

Missouri  
Department of  
Natural Resources

DRAFT ELK RIVER TMDL  
PUBLIC COMMENTS

Public Notice  
Dec. 3, 2003 – Jan. 4, 2004

**Elk River – WBID 3246**  
**Big Sugar Creek - WBID 3250**  
**Little Sugar Creek - WBID 3249**  
**Buffalo Creek - WBIDs 3269, 3273**  
**Patterson Creek - WBID 3268**  
**Indian Creek - WBID 3256**  
**Middle Indian Creek - WBIDs 3262, 3263**  
**South Indian Creek - WBID 3259**  
**North Indian Creek - WBID 3260**

Barry, McDonald and Newton counties, Mo.

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

Alvin/Rosiland Layne  
636 Route K  
Pineville, Mo 64856-9608  
417 223 4948

RECEIVED  
JAN 12 2004  
JAN 12 2004

Gail Wilson  
TMDL Developer  
Missouri Department of Natural Resources  
Water Quality Section  
PO Box 176  
Jefferson City, Mo 65102

To Whom It May Concern:

This is a follow-up letter to my fax January 6 and email January 1, 2004. We are residents of the Elk River watershed more specifically on Little Sugar Creek. We've been here 20 years and work here as well. Rosiland grew up on Little Sugar in Benton County, Ark. We operate a small cattle and poultry farm as well as work off the farm. We are also intensely involved with the Elk River Watershed Improvement Association. The TMDL will affect us directly and we wish it to be fair and unbiased, based solely on sound science, facts and not on theories. At this time, we understand the TMDL is part of a consent decree and is coming out before testing can be done to determine the exact sources of excess nutrients. The only tests are from USGS at Tiff City. These tell only the total nutrients and not from where they originate. Until proper testing is done-DNA-only point sources can be determined. NPS "finger-pointing" is just conjecture. We believe NPS changes remain voluntary.

USGS data suggests that .06mg/l is an appropriate target; although .0638 might be more so. Some are suggesting following Oklahoma's .037mg/l; but this target has no basis in sound science nor does USGS' historical data support such a limit.

Bentonville's watersource (Beaver Lake) should be considered as an additional fact in this document.

Page by page:

Page 2 Beneficial uses/Little Sugar/Ark: not listed is irrigation, and livestock watering. Used to live there; know it's done.

Identified source on 303d list included only Mo section of Little Sugar. Does not take into account any of the human population explosion upstream.

1.0 Background: Does not include population explosion in NWA with ensuing septic systems, stormwater runoff on pavement, increase in building of roadways, etc.

Page 4 last paragraph...a soils map was included with our conservation plan..must be one somewhere for McDonald County.

Page 5 low flows occur in August sometimes continue into early September.

Little Sugar/Ark has numerous losing stream segments and tributaries (My Dad's farm had 3 on his Benton County farm)

Page 9 Why have anything about the Jesse James movie? Does not seem relevant to the document.

Page 12 Conflicts with animal info on page 35. Also sub watershed of Big Sugar originates in Ark as well as Little Sugar.

Page 13 WLA for point sources cannot remain constant as they suffer from stormwater overflow, heavy rain overflows their systems. We have been told most municipalities have instructed their wastewater personnel to test only at low flow. They should test at high flow also.

Page 15 How can we have a water year 1940 if USGS only started testing in '66? Anything before that is guessing.

Page 18, Section 6...If reducing Tyson & Bentonville's permits to 1mg/l will reduce the load 64%, then point sources have to be higher than 60%. There is no way to determine source of the load without proper testing.

Page 20 Land application: Fapri study shows the half life of fecal coliform in animal nutrients too short to be problematic unless direct deposit to water.

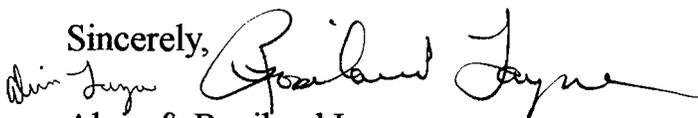
Urban development census info does not include any of the housing developments (that would probably be on septic) outside these listed cities' limits.

Also, Centerton, Ark: N part physically in watershed, their wastewater handled by Bentonville ( the newer plant at McKissick Creek) If Bentonville is still reporting their outflow at Town Hole, that info is outdated or erroneous as that is the old plant and not supposed to be functioning.

Little Flock, Ark is physically in watershed although their sewage is handled by Rogers. N part of Rogers also is in this watershed-practically everything north of 102 hwy and west of 62 hwy. Avoca, Ark is also not included in the census info: do not know their sewage handling, if any.

Thank you

Sincerely,



Alvin & Rosiland Layne



"Rosiland Layne"  
<rozlayne@olemac.ne  
>

To: "Sharon Clifford" <sharon.clifford@dnr.mo.gov>  
cc: "Leslie Holloway" <lholloway@mofb.com>  
Subject: TMDL comments

01/01/2004 06:54 PM

Dear Sharon,

Thank you for all your hard work on this consent decree TMDL. I know it's been a strain.

We were interested where you mentioned that cities handle nutrient removal with chemical or biological. What is the biological? Would that be something that might be worked into septic systems? Or something Bella Vista could do to clean up their lakes? or too cost prohibitive?

Did you realize that Bentonville gets their water supply from Beaver Lake? As the lake is surrounded by housing/septic systems, their water already has a load in it. Of course, it hasn't escaped us that White River flows to that lake and therefore puts the burden back on Mo. We all live downstream, right?

The USGS data shows .06 to be reasonable limit; although to be more accurate, the .0638 would probably fit.

I'll just go page by page, if you don't mind.

pg2 Beneficial uses/Little Sugar/ Ark: not listed is irrigation, and livestock watering. Used to live there so know it's done.

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Thank you again.

Sincerely,

Alvin & Rosiland Layne  
636 Route K  
Pineville, Mo 64856-9608



"Rosiland Layne"  
<rozlayne@olemac.ne  
▷

To: "Sharon Clifford" <sharon.clifford@dnr.mo.gov>  
cc: "Leslie Holloway" <lholloway@mofb.com>  
Subject: TMDL comments/additional

01/01/2004 06:59 PM

Sorry,

I left out Page 18, Section 6... If reducing Tyson & Bentonville's permits to 1mg/l will reduce the load 64%, then point sources have to be higher than 60%. There is no way to determine source of the load without proper testing.

Alvin & Rosiland Layne  
636 Route K  
Pineville, Mo 64856

STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

Bob Holden, Governor • Stephen M. Mahfood, Director

[www.dnr.state.mo.us](http://www.dnr.state.mo.us)

January 27, 2004

Alvin and Rosiland Layne  
636 Route K  
Pineville, MO 64856-9608

Dear Mr. & Mrs. Layne:

Thank you for your comments on the Elk River Total Maximum Daily Load (TMDL) document. Staff in the Missouri Department of Natural Resources have reviewed and carefully considered your comments, and we wish to share our responses to those comments with you. The following responses correspond sequentially to the comments contained in your letter.

My staff and I heartily agree with your statement that the TMDL document should be fair and unbiased. You are correct in stating that the TMDL document was developed based on a schedule related to a consent decree. However, we believe there is adequate data to support the conclusions of the TMDL document. The type of source tracking analysis you suggest can provide additional information, but we do not consider it to be strictly definitive, particularly in a situation such as this. It is used to identify sources of bacteria, not nutrients. One of our goals is to institute a more extensive monitoring program that would identify the amount of loading from each sub-watershed to help prioritize water quality protection efforts in the future, and we will continue to work toward that goal.

I want to be sure you understand that we agree the efforts to address nonpoint sources of water pollution, such as might come from your small agricultural operation or my backyard, are voluntary. You may be aware of our efforts to direct grant funding to the Elk River Watershed in recent years to demonstrate and cost-share on nonpoint source protection projects. If you would like more information on that effort, please contact Colleen Meredith of my staff at (573) 526-7687 or at the address at the end of this letter.



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You are correct in your statement regarding the phosphorus target. Many comment letters were received asking the target be 0.037 mg/L. My staff and I believe the approach taken in the TMDL document is scientifically sound and the 0.06 mg/L target will be retained unless future data indicates the target is inaccurate.

I appreciate your comment regarding the need to consider Beaver Lake in the document. The TMDL document is intended to set an allocation for the Arkansas portion of the watershed. It was not our intent to fully analyze their ecosystems, nor dictate how they will achieve the nutrient reductions needed within their state. In response to the Elk River Watershed Improvement Association's (ERWIA) comments, it was suggested the watershed association hold a public meeting in Arkansas to help communicate these concerns and raise awareness among Arkansas citizens. This could prove to be very helpful to Arkansas Department of Environmental Quality (DEQ) in their future efforts.

Page 2 & Section 1.0:

A beneficial use identified in the TMDL for the Little Sugar in Arkansas is Domestic, Industrial and Agricultural Water Supply. Each state expresses their designated uses differently, but an agricultural water supply includes livestock watering and irrigation for agricultural purposes. The beneficial uses identified were taken directly from Arkansas' water quality standards.

Impaired waters are identified by each state, according to federal law. Missouri cannot identify a stream segment in Arkansas as impaired; that must be done by Arkansas or the Environmental Protection Agency. However, population growth is discussed in the TMDL under *5.0 Load Allocation for Total Phosphorus and Total Nitrogen, Urban Development* and again under *6.0 TMDL Results Discussion*. Also, the implementation plan for point sources was devised with the potential for population growth in mind. That is why any facility seeking to expand their discharge above a design flow of 22,500 gallons per day will have nutrient limits included in their permit. In response to your comments, language has been added to the TMDL document regarding the threats to water quality due to increasing urbanization.

Page 4

The soils information used in the Elk River TMDL was obtained from the Natural Resources Conservation Service (NRCS) website:

[http://soils.missouri.edu/PDF\\_manuscripts/mcdonald/welcome.pdf](http://soils.missouri.edu/PDF_manuscripts/mcdonald/welcome.pdf).

The following verbiage was taken directly from this site: *Soil Survey of McDonald County, Missouri, This soil survey is being completed at the Missouri State NRCS office. You may contact the state office at (573) 876-0907 to request preliminary information for this county. Or you may email the Missouri State Soil Scientist Mr. Dennis Potter with your request.* Based on our consultations with NRCS, we have made it a practice to not use or publish preliminary information in the TMDL documents.

Alvin and Rosiland Layne

Page 3

Page 5

The flow information has been changed to reflect the concern reflected in your comment.

Page 9

Part of the information regarding the movie Jesse James was removed, but not the fact the movie was made in Pineville. The purpose in providing a history of the watershed is to give the reader a sense of people and place. Recounting historical events may create a positive attitude about the importance of this watershed to local residents.

Page 12

The information on Page 35 was anecdotal information provided by Benton County Conservation District staff. The National Agricultural Statistical Service provided the official statistics, and the only historical information available, on a countywide basis. It was necessary to extrapolate the numbers for the comparisons. The point of the tables generated from these statistics was to document the growth of poultry production in the watershed. It is not meant to be an accurate accounting of the numbers of animals for decision making regarding loading or remediation efforts.

Language has been added to the TMDL document regarding the Big Sugar originating in Benton County, Arkansas, and Barry County, Missouri.

Page 13

It is true that stormwater can impact wastewater treatment plants. All NPDES permits have a reporting requirement for flow. All computer models require that we make some assumptions. In this case, we believe that deriving the allocations by using the assumption of constant loading from point sources is an appropriate method to calculate the allocations based on the available data. However, language has been included in the TMDL document to recognize the concern related to the use of this assumption.

One of the reasons wastewater plants test when streams are at low flow is that is the condition where pollution has the most serious affect on aquatic life. If you are referring to taking flow measurement only during low flows from the treatment facility, that is a different concern. Most mechanical plants have continuous monitors for flow and department staff can access those records. The department's Southwest Regional Office would appreciate hearing any information citizens can provide regarding flow exceedences or by-passes that may occur at wastewater plants. You can contact that office by calling 1-800-361-4827.

