's submittals under the Federal Consent Decree. The water quality improvements and load reductions resulting from the District's efforts must be accounted for in estimating future load reduction requirements.

[2] The CMOM Program will include detailed performance goals for the prioritization, cleaning, inspection, and rehabilitation of the entire sewer system. Implementation of the Federal Consent Decree will also include continued implementation of the District's Fats, Oils, and Grease (FOG) Program, the development and implementation of a Private Inflow and Infiltration Reduction Program, a Building Backup Response Plan, and a Non-Capacity Related SSO Response Plan.

f. The language regarding "the presence of sewerage system infrastructure", "mismanagement", and "sewage discharge" on page 12 and any subsequent references should be deleted.

This is broad-sweeping language that implies that simply the presence of a sewerage system will result in non-attainment of the WBCR-B designated uses. This statement is inaccurate and should be deleted.

g. The Missouri Department of Transportation (MoDOT) MS4 permit should be incorporated into the TMDL as a point source and must be included in the wasteload allocation.

Highway corridors comprise a meaningful portion of the watershed (2%) and a likely higher percentage of the watershed's impervious area. These corridors should be controlled under the MoDOT MS4 permit. Pitt et al. (2004) demonstrates that highways significantly contribute to bacteria loading during wet weather conditions, with median fecal coliform densities ranging from 730 to 1,700 col./100 mL. Therefore, the MoDOT MS4 permit must be referenced as a point source in the TMDL and included within the wasteload allocation. Obviously, state agencies are not entitled to preferential treatment. Failure to include the MoDOT MS4 permit represents preferential treatment of Agency sources, is arbitrary and capricious, and is otherwise not in accordance with the law.

h. The reference to MS4 stormwater management plans should be revised.

The source assessment and inventory section pertaining to the MS4 permit held by the District and co-permitted local governments states that stormwater management plans are to be developed to "prevent the input of harmful pollutants" (page 15). The District requests that the Department revise the TMDL to state that these plans are to be developed to "reduce the discharge of pollutants from the MS4 system to the maximum extent practicable," consistent with state and USEPA regulations and guidance.

i. The District's Supplemental Environmental Project (SEP) to eliminate some septic systems should be put into proper perspective.

As referenced in the TMDL, the District committed to a SEP to eliminate some septic systems within our jurisdiction as part of the recent Federal Consent Decree. This project was undertaken in connection with the settlement of an enforcement action, United States, State of Missouri, and the Missouri Coalition for the Environment Foundation v. Metropolitan St. Louis Sewer District, No 4:07-CV-01120-CEJ, taken on behalf of the U.S. Environmental Protection Agency, the State, and the Coalition under the Clean Water Act. The specified expenditure for this SEP is only $1.6 million to be used for low income homeowners throughout the entire area served by MSD. This money may also be used to repair defective private laterals. Therefore it is unlikely that the SEP will result in a significant reduction of bacteria within the Fishpot Creek watershed. The District requests that the TMDL be revised to accurately describe the limitations of the SEP so that local landowners and stakeholders have a realistic expectation that additional actions will be needed to address failing septic systems.

4. APPLICABLE WATER QUALITY STANDARDS AND NUMERIC TARGET

a. The water quality condition targeted by the TMDL is not sufficiently linked with human health risk in the Fishpot Creek watershed.

The TMDL targets a WBCR-B *E. coli* criterion of 206 col./100 mL as a recreational season (April 1 through October 31) geometric mean for the classified segment of Fishpot Creek and a "never to be exceeded" 126 col./100 mL for the losing stream segment of Fishpot Creek. These criteria are based on the USEPA 1986 bacteria criteria document ('1986 criteria').

While these are approved criteria, they are not appropriate for several waterbodies within our jurisdiction because the underlying epidemiological studies are 1) poorly correlated with risk, 2) rooted in two unsupported assumptions, 3) not representative of inland flowing waters, and 4) largely focused on publicly-owned treatment work (POTW) impacted waters. Further discussion regarding the losing stream criterion is included in comment 4.d.

USEPA's 1986 criteria are based on a poor regression from relatively few epidemiologically studies. The epidemiological studies supporting this criterion were conducted on just two lakes over three years – i.e., Lake Erie and at Keystone Lake (which is about 60 miles east of Tulsa, Oklahoma) in 1979, 1980, and 1982. At the 95 percent confidence level, results from these studies indicate the corresponding mean *E. coli* density for the WBCR-B protection level (i.e., 10 illnesses per 1,000 swimmers or 1.0% risk) range anywhere from approximately 120 col./100 mL to 500 col./100 mL (USEPA, 1984).

The 1986 criteria are also rooted in two unsupported assumptions (Wymer, 2007). This stems from the fact that USEPA set the 1986 *E. coli* criteria to have the same level of protection as the previously recommended fecal coliform criterion of 200 col./100 mL. The fecal coliform criterion was translated from a prior total coliform criterion, which was based on epidemiological studies dating back to 1948. In order to make this translation, in 1968 the National Technical Advisory Committee (NTAC) assumed fecal coliforms comprised about 18% of total coliforms in all waters (i.e., first unsupported assumption). Second, the NTAC arbitrarily halved the indicator density at which a detectable health effect occurred (i.e., from 400 to 200 col./100 mL in fecal coliform) assuming this would result in zero risk (i.e., second unsupported assumption).

The 1986 criteria have also been criticized as inapplicable for flowing waters, as they are based on studies from two lakes (i.e., Lake Erie and Keystone Lake) selected for the lack of nonpoint source pollution. Flowing waters (e.g., streams and rivers) present some unique challenges and characteristics that are not addressed by the 1986 criteria (USEPA, 2007a). Inland flowing waters are very diverse in terms of water flow, water volume, size, morphology of stream beds, land use, and anthropogenic impacts (WERF, 2009). Additionally, exposures in lakes and flowing waters differ. The 1986 criteria include no consideration for these differences such as providing allowances to reflect the differences in hydrologic regime (e.g., extreme high flows) (USEPA, 2007a).

