



Missouri  
Department of  
Natural Resources

DRAFT WEST FORK SNI-A-BAR CREEK TMDL  
PUBLIC COMMENTS

Public Notice  
Aug. 26 – Sept. 25, 2005

**West Fork Sni-a-Bar Creek  
WBID # 0400**

Jackson, Mo.

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

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2005 SEP 23 11:11:54  
WATER PROTECTION DIVISION

September 21, 2005 *Ann C.*

Mr. Phil Schroeder, Chief  
Water Quality Monitoring and Assessment Section  
Missouri Department of Natural Resources  
P.O. Box 176  
Jefferson City, MO 65102-0176

Re: Comments on the Draft West Fork Sni-A-Bar Creek Total Maximum Daily Load Study

Dear Mr. Schroeder:

At the request of the City of Lake Lotawana, Missouri (the City), MEC Water Resources, Inc. (MEC) is submitting this comment letter regarding the recently completed draft West Fork Sni-A-Bar Creek Total Maximum Daily Load Study (TMDL). The City notes that the Department has issued operating permits 'in lieu of TMDLs' for other dischargers throughout the state of Missouri. Permit conditions and obligations prescribed within permits 'in lieu of TMDLs' are developed using Missouri's water quality-based effluent limits practices compared to those stipulated for the City within the draft TMDL. The City hereby requests that the Department reconsider the need for a formal TMDL document and issue an operating permit 'in lieu of TMDL'.

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Should the Department choose to deny this request, the City offers comments on the draft TMDL in Sections One (I) and Two (II). Items within the draft TMDL that the City supports are discussed in Section I. Section II outlines changes or modifications to the draft TMDL requested by the City. We appreciate the opportunity to provide these comments and look forward to working with you and your staff in resolving the City's concerns.

#### SECTION I. ITEMS THAT THE CITY OF LAKE LOTAWANA SUPPORTS

##### A. APPLICATION OF THE PHASED APPROACH FOR TMDL DEVELOPMENT

The City is supportive of the adaptive management approach the Department has chosen to use to address water quality concerns in West Fork Sni-A-Bar Creek. The City believes that a phased or iterative approach optimizes water quality investments while justifiably acknowledging the inherent uncertainties of the TMDL process. The City appreciates the Department's understanding as we cooperatively move forward in addressing identifiable water quality impacts within West Fork Sni-A-Bar Creek.

##### B. DESIGNATION OF WEST FORK SNI-A-BAR CREEK AS A LIMITED WARM-WATER FISHERY

The City is supportive of the Department's designation of West Fork Sni-A-Bar Creek as a Limited Warm-Water Fishery. The City believes that that the location (non-Ozark) of West Fork Sni-A-Bar Creek, presumed low-flow characteristics (<0.1 cfs), and concentrations of

dissolved oxygen below 5.0 mg/L upstream of the Lake Lotawanna Wastewater Treatment Facility (LL-WWTF) support this designation.

#### C. VOLATILE SUSPENDED SOLIDS LOAD CAPACITY

The City supports the Department's decision to exclude an explicit volatile suspended solids (VSS) load capacity within the West Fork Sni-A-Bar Creek TMDL. Proposed treatment process upgrades to the LL-WWTF are likely to eliminate significant suspended algal inputs.

#### D. CALCULATION OF LOAD CAPACITY

The City is supportive of expressing TMDL limit requirements as a thirty-day average. The City believes this approach is defensible as chronic dissolved oxygen and ammonia criteria yield the most stringent long-term averages in the context of water quality-based limit derivation.