Page 15

The U.S. Geological Survey (USGS) has collected flow data at Tiff City, Missouri, since 1939. Hence, there is flow data available from Water Year 1940. Water quality data has been collected by USGS at the same site since 1966. A statement clarifying this information has been added to Section 3.0, *Calculation of the Load Capacity*.

Page 18

The point source load, or Wasteload Allocation, will be reduced by 64% by having 1.0 mg/L monthly average permit limits at the two facilities mentioned in your comment. As more data becomes available, the TMDL target and allocations can be changed to reflect the new information and provide the most accurate analysis possible with the available data.

The fecal coliform levels in these waters do not exceed Missouri's Water Quality Standards so bacteria will not be addressed in the TMDL document at this time. The information you provided in your comment is informative.

General comments at end of letter:

I appreciate your statement regarding the TMDL document not providing a full accounting of population growth in the watershed. Use of urban census data, however, is an effective way to demonstrate the concern regarding future population growth. Thank you for providing further information regarding possible point sources in the watershed.

Again, thank you for commenting. Your participation in the TMDL process and concern for water resources is appreciated. If you have other questions, please contact Gail Wilson of the Water Quality Monitoring and Assessment Section at (573) 751-7428 or at Missouri Department of Natural Resources, Water Protection Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM



Becky L. Shannon, Chief  
Watershed Protection Section

BLS:gwd

# ADEQ

ARKANSAS  
Department of Environmental Quality

January 07, 2004

RECEIVED  
JAN 12 2004  
WPCP

Ms. Sharon Clifford  
Missouri Dept. of Natural Resources  
P.O. Box 176  
Jefferson City, Mo.65102

RE: Elk River TMDL comments

Dear Ms. Clifford:

As per our email communication, I am submitting this letter as documentation of our formal comments on the referenced draft TMDL. We don't feel it is appropriate to assign wasteloads to Arkansas permitted facilities, but will be willing to actively work toward phosphorus reductions in the Little Sugar Creek basin. Taking the necessary measures to achieve a target nutrient load at the state line will be our focus. We look forward to working together with Missouri DNR personnel to achieve compliance with the Elk River TMDL.

Please feel free to contact me at any time (501-682-0660 or [singleton@adeq.state.ar.us](mailto:singleton@adeq.state.ar.us)) with any questions or comments.

Sincerely,



Bob Singleton  
Technical Assistance Manager  
Planning Branch-Water Division

STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

Bob Holden, Governor • Stephen M. Mahfood, Director

www.dnr.state.mo.us

January 30, 2004

Mr. Bob Singleton  
Technical Assistance Manager  
Planning Branch-Water Division  
Arkansas Department of Environmental Quality  
P.O. Box 8913  
Little Rock, AR 72219-8913

Dear Mr. Singleton:

Thank you for your comment letter on the Elk River Total Maximum Daily Load (TMDL) document. I understand your concern regarding the assignment of specific wasteloads to facilities located in Arkansas. Several options were discussed as to how to address the concern expressed by the Arkansas Department of Environmental Quality (ADEQ). The option suggested by your letter, that we include only total loads for the Arkansas portion of the watershed, was among those discussed.

As you know, the Elk River TMDL was developed using a load duration curve. One of the past criticisms of the use of load duration curves for TMDL development is that specific load and wasteload allocation information was not included. The Elk River TMDL is our first attempt to provide specific allocation information from a load duration curve. Let me quickly provide assurance, however, that the Elk River TMDL document is not intended to regulate activities within Arkansas. In response to your comment, my staff contacted staff at Region 7 of the Environmental Protection Agency (EPA) who indicated that they and staff at EPA Headquarters were in favor of retaining the specific point source information in the document.

Although we have not changed the table with specific wasteloads, we have added the following language to the TMDL document in response to your comment:

Table 9 below includes specific information regarding the loading from point sources in Arkansas. These numbers were based on information provided by the Arkansas Department of Environmental Quality (ADEQ) as to their current plans for addressing point source contributions in the Elk River watershed. It is not the intent of the State of Missouri to dictate how ADEQ addresses point and nonpoint



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Mr. Bob Singleton  
Page 2

sources of nutrients. As the TMDL is implemented and further data is obtained, or as the Oklahoma Department of Environmental Quality addresses impairments in their portion of the watershed, on-going negotiations between the states will address any changes that are needed to ensure the nutrient impairment of the Elk River basin is resolved. This is best accomplished when individual states are allowed to tailor their portion of the implementation plan to the laws, funding opportunities and knowledge of the resource that exists within each state agency.”

Thank you for your agency’s assistance with the development of this TMDL document. We look forward to continuing to work with your office and others in Arkansas on water quality issues in shared watersheds. If you have other questions, please contact me at (573) 751-7428 or at Missouri Department of Natural Resources, Water Protection Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM



Becky L. Shannon, Chief  
Watershed Protection Section

BLS:gwd

January 3, 2004

*Post marked Jan 3*

Department of Natural Resources  
WPCP, Planning Section  
PO Box 176  
Jefferson City, Missouri  
65102-0176

To whom it may concern:

My husband Arley and I (Judy) recently moved to the Elk River area of Grand Lake, but he has fished Elk River and the surrounding area for close to 50 years. My first husband and I lived on Grand Lake from 1978 to 1987. After his death, Arley and I married and lived here two additional years. We are not strangers to this area.

One of my favorite memories when we were dating 15 years ago was catching crappie together in a heated dock one winter. They were biting like crazy, even I was catching them. He says that the fishing had always been good in the winter months in the Elk River arm. He has always been an avid sportsman and fishes at least once or twice a week. Things have slowly changed since then. He reports that he will catch a few "keepers" during the winter months, but nothing compared to what it used to be like. One can't help but wonder what has happened to change this.

Since we married in 1988, we have enjoyed coming to the lake for a variety of other reasons. Elk River has been known as the clear water part of the lake, but this has changed also. In the past, we enjoyed picnics on the gravel bars. In recent years, we have noticed clumps of algae rising to the surface and wondered why this was happening. More important are the things we can't see like the pollutants

Arley and Judy David letter, pg. 2

that are being dumped into Elk River. We are learning that phosphorus levels cause this algae to form and the imbalance can cause lower oxygen levels vital to all life forms.

We are now senior citizens who have the financial means to live on the lake because of a lifetime of saving, planning, and the acculation of money over a long period of time. It is disappointing to pay so much money for a lake lot and then learn that our beloved lake is being changed forever.

I learned the following information from a local group of concerned citizens. According to EPA research, surface waters that are maintained at .01 to .03 mg/l of total phosphorus tend to remain uncontaminated by algal blooms. This ecological balance is important to prevent the formation of putrescent, unsightly or harmful bottom deposits that could prevent our lake from being used to its full potential. We worry about the quality of our drinking water, the use of the lake for boating, swimming, and skiing, as well as its use for fishing. We would like for our grandson to have a healthy lake environment to enjoy in future years. No one wants to live or recreate in a polluted lake. We agree that the present phosphorus levels are too high.

We recommend that the same standard be used that Oklahoma has established for scenic rivers, which is .037/l for the TMDL. We need to act now before futher damage is done.

Sincerely,



Arley and Judy David  
66700 E 255 Rd  
Grove, Oklahoma  
74344

STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

Bob Holden, Governor • Stephen M. Mahfood, Director

[www.dnr.state.mo.us](http://www.dnr.state.mo.us)

January 27, 2004

Arley & Judy David  
66700 E 255 Road  
Grove, OK 74344

Dear Mr. & Mrs. David:

Thank you for your comments on the Elk River Total Maximum Daily Load (TMDL) document. I read your descriptions of the beautiful area in which you live with longing, having been raised in southwest Missouri myself. Staff here in the Missouri Department of Natural Resources (the department) have reviewed and carefully considered your comments, and we wish to share our responses to those comments with you.

The observations made by your family are consistent with the department's findings based on the available data. Statistical analysis indicates increased nutrient loading to the Elk River began in 1985 and coincided with the growth of the poultry industry and a growth in human population. The algal blooms you observed occurred after 1985. Lakes and streams naturally age as their nutrient load increases over long periods of time due to natural processes. If the rate of nutrient loading is increased, this change can happen too quickly and cause a change in the aquatic life community. Clear lakes with low concentrations of algae provide optimal conditions for some fish species, including crappie. As the nutrient load increases, the game fish population changes over to a bluegill/bass/catfish population.

Based on the data analysis mentioned above, my staff and I, working with the Environmental Protection Agency (EPA), determined it was appropriate to base the total phosphorus (TP) target for the Elk River on the historic data. Prior to 1985, the average TP concentration in the Elk River at Tiff City, Missouri, which is near the Oklahoma state line, was 0.06 mg/L. Because nuisance algae was not a problem in the Elk River prior to 1985, it is reasonable to conclude that this level of nutrient loading will also be protective today.

Please keep in mind that the EPA documents you mention are very general; the Elk River TMDL target is specific to this watershed. We believe it is most appropriate to apply a target specific to the watershed when that can be done. Further discussion of how the nutrient target was set is available in the Elk River TMDL document itself and it is available on the department's web site: <http://www.dnr.state.mo.us/wpscd/wpcp/wpc-tmdl.htm>.



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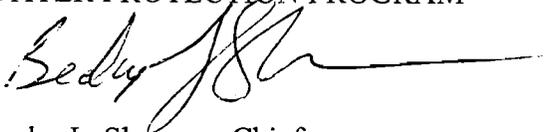
Arley & Judy David  
Page 2

The Elk River TMDL document is a phased TMDL, using an adaptive management approach. This means we set a target based on available data, then implement actions to ensure the target is met and continue to collect data. If the data indicates the initial target is not protective, the target will be lowered. This approach allows progress to be made on fixing the impairment, rather than waiting to collect large amounts of data over a long period of time to develop the most accurate target possible. As I've mentioned, however, we believe existing data supports the target established in the current TMDL document.

Again, thank you for commenting. Your participation in the TMDL process and concern for water resources is appreciated. If you have other questions, please contact Gail Wilson of the Water Quality Monitoring and Assessment Section at (573) 751-7428 or at Missouri Department of Natural Resources, Water Protection Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM

A handwritten signature in black ink, appearing to read "Becky Shannon", with a long horizontal flourish extending to the right.

Becky L. Shannon, Chief  
Watershed Protection Section

BLS:gwd

**CONCERNED CITIZENS FOR GREEN COUNTRY CONSERVATION**

c/o Running Water  
32700 S 660 Road  
Grove, Oklahoma 74344

December 29, 2003

**RECEIVED**  
JAN 02 2004  
**WPCP**

Department of Natural Resources  
WPCP, Planning Section  
P.O. Box 176  
Jefferson City, MO 65102-0176

**Re: Public Comment on Draft Elk River TMDL**

Attached is a document containing the comments of Concerned Citizens for Green Country Conservation (CCGCC). If it would be helpful to restoring the Elk River to manageable water quality, we are prepared to discuss and add information to each of the items where we have provided comments.

CCGCC is an all-volunteer, non-profit organization formed in 1996 and has members in both Missouri and Oklahoma. Some of our members are residents of the Elk River Basin, others live downstream from the basin and still others live in adjoining areas. All of us are concerned about the water quality in the Elk River Basin. We, many of our family members and our neighbors have been frequent recreational users of those waters in the past. Our use in recent years has been curtailed because of the degradation in the water quality and the health risks associated with continued use.

We appreciate the opportunity to comment and look forward to being involved in many ways with efforts to restore the Elk River water quality.



