



Missouri
Department of
Natural Resources

DRAFT SPRING CREEK TMDL
PUBLIC COMMENTS

1st Public Notice
April 7 – May 7, 2009

2nd Public Notice
May 14 – June 28, 2010

**Spring Creek
WBID # 1870**

Dent County, Mo.

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

May 6, 2009

Mr. John Hoke
TMDL Unit Chief
Water Pollution Control Branch
Water Protection Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

RECEIVED
MAY 07 2009
WATER PROTECTION PROGRAM

Re: Official public notice comments (April 7th, 2009 - May 7th, 2009) for the Spring Creek Total Maximum Daily Load Study on behalf of the City of Salem, Missouri

Dear Mr. Hoke:

1123 Wilkes Blvd. On behalf of the City of Salem (City), Missouri, MEC Water Resources, Inc. (MEC)
Suite 400 respectfully submits the following comments during the public notice period for the
Columbia, MO 65201 draft Spring Creek Total Maximum Daily Load (TMDL) evaluation. The City acknowledges
voice: 573.443.4100 the dedication to stakeholder involvement throughout the Spring Creek TMDL process
fax: 573.443.4140 by Missouri Department of Natural Resources (the Department) staff. The City extends
www.mecwater.com their appreciation to Department staff for their responsive delivery of requested TMDL
information, and looks forward to consensus resolution of concerns outlined in this
comment letter.

BACKGROUND

The City of Salem (the City) currently operates an activated sludge, oxidation ditch Wastewater Treatment Facility (WWTF) having a dry weather Design Average Flow (DAF) of 0.741 Million Gallons per Day (MGD). As you may be aware, the City is nearing treatment capacity and is coordinating with their engineering consultant, CM Archer Group, P.C., to evaluate potential options for expanding their current WWTF. Potential load-based permit limits associated with the draft TMDL concern the City in the context of evaluating expanded design flows, treatment processes, and antidegradation review requirements. The City believes that treatment needed to meet TMDL allocations (see Table 9 in TMDL document) at future design flows may not be affordable or practicable. In addition, the City contends that technical and regulatory information provided or cited by the Department may not fully support draft wasteload allocations (WLAs) included in the TMDL. In the interest of brevity during the public comment period, the City is providing an itemized series of general comments. The City requests a meeting with Department staff in the near future to address these concerns in further detail.

WASTELOAD ALLOCATIONS FOR TOTAL PHOSPHORUS AND TOTAL NITROGEN

Included within Table 9 of the draft TMDL are wasteload allocations of 4.6 lbs / day (0.75 mg/L) for total phosphorus and 36.1 lbs /day (5.8 mg/L) for total nitrogen. It is not clear to the City what regulatory or technical basis support prescribed nutrient WLAs. The City notes that Spring Creek is not identified by the Department as being impaired by unacceptably high nutrient concentrations, and that the State of Missouri has not adopted numeric (304(a)) nutrient criteria for flowing waters.

The TMDL appears to seek a link between nutrient concentrations, dissolved oxygen, sediment oxygen demand (SOD), and algae. The City acknowledges that nutrient concentrations can indirectly affect dissolved oxygen (DO) via nutrient limitation of stream algal communities and reduced organic matter flux to the sediments. However, a quantitative linkage between effluent nutrient concentrations and dissolved oxygen is not supported by the water quality model used to develop TMDL allocations. The City looks forward to discussing the details of this issue with the Department. In the interim, the City requests that WLAs for total phosphorus and total nitrogen be removed from the draft TMDL document.

WASTELOAD ALLOCATIONS FOR CARBONACEOUS BIOCHEMICAL OXYGEN DEMAND (CBOD)

Included within Table 9 of the draft TMDL is a 'CBOD' wasteload allocation of 82.3 lbs/day (13 mg/L). The City offers the following technical, regulatory, and socioeconomic comments related to CBOD values referenced in the draft TMDL:

- ***Nomenclature Clarification*** – Is the WLA for 'CBOD' in Table 9 expressed as CBOD Ultimate or 5-day CBOD?
- ***Contribution of CBOD to Dissolved Oxygen Mass-Balances in Spring Creek*** - The majority of effluent and in-stream (upstream and downstream of Salem WWTF) CBOD₅ data collected by the Department or their contractors in 2003 and 2008 are non-detect or very low values. However, despite low CBOD values, early morning DO concentrations are documented to be less than 5.0 mg/L. In addition, we have not received a water quality model from the Department demonstrating that the statewide DO criterion will be met with allocations presented in Table 9 of the TMDL. The City questions the technical justification or relevance of significantly reducing permitted CBOD concentrations.
- ***Affordability of Advanced Treatment*** - The City is concerned that tertiary filtration or membrane technology needed to meet TMDL WLAs may not be affordable. As we move forward in the TMDL and facility planning process, the City requests consideration of socioeconomic factors by the Department. In addition, other regulatory requirements (e.g., inflow and infiltration reduction requirements, wet weather treatment capacity, etc.) should be considered during socioeconomic evaluations.

The City looks forward to further discussing CBOD and DO related issues with the Department in the near future.

WASTELOAD ALLOCATIONS FOR TOTAL SUSPENDED SOLIDS (TSS)

Section 8 of the TMDL titled 'Waste Load Allocation (Point Source Loads)' mentions that the TSS / VSS allocation is set equal to CBOD, however no WLA TSS / VSS is included in Table 9. The City requests the Department to clarify what, if any, WLAs are being recommended for TSS. In addition, the City notes the Department did not provide a regulatory citation or technical documentation (or linkage) that supports the practice of setting TSS/VSS equal to CBOD. The City looks forward to further discussing TSS related issues with the Department in the near future.

CONSIDERATION OF UPSTREAM LOW DISSOLVED OXYGEN SOURCES

Page 26 of the draft TMDL infers that non-point source loads to the Spring Creek system are causing DO concentrations upstream of the Salem WWTF to be less than 5.0 mg/L. Data collected by the Department or their contractors in 2003 and 2008 do not appear to support a substantive upstream load of oxygen demanding materials. We note that attainment of the statewide DO criteria of 5.0 mg/L is not achieved in several of Missouri's biocriteria reference streams and that non-attainment in these waters are attributed partly or completely to natural features, morphology, and/or flow conditions. In recognition that the 5.0 mg/L DO criterion may not be attainable in all reaches of Spring Creek, the City requests the Department also include in Section 13.2 a discussion of potential natural sources of low DO. The City looks forward to further discussing low DO related issues with the Department in the near future.

DOCUMENTATION OF CONTROL SITE

The City requests the Department further clarify the intent and potential use of 'Control Site' data discussed in Section 5, page 16 of the draft TMDL. The City looks forward to further discussing control site and reference stream issues with the Department in the near future.

DATA COLLECTION AND MODEL CALIBRATION

The City notes that at least four datasets are available for use in model calibration and verification efforts. The Environmental Services Program (ESP) conducted two intensive model-driven studies in July and August of 2003. Data collected by ESP in 2003 is consistent with the Department's Wasteload Allocation Project Procedure (WLA-PP, see MDNR Standard Operating Procedure document) and features Ultimate CBOD analyses, a critical model-driven data parameter. In addition to the intensive studies performed by ESP, additional data were collected by Department contractors in May and September of 2008. Data collected in 2008 do not appear to conform to requirements established in the Department's WLA-PP document.

It is the City's understanding that the more detailed 2003 dataset was not used in calibrating and verifying the model used to predict TMDL allocations. To build model robustness, modeling literature supports use of all available and representative datasets. The City looks forward to further discussing dataset selection issues with the Department.

SUMMARY

We appreciate the opportunity to provide these comments and look forward to working with the Department in the near future to resolve the City's concerns. Please feel free to contact our firm or the City to schedule a meeting or to discuss these comments.

Sincerely,

MEC Water Resources, Inc.

A handwritten signature in black ink, appearing to read 'Chris Zell', with a long horizontal flourish extending to the right.