In addition to the issues noted above, the lake studies on which the 1986 criteria are based largely focused on POTW-impacted waters. However, the relative human health risks from exposure to recreational waters impacted by non-human sources or by poorly or untreated human fecal matter are not well understood (Soller et al., 2010; USEPA 2007b). A growing body of evidence suggests relative risks differ depending on the source (e.g., feces from fowl and

some large animals present substantially lower risk than from humans) (Soller et al., 2010). The 1986 criteria do not take these differences into account.

Tools, such as QMRA, could be employed to provide more scientifically-defensible and valid criteria based upon actual human health risk. QMRA is a powerful tool for exploring the relative risks under different exposure scenarios (e.g., storm vs. non-storm event, *E. coli* from animal feces vs. POTW) (WERF, 2009). Given these considerations, the Department should reconsider bacteria targets and adjust them as appropriate in subsequent TMDL revisions.

b. The TMDL target should consider the effects of bacteria source on human health risk.

Recent QMRAs by USEPA contractors have shown that setting appropriate recreational indicator bacteria limits (i.e., corresponding to illness rates of 8-9 per 1,000 WBCR exposures) requires an understanding of bacteria sources (Schoen and Ashbolt 2010, Soller et al. 2010). As shown in Figure 4 from Schoen and Ashbolt (2010), when percent of bacteria from non-human sources (in this case gulls, as shown on the x-axis) is above roughly 80%, the cumulative illness risk (or the sum of the gull and human/sewage risk curves) is roughly half the USEPA's tolerable illness rate (as indicated by the "illness benchmark" horizontal line). Stated another way, when the percent of bacteria indicators from human fecal sources is low, default recreational criteria are overprotective and can be safely increased. Further supporting this understanding, as shown in Figure 3b from Soller et al.(2010), predicted illness risks associated with recreational contact with a variety of fecal sources all at uniform concentrations of 126 col./100ml *E. coli* indicate that illness rates (and therefore appropriate recreational limits) are very much a function of bacteria source. While some source tracking information is available within the USGS study, a phased TMDL approach would allow the collection of additional source data, which is essential given the very rough nature of the USGS source tracking methods.

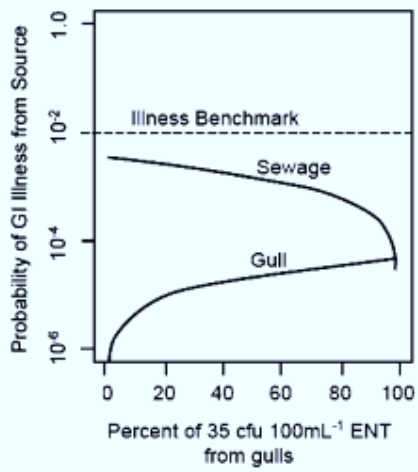


FIGURE 4. Comparison of median illness risk for adults when total ENT concentration (at 35 cfu 100 mL^{-1}) is attributed to a mixture of primary POTW effluent (sewage) and seagull feces (gulls).

Source: Schoen and Ashbolt (2010).

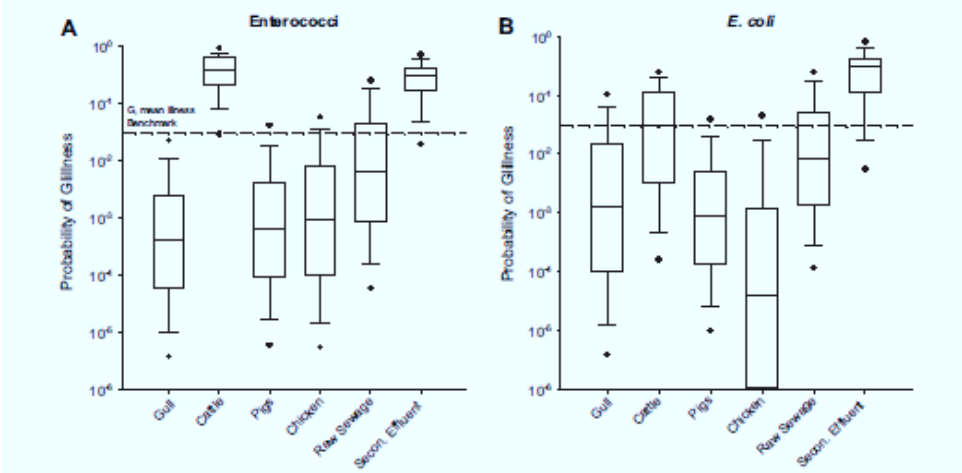


Fig. 3 – Run 2 probability of GI illness. Run 2 probability of GI illness from ingestion of water containing fresh faecal pollution at densities of 35 cfu 100 mL^{-1} ENT (3A) and 126 cfu 100 mL^{-1} E. coli (3B). Predicted risk (median, interquartile range, 10th and 90th percentiles, and 5th and 95th percentiles) for fresh gull, cattle and pig faeces, and chicken litter. Human impacts are presented for primary sewage (Human 1) and secondary disinfected effluent (Human 2). The illness benchmark represents a geometric mean probability of illness of 0.03.

Source: Soller et al. (2010)

In addition, we offer the following information regarding bacteria source and natural background contributions that substantiate selection of alternative water quality targets for TMDLs:

- California bacteria TMDLs that consider monitoring data from reference watersheds when setting criteria exceedance rates http://www.waterboards.ca.gov/losangeles/board_decisions/basin_plan_amendments/technical_documents/bpa_78_R10-006_td.shtml).

- California Basin Plan Amendments that incorporate Natural Source Exclusion into Water Quality Standards http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/issue_7.shtml).

c. Two beneficial uses identified in the TMDL are not listed in Missouri's Water Quality Standards.

The District notes beneficial uses listed on page ii including 'Protection of warm water aquatic life' and 'Metropolitan no-discharge stream' are not consistent with the beneficial uses in 10 CSR 20-7.031(1)(C). Furthermore, the District notes that TMDLs are intended to restore designated uses. Therefore, the District strongly questions the basis for developing a TMDL in unclassified losing stream segments of Fishpot Creek because 'losing stream' is not a designated beneficial use in Missouri. At a minimum, DNR should acknowledge that this is a "pre-TMDL" calculation designed to limit bacteria loads to an undesignated stream segment.

d. The TMDL does not include or reference sufficient scientific and regulatory basis for the losing stream *E. coli* criterion.