Riley Needham, President  
Concerned Citizens for Green Country Conservation

## Public Review and Comment on Draft Elk River TMDL

### Concerned Citizens for Green Country Conservation

32700 S. 660 Road  
C/O Running Water  
Grove, Oklahoma 74344

12/29/03



Riley Needham, President

**SUMMARY**--Each item addressed in the summary is covered in more detail with backup information in the discussion section and in the references listed.

**Item 1--Total Phosphorus Standard**--It is requested that an instream numeric standard be adopted on total phosphorus. The standard should be no higher than 0.040 mg/L total phosphorus and should be for the monitoring station at the Highway 43 bridge near Tiff City.

**Item 2--Point Source Regulations**--The major loading of total phosphorus in the watershed comes from the point source discharges. There is currently no limit on the phosphorus that is permitted from these sources. Setting limits on the loading of phosphorus from point sources is long overdue to protect the surface waters in the Elk River Watershed.

a)--Reopen the NPDES (National Pollutant Discharge Elimination System) permits on all wastewater treatment facilities in the watershed and establish a limit on the concentration and loading of total phosphorus. Set the concentration limit at 1.0 mg/L as a monthly average for the smaller volume discharges and progress to a limit of 0.2 mg/L for the larger discharges. Table 1 in the discussion section provides a detailed request for the monthly average as a function of design flow rate. The design flow rate for the loading determination should be that which was in force in 2002. This provision will prevent facilities from asking for higher design flow just to avoid the limits on the phosphorus loading.

b)--Establish an Environmental Management System in each wastewater treatment facility to prevent the upsets that are so detrimental to the improvement of the waters in the Elk River Watershed. All upsets are avoidable with the proper implementation of an appropriate management system such as is represented in EPA 744-R-00-011. Through training and dedication, appropriate work practices and attitudes can be developed that are an essential basis for the prevention of upsets.

c)--Implement continuous monitoring of total phosphorus in two of the largest wastewater treatment facilities to establish the correlation between the DMR (Discharge Monitoring Report) reporting and the actual loading of total phosphorus. One of the facilities should be publicly operated and the other should be privately operated. The loading calculations are now determined from the self-monitoring DMR program. Many examples are available showing that that program understates the actual loading. Data from two continuous monitoring programs would allow better judgement to be used to adjust the calculations to more accurately represent the actual loading.

**Item 3--Add bacterial pollution** to the TMDL (Total Maximum Daily Load). Measurements taken at the Highway 43 bridge show that the water contains enterococci at levels too high to be safe for recreational contact with the water. High levels of nutrients facilitate the survival and, under the proper conditions, even enable the growth of indicator bacteria. Therefore control of bacteria and nutrients are complimentary improvements in the water quality. Enterococci are the indicator bacteria that are most frequently above safe levels and should be selected as the bacterial standard for the Watershed.

**Item 4--Nonpoint Sources--**The loading of phosphorus from the nonpoint sources is small compared to the point sources. Even with that fact efforts need to be considered that will identify and remedy the larger nonpoint sources. Computer models are available that can help to identify the locations of the parts of the watershed that are the most likely to be the significant sources of phosphorus from nonpoint sources.

**Item 5--Correction to Information Sheet--**Correct the Information Sheet issued by Missouri Department of Natural Resources to reflect the facts that the source of the nutrient pollution is predominately point sources. The document now lists "nonpoint source runoff from livestock production". Such a statement is easily demonstrated as false even with just a casual review of the loading data. The erroneous information in this document was noted to representatives of the Department both verbally and in writing several times since May of 2003.

Send out a correction to the document to all parties who were notified of the public comment period and request that since the comment period to respond to the Department is over that they respond with changes to their comments directly to the Region 7 Office of EPA.

**DISCUSSION AND BACKGROUND INFORMATION**--Each of the items listed in the summary are discussed and representative background information is provided in this section. The objective of this section is to bring forth a sampling of the recent studies and the scope of the information that should be used to arrive at a scientific basis for the selection of the parameters for the TMDL for the Elk River Watershed. We believe that the antidotal data used to qualitatively select the level of total phosphorus that would be controlling of the unacceptably low aesthetic quality of the Elk River is insufficient as the

sole selection criteria in the methodology. Aesthetics is not the only criteria that must be used if the process is to be based on the scientific method.

**Total Phosphorus (TP) Standard**--It is requested that an instream numeric standard on total phosphorus be adopted that is less than 0.040 mg/L to limit algal growth to restore the aesthetics and, more importantly, to protect the public health for users of the water in and downstream of the Elk River Watershed. A very large number of studies, both current and over the past 40 years, shows that the likely levels of total phosphorus required for the restoration of the Elk River to a water quality that is manageable will be between 0.020 and 0.040 mg/L. A standard of 0.040 mg/L would allow a sizable improvement in the water quality, bring control of the long neglected point sources of TP and allow time to more carefully determine how much lower the TP will need to be to provide the required control of the health risk to the public. Several publications and studies are highlighted in the following list that support the limiting of the TP to a level below 0.040 mg/L:

- Modeling results from more than 200 studies worldwide show that levels of TP required for control of algal blooms is 0.035 mg/L. (1) Additional modeling results updating those reported in the above reference indicate that a level of TP required for control of algal blooms is 0.030 mg/L. (2)
- The recent summary report on the Eucha/Spavinaw Watershed recommended returning the loading of TP to manageable levels for a source of drinking water. The recommended TP concentration for Eucha was 0.021 mg/L and for Spavinaw was 0.014 mg/L. This level of TP would control Spavinaw to a lower eutrophic-upper mesotrophic status. (3)
- Measured results in the Clark Fork River showed that the level of TP where the growth of algae was controlled was 0.0205 mg/L. (1)
- Measurements reported from Europe, Canada and the United States show that the TP levels required for the control of cyanobacteria is within the range of 0.020 to 0.040 mg/L. (4, 5) Algal toxins are well documented to cause a wide range of health risks to users of the waters, both for recreation and as a source of drinking water. (4, 6) In addition some organic compounds produced by algae form carcinogens in the water treatment process. (7)
- The results from the restoration of many lakes to acceptable water quality show TP levels needed to maintain control of algal blooms is 0.015 to 0.020 mg/L. (7) It should be noted that the eutrophication scale for streams is less well developed than that for lakes and reservoirs, but the available information shows that they closely track each other.

**Point Source Regulations**--The point sources are the major contributor of the nutrient pollution in the Elk River Watershed. When all factors are considered-- the underreporting of the self-monitoring system (DMR), the more biologically active

condition of wastewater, the plant upsets and the unreported discharges--the contribution of the point sources is estimated to account for approximately 80% of the total phosphorus loading in the watershed. At the current time there is no limit on total phosphorus in the NPDES permits for the wastewater treatment facilities in the Watershed. Highly efficient treatment systems are available and have been well demonstrated for more than two decades that can essentially eliminate the phosphorus discharge from wastewater. (9) One of the reported systems meets a permit limit of a weekly average on TP of 0.1 mg/L and has reported a yearly average performance where the discharge averaged below 0.030 mg/L. Clearly the technology is available and the operation of such systems is well documented. The implementation of a limit on discharge of total phosphorus is long overdue to protect the waters in the Elk River Basin. Because of the impact of the increased loading from the larger treatment plants, the regulation of the discharge concentration of total phosphorus should be less for the larger plants and allowed to be higher for the smaller plants. The following table, adopted from the Eucha/Spavinaw Study (3) shows our recommendation for the point sources:

**TABLE I**

Design Flow for Treatment Facility effective in 2002, (gallon per day)	Maximum limit on monthly average concentration of total phosphorus, (mg/L)
Less than 50,000	1.0
50,000 to 500,000	0.5
Greater than 500,000	0.2

In addition to the limit on the concentration on total phosphorus, a load limit must also be a part of the NPDES permit. The load limit would be determined as follows:

Daily load limit for facility, pounds of total phosphorus per day = (monthly average concentration, mg/L) \* (8.33) \* (design flow applicable for 2002, million gallon per day)

For example, a facility with a design flow of 1.5 million gallon per day in the year 2002 would have a daily load limit specified in their NPDES permit of:

$$\text{Daily load limit, \#/day} = (0.2) * (8.33) * (1.5) = \sim 2.5\#/day$$

By using the design flow effective for 2002 this method will prevent facilities from requesting increases in design flow to avoid meeting the intent of the regulation to essentially eliminate the impact of wastewater treatment discharges from being the number one cause of the nutrient impairment of the Elk River.

Because plant upsets, both reported and unreported, are large contributors to the nutrient loading, it is recommended that a Management System be adopted in each of the treatment facilities. Management Systems have been developed over more than 3 decades that have proven effective at eliminating the environmental impact of upsets. The original system was developed by the DuPont Company as a profit based system to decrease the high cost of industrial accidents. The original system has been adopted and adapted to a

broader need in the environmental and safety arena. The basis of the system is that all upsets or accidents are preventable. They are caused by work practices and attitudes that can be changed by implementing a management system that detects flawed practices by identifying every-day events that could lead to an upset and then correcting those practices. Each upset is not an isolated event, but is associated with tens or even hundreds of related events that are the result of flawed work practices that just did not advance to the magnitude of a full-blown upset. By identifying such events and taking the appropriate actions, all upsets can be avoided. A good documentation of the Management System is presented in EPA 744-R-00-011. In companies and facilities where such systems have been fully implemented, the result is a positive contribution to the bottom line by avoiding the high cost to remedy the impact of upsets.

Implement a monitoring system in at least two of the larger wastewater facilities to continuously monitor the total phosphorus concentration. Such a system has been reported as very helpful in the rapid progress made by the city of Rogers, Arkansas in achieving a discharge performance of 0.2 mg/L in TP. It is recommended that one of the monitoring systems be placed in a large publicly operated plant and the second system be placed in a large privately operated facility. Each system should be a required part of the DMR for that facility and a matter of public record to help restore the confidence in the self-monitoring system currently in operation. An additional benefit of the monitoring system would be to document the actual loading of total phosphorus and allow correlations to be developed to determine loading from the sparse data set normally reported in the DMRs. It is a common myth that wastewater discharges are the contributors to low flow loading and that runoff is the major contributor at high flow. We have repeatedly seen wastewater ponds rapidly depleted during summer high flow events.

We request that the Tyson treatment plant at Noel be selected as one of the continuously monitored facilities because of its high loading of TP in the past and the repeated upsets that have been reported. Such continuous monitoring would be a great benefit to rapidly bring the facility into a high level of performance. This is likely a very significant single, specific action that can be taken with respect to a treatment facility that will directly benefit the improvement of the water quality in the Elk River.

**Bacterial Pollution**--It is requested that bacterial pollution be added to the nutrient pollution in the TMDL. High levels of nutrients act as a facilitator for the extended survival and even growth of bacteria introduced into the surface waters. The data collected for the Elk River at the Highway 43 bridge and reported in the 2002 Beneficial Use Monitoring Program by the Oklahoma Water Resources Board (10) show that the beneficial use of primary body contact--recreation was not supported because of high levels of enterococci.

In studying the bacteriological characteristics of other streams in the area, we find that the standard of 33cfu/100ml for enterococci is often violated even when the fecal coliform is below 200cfu/100ml and E. coli is below 128cfu/100ml. Therefore, since the foundation studies of Dufour (11) show that swimming related illness is directly correlated both with the levels of E. coli and enterococci, we request that the enterococci

standard be adopted as the bacterial standard for the Elk River Watershed. The adoption of this standard would be more protective for recreational users of the waters. Since part of the studies of Dufour was conducted at Keystone Lake near Tulsa, it is evident that the findings should be applicable to waters in this general vicinity.