Chris Zell
Project Manager

c: Jeff Medows, P.E.
CM Archer Group PC



STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Jeremiah W. (Jay) Nixon, Governor • Mark N. Templeton, Director

www.dnr.mo.gov

August 31, 2010

Mr. Chris Zell
Geosyntec Consultants
1123 Wilkes Boulevard, Suite 400
Columbia, MO 65201

RE: Response to Comments on the Draft Spring Creek Total Maximum Daily Load

Dear Mr. Zell:

The Missouri Department of Natural Resources (Department) appreciates the comments provided by Geosyntec Consultants (formerly MEC Water Resources) on the draft Spring Creek Total Maximum Daily Load (TMDL). This letter responds to comments received from MEC Water Resources on May 7, 2009 following the first public notice of the draft Spring Creek TMDL. Please find herein the Department's response to each comment and the location of the revision (if applicable) within the draft TMDL placed on public notice on April 7, 2009. No comments were received from Geosyntec during or following the second public notice of the draft Spring Creek TMDL.

Comment #1: *Included within Table 9 of the draft TMDL are wasteload allocations of 4.6 lbs/day (0.75 mg/L) for total phosphorus and 36.1 lbs/day (5.8 mg/L) for total nitrogen. It is not clear to the City what regulatory or technical basis support prescribed nutrient WLAs. The City notes that Spring Creek is not identified by the Department as being impaired by unacceptably high nutrient concentrations, and that the State of Missouri has not adopted numeric (304(a)) nutrient criteria for flowing waters.*

It is recognized by EPA in their National Nutrient Strategy¹ and their Nutrient Criteria Technical Guidance Manual for Rivers and Streams², and widely understood in general, that excessive nutrients in a water body can lead to potentially harmful algal blooms which can in turn contribute to low dissolved oxygen conditions. These conditions may affect the narrative water quality criteria and can result in an impairment of the designated use for the protection of warm water aquatic life.

It is within the authority of the Department to set wasteload allocations for pollutants that cause or contribute to the impairment of a water body. According to 40 CFR 122.44(d)(1)(i), "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality."

¹ National Strategy for the Development of Regional Nutrient Criteria (June 1998). EPA 822-R-98-002.

² Nutrient Criteria Technical Guidance Manual: Rivers and Streams (July 2000). EPA 822-B00-002.

EPA regulations state that TMDLs can be expressed in several ways, including in terms of toxicity, which is a characteristic of one or more pollutants, or by some “other appropriate measure” [40 CFR 130.2(i)]. This flexibility in the expression of TMDLs supports reliance on a surrogate where, as in this case, there is a reasonable rationale and the TMDL is designed to ensure attainment with water quality standards. When an impairment cannot be tied to a single pollutant, EPA recommends that surrogate measures may be used when specific numeric criteria targets are not discernable. In these cases, alternate numeric environmental indicators or conditions may be used³.

Based on the best available data, the Department has determined that total nitrogen and total phosphorus, in addition to carbonaceous biochemical oxygen demand and total suspended solids, are appropriate pollutants to address the low dissolved oxygen impairment of Spring Creek. Because there are no numeric criteria for nutrients in Missouri’s Water Quality Standards, numeric targets were developed for this TMDL using reference conditions based on streams in the same ecological region as Spring Creek. Development of these reference criteria are discussed in Sections 4.4 and 5.2.2 and Appendices D – F of the TMDL.

***Comment #2:** The TMDL appears to seek a link between nutrient concentrations, dissolved oxygen, sediment oxygen demand (SOD), and algae. The City acknowledges that nutrient concentrations can indirectly affect dissolved oxygen (DO) via nutrient limitation of stream algal communities and reduced organic matter flux to the sediments. However, a quantitative linkage between effluent nutrient concentrations and dissolved oxygen is not supported by the water quality model used to develop TMDL allocations. The City looks forward to discussing the details of this issue with the Department. In the interim, the City requests that WLAs for total phosphorus and total nitrogen be removed from the draft TMDL document.*

The draft Spring Creek TMDL uses a reference condition to reduce nutrient concentrations to a level that will decrease algal productivity, thereby reducing algal blooms available for decay and decomposition, processes that consume in-stream dissolved oxygen. The reduction of available algae will therefore reduce the biochemical oxygen demand (BOD) of algal organic matter in the water column and sediment oxygen demand (SOD) from algal decay on the stream bottom. The lack of algal biomass as represented by chlorophyll-*a* in the control stream within the watershed indicates this is a valid approach. Data collected for the TMDL indicate elevated concentrations of nutrients above reference concentrations downstream from the City of Salem WWTF. Reducing excess nutrients discharged from the facility will aid in addressing the low dissolved oxygen impairment of Spring Creek.