### SECTION II. ITEMS FOR WHICH THE CITY OF LAKE LOTAWANA, MO REQUESTS FURTHER CLARIFICATION OR MODIFICATION

#### A. APPLICATION OF DRAFT BIOLOGICAL CRITERIA

The City does not disagree that Missouri's Water Quality Standards should eventually include biological metrics that identify appropriate target levels of biological integrity within Missouri's streams, rivers, lakes, and reservoirs. However, the City objects to the use or application of draft criteria (biological) within the draft West Fork Sni-A-Bar Creek TMDL that have not been incorporated by rule into Missouri's Water Quality Standards. Missouri Revised Statutes 644.036(1.) and 644.036(3.) clearly establish the necessity of public hearings and participation, in addition to a formal vote by the Clean Water Commission, prior to a rule or standard being adopted and available for widespread regulatory use. The City believes that public hearings and formal review opportunities offered through the rule making process are critical in establishing defensible and publicly-supportable water quality criteria. The City hereby requests that all references to, or application of, draft biocriteria be removed from the draft West Fork Sni-A-Bar Creek TMDL until such time that these criteria are incorporated into rule.

In lieu of draft biocriteria implementation, the City proposes to conduct both acute and chronic Whole-Effluent Toxicity (WET) tests to directly assess biological effects from the LL-WWTF. As the test species used within WET testing protocols are more pollution-sensitive than biota inhabiting West Fork Sni-A-Bar Creek, the City believes that inclusion of WET tests instead of biocriteria are an adequate and defensible approach to resource protection.

Lastly, the City would like to note that the last version (February 2002) of Missouri's draft biocriteria protocols list a possible 'Missouri Stream Condition Index' range of zero to twenty. The City is unsure of the origin or methodology associated with 'BI' scores listed on page seven of the draft TMDL but are concerned this methodology may not be consistent with draft biocriteria developed by the Environmental Services Program.

## B. MONITORING PLAN IMPLEMENTATION

The City is concerned regarding several items outlined in the draft TMDL related to implementation of water quality assessment and monitoring activities. On page seven, paragraph three of the draft TMDL, the Department states that “nutrients and BI score will guide phase two target nutrient loads and stream restoration practices if phase one monitoring and assessment indicate impairment after the upgrade.” Neither nutrient criteria nor biocriteria have been approved through the rulemaking process. Also, there is question as to whether nutrients and BI score are accurate indicators of the presumed stream impairment. The City hereby requests the Department to further clarify the rationale and identify the technical underpinnings of nutrient target loads referred to in the draft TMDL.

The City is uncertain of the rationale for continued monitoring and evaluation (page seven, paragraph three) should the facility upgrade correct presumed designated use impairments. The City requests that the final draft TMDL clarify this issue and identify the Department as the party responsible for monitoring should upgrades result in beneficial use attainment.

The City understands and accepts in-stream compliance monitoring requirements outlined on page nine, paragraph three of the draft TMDL. However, wording within this paragraph suggests that the City has been mandated to fund a complex monitoring plan to support further modeling regardless of the outcome of Phase One compliance monitoring. Wording also suggests that the City is being asked to complete detailed biological assessments. The City requests that final drafts of the TMDL clarify that additional wasteload allocation monitoring be conducted pending statistically significant differences between in-stream compliance monitoring results and appropriate water quality criteria. As discussed in Section II.A. , the City opposes use or application of draft biocriteria and requests that references to biological monitoring mandates be removed from final drafts of the TMDL.

## C. MARGIN OF SAFETY CALCULATION

The draft West Fork Sni-A-Bar Creek TMDL lists an explicit Margin of Safety (MOS) in the table located on page nine. However, language contained under the heading of ‘Margin of Safety’ states the MOS for the draft TMDL is intended to be implicit due to Phase One and Two monitoring strategies. The City is supportive of an implicit approach to identify an appropriate MOS for the draft TMDL and requests the explicit MOS be removed. The City believes that in-stream compliance monitoring will assure that any uncertainties in prescribed point or non-point allocations will not result in continued water quality impacts.