**Nonpoint Sources**--The contribution of the nonpoint sources to the nutrient pollution of the Elk River Watershed is much less than the contribution of the point sources. Even so, we believe a focused program should be initiated to locate and address the larger potential nonpoint sources. We believe that an excellent way to focus the effort would be to use one of the computer programs that is available to identify sites that have high potential to contribute and then to adopt practices to control the actual contribution of TP from such sites. The critical steps to successful implementation of this program are:

- Identify and adopt a robust and well-defined computer model that accounts for the important features of the Elk River Watershed. One such model (The Soil and Water Assessment Tool) is reported to have been used in the Eucha/Spavinaw Study (3) (reported by Storm, etal, referenced in that study).
- Carefully develop the required input data such as hydrologic characteristics, land use practices, soil test phosphorus and etc.
- Calibrate the model to the Elk River Watershed characteristics that are unique and significant for identifying high potential contributing sites.
- Validate the results of the model by statistically selecting a representative number of individual sites for detailed analysis and onsite verification of the potential.

When the high potential sites have been identified that possess both a source of phosphorus and a transport capability, then use well-recognized practices to control the actual contribution of total phosphorus to the surface waters. (12,13)

**Correction to Information Sheet**--The information in the sheet and the presentations made to the public attempts to perpetuate the erroneous information that the source of the nutrient pollution is nonpoint. Such false information severely damages the public trust and confidence that is required for the Department of Natural Resources to successfully conduct its mission as delegated by the EPA. Urgent action is needed to again restore the public trust. We find this conduct unacceptable and unprofessional.

#### **REFERENCES**--

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RECEIVED

MAR 05 2004

**CONCERNED CITIZENS FOR GREEN COUNTRY CONSERVATION**

c/o Running Water  
32700 S 660 Road  
Grove, Oklahoma 74344

February 29, 2004

copy:

Missouri Dept of Nat Res.  
WPCP, Planning Section

US EPA Region 7  
Office of External Programs  
Attn: Jack Genereaux  
901 N. 5th Street  
Kansas City, KS 66101

**Re: Elk River TMDL**

This letter provides additional information for consideration in the development of a TMDL for the Elk River. I am also providing as Attachment I, a Position Paper Relating to Water Quality in Grand Lake developed by the Grove Area Chamber of Commerce last year after about 6-months of discussions and consideration. I think the information in this Attachment is representative of the concern of many individuals in the entire area.

Attachment II is the information we furnished to Missouri Department of Natural Resources as our comments on the draft Elk River TMDL which was on public comment in December 2003. Since the comment period, we have had time to put together in graphical form some of the information we had as further support for our comments in that document.

**Attachment II--Item 1--Total Phosphorus Standard--**The direct sources of information available for the knowledgeable forecasting of the required level of total phosphorus (TP) in the Elk River to bring the water quality into manageable condition are: a)--the large resource of scientific information from the science of Limnology and b)--the historical levels of total phosphorus in the Elk River. As is noted from the referenced studies there is no support for being able to manage the water quality with levels of TP above 0.040mg/L. In the Elk River the objectionable kinds of alga are the benthic forms as well as the floating mats in the slower flowing backwater areas.

The historical concentrations of TP from the USGS station near Tiff City are shown as the geometric mean in Figure II-1. Figure II-2 shows the geometric mean for time periods dating back from 1985, the period that is stated by MoDNR as the basis for the selection of a TP level of 0.060mg/L as their recommendation. As is evident from the charts, the historical levels of TP have been below their goal value of 0.060. We think selection of a value below 0.040 mg/L will be required just to return to the levels recorded for the time period at and just prior to 1985.

**Attachment II--Item 2--Point Source Regulations--**Point sources that have unregulated discharges of phosphorus in their NPDES permits are the cause of the nutrient pollution of the Elk River. Figure II-3 is a plot of the concentration of TP from the DMRs for the Tyson Plant at Noel compared to the values for the monitoring station near Tiff City. The time period is from December 2000 to September 2002. Figure II-4 shows the loading for the same time period. It is clear that the dominant source of the phosphorus is from this plant discharge based on the reported Discharge Monitoring Report alone. The additional contributions from the discharges from the facility during the high water periods that have been reported outside the DMR system are not a part of this loading measurement. This Plant has been under a Consent Judgement since February 18, 2001 and we think the relaxed time table to bring the plant into a regulated phosphorus discharge and implement management systems to prevent upsets is completely unacceptable for protection of the Waters of the Nation. Figure II-5 shows the reported loading from the Plant for the time period as measured by the average, the mean and the geomean.

Figure II-6 is a plot of the phosphorus concentration compared to the stream flow. The trend of decreasing concentration with increased flow is consistent with the phosphorus pollution being from point sources.

We believe that since the cause of the nutrient overload is from the unregulated discharge of phosphorus from point sources that an accelerated timetable should be implemented to meet the TMDL requirements for an instream standard below 0.040mg/L on total phosphorus. A reasonable timetable would be to implement the interim NPDES permit for the Tyson Plant by May 1, 2004 and reopen all permits and within 5 years regulate TP levels discharged from each plant as noted in the Table I of Attachment II. That is, the loading and concentration of TP from the plants would be within these limits no later than May 1, 2009. These actions alone would likely allow an instream standard below 0.040mg/L to be met. Such a timetable for the TMDL program would then allow further evaluation of the condition of the Elk River to establish if lower levels of TP are needed as the studies from around the Nation and the World would forecast.

**Attachment II--Item 3--Bacterial Pollution--**Additional information that shows that enterococci are a problem for the maintenance of full body contact is included as Attachment III. This information is the Beneficial Use Monitoring Program (BUMP) report for the year of 2003 from the Oklahoma Water Resources Board.

In addition, data from monthly sampling are available for the USGS monitoring station near Tiff City. I think the data indicate several characteristics of the bacterial pollution and point to the possible sources. Figure II-7 is a plot of the data available from this station. Generally the levels of bacterial pollution have declined from the early 90s to the past five years. From a comparison of the individual sample results to the standards for full body contact, it can be seen that the levels of Fecal Strep are above their standards value (33cfu/100ml) more often than are either Fecal Coliform (standards value of 200cfu/100ml) or E. Coli (standards value of 128cfu/100ml). This observation from the USGS data is consistent with the findings from the BUMP report referenced above and provided as Attachment III.

Figure II-8 is a plot of the same data correlated with the stream flow. It is evident from the data that the values for the indicator bacteria are above their respective standards value both at low flow and for the higher flow. Therefore the bacteria for this time period appears to be coming from both point sources and nonpoint sources. However, the character of the bacteria pollution has changed since mid-1999. Figure II-9 correlates the bacterial data for the time period of June 1999 to September 2002 with the flow rate. During this time period only the indicator bacteria Fecal Strep were above the standard value. No samples showed values of Fecal Coliform or E. Coli that were above their respective standard values. Since there was only one sample collected at the higher flow rates where we saw the increased levels of bacteria from Figure II-8, the source of the Fecal Strep is very likely from inadequate sterilization at the point source discharges. Based on this information, we request that the sterilization procedures be reviewed to assure that adequate chlorine concentration and residence time are being consistently used to eliminate the Fecal Strep. Figure II-10 emphasizes the Fecal Strep data for the entire time period where they have been collected.

Finally, we would like to also emphasize that we see the same type of bacterial behavior in other clear water streams in the area. That information can also be provided if it would be useful as the basis for establishing Fecal Strep as the standard for reporting of DMRs in the region. We find that when the Fecal Strep is below 33 colonies/100ml then the other indicator bacteria--Fecal Coliform and E. Coli are also below their reference standard value for full body contact.

We appreciate the opportunity to provide additional information concerning the Elk River TMDL directly to US EPA Region 7. I am available to discuss any of the requests and comments contained in this communication. We look forward to assisting in restoring the water quality of the Elk River.

*--ORIGINAL SIGNED BY --*

Riley Needham, Ph. D.  
President, Concerned Citizens for Green Country Conservation

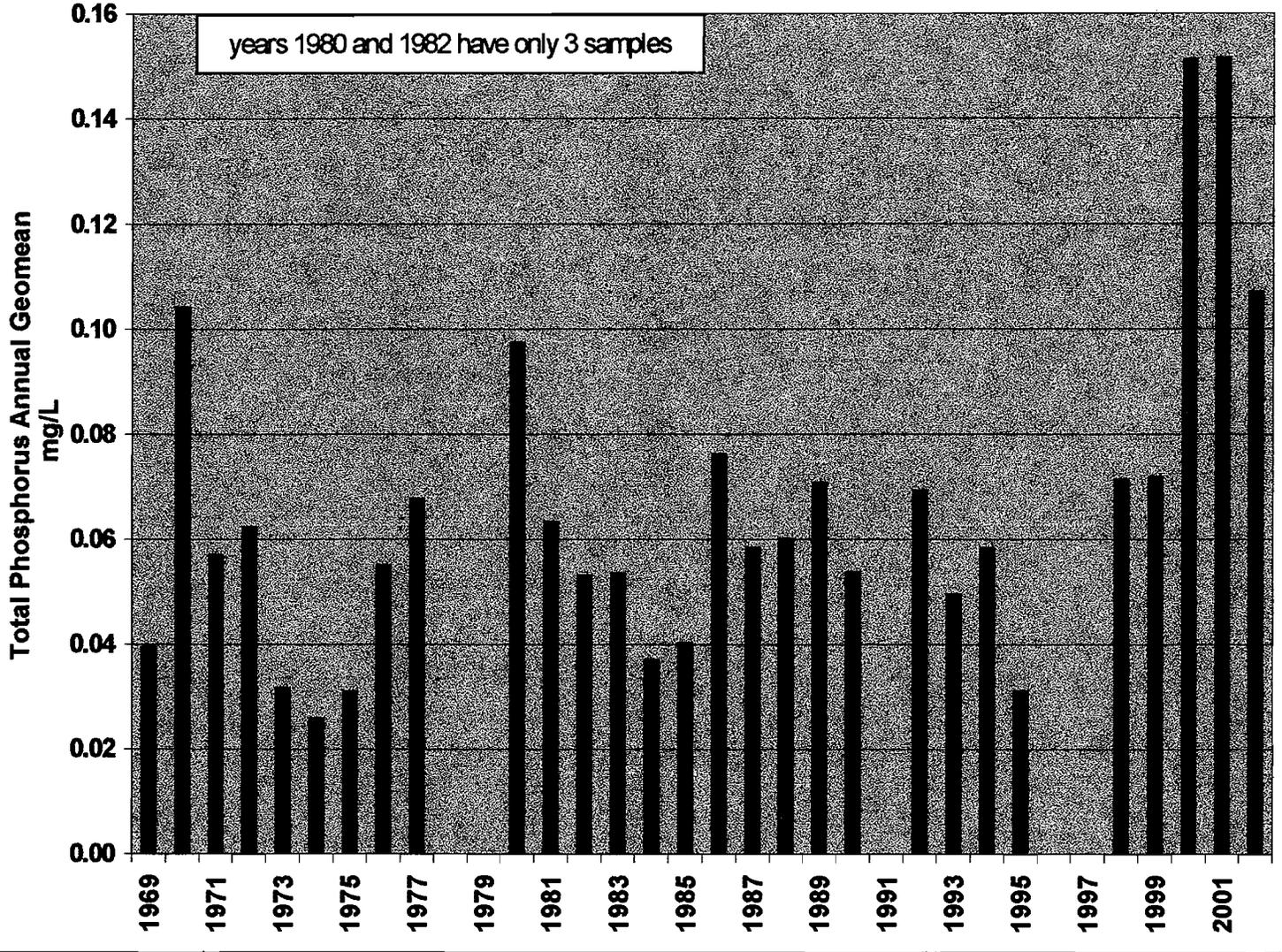
CC:

Senator Jim Inhofe  
Missouri Department of Natural Resources ✓  
Oklahoma Secretary of the Environment  
Grove Area Chamber of Commerce