The losing stream criterion of 126 col./100 mL (instantaneous maximum) applied to the losing segment of Fishpot Creek is not linked with a beneficial use. It is our understanding that the intent of the losing stream *E. coli* criterion is protection of groundwater use for public or private drinking water. While the losing stream criterion may be well-intentioned, the District believes that any criterion must be supported by science and regulatory structure to avoid unintended consequences. As explained in the following paragraph, the losing stream criterion has limited scientific and regulatory basis.

The magnitude of the criterion (*E. coli*, 126 col./100 mL) was apparently derived from the WBCR-A criterion, a value developed from epidemiological studies and scientifically intended to protect recreational uses, not drinking water supplies or uses. Oddly, the Department does not list a bacteria criterion for Drinking Water Supplies in Table A of 10 CSR 20-7.031 suggesting that losing streams are held to a higher standard. In reviewing the Department's definition of the Drinking Water Supply beneficial use (10 CSR 20-7.031(1)(C)10.), the District notes that drinking water protection is intended to support consumption *after* treatment by *public* water treatment facilities. Thus, application of the losing stream criterion to protect consumption of untreated groundwater is not scientifically linked with Missouri's recreational or drinking water supply beneficial uses, or Federal drinking water standards. In addition, the District is not aware of the connection of Fishpot Creek to an aquifer that may be used for drinking water supply or the presence of any private wells in the Fishpot Creek watershed that would warrant establishing stringent protections for source water areas. For these reasons and others already mentioned (see comment 2.d.), the Department must remove the TMDL calculations for the unclassified losing segment in the TMDL.

e. The TMDL bypassed Listing Methodology and 303(d) public notice requirements.

On page 8 of the TMDL, the Department points out that the allowed exceedance rate for bacteria in losing streams (for the purposes of impaired waters listing) is not included in the state's Listing Methodology Document (LMD). The Department justifies an allowed exceedance rate of ten-percent for *E. coli* in losing streams based on rates applied to aquatic life parameters such as pH, dissolved oxygen, and temperature. By implementing the ten-percent rule in the TMDL, the Department effectively bypassed public participation in the Listing Methodology and 303(d) listing processes. For these reasons and others already mentioned (see comment 2.d. and 4.d.), the Department must remove the unclassified losing segment from the TMDL.

5. MODELING APPROACH, LOADING CAPACITY, LOAD AND WASTELOAD ALLOCATION, AND MARGIN OF SAFETY

a. The modeling approach and Loading Capacity calculated for Fishpot Creek is inconsistent with Missouri's recreational water quality criteria and Total Maximum Daily Load guidance developed by the U.S. Environmental Protection Agency.

Missouri's WBCR-B criterion (206 col./100 mL) is expressed as a recreational season geometric mean, with the stipulated recreation season spanning from April 1 to October 31 (10 CSR 20-7.031). Therefore, the bacteria criterion applicable to the currently classified segment of Fishpot Creek has a seven-month averaging period.

Technical guidance developed by the USEPA (2007c) clearly indicates that development of the Loading Capacity Curve should be calculated by multiplying the appropriate daily criterion by the average daily flow value. The Department apparently multiplied the seven-month criterion by a daily flow value to obtain the Loading Capacity for Fishpot Creek. In USEPA (2007c) guidance (see Appendix A), USEPA discusses approaches to convert non-daily criteria to daily values for use in the Load Duration Curve approach. Included in Appendix B of USEPA (2007c) is a bacteria example calculation that converts a non-daily bacteria criterion to a daily value using statistical procedures outlined in USEPA (1986). Such an example is directly applicable to Fishpot Creek.

While Missouri water quality standards do not include a short-term (e.g., daily) criterion for protection of WBCR-B, the process included in USEPA (2007c) should be used to develop a water quality target to evaluate loading capacity using a Load Duration Curve approach with the understanding that the recreational season geometric mean should be used to determine water quality standards compliance. The Department should recalculate the Loading Capacity (and TMDL components) for Fishpot Creek based on an appropriate TMDL target that considers the correct averaging period. Such an approach may include development of a daily TMDL target based on statistical characteristics of bacteria datasets collected in Fishpot Creek. An example of an alternative daily TMDL target analysis is provided in the next comment. The District wishes to emphasize that daily *E. coli* targets suggested above be considered implementation goals to achieve the primary criterion (i.e., recreational season geometric mean).

b. The load duration curve must be adjusted so that sample data and TMDL target have comparable averaging periods.

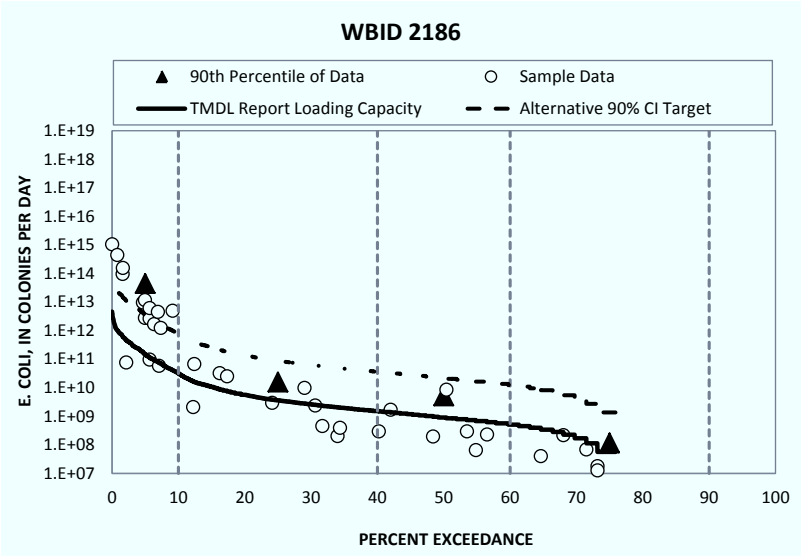
As discussed above, technical guidance developed by the USEPA (2007c) suggests that load duration curves should be calculated from data and criteria that have the same averaging period. Data used in the TMDL report did not have the same averaging period. In the TMDL, the Department multiplied the recreational season geometric mean criterion by a daily flow value to obtain the loading capacity for Fishpot Creek. This loading capacity was then compared to daily bacteria measurements and geometric means of data from various daily flow exceedance intervals.