## D. UPSTREAM DISSOLVED OXYGEN CONCENTRATIONS

The City is concerned that dissolved oxygen data collected upstream of the LL-WWTF was not addressed or discussed within the draft TMDL. Six of eight discrete dissolved oxygen measurements collected upstream of the LL-WWTF, and all daily average calculations, are below the state water quality standard. Yet, the LL-WWTF is listed as the only source of dissolved oxygen impairment. As very little carbonaceous or nitrogenous biochemical oxygen demand was measured upstream of the LL-WWTF, the City believes that West Fork Sni-A-Bar Creek experiences natural levels of hypoxia during warm-weather periods. The City

believes consideration of natural dissolved oxygen regimes should be addressed in final drafts of the TMDL. The City is hopeful that the Department will identify naturally attainable dissolved oxygen levels for use as compliance targets to guide future phases of the West Fork Sni-A-Bar Creek TMDL.

E. VOLATILE SUSPENDED SOLIDS IMPAIRMENT

The City does not believe the draft TMDL quantifiably relates observed volatile suspended solids (VSS) concentrations, or algal levels, to measurable impacts on aquatic life. The City agrees with the Department that VSS effluent limitations are unnecessary due to planned treatment plant upgrades.

F. WASTEWATER TREATMENT EXPANSION FLEXIBILITY

The City is concerned that the draft TMDL does not include procedures that allow the City to expand the design average flow of the LL-WWTF to accommodate future population growth. The City believes that compliance with water quality criteria is not often related to mass loading rates and asserts that a concentration-based approach is more appropriate. Substantially different mass loading rates, on the order of 300%, can result in the same in-stream concentration due to kinetic rates being concentration and travel time dependent. Thus, the City requests that the Department include within the draft TMDL the flexibility to recalculate allowable loading rates should future expansion become necessary. The City opposes an approach of a fixed loading rate being divided by an increased design flow to arrive at effluent limits. Rather the City believes that appropriate water quality models be used to simulate an increased design flow and the resulting wasteload allocation, expressed as a concentration, be used to recalculate allowable loading rates.

On behalf of the City of Lake Lotawana, thank you for considering the requests contained in this comment letter. We look forward to receiving your reply. Please contact me if you have any questions or would like to discuss these issues further.

Sincerely,

**MEC Water Resources, Inc.**

A handwritten signature in black ink, appearing to read "Tom Wallace", written in a cursive style.

Tom Wallace  
Principal

cc: P. Pendergist, City of Lake Lotawana

STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

Matt Blunt, Governor • Doyle Childers, Director

[www.dnr.mo.gov](http://www.dnr.mo.gov)

November 17, 2005

Mr. Tom Wallace  
MEC Water Resources  
1000 North College Avenue, Suite 4  
Columbia, MO 65201

RE: Response to Comments on the West Fork Sni-A-Bar Total Maximum Daily Load (TMDL)

Dear Mr. Wallace:

Thank you for your comments regarding the West Fork Sni-a-Bar Creek TMDL. Following are our responses to your comments.

In discussions with the U.S. Environmental Protection Agency (EPA), the Department of Natural Resources decided that this project would be a phased TMDL. Because of planned future discharges to West Fork Sni-A-Bar Creek by Blue Springs, Missouri, a TMDL is necessary. Should the City of Lake Lotawana's wastewater treatment plant (WWTP) upgrade fail to resolve the stream impairment, a second phase can investigate other potential sources of impairment. The option of a permit in lieu of a TMDL does not allow for phased evaluation.

#### Section I

No comments on A, B, C, and D.

#### Section II

- A. The City of Lake Lotawana will be required by this permit to do Whole-Effluent Toxicity (WET) tests to directly assess the effects of the WWTP effluent on fish. This should document the toxicity of the effluent. Other issues, such as the effect of sludge on fish eggs and macroinvertebrate habitat, or instream algal blooms robbing the environment of Dissolved Oxygen (DO), cannot be documented by the WET tests.

The department's Environmental Services Program (ESP) bioassessment criteria include the Biotic Index (BI) criteria. The Semi-quantitative Macroinvertebrate Stream Bioassessment Project Procedure (SMSBPP) includes the BI as one of the metrics to evaluate streams. The BI will be removed from the TMDL requirements. However, the bioassessment of the stream will still use the metrics that is included in the ESP criteria if a Phase Two assessment is needed.