# Elk River—Total Phosphorus concentrations

Figure II-1

Data source: USGS station near Tiff City

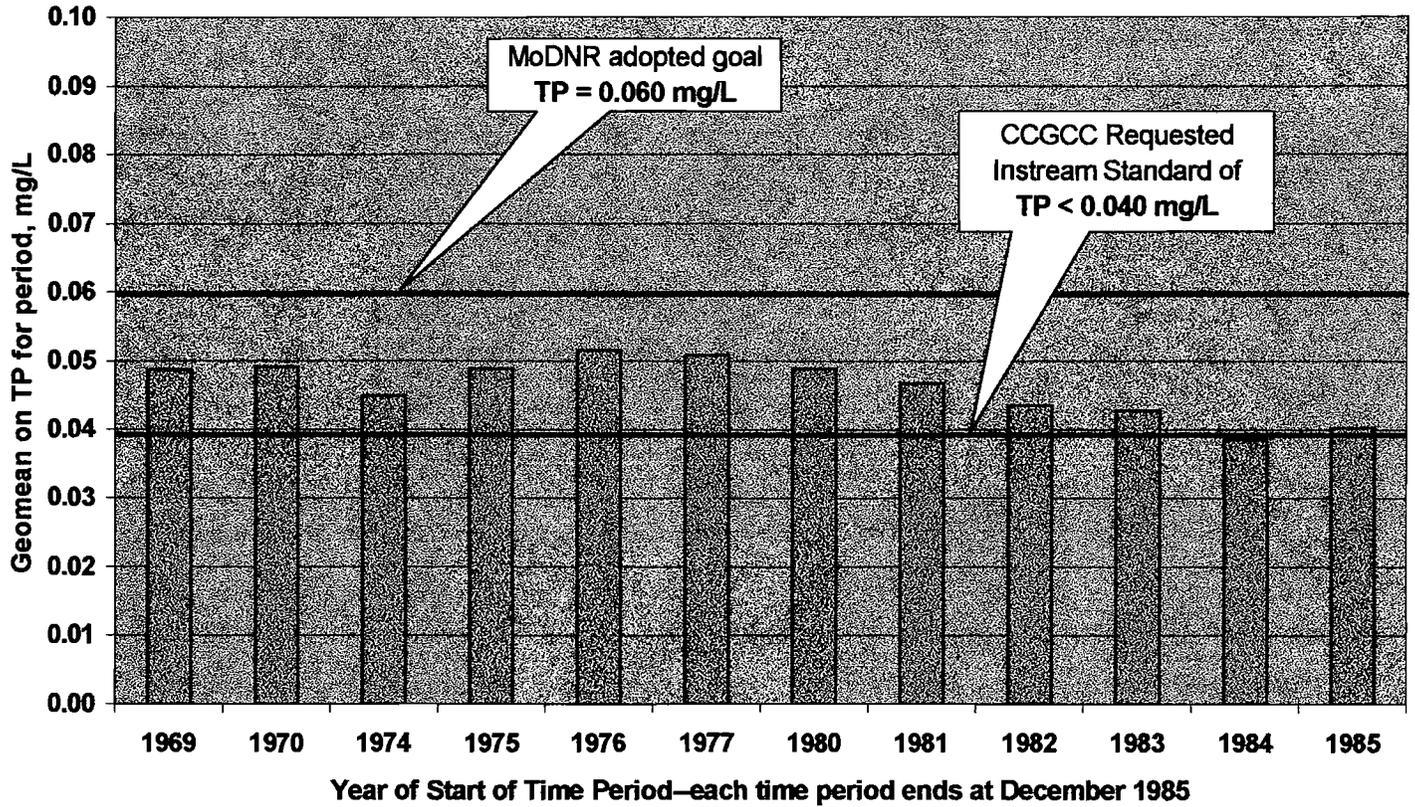


# Elk River

## --USGS Station near Tiff City--

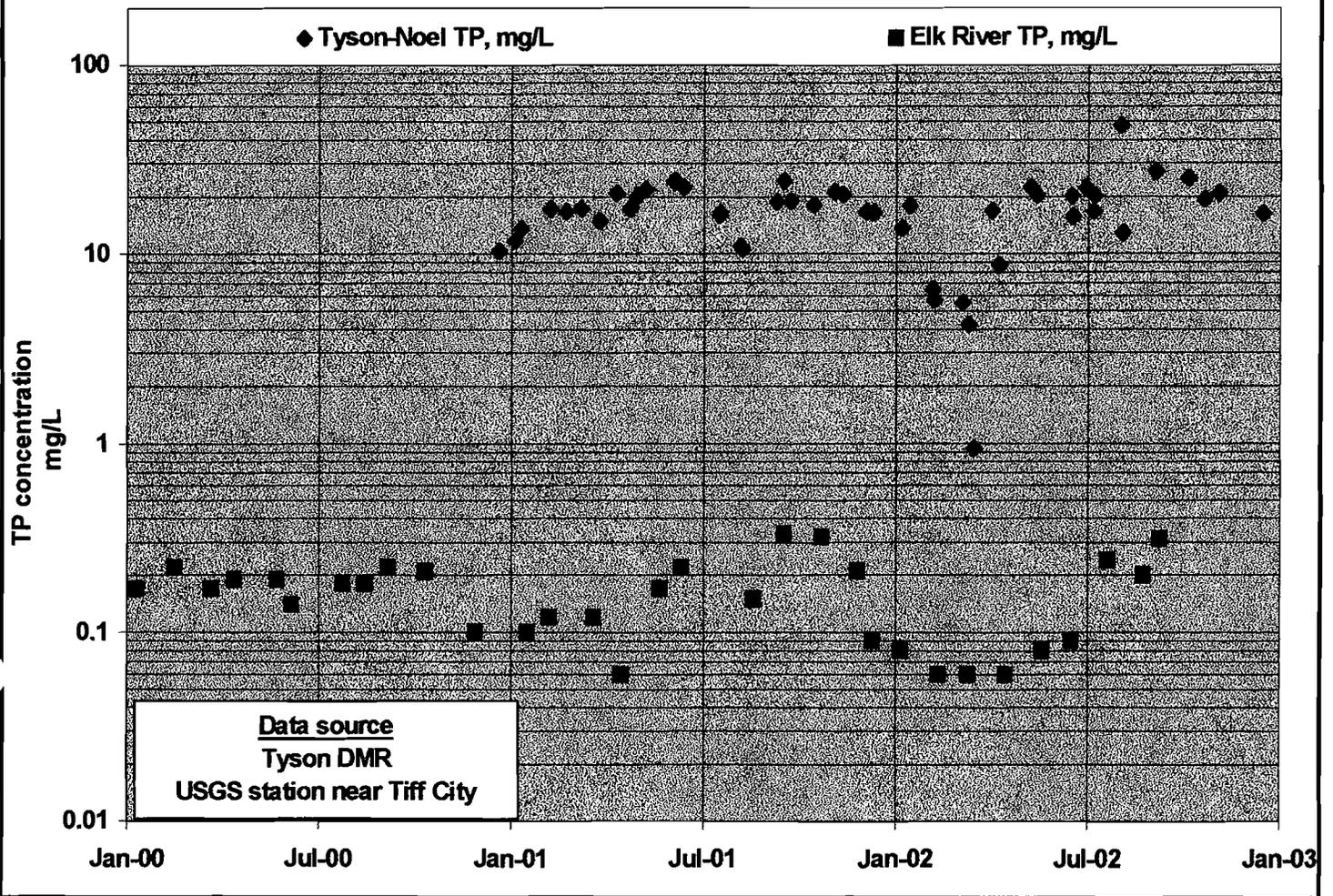
Figure II-2

Geomean for Time Period Starting with the Year Indicated and Going Forward to the End of 1985--