***Comment #3:** Included within Table 9 of the draft TMDL is a ‘CBOD’ wasteload allocation of 82.3 lbs/day (13 mg/L). The City offers the following technical, regulatory, and socioeconomic comments related to CBOD values referenced in the draft TMDL:*

Nomenclature Clarification – Is the WLA for ‘CBOD’ in Table 9 expressed as CBOD Ultimate or 5-day CBOD?

Wasteload allocations for carbonaceous biochemical oxygen demand (CBOD) in the draft TMDL should be identified as CBOD₅, which represents a 5-day CBOD. This revision was made prior to the second public notice of the draft TMDL.

³ Report of the Federal Advisory Committee on the Total Maximum Daily Load (TMDL) Program. The National Advisory Council for Environmental Policy and Technology (NACEPT) (July 1998). EPA 100-R-98-06.

Mr. Chris Zell
Page Three

Contribution of CBOD to Dissolved Oxygen Mass-Balances in Spring Creek – The majority of effluent and in-stream (upstream and downstream of Salem WWTF) CBOD5 data collected by the Department or their contractors in 2003 and 2008 are non-detect or very low values. However, despite low CBOD values, early morning DO concentrations are documented to be less than 5.0 mg/L. In addition, we have not received a water quality model from the Department demonstrating that the statewide DO criterion will be met with allocations presented in Table 9 of the TMDL. The City questions the technical justification or relevance of significantly reducing permitted CBOD concentrations.

During the TMDL public notice, the Department provided the city and its contractor with a copy of the calibrated water quality model for their review. The model demonstrates that reductions in CBOD and nutrients are necessary to comply with the in-stream water quality dissolved oxygen minimum criterion. While CBOD concentrations observed during the time of the Department and contractor surveys are low, additional reductions in nutrients are needed to achieve in-stream conditions that will result in compliance with water quality standards. As noted in the response to Comment #1, nutrients from the City of Salem WWTF are causing or contributing to the low dissolved oxygen impairment. Reducing excess nutrients discharged from the facility will aid in addressing the impairment of Spring Creek.

Affordability of Advanced Treatment -The City is concerned that tertiary filtration or membrane technology needed to meet TMDL WLAs may not be affordable. As we move forward in the TMDL and facility planning process, the City requests consideration of socioeconomic factors by the Department. In addition, other regulatory requirements (e.g., inflow and infiltration reduction requirements, wet weather treatment capacity, etc.) should be considered during socioeconomic evaluations.

The City looks forward to further discussing CBOD and DO related issues with the Department in the near future.

Development of TMDL wasteload allocations must ensure attainment and compliance with applicable water quality standards per 40 CFR 130.7(c). As a result, TMDL wasteload allocation development is conducted without consideration of wastewater treatment technology or cost. However, the implementation section of the TMDL outlines a phased implementation approach to pollutant reduction. This phased approach stipulates that initial reductions to limits for CBOD₅ and total suspended solids (TSS) should result in attainment of numeric and narrative water quality criteria. In the event that post-TMDL monitoring indicates that reductions in CBOD and TSS from the facility are not achieving the desired improvements to water quality, additional conditions, including effluent limits for nutrients, may be placed in the operating permit for the Salem WWTF. The Department typically waits at least three years from the end of a permit compliance schedule or facility upgrade before assessing the impact of facility improvements on in-stream water quality. Should the city determine that the upgrades necessary to meet water quality standards are not feasible, a socioeconomic analysis can be submitted to the Department for its consideration per 40 CFR 131.10(g)(6).

Comment #4: *Section 8 of the TMDL titled 'Waste Load Allocation (Point Source Loads)' mentions that the TSS/VSS allocation is set equal to CBOD, however no WLA TSS/VSS is included in Table 9. The City requests the Department to clarify what, if any, WLAs are being recommended for TSS. In addition, the City notes the Department did not provide a regulatory citation or technical documentation (or linkage) that supports the practice of setting TSS/VSS*

Mr. Chris Zell
Page Four

equal to CBOD. The City looks forward to further discussing TSS related issues with the Department in the near future.