The correct way to calculate the TMDL using a Load Duration Curve would be to either 1) convert the bacteria and flow data into recreational season geometric mean values and compare them to the geometric mean water quality criterion or 2) convert the recreational season water quality criterion to a daily value and compare it to the daily data. Either method would provide a more accurate representation of existing loading conditions relative to intended water quality criterion. The first method of converting the sample data to a recreational season geometric mean is complicated by the fact that limited data are available from most years to calculate a representative geometric mean value.

However, the second method of converting the average water quality criterion into a daily value is a straightforward process. Appendix B of USEPA's (2007c) technical guidance includes an example bacteria calculation that converts a non-daily bacteria criterion to a daily value using statistical procedures outlined in USEPA (1986). This example is directly applicable to Fishpot Creek and is illustrated in the following paragraphs.

The USEPA (1986) method used to develop the alternative daily statistical targets for *E. coli* is based on both the inherent variability in water quality data (as measured by the log standard deviation) and the assumed log-normal relationship between the geometric mean and statistical maximum value of bacteria data. Once calculated, this statistical maximum value can be interpreted as a daily target that is protective of the long-term average criterion, even when it is exceeded a certain percentage of the time. The USEPA approach therefore also provides a method for assigning a degree of caution based on the expected use intensity of the water. For example, USEPA's 1986 method included a high degree of caution (75% confidence) that can be assigned for heavily used waters while a lower degree of caution (95% confidence) can be assigned for waters with limited use.

We applied this alternative target approach to data (n = 57, log SD = 1.08) collected from Fishpot Creek (WBID 2186). The alternative target was developed using the 90% confidence interval (CI) factor as this level likely corresponds to infrequent use of Fishpot Creek ("lightly used full body contact" from USEPA 1986). We view this as a highly conservative calculation since the District is not aware of any WBCR uses that have occurred within Fishpot Creek. The result of applying a daily alternative target indicates that reductions in the high flow category should be lowered. The District notes that reductions in the 90% to 100% exceedance range are infeasible to manage (see comment 5.g.) and would require implementation of stormwater controls that are not practicable (see comment 5.j.).



Comparison between the MDNR-calculated TMDL and Alternative Statistical Maximum 90% Confidence Interval Target for the Classified Section of Fishpot Creek.

Note 1: There were inconsequential differences between the distributions of recreational season and annual flow data. To maintain consistency with the TMDL report, watershed-adjusted flow data used by Department were used to calculate both loading capacity curves.

If the Department chooses to retain the load duration curve approach, the approach must be adjusted so that the sample data and water quality criterion are expressed with the same averaging periods. The method outlined above is the most appropriate way to express the data and criterion as daily values while still maintaining consistency with the recreational geometric mean water quality criterion.

c. Methods used to determine the Loading Capacity result in a Margin of Safety that is unrealistic, excessive, and significantly overestimates uncertainty.

As noted in an earlier comment, the Loading Capacity curve depicted in the TMDL is apparently based on use of the 206 col./100 mL geometric average. In other words, the 206 col./100 mL target could be considered a daily not-to-exceed target. By implementing the criterion as a daily value, the Department is protecting a geometric mean condition well below the WBCR-B criterion according to USEPA (1986) guidance. By using this approach, the implied geometric mean target is 15 col./100 mL, assuming the statistical distribution of the Fishpot Creek water quality data (i.e., 1.08 log standard deviation). Such an assumption creates an arbitrary and unrealistically large and scientifically unsupportable margin of safety that is approximately 14 times greater than intended by the current draft of the TMDL.

d. An explicit Margin of Safety is not needed as bacteria are treated as a conservative parameter in the Load Duration Curve modeling approach.

As noted in other comments, the Department has apparently grouped data collected at multiple sites into the Load Duration Curve developed for a single location in the watershed. It is well acknowledged in the technical literature and USEPA (2001) guidance the bacteria indicators are not conservative parameters. Rather, organisms undergo decay and settling processes when introduced into the water column, as well as potentially regrowth in sediments and resuspension. Thus, measurements collected several miles upstream of the impaired segment are not 'instantaneously transported' to a single point of compliance represented by a Load Duration Curve. Treating bacteria as a conservative parameter represents an implicit margin of safety and renders additional explicit safety factors unnecessary.

e. The Load Duration Curve approach provides a very limited linkage between watershed processes and bacteria fate and transport mechanisms.

The Load Duration Curve approach for TMDL development may be an expedient means to determine TMDL components. However, quantitatively evaluating improvements likely to result from implementing management scenarios (e.g., land use practices, structural Best Management Practices, sanitary sewer improvements, etc.) is precluded by this empirical approach. In comparison, a numerical watershed model (e.g., SWAT, HSPF, SWMM etc.) provides a quantitative link between watershed improvements and calculated changes in bacteria densities.

A watershed model offers several implementation advantages over a Load Duration Curve approach including but not limited to: (1) a more accurate estimate of loading capacity during the recreational season, (2) identification of critical source areas, (3) consideration of fate and transport mechanisms, (4) a framework to assess data collected at different times/locations (i.e., Fishpot Creek), (5) a framework to allocate loads to meaningful discharge categories, and (6) optimization and selection of management scenarios to help best achieve water quality standards with available resources.