# Elk River and Tyson Noel comparison in TP

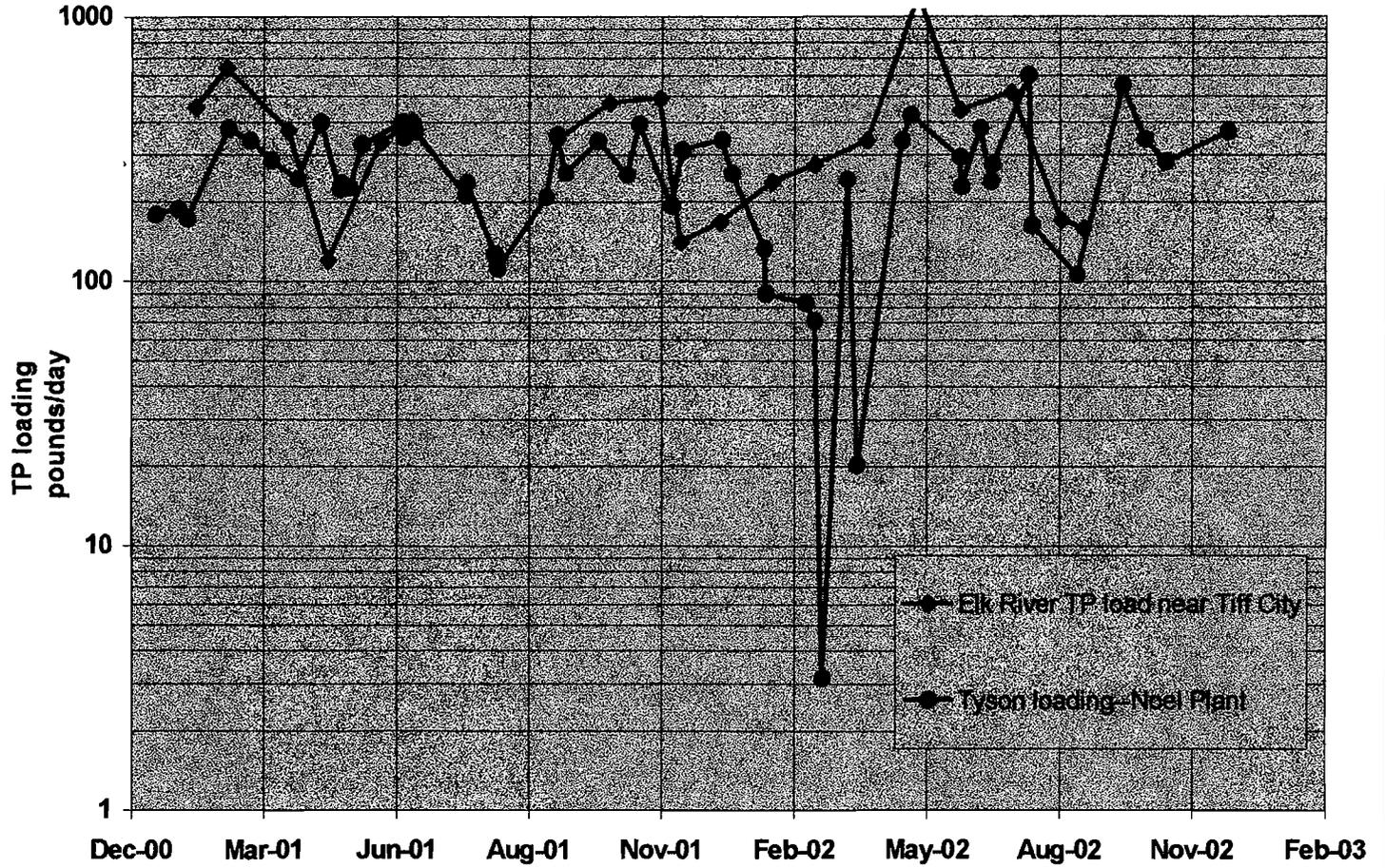
Figure II-3



# Elk River—USGS data—loading of total phosphorus

Figure II-4

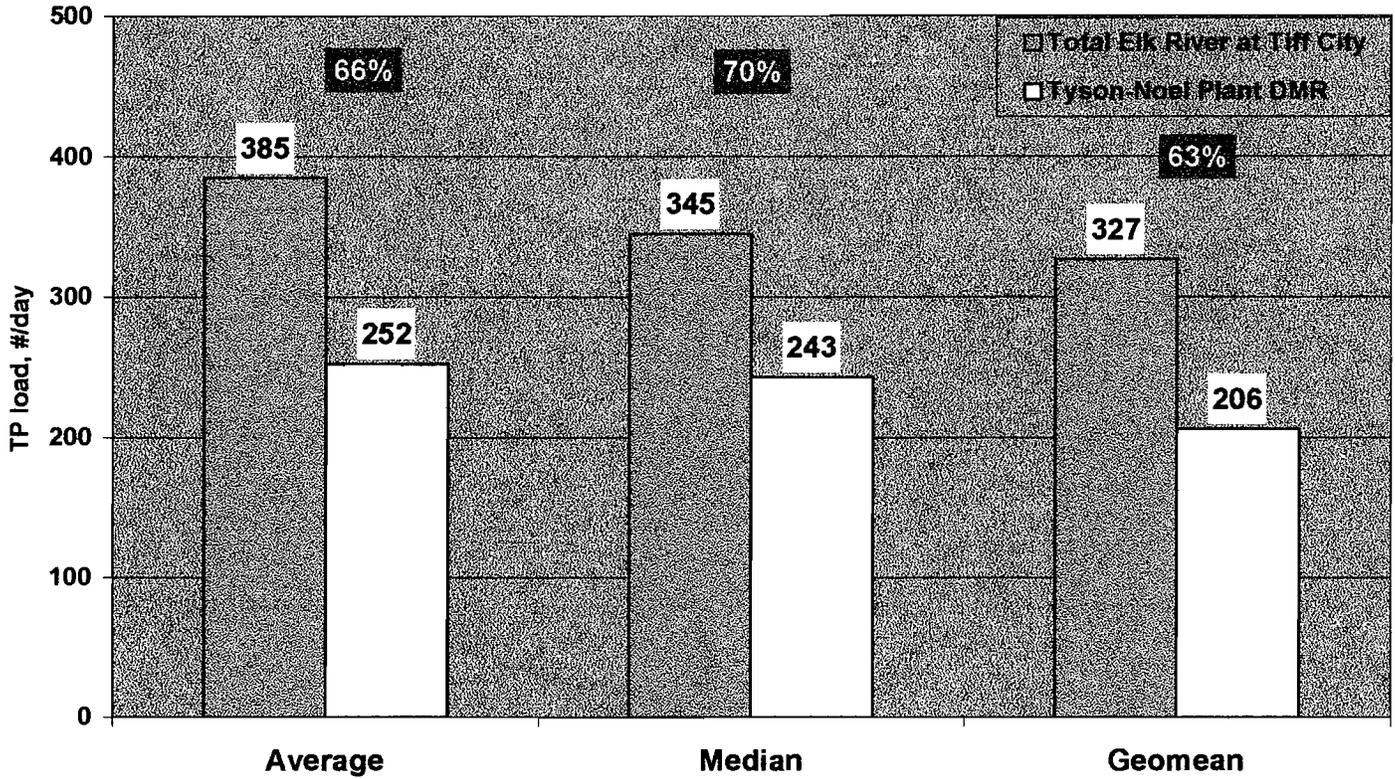
Data source: USGS station near Tiff City and Tyson reported DMR



# Comparison of Loading from Tyson Noel Plant to Total Elk River Loading near Tiff City USGS Station

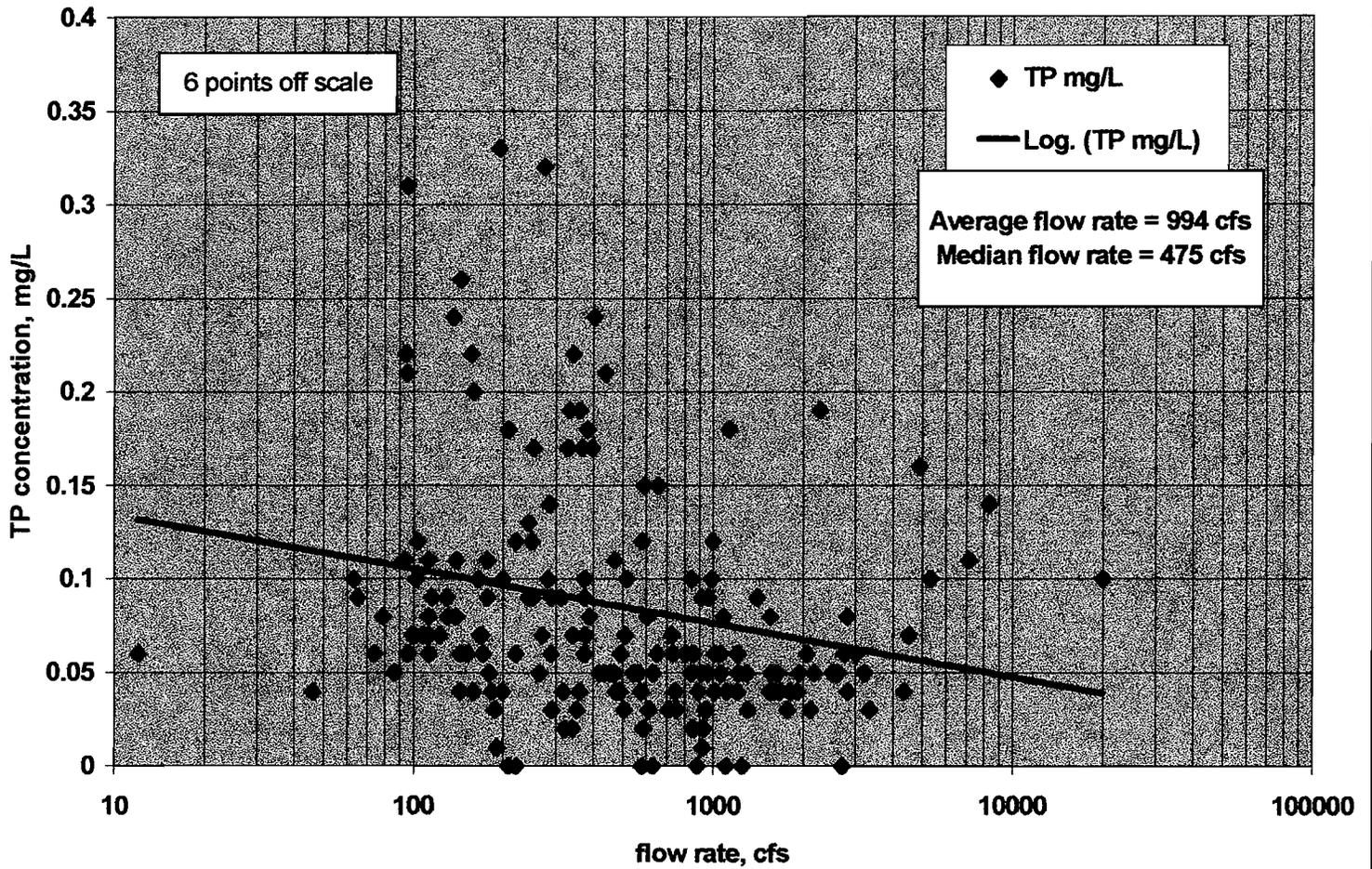
Figure II-5

Time Period of Comparison is Dec 2000 to Sept 2002



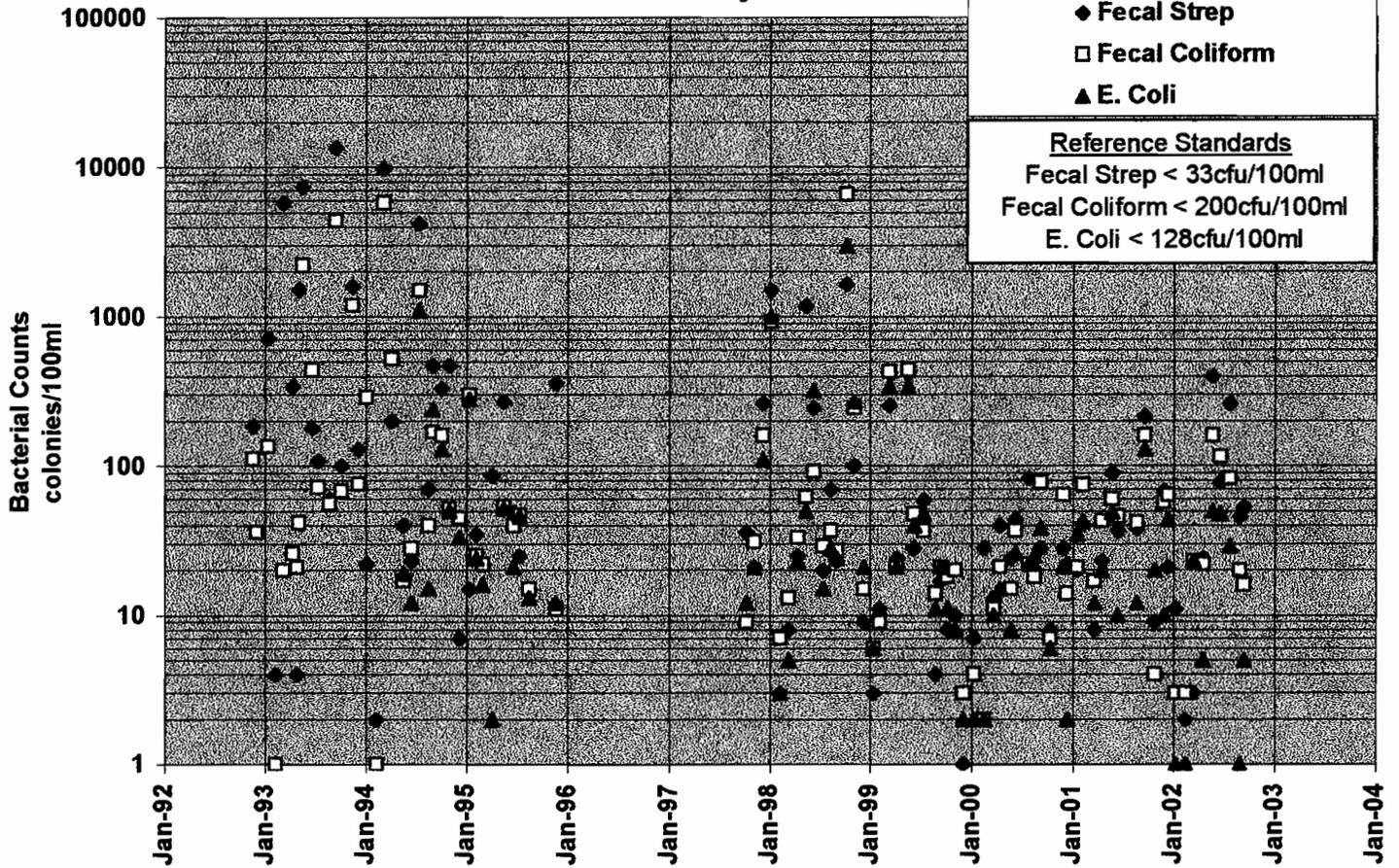
**Elk River correlation of TP with flow rate**  
**--time period of correlation 1969-2002--**