Wasteload allocation values for the City of Salem WWTF can be found in Table 8 of the draft Spring Creek TMDL placed on public notice April 9, 2009. Based on the QUAL2K and load duration curve modeling conducted for the TMDL, a TSS wasteload allocation of 31 lbs/day (5 mg/L) was calculated for the facility. Please note that the conversion of wasteload allocations to permit limits is the purview of the Permits and Engineering Section of the Water Pollution Control Branch. Should you have questions regarding the determination of permit effluent limits, please contact the Permits and Engineering section chief, Refaat Mefrakis at (573) 526-2928 or by email at refaat.mefrakis@dnr.mo.gov.

Comment #5: *Page 26 of the draft TMDL infers that non-point source loads to the Spring Creek system are causing DO concentrations upstream of the Salem WWTF to be less than 5.0 mg/L. Data collected by the Department or their contractors in 2003 and 2008 do not appear to support a substantive upstream load of oxygen demanding materials. We note that attainment of the statewide DO criteria of 5.0 mg/L is not achieved in several of Missouri's biocriteria reference streams and that non-attainment in these waters are attributed partly or completely to natural features, morphology, and/or flow conditions. In recognition that the 5.0 mg/L DO criterion may not be attainable in all reaches of Spring Creek, the City requests the Department also include in Section 13.2 a discussion of potential natural sources of low DO. The City looks forward to further discussing low DO related issues with the Department in the near future.*

The Department acknowledges that many streams in Missouri may not attain the minimum DO criterion due to natural features, morphology and/or flow conditions. However, there are a number of anthropogenic sources of oxygen demanding pollutants in the Spring Creek watershed which are detailed in Section 13.2 draft Spring Creek TMDL placed on public notice April 9, 2009. The presence of significant CBOD and nutrient loads from the city of Salem exacerbates and perpetuates low oxygen conditions downstream of the facility. Therefore, reductions are necessary from both point and nonpoint sources of oxygen demanding substances to ensure attainment of the water quality standards. That said, the Department has revised the implementation language in the former Section 13 (now Section 12) of the TMDL to allow for investigation of the appropriateness of the current dissolved oxygen water quality criterion for Spring Creek.

Comment #6: *The City requests the Department further clarify the intent and potential use of 'Control Site' data discussed in Section 5, page 16 of the draft TMDL. The City looks forward to further discussing control site and reference stream issues with the Department in the near future.*

An earlier draft of the Spring Creek TMDL used a control site reference to reflect natural background conditions and concentrations of nutrients and other oxygen demanding substances. This approach was subsequently abandoned in favor of TMDL nutrient targets based upon an ecoregion reference concentration approach. Data from the control site were not used for TMDL nutrient target development or modeling found the draft Spring Creek TMDL public noticed April 9, 2009.

Comment #7: *The City notes that at least four datasets are available for use in model calibration and verification efforts. The Environmental Services Program (ESP) conducted two intensive model-driven studies in July and August of 2003. Data collected by ESP in 2003 is*

Mr. Chris Zell
Page Five

consistent with the Department's Wasteload Allocation Project Procedure (WLA-PP, see MDNR Standard Operating Procedure document) and features Ultimate CBOD analyses, a critical model-driven data parameter. In addition to the intensive studies performed by ESP, additional data were collected by Department contractors in May and September of 2008. Data collected in 2008 do not appear to conform to requirements established in the Department's WLA-PP document.

It is the City's understanding that the more detailed 2003 dataset was not used in calibrating and verifying the model used to predict TMDL allocations. To build model robustness, modeling literature supports use of all available and representative datasets. The City looks forward to further discussing dataset selection issues with the Department.

The water quality data previously collected for Spring Creek were not sufficient to successfully calibrate the QUAL2K water quality model. Additional water quality and hydrologic data were needed. These data were collected in May and September 2008 using Department approved protocols, procedures, and sampling methods. All available and representative datasets were reviewed and used to develop the QUAL2K model and inform decisions regarding water quality rate and kinetics parameters. The Department believes the water quality data and QUAL2K model are of sufficient quality and quantity to develop appropriate wasteload allocations.