Achieving the currently proposed TMDL load reductions in Fishpot Creek would take decades (or longer), require significant investments, and would not allow resources to be targeted at restoring uses during the periods where the creek is most likely to be used for recreation (low flows). The TMDL should be based upon a meaningful tool that links in-stream criteria with the landscape processes that generate and transport bacteria. A more robust modeling tool is needed to deal with the complexities of bacteria fate and transport in an urban environment, and to avoid an arbitrary result and unnecessary and costly expenditures that would be unsupported by a meaningful reduction in risk or other benefits to human health or the environment.

f. If the load duration curve approach is retained, the Department should calculate separate load duration curves for each monitoring site in the watershed.

As discussed above, a more robust modeling tool is needed to correctly account for the complexities of bacteria fate and transport in an urban environment. However, if the Department chooses to retain the load duration curve approach, it must be modified to accurately reflect conditions in the classified segment. In the absence of specifying decay and settling to more accurately quantify bacteria loads from upstream sites, a load duration curve should be developed using data only for those sites located in the classified section. This modeling approach would better reflect conditions in the classified reach. If calculated using appropriate flow adjustment factors (see earlier comments), individual load duration curves could also be developed for sites outside of the classified reach. Analysis of these curves may be useful in helping to identify critical source areas in the watershed, therefore allowing implementation resources to be focused to achieve the greatest public health benefit.

g. The Fishpot Creek TMDL should consider feasible management options and actual risk during wet weather conditions.

According to Cleland (2002) as cited by TCEQ (2007), the upper parts of the Load Duration Curve may represent flow conditions that exceed feasible management. Specifically, the experts that TCEQ enlisted state in their report:

> "Exceedances occurring at the low flows may require regulatory actions to control point sources. At the mid-range and high flows, management measures directed towards nonpoint sources could be developed. At some point in the flow frequency, control of pollutant sources becomes unfeasible. Pollutant loadings at these high flow events typically exceed design specifications for control actions. For this reason, it may be reasonable to exclude data and loadings that occur at flooding conditions."

In addition, we note that high flows may also represent reduced illness risk because: (1) whole body contact recreation may be non-existent, and (2) velocities may exceed those considered safe for swimming by Hyra (1978).

The Department should incorporate these factors that present lower risk during 0% to 10% exceedance interval when estimating load reduction needs. A revision could be implemented by selecting a higher confidence interval when identifying a daily TMDL target using USEPA (1986) bacteria criteria guidelines.

h. Wasteload allocations and TMDL targets must consider natural sources.

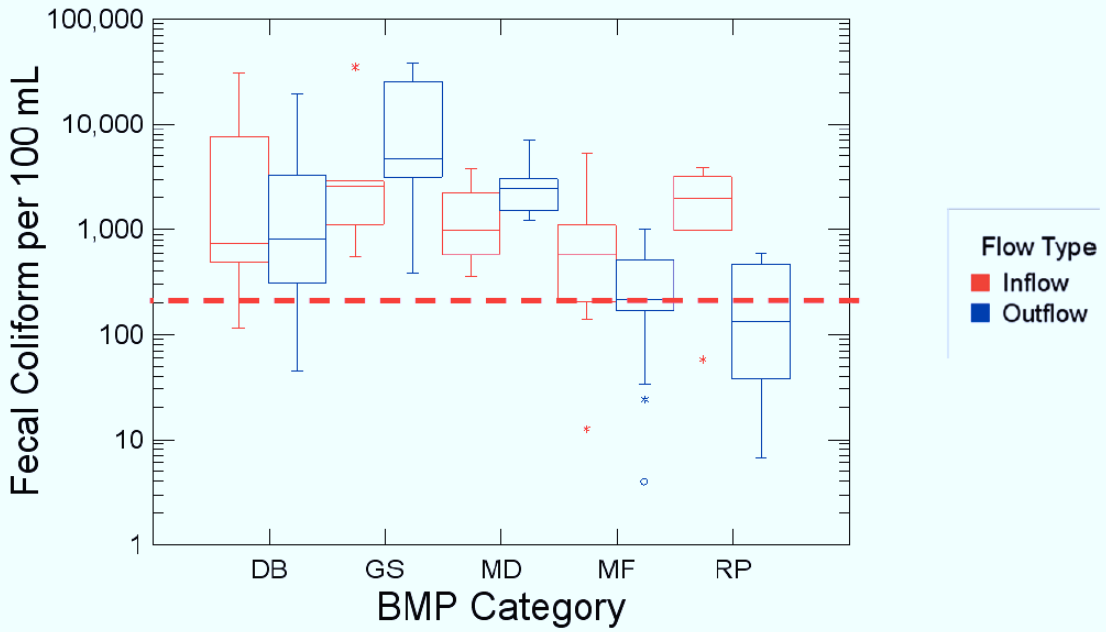
Pathogenic indicator bacteria, such as *E. coli,* are contributed to streams, rivers, and lakes by various sources including natural sources (e.g., deer, raccoons, waterfowl, soils, sediments, plants, and decaying organic matter, etc.). Natural or wildlife contributions should be considered when setting TMDL bacteria targets and developing wasteload allocations. The District submits that the Department must evaluate natural bacteria loads and the corresponding human health risks. Such evaluations must be used to make appropriate wasteload allocations for stormwater permittees.

i. Wasteload allocation and implementation expectations must consider the limitations of treatment provided by structural and non-structural best management practices.

The District believes that technical feasibility must be considered when implementing any TMDL provisions into MS4 permits. Such a position is supported by the Maximum Extent Practicable (MEP) standard and minimum control measures approach embodied in the Clean Water Act. The reality of the MEP standard is supported by results generated by the International Stormwater Best Management Practice (BMP) Database (BMP DB). The BMP DB is a warehouse for performance data of various urban stormwater BMPs. Recently, data from the BMP DB were used to evaluate the performance of various structural BMPs in treating bacteria (see below for figure, with permission). Results from this analysis suggest that typical flow-through and passive control BMPs may not be capable of consistently achieving WBCR criteria, depending upon the expressed average period or duration. The ability of other BMPs, such as infiltration or capture/reuse systems, are constrained by soil infiltration conditions, available open space, land availability, reuse opportunities, and infrastructure or utility conflicts. The MEP standard must be employed in implementing MS4 controls, including the development and implementation of the Fishpot Creek TMDL.