Figure II-6



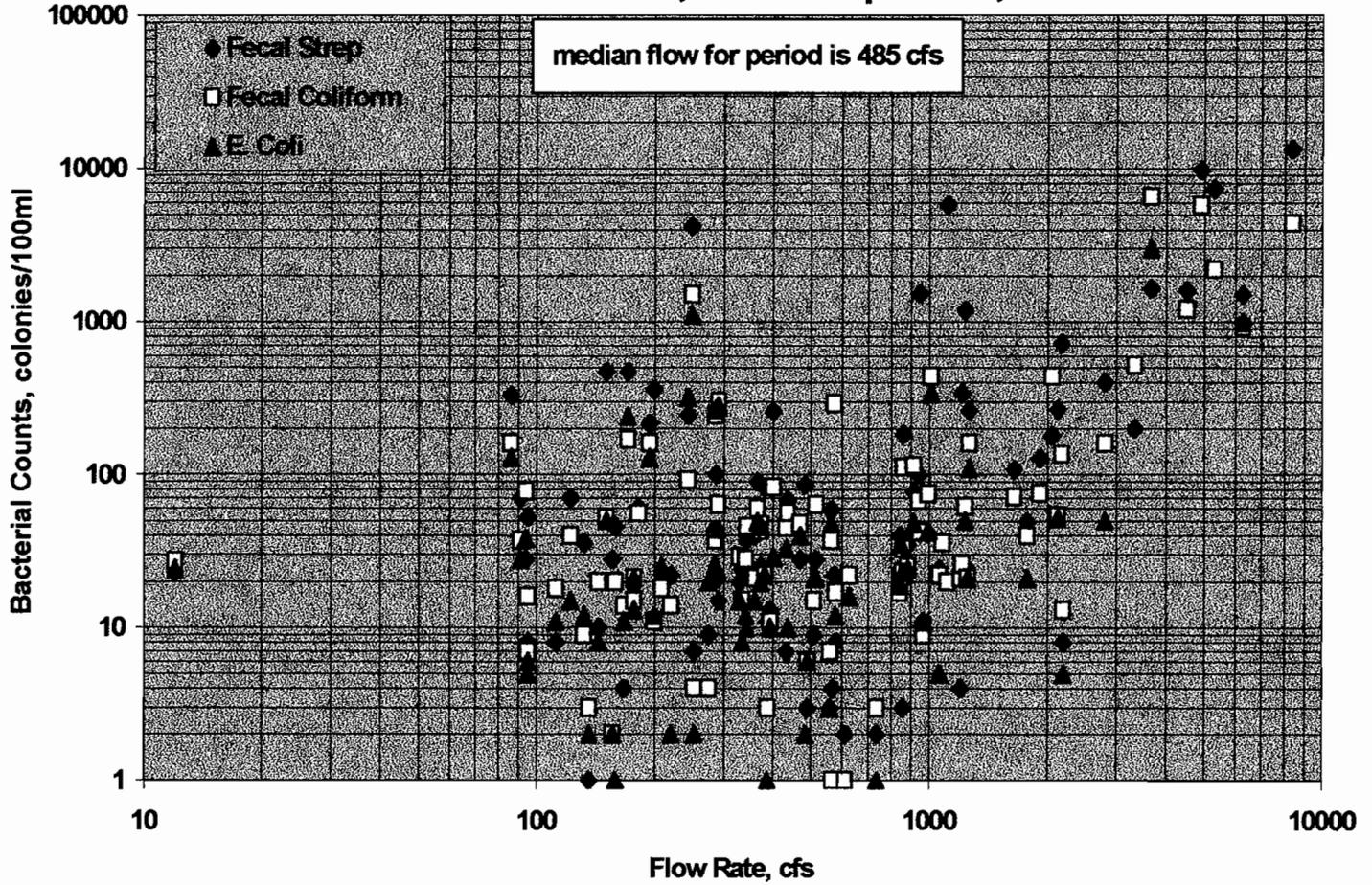
**Bacterial Data--Elk River--1992-2002**  
**USGS station near Tiff City**

Figure II-7



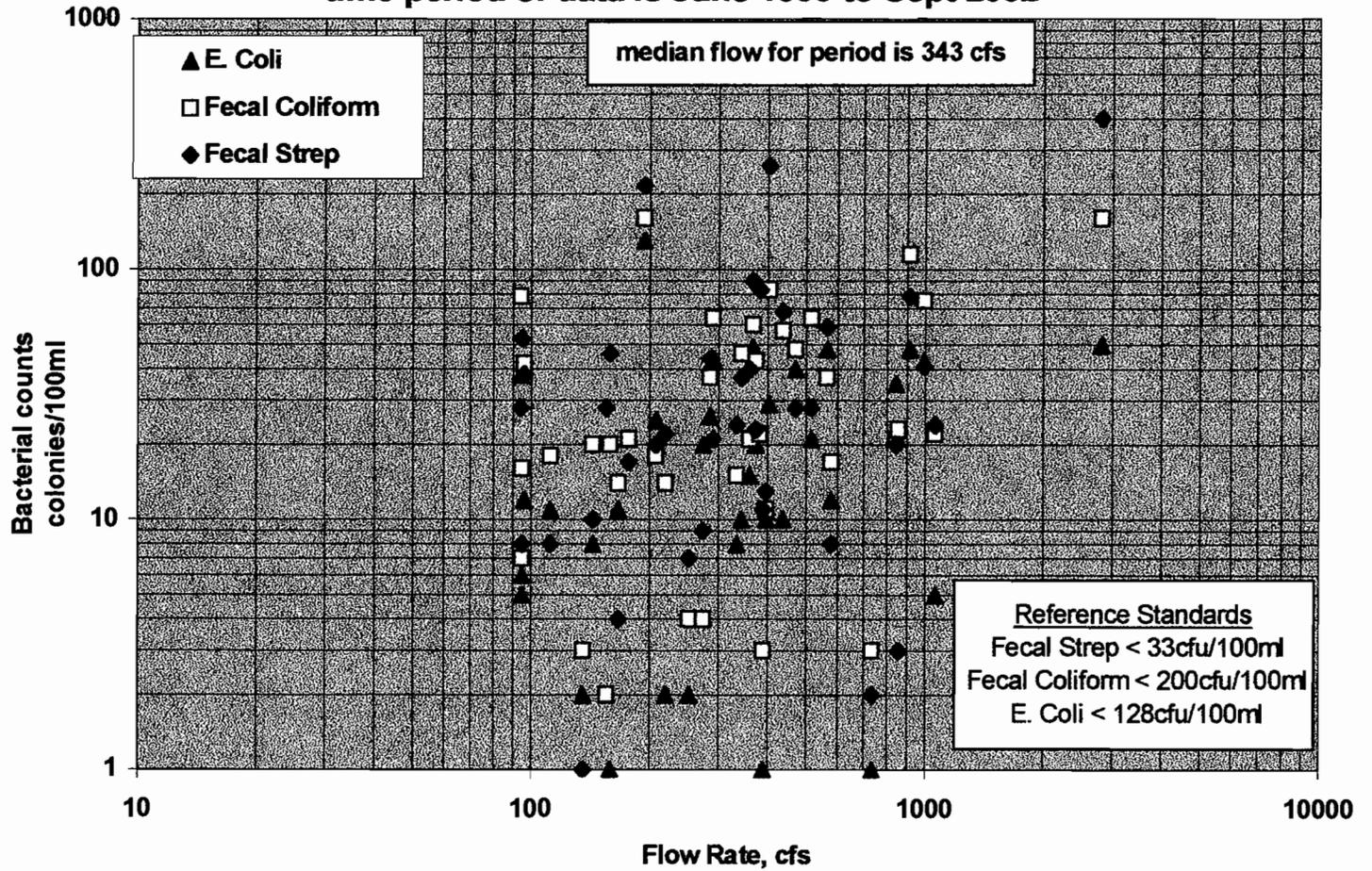
**Elk River—Bacteria Correlated with Flow Rate**  
**—USGS Station near Tiff City—**  
**Time Period is December, 1992 to September, 2002**

Figure II-8



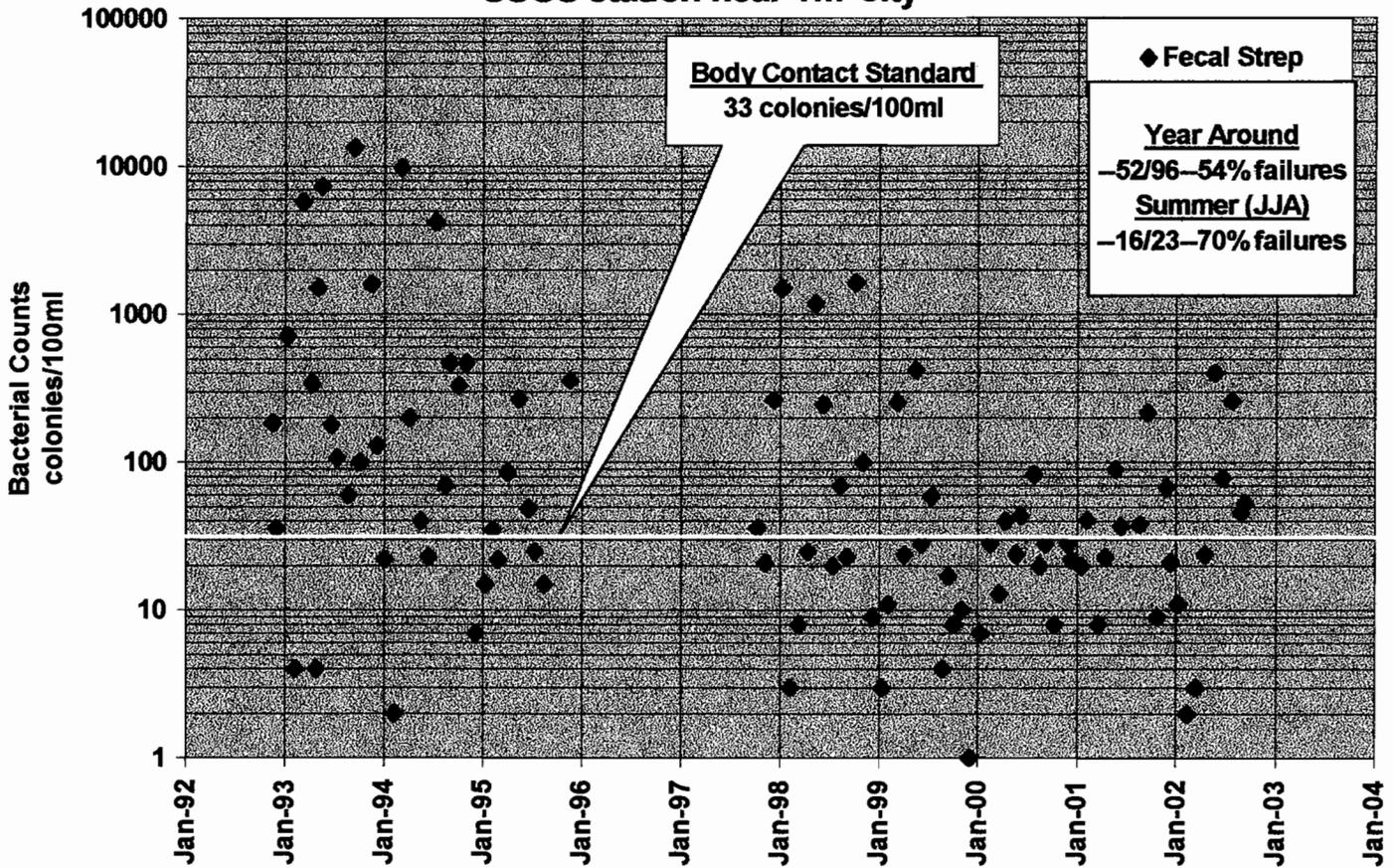
Elk River—USGS Station near Tiff City  
time period of data is June 1999 to Sept 2002

Figure II-9



**Elk River--Fecal Strep bacterial counts**  
**--data time period 11/1992 to 10/2002--**  
**USGS station near Tiff City**

Figure II-10





AREA CHAMBER OF COMMERCE

9630 Hwy 59 N, Ste. 1 • Grove, Oklahoma 74344 918/786-9079 • Fax 918/786-2909 www.groveok.org

July 29, 2003

Riley Needham  
CCGCC  
32700 S 660 Rd  
c/o Running Water  
Grove, OK 74344

Dear Mr. Needham:

Water quality of Grand Lake is a subject that should be of interest to all persons involved with the lake. Good water quality is essential to the continued viability of the lake as a tourist and residential asset. Over the past few years the subject of the quality of the lake water has become a major source of discussion. Accordingly, the Grove Area Chamber of Commerce has developed an official position relative to water quality for the lake. We feel we can no longer take a passive role in this most important matter.