The Department appreciated the opportunity to discuss the draft Spring Creek TMDL and the comments above with the City of Salem and their consultants on May 7, 2009. As discussed during the meeting, the Department favors a phased approach to TMDL wasteload allocation implementation and has revised Section 12 of the TMDL to better reflect this approach. Also, the Department understands that resources are limited and that communities are sometimes hard pressed to meet the demands of water and wastewater system improvements. I invite you to contact the Department's Financial Assistance Center to discuss grant and low-interest loan options that may be available to the city. To reach the Financial Assistance Center, you can call (573) 751-1192 and ask for either Doug Garrett or Traci Newberry, or email Mr. Garrett at doug.garrett@dnr.mo.gov. You can also find the Department's Financial Assistance Center on the web at <http://www.dnr.mo.gov/env/wpp/srf/index.html>.

Thank you again for your comments and involvement in the process. If you should have questions or would like to discuss this TMDL further, please contact me at (573) 526-1446 or by mail at the Missouri Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102.

Sincerely,

WATER PROTECTION PROGRAM



John Hoke, Chief
TMDL Unit

JH:apl

Hoke, John

From: Hoke, John
Sent: Tuesday, August 31, 2010 10:41 AM
To: 'Ken Midkiff'
Subject: RE: Spring Creek - WBID#1870 - Comments

Ken,

The Missouri Department of Natural Resources (Department) appreciates your comments on the draft Spring Creek Total Maximum Daily Load (TMDL). This e-mail responds to comments received by e-mail on May 14, 2010. Please find herein the Department's response to each comment and the location of the revision (if applicable) within the draft TMDL as it will be submitted to the United States Environmental Protection Agency.

Wasteload allocation modeling for the draft Spring Creek TMDL indicates that pollutant reductions for carbonaceous biochemical oxygen demand (CBOD) and total suspended solids (TSS) are needed to comply with applicable water quality standards. Wasteload allocations of 3.3 mg/L (20.5 lbs/day) CBOD-5 and 5 mg/L (31 lbs/day) TSS are recommended for the City of Salem WWTF in Table 8 of the draft TMDL. Please note that the conversion of wasteload allocations to permit limits is the purview of the Permits and Engineering Section of the Water Pollution Control Branch. Should you have questions regarding the determination of permit effluent limits, please contact the Permits and Engineering section chief, Refaat Mefrakis at (573) 526-2928 or by email at refaat.mefrakis@dnr.mo.gov.

The City of Salem WWTF must comply with the terms and conditions found in its Missouri State Operating Permit (MO-0021768). This includes effluent limitations and monitoring requirements, which includes outfall flow. The facility average flow as a percentage of facility design flow is typically reviewed at permit renewal. Should staff determine that upgrade or expansion of the facility is necessary to ensure proper operation and maintenance or compliance with water quality standards, the Department will discuss upgrade or expansion options with the city. These options may include expansion of the facility design flow through construction, reduction of infiltration and inflow (I&I) through collection system improvements, or a combination of these or other options. For additional information or questions on facility design flow determinations, please contact the Permits and Engineering Section.

Thank you again for your comments and involvement in the TMDL process. If you should have questions or would like to discuss this TMDL further, please contact me at (573) 526-1446 or by mail at the Missouri Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102-0176.

John Hoke
Env. Specialist IV, TMDL Unit Chief
Water Quality Monitoring & Assessment
Missouri Department of Natural Resources
Phone: (573) 526-1446 Fax: (573) 522-9920

-----Original Message-----

From: Ken Midkiff [<mailto:12midkiff@centurylink.net>]
Sent: Friday, May 14, 2010 1:05 PM
To: Hoke, John
Subject: Spring Creek - WBID#1870 - Comments

John,

I have a copy of the Operating Permit for the City of Salem (MO-0021768) and the DMRs for 2009. It is apparent to me that the Salem WWTF effluent limits need to be scaled back considerably - and in particular those pollutants that cause low DO and an accumulation of sediment. It is suggested that TSS and CBOD need to be reduced by more than one-half to 7.5 ppm Daily Max and 3.25 ppm monthly average for both.

In addition, it is suggested that the City of Salem WWTF not be allowed to exceed the Design Flow.