Please note that the entire BMP DB report on Fecal Indicator Bacteria can be found at:
http://www.bmpdatabase.org/Docs/BMP%20Database%20Bacteria%20Paper%20Dec%202010.pdf

Figure 11. Box Plots of BMP Study Geometric Means for Fecal Coliform by Selected BMP Category



Notes: **DB** = Detention Basin; **GS** = Grass Strip/Swale; **MD** = Manufactured Device; **MF** = Media Filter; **RP** = Retention Pond

j. The TMDL should be revised to exclude extremely high flow events.

During high stream flows (which occur less than 10% of the time), stream velocities and turbulence may exceed those necessary or appealing for safe recreation (Whole Body Contact Recreation). It is arbitrary and unreasonable to require the highest bacteria percent reduction (Table 9) when flows may be unsafe for recreation and/or are not feasibly managed. The Missouri Effluent Regulations (20 CSR 10-7.015) recognize this situation by allowing a "temporary suspension of accountability for bacteria standards" during periods of wet weather.

The District is very concerned that the TMDL could result in stormwater management requirements that go beyond those already adopted for compliance with the MS4 permit (e.g., requiring capture and treatment of volumes greater than 90th percentile daily storm depth). Such additional requirements exceed the MEP provisions of the District's MS4 permit and extend beyond the intent of the Phase II stormwater regulations. Thus, the draft TMDL may create stormwater performance objectives that are arbitrary, and are not required by law, not enforceable, and not necessary to protect recreational uses. The Department should reevaluate the load reduction targets for flows that are generated by precipitation events greater than the 90th percentile storm.

k. It is not clear if sanitary sewer overflows (SSOs) are included in the wasteload allocation.

On page 24 (second paragraph), the draft TMDL indicates that wasteload allocations for SSOs are considered zero. In the following sentence, the Department states that SSOs are included in the wasteload allocation. These two sentences appear to be contradictory and should be clarified.

l. It is arbitrary and unrealistic to assign permit holders a wasteload allocation equal to zero.

Section 7 suggests that permit holders listed in Table 5 are to be prescribed a wasteload allocation of zero. No scientifically supportable TMDL allocation scheme or technical basis supports a wasteload allocation of zero. The District notes unavoidable natural background loads, the limits of treatment achievable through implementation of structural BMPs, and the need for a watershed model to distribute wasteload allocations to spatially explicit locations or discharge categories. All permitted entities, including the Missouri Department of Transportation, must be assigned wasteload allocations. In addition, the municipal MS4 co-permittees should also be included in the wasteload allocations.

m. The wasteload allocation included in the TMDL is inaccurate given the technical defects with the Load Duration Curve approach.

The wasteload allocation assigned to the District's MS4 permit was based upon the Load Duration Curve approach. For the reasons described above, these calculations and all wasteload allocations must be reevaluated and adjusted, as appropriate.

6. IMPLEMENTATION PLAN

a. Maximize grant funding to assist with TMDL implementation.

The District understands that Section 319 grant funding guidance requires that grant awards be directed at addressing nonpoint source pollution concerns and watershed restoration activities. The TMDL indicates the watershed does not include any nonpoint source discharges, but this does not mean that Section 319 funding is not available to help with TMDL implementation activities. Section 319 grant guidance published by EPA (see 68 FR 205) specifically states:

> "Section 319 funds may be used to fund any urban stormwater activities that are not specifically required by a draft or final NPDES permit."

The section also describes other urban runoff management activities that could be eligible for Section 319 funding, including technical assistance to local stormwater programs, monitoring needed to design and evaluate the effectiveness of implementation strategies, best management practices for pollution prevention and runoff control except those required by a draft or final NPDES permit, information and education programs, technology transfer and training, and development and implementation of policies, regulations, and local ordinances to address stormwater runoff. The Department should more explicitly state what 319 funding will be sought and how that funding could be used to assist in TMDL implementation efforts.

b. TMDL implementation should allow sanitary sewer improvements to proceed prior to other restoration activities.

The District strongly urges the Department to postpone TMDL implementation to allow sanitary sewer improvement efforts to be completed. The District, USEPA, the Department, and with some input from the Missouri Coalition for the Environment (as well as the District stakeholders) spent several years determining the best approach to implementing sanitary sewer improvements. This approach, as well as a post-construction monitoring plan, is embodied in a Federal Consent Decree.

After all SSO projects have been completed, the CMOM Program has been fully developed and implemented, and in-stream water quality has been assessed for at least two years, the Department should evaluate whether the creek is impaired and delist the creek if appropriate. If the creek is still impaired, then the TMDL should be revisited and the requirement to move forward with load reduction efforts may be appropriate via the addition of enhanced MS4 program implementation and BMPs. This could include more focused illicit discharge detection and elimination, conducting sanitary surveys, addressing septic system failures, and other bacteria-focused BMPs.

c. The TMDL implementation plan should include the opportunity to develop site-specific recreational use criteria.

The District believes that it is possible to develop a more accurate, site-specific water quality target for the TMDL that is protective of human health for Fishpot Creek and allows the District and other stakeholders to more efficiently target limited financial resources across all of MSD's watersheds. This can be accomplished through the use of state-of-the-art quantitative polymerase chain reaction (qPCR) detection methods, human-specific indicator or marker species measurements, pathogen measurements (if needed), quantitative microbial risk assessment and the latest microbial source tracking techniques. This is also discussed in item 4.a above. The Department should include at least a two to three year period in the implementation schedule to allow this to be completed.

d. The TMDL should be re-written to be a phased TMDL that includes revision of the water quality target(s), collection of additional data and information, and adjustments to the wasteload and load allocations.

The Fishpot Creek TMDL and all subsequent TMDLs that the Department develops for waterbodies within the District's service area will impose requirements on the District and other stakeholders to reduce pollutant loads. The Department should recognize that in most instances, the District's ratepayers will bear a disproportionate burden for implementing the TMDL. USEPA's new integrated municipal stormwater and wastewater planning approach (USEPA 2012) is intended to help states and communities

> "assist municipalities on their critical paths to achieving the human health and water quality objectives of the Clean Water Act by identifying efficiencies in implementing requirements that arise from distinct wastewater and stormwater programs, including how to best prioritize capital investments."