The following statement represents the Grove Area Chamber of Commerce position. It is a proactive approach, which stresses good management of the entire water shed for the lake. It supports the present Oklahoma Water Resource Board's nutrient level limits for the Scenic Rivers and encourages expansion of that effort to cover all waters in the Grand Lake Watershed. We are also encouraging the establishment of limits of other types of pollutants that may be entering the lake and requesting the Oklahoma Department of Agriculture to take a more active role in controlling land that surrounds the lake.

You are encouraged to disseminate this information to others so that the position of the GACC is clearly understood. You are also encouraged to add your support to this very important factor for our economic future and the environmental future of Grand Lake. The position statement is attached. If you have any questions regarding this position, please feel free to contact me at 786-2658.

Sincerely,

A handwritten signature in black ink that reads "Tom Sanders". The signature is written in a cursive, flowing style.

Tom Sanders  
Chairman of the Board

*Giving the Grand Life™*

**Position paper by the Grove Area Chamber of Commerce relating to the water quality of Grand Lake O'the Cherokees.**

The following is the official position of the Grove Area Chamber of Commerce relative to the efforts needed to begin the improvement of the water quality in Grand Lake. We recognize that Grand Lake is central to the success of businesses in our city. Failure to take positive proactive steps will result in a water quality situation that will affect all the citizens in the Northeast corner of Oklahoma. We therefore resolve the following:

- 1 The Chamber supports the Oklahoma Water Resources Board (OWRB) standard of 0.037 mg/L for the maximum in-stream total phosphorus in the Scenic Rivers of Oklahoma.
- 2 Further we request that the OWRB adopt a numerical standard for the maximum in-stream total phosphorus for all streams flowing into Grand Lake. The value established for the scenic rivers would be appropriate for this application.
- 3 We request that the OWRB and the Legislature officially classify the Grand Lake Watershed as a "Nutrient Limited Watershed". This designation will start the planning process to establish actions required to reduce the nutrient loading into the Lake.
- 4 We request our U.S. Congressional Representatives to encourage the EPA to take a leadership role in establishing initiatives through out the Grand Lake Watershed to reduce all pollutants in Grand lake.
- 5 We request that the Oklahoma Department of Agriculture adopt a Best Management Practices that prohibits application of poultry litter or manure to soils that currently test greater than 150 pounds per acre for phosphorus.

As Approved 7-1-03

**CONCERNED CITIZENS FOR GREEN COUNTRY CONSERVATION**

c/o Running Water  
32700 S 660 Road  
Grove, Oklahoma 74344

December 29, 2003

Department of Natural Resources  
WPCP, Planning Section  
P.O. Box 176  
Jefferson City, MO 65102-0176

**Re: Public Comment on Draft Elk River TMDL**

Attached is a document containing the comments of Concerned Citizens for Green Country Conservation (CCGCC). If it would be helpful to restoring the Elk River to manageable water quality, we are prepared to discuss and add information to each of the items where we have provided comments.

CCGCC is an all-volunteer, non-profit organization formed in 1996 and has members in both Missouri and Oklahoma. Some of our members are residents of the Elk River Basin, others live downstream from the basin and still others live in adjoining areas. All of us are concerned about the water quality in the Elk River Basin. We, many of our family members and our neighbors have been frequent recreational users of those waters in the past. Our use in recent years has been curtailed because of the degradation in the water quality and the health risks associated with continued use.

We appreciate the opportunity to comment and look forward to being involved in many ways with efforts to restore the Elk River water quality.

Riley Needham, President  
Concerned Citizens for Green Country Conservation

## **Public Review and Comment on Draft Elk River TMDL**

### **Concerned Citizens for Green Country Conservation**

**32700 S. 660 Road  
C/O Running Water  
Grove, Oklahoma 74344**

**12/29/03**

**Riley Needham, President**

**SUMMARY**--Each item addressed in the summary is covered in more detail with backup information in the discussion section and in the references listed.

**Item 1--Total Phosphorus Standard**--It is requested that an instream numeric standard be adopted on total phosphorus. The standard should be no higher than 0.040 mg/L total phosphorus and should be for the monitoring station at the Highway 43 bridge near Tiff City.

**Item 2--Point Source Regulations**--The major loading of total phosphorus in the watershed comes from the point source discharges. There is currently no limit on the phosphorus that is permitted from these sources. Setting limits on the loading of phosphorus from point sources is long overdue to protect the surface waters in the Elk River Watershed.

a)--Reopen the NPDES (National Pollutant Discharge Elimination System) permits on all wastewater treatment facilities in the watershed and establish a limit on the concentration and loading of total phosphorus. Set the concentration limit at 1.0 mg/L as a monthly average for the smaller volume discharges and progress to a limit of 0.2 mg/L for the larger discharges. Table 1 in the discussion section provides a detailed request for the monthly average as a function of design flow rate. The design flow rate for the loading determination should be that which was in force in 2002. This provision will prevent facilities from asking for higher design flow just to avoid the limits on the phosphorus loading.

b)--Establish an Environmental Management System in each wastewater treatment facility to prevent the upsets that are so detrimental to the improvement of the waters in the Elk River Watershed. All upsets are avoidable with the proper implementation of an appropriate management system such as is represented in EPA 744-R-00-011. Through training and dedication, appropriate work practices and attitudes can be developed that are an essential basis for the prevention of upsets.

c)--Implement continuous monitoring of total phosphorus in two of the largest wastewater treatment facilities to establish the correlation between the DMR (Discharge Monitoring Report) reporting and the actual loading of total phosphorus. One of the facilities should be publicly operated and the other should be privately operated. The loading calculations are now determined from the self-monitoring DMR program. Many examples are available showing that that program understates the actual loading. Data from two continuous monitoring programs would allow better judgement to be used to adjust the calculations to more accurately represent the actual loading.

**Item 3--Add bacterial pollution** to the TMDL (Total Maximum Daily Load). Measurements taken at the Highway 43 bridge show that the water contains enterococci at levels too high to be safe for recreational contact with the water. High levels of nutrients facilitate the survival and, under the proper conditions, even enable the growth of indicator bacteria. Therefore control of bacteria and nutrients are complimentary improvements in the water quality. Enterococci are the indicator bacteria that are most frequently above safe levels and should be selected as the bacterial standard for the Watershed.

**Item 4--Nonpoint Sources--**The loading of phosphorus from the nonpoint sources is small compared to the point sources. Even with that fact efforts need to be considered that will identify and remedy the larger nonpoint sources. Computer models are available that can help to identify the locations of the parts of the watershed that are the most likely to be the significant sources of phosphorus from nonpoint sources.

**Item 5--Correction to Information Sheet--**Correct the Information Sheet issued by Missouri Department of Natural Resources to reflect the facts that the source of the nutrient pollution is predominately point sources. The document now lists "nonpoint source runoff from livestock production". Such a statement is easily demonstrated as false even with just a casual review of the loading data. The erroneous information in this document was noted to representatives of the Department both verbally and in writing several times since May of 2003.

Send out a correction to the document to all parties who were notified of the public comment period and request that since the comment period to respond to the Department is over that they respond with changes to their comments directly to the Region 7 Office of EPA.

**DISCUSSION AND BACKGROUND INFORMATION**--Each of the items listed in the summary are discussed and representative background information is provided in this section. The objective of this section is to bring forth a sampling of the recent studies and the scope of the information that should be used to arrive at a scientific basis for the selection of the parameters for the TMDL for the Elk River Watershed. We believe that the antidotal data used to qualitatively select the level of total phosphorus that would be controlling of the unacceptably low aesthetic quality of the Elk River is insufficient as the

sole selection criteria in the methodology. Aesthetics is not the only criteria that must be used if the process is to be based on the scientific method.

**Total Phosphorus (TP) Standard**--It is requested that an instream numeric standard on total phosphorus be adopted that is less than 0.040 mg/L to limit algal growth to restore the aesthetics and, more importantly, to protect the public health for users of the water in and downstream of the Elk River Watershed. A very large number of studies, both current and over the past 40 years, shows that the likely levels of total phosphorus required for the restoration of the Elk River to a water quality that is manageable will be between 0.020 and 0.040 mg/L. A standard of 0.040 mg/L would allow a sizable improvement in the water quality, bring control of the long neglected point sources of TP and allow time to more carefully determine how much lower the TP will need to be to provide the required control of the health risk to the public. Several publications and studies are highlighted in the following list that support the limiting of the TP to a level below 0.040 mg/L:

- Modeling results from more than 200 studies worldwide show that levels of TP required for control of algal blooms is 0.035 mg/L. (1) Additional modeling results updating those reported in the above reference indicate that a level of TP required for control of algal blooms is 0.030 mg/L. (2)
- The recent summary report on the Eucha/Spavinaw Watershed recommended returning the loading of TP to manageable levels for a source of drinking water. The recommended TP concentration for Eucha was 0.021 mg/L and for Spavinaw was 0.014 mg/L. This level of TP would control Spavinaw to a lower eutrophic-upper mesotrophic status. (3)
- Measured results in the Clark Fork River showed that the level of TP where the growth of algae was controlled was 0.0205 mg/L. (1)
- Measurements reported from Europe, Canada and the United States show that the TP levels required for the control of cyanobacteria is within the range of 0.020 to 0.040 mg/L. (4, 5) Algal toxins are well documented to cause a wide range of health risks to users of the waters, both for recreation and as a source of drinking water. (4, 6) In addition some organic compounds produced by algae form carcinogens in the water treatment process. (7)
- The results from the restoration of many lakes to acceptable water quality show TP levels needed to maintain control of algal blooms is 0.015 to 0.020 mg/L. (7) It should be noted that the eutrophication scale for streams is less well developed than that for lakes and reservoirs, but the available information shows that they closely track each other.

**Point Source Regulations**--The point sources are the major contributor of the nutrient pollution in the Elk River Watershed. When all factors are considered-- the underreporting of the self-monitoring system (DMR), the more biologically active

condition of wastewater, the plant upsets and the unreported discharges--the contribution of the point sources is estimated to account for approximately 80% of the total phosphorus loading in the watershed. At the current time there is no limit on total phosphorus in the NPDES permits for the wastewater treatment facilities in the Watershed. Highly efficient treatment systems are available and have been well demonstrated for more than two decades that can essentially eliminate the phosphorus discharge from wastewater. (9) One of the reported systems meets a permit limit of a weekly average on TP of 0.1 mg/L and has reported a yearly average performance where the discharge averaged below 0.030 mg/L. Clearly the technology is available and the operation of such systems is well documented. The implementation of a limit on discharge of total phosphorus is long overdue to protect the waters in the Elk River Basin. Because of the impact of the increased loading from the larger treatment plants, the regulation of the discharge concentration of total phosphorus should be less for the larger plants and allowed to be higher for the smaller plants. The following table, adopted from the Eucha/Spavinaw Study (3) shows our recommendation for the point sources:

**TABLE I**

Design Flow for Treatment Facility effective in 2002, (gallon per day)	Maximum limit on monthly average concentration of total phosphorus, (mg/L)
Less than 50,000	1.0
50,000 to 500,000	0.5
Greater than 500,000	0.2

In addition to the limit on the concentration on