Ken Midkiff
Missouri Clean Water Campaign

June 28, 2010

Missouri Department of Natural Resources
Water Protection Program
Water Quality Assessment and Protection Section
PO Box 176
Jefferson City, MO 65102-0176

Attn: Mr. John Hoke

Re: Spring Creek TMDL, Dent County, MO

Dear Mr. Hoke:

Upon review of the Spring Creek TMDL, we submit the following comments for your consideration:

- 1) Regarding the implementation strategy: At Section 12 (p. 26) it talks about naturally occurring low DO and the need to review the Water Quality standard. It implies but does not state that the WQ standard will be reviewed before the WLA is applied to the permit. However in Section 12.1 (p. 27) it says clearly that the TMDL will be implemented partially through permit action. It goes on to say that "Wasteload allocations developed for this TMDL will be used to derive new effluent limitations..." Please clarify. We request that there will be **no revised permit with TMDL-derived effluent limits until the standards are revised.**
- 2) At Section 12 (p. 26) it talks about naturally occurring low DO and the need to review the Water Quality standard. It is unclear that the DO upstream of the WWTF discharge is impaired and that the low DO is not a naturally occurring phenomenon, especially during the summer months. In many cases, downstream DO is higher than upstream DO. In all 6 data pairs on page 41, the DO downstream of the WWTF is higher than the upstream DO. The data does not suggest that the WWTF discharge is not significantly reducing DO. It is also not clear that the proposed effluent limits for the WWTF will significantly improve the dissolved oxygen levels or the overall water quality in Spring Creek.
- 3) Non-point sources were assigned a load allocation (LA). The LA is much, much greater than the Waste Load Allocation (WLA). The non-point sources are not regulated. An attempt to form a Watershed Group was made in an effort to address non-point sources.
- 4) A limited data set (1 sampling event) was used in modeling Spring Creek using QUAL2K. One sampling event does not constitute a representative sample.
- 5) If the Spring Creek TMDL is approved in its current form, the City of Salem WWTF will face proposed discharge limits of 0.289 mg/L TN and 0.007 mg/L TP. These limits are not achievable. Biological Nutrient Removal typically provides treatment to effluent levels of 8 mg/L TN and 1 mg/L TP. Enhanced Nutrient Removal typically provides treatment to effluent levels of 3 mg/L TN and 0.3 mg/L TP. If nutrient limits are required in the future, we request that they be technology based, not the TMDL limits.

June 28, 2010
Missouri Department of Natural Resources
Page 2

Thank you for consideration of these important matters related to the Spring Creek TMDL.

Respectfully Submitted,

Gary Brown, Mayor
City of Salem



STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Jeremiah W. (Jay) Nixon, Governor • Mark N. Templeton, Director

www.dnr.mo.gov

August 31, 2010

The Honorable Gary Brown, Mayor
City of Salem
400 North Iron
Salem, MO 65560

RE: Response to Comments on the Draft Spring Creek Total Maximum Daily Load

Dear Mayor Brown:

The Missouri Department of Natural Resources (Department) appreciates the comments provided by the City of Salem on the draft Spring Creek Total Maximum Daily Load (TMDL). This letter responds to comments received June 28, 2010. Please find herein the Department's response to each comment and the location of the revision (if applicable) within the draft TMDL placed on public notice May 14, 2010.

Comment #1: Regarding the implementation strategy: At Section 12 (p. 26) it talks about naturally occurring low DO and the need to review the Water Quality standard. It implies but does not state that the WQ standard will be reviewed before the WLA is applied to the permit. However in Section 12.1 (p. 27) it says clearly that the TMDL will be implemented partially through permit action. It goes on to say that "Wasteload allocations developed for this TMDL will be used to derive new effluent limitations..." Please clarify. We request that there will be no revised permit with TMDL-derived effluent limits until the standards are revised.

The intention of the Department is that the TMDL WLAs for carbonaceous biochemical oxygen demand (CBOD) and total suspended solids (TSS) will not be applied to the City of Salem WWTF permit until after the city or Department has determined the 5 mg/L minimum dissolved oxygen criterion is applicable. If the current water quality criterion for dissolved oxygen is not appropriate, and a new dissolved oxygen criterion is promulgated, new wasteload allocations for CBOD and TSS will be calculated and implemented in the City of Salem WWTF permit. However, should studies conducted by the city or Department determine the current water quality criterion is applicable; the TMDL WLAs for CBOD and TSS will be implemented as found in the TMDL. The wording in Section 12.1 of the TMDL has been adjusted to reflect this approach.