The TMDL does not fully integrate, and may not be sufficiently consistent with, the Federal Consent Decree that binds the District along with USEPA and the Coalition. This decree addresses mitigation of sanitary sewer overflows and post-construction monitoring which will help ensure that any recreational use impairments in Fishpot Creek are addressed.

The implementation plan for the TMDL should also consider the additional requirements for stormwater sources that will be imposed through the District's MS4 program. The implementation plan must include further source characterization, monitoring, assess beneficial use attainment, sanitary sewer improvements and CMOM efforts, and evaluation of on-site wastewater systems. Because of the disproportionate cost that the District's ratepayers are bearing, additional stormwater controls should only be pursued if needed and appropriate and after "lower hanging fruit" controls have been identified.

Given USEPA's new framework, the Department has added flexibility to integrate the Fishpot Creek TMDL and other urban stream TMDLs within the District's service area into a more comprehensive facility planning approach. Under USEPA's framework, there are many options that could be considered. The District recommends that the Department conduct a stakeholder meeting(s) on these options to evaluate how best to consider this new approach with respect to restoring urban streams within the District's service area.

e. The timing and necessity for TMDL issuance and implementation should take into account Federal Consent Decree obligations and resource allocations.

The District is presently implementing water quality improvements prescribed by a Federal Consent Decree. These improvements will further reduce bacteria concentrations in Fishpot Creek. Issuance and implementation of the TMDL prior to completing the referenced improvement arbitrarily creates the potential for resource allocation conflicts and a high potential for other inconsistent and conflicting obligations. Such conflicts also arise from the coarse TMDL source and allocation analysis dictated by the Load Duration Curve method. In other words, the TMDL does not quantify the relative contributions from various source categories, permittees, or critical subwatersheds. Attempting to implement a TMDL without a meaningful source analysis has the potential to arbitrarily divert resources away from areas or sources most in need of improvement. Therefore, any TMDL implementation plan must incorporate and integrate Federal Consent Decree requirements and improvements, CMOM activity, and monitoring of the resulting stream water quality prior to any additional efforts to improve wet weather conditions.

f. The potential cost, technical complexity, and stakeholder interest in the TMDL warrants additional public participation.

The District notes that Missouri's Public Participation Plan stipulates that public meetings be held when appropriate. Further, because the Department is developing a standard, a public hearing opportunity is required under RSMo Section 644.036. Moreover, the District believes that public meetings are appropriate due to the potentially significant infrastructure planning and capital costs associated with implementing the TMDL. For the purposes of rough estimation, we estimate that installing stormwater treatment retrofits to the MEP could cost from $10,000 to $30,000 per developed urban acre. This estimate was based upon rough local cost calculations and costs gathered from other MS4 programs that have TMDL drivers. Since the Fishpot Creek watershed is composed of approximately 4,842 urban acres, the District is concerned that the cost of stormwater implementation could range from $48 million to $145 million. This estimate does not consider treatment of woodland, forests, or grasslands that may contribute bacteria from natural sources. Therefore, public meetings are certainly warranted and appropriate (and required by law) prior to finalizing the TMDL. The District requests to move forward in a collaborative manner with the Department in developing TMDLs for waters within or intersected by District boundaries.

g. The implementation plan should target water quality criteria, rather than specific load reductions, as its ultimate goal.

Section 12 of the TMDL report indicates that the TMDL is considered to be successfully implemented when loading reductions listed in Table 9 are achieved.

The District understands that the purpose of the TMDL process is to establish loading levels needed to meet water quality standards, and that achieving the estimated reductions should result in standards being attained. However, given the technical issues and uncertainties associated with the MDNR's TMDL development approach, water quality standards likely will be achieved well before all loading reductions in Table 9 are met. The District asserts that the Section 12 must be modified to state that the TMDL is considered to be successfully implemented when water quality standards, rather than the estimated loading reductions, are achieved. Furthermore, the Department should not develop implementation plans on a pollutant-by-pollutant basis for waters having multiple impairments (e.g., chloride). Instead, any implementation plan developed by the Department must integrate and account for all pollutants demonstrated to exceed water quality standards so that control measures and funding schedules can be coordinated and optimized.

7. REASONABLE ASSURANCE

a. The TMDL should include other District actions planned for the watershed in the discussion about reasonable assurance.

The TMDL does not address the actions that MSD is required to take in the Fishpot Creek watershed (and other watersheds) under the above referenced Consent Decree that must count towards reasonable assurance that the TMDL will be implemented. These actions include sewer lining, the SEP, sanitary sewer improvements, continued development and implementation of a CMOM Program, as well as other actions. The SEP project was undertaken in connection with the settlement of an enforcement action, United States, State of Missouri, and the Missouri Coalition for the Environment Foundation v. Metropolitan St. Louis Sewer District, No 4:07-CV-01120-CEJ, taken on behalf of the U.S. Environmental Protection Agency, the State, and the Coalition under the Clean Water Act. TMDL requirements must be integrated with the Consent Decree obligations to avoid conflicting obligations, unnecessary expenditures, and other arbitrary and/or duplicative requirements.

b. The TMDL should rely on the maximum extent practicable (MEP) standard for reasonable assurance in stormwater permits.