- B. Nutrients will be a concern in nonpoint assessment of the stream for any Phase Two assessment. The TMDL wording will more clearly identify the tie between nutrients and nonpoint source concerns of a Phase Two TMDL.

The city should be aware that nutrient criteria are currently being developed and are anticipated for lakes in 2007 and streams in 2008. The referral to nutrient loadings will be removed from the TMDL, but the city should be aware of the potential impact on point source permits later.

Instream monitoring is a permit requirement to show that the stream is responding to the new treatment regime. All 303(d) listed permits require instream monitoring. The permit includes instructions on collecting DO, Temperature, Ammonia, and pH. The monitoring can be used by the city to assist operational planning to meet the water quality standards (WQS) and avoid water quality problems. Once the state has verification that the stream is meeting WQS, the instream monitoring requirement can be removed from the permit.

The TMDL language states that the city is not responsible for any additional treatment or other water quality management practices, unrelated to the wastewater treatment system. Any nonpoint sources or other point sources that may be identified in the future as creating impairment are not the responsibility of the city. The permit has a schedule of report submittals to insure that the WWTP can meet the design criteria and effluent limits set in the permit. Meeting the permit limits is the responsibility of the city.

Any future Phase Two modeling work would be the responsibility of the department, as was the Phase One modeling. In this instance, the city chose to do the wasteload allocation (WLA) through your company rather than wait for the department-generated data to be modeled. EPA recommended that the Phase Two monitoring be included to insure that the stream is improving. Bioassessment has been used in the past to document improvement.

- C. A WLA was completed by the city and submitted to the department for review under the TMDL process. An adaptive management approach that allowed for less stringent limits (weekly and monthly limits, no daily maximum for Biochemical Oxygen Demand and Total Suspended Solids) was requested and included in the TMDL and permit. The WWTP was designed to meet WQS for DO of 5 mg/L. The explicit 10% margin of safety is necessary to insure the calculated numeric load capacity for the stream is truly protective. Instream monitoring once a quarter will only document the water quality of the stream.
- D. We found no specific point or nonpoint sources of low DO above the lagoon discharge. The Clean Water Commission approved revisions to our WQS rules that allow for site-specific criteria, including background DO. The new rule will go into effect on December 31, 2005. The implementation of the rule will give the city the opportunity to re-evaluate the DO requirements for the West Fork Sni-a-Bar Creek in the future.

Mr. Tom Wallace  
Page Three

- E. We agree that there was not a biological assessment done to show impairment of the aquatic community. However, the decomposition of Volatile Suspended Solids decreases DO (which was documented) resulting in the impairment of the biological community in streams. We expect that the city's upgrade to an advanced treatment facility will significantly improve the DO of the stream.
- F. A TMDL is Total Maximum Daily Load. The load is based on the amount of pollutant that a stream can assimilate without impairment for a specific flow. The stream must be able to meet the WQS for the stream to be removed from the 303(d) list. A re-evaluation of the natural background DO of the stream and subsequent development of site-specific criteria may result in a revised loading for any future WLA. The TMDL can be revised based on the new WLA.

The department will submit the TMDL to EPA for approval as modified per Paragraph IIA in this letter. Thank you for your comments and I believe that we all have the best interests of the West Fork Sni-a-Bar Creek in mind as we move forward. We thank the city for the major effort and commitment to improve the wastewater discharge to the stream. If you have any questions or if we can be of further assistance, please contact Mary Clark of my staff at P.O. Box 176, Jefferson City, Missouri 65102, (573) 526-1002 or [mary.clark@dnr.mo.gov](mailto:mary.clark@dnr.mo.gov).

Sincerely,

WATER PROTECTION PROGRAM



Philip A. Schroeder, Chief  
Water Quality Monitoring and Assessment Section

PAS:mcl

c: Ms. Jane Porter, City Administrator, City of Lake Lotawana