Comment #2: *At Section 12 (p. 26) it talks about naturally occurring low DO and the need to review the Water Quality standard. It is unclear that the DO upstream of the WWTF discharge is impaired and that the low DO is not a naturally occurring phenomenon, especially during the summer months. In many cases, downstream DO is higher than upstream DO. In all 6 data pairs on page 41, the DO downstream of the WWTF is higher than the upstream DO. The data does not suggest that the WWTF discharge is not significantly reducing DO. It is also not clear that the proposed effluent limits for the WWTF will significantly improve the dissolved oxygen levels or the overall water quality in Spring Creek.*

The department has not determined the source(s) and cause(s) of the low DO upstream of the City of Salem WWTF. Due to the uncertainty of low dissolved oxygen as a natural condition in Spring Creek, the Department favors a phased implementation of CBOD, TSS, and nutrient reductions for the WWTF. Because it is not clear that the proposed effluent limits for the WWTF will significantly improve the dissolved oxygen levels in Spring Creek, the city should make a concerted effort to address the nonpoint sources of these pollutants. To this end, it is recommended that every effort be made to address all man-made influences (reduced riparian buffer, cattle access, etc.) of nutrients and oxygen demanding substances that may be causing or contributing to the low DO impairment of the stream.

Comment #3: *Non-point sources were assigned a load allocation (LA). The LA is much, much greater than the Waste Load Allocation (WLA). The non-point sources are not regulated. An attempt to form a Watershed Group was made in an effort to address non-point sources.*

The Department recognizes that nonpoint sources are not regulated and that volunteer efforts to reduce nutrients and oxygen demanding substances must occur. The LA portion of the Spring Creek TMDL is much greater than the WLA portion due to the larger flow volumes generated by nonpoint sources within the watershed. Because of this fact, efforts to control nonpoint sources of nutrients and oxygen demanding substances should result in significant improvement in water quality. It is recommended the city and residents of the Spring Creek watershed consider forming a watershed group to address nonpoint sources. The Department is willing to assist in this effort and you are free to contact Ms. Anne Peery of my staff at 573-526-1426 or anne.peery@dnr.mo.gov for additional information.

Comment #4: *A limited data set (1 sampling event) was used in modeling Spring Creek using QUAL2K. One sampling event does not constitute a representative sample.*

The Department believes the water quality data and information collected for the Spring Creek TMDL are of sufficient quality and quantity to develop appropriate wasteload allocations. In addition to intensive stream studies conducted by the Department in 2003, EPA contractors collected additional water quality data and information in May and September of 2008. The sum total of these data were used to calibrate the QUAL2K water quality model and inform decisions on the rates and kinetics of applicable water quality parameters.

The Honorable Gary Brown
Page Three

Comment #5: If the Spring Creek TMDL is approved in its current form, the City of Salem WWTF will face proposed discharge limits of 0.289 mg/L TN and 0.007 mg/L TP. These limits are not achievable. Biological Nutrient Removal typically provides treatment to effluent levels of 8 mg/L TN and 1 mg/L TP. Enhanced Nutrient Removal typically provides treatment to effluent levels of 3 mg/L TN and 0.3 mg/L TP. If nutrient limits are required in the future, we request that they be technology based, not the TMDL limits.

Development of TMDL wasteload allocations must ensure attainment and compliance with applicable water quality standards per 40 CFR 130.7(c). As a result, TMDL wasteload allocation development is conducted without consideration of wastewater treatment technology or cost. However, the implementation section of the Spring Creek TMDL (Section 12.1) outlines a phased implementation approach to pollutant reduction. Nutrient effluent limitations for total phosphorous and total nitrogen would not immediately be included in the City of Salem WWTF operating permit. Rather, the city would be required to conduct nutrient monitoring at some frequency until such time as nutrient effluent limits are needed to protect water quality. This would likely be after initial reductions in CBOD and TSS are accomplished and nutrient reductions to the level found in the Spring Creek TMDL or nutrient criteria are necessary.

Thank you again for your comments and support of the TMDL process. If you should have questions or would like to discuss this TMDL further, please contact me at (573) 526-1446 or by mail at the Missouri Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102.

Sincerely,

WATER PROTECTION PROGRAM



John Hoke, Chief
TMDL Unit

JH:apl