The District is very concerned about the mention of *effluent limits* in stormwater permits in the discussion of reasonable assurance. In 1987, Congress amended the Clean Water Act (CWA) to expand the National Pollutant Discharge Elimination System (NPDES) permitting program to include pollutants discharged in certain types of stormwater runoff. Section 402(p) was added, which states, in part:

> ***§402(p) Municipal and Industrial Storm Water Discharges. (3) Permit Requirements.***
> ***(A) Industrial Discharges.*** *Permits for discharges associated with industrial activity shall meet all applicable provisions of this section and section 301 [Related to effluent Limitations].*
> ***(B) Municipal Discharge.*** *Permits for discharges from municipal storm sewers (i) may be issued on a system- or jurisdiction-wide basis; (ii) shall include a requirement to effectively prohibit non-storm water discharges into the storm sewers; and (iii)* ***shall require controls to reduce the discharge of pollutants to the maximum extent practicable****, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants [emphasis added].*

The stormwater permitting program defined in the statute explicitly incorporated the phrase "*reduce the discharge of pollutants to the maximum extent practicable*" (known as the MEP standard) into the regulations and the resulting permits. The CWA only imposes the MEP standard on MS4 permit holders and the imposition of effluent limitations in municipal stormwater permits is not authorized. Section 402(p)(3)(A) regarding discharges associated with industrial activities clearly references the Section 301 effluent standards (rather than the MEP standard), whereas Section 402(p)(3)(B) regarding discharges from municipal storm sewers employs the MEP standard (rather than the 301 effluent standards).[3] The imposition of effluent limits on MS4 permit holders would not comply with Section 402(p)(3), and will exceed the Department's jurisdiction and authority.

Based on the applicability of the MEP standard, the District urges the Department to include reference to the MS4 being revised to include the implementation of appropriate and incremental BMPs to reduce the discharge of pollutants from the municipal storm sewer system to the maximum extent practicable, but only if, after sanitary sewer improvements and other required efforts are complete, water quality does not meet applicable water quality standards.

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3 In the sections on the MEP standard in the District's previous comments on proposed TMDLs (Watkins Creek, Gravois Creek and Creve Coeur Creek), the District inadvertently referred to Section 402(p)(3)(A) as 402(p)(A) and 402(p)(3)(B) as 403(p)(B). Please accept this note as a correction of those typographical errors.

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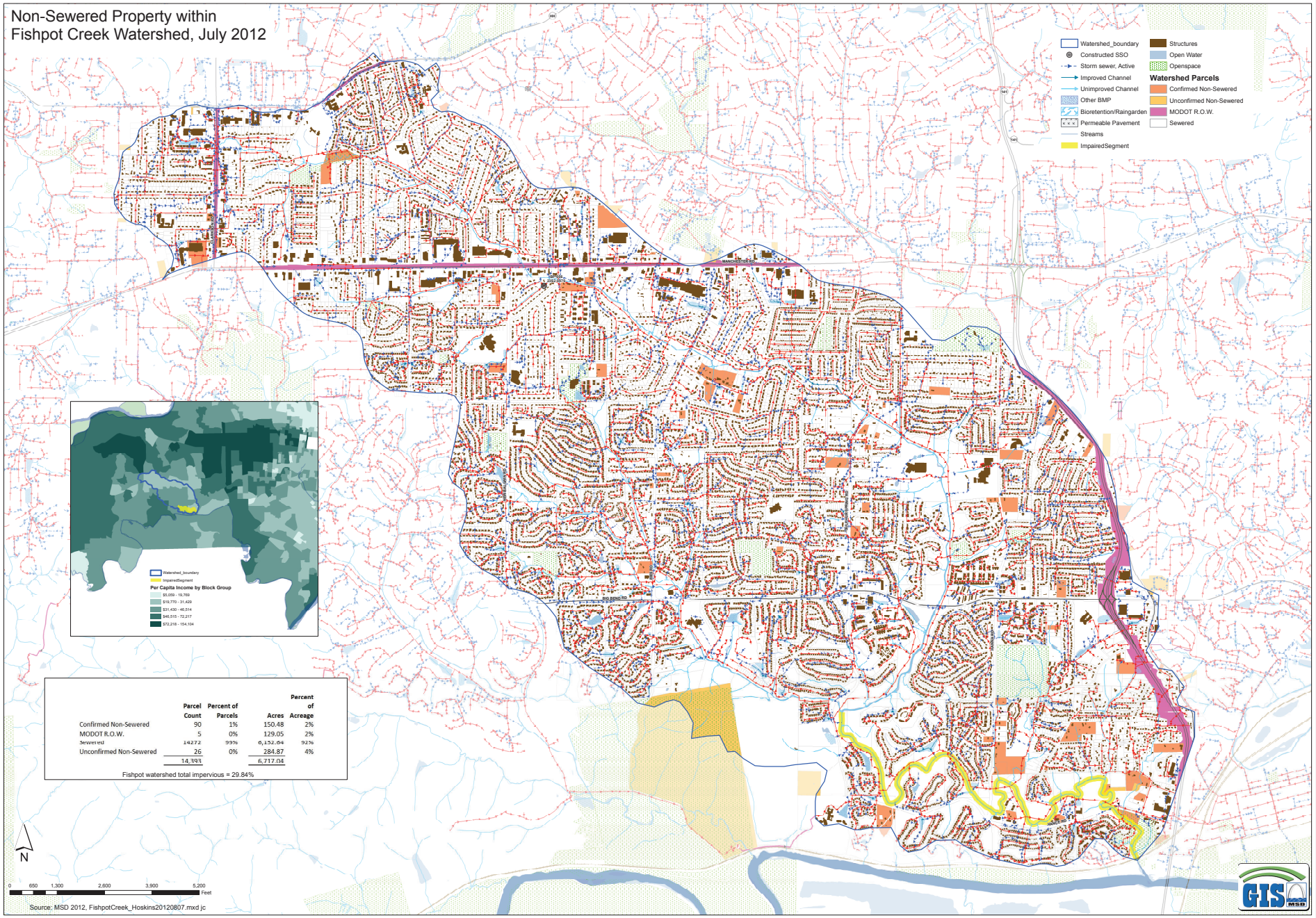
Non-Sewered Property within Fishpot Creek Watershed, July 2012



	Parcel Count	Percent of Parcels	Acres	Percent of Acreage
Confirmed Non-Sewered	90	1%	150.48	2%
MODOT R.O.W.	5	0%	129.05	2%
Sewered	14,272	99%	6,152.64	92%
Unconfirmed Non-Sewered	26	0%	284.87	4%
	14,393		6,717.04	

Fishpot watershed total impervious = 29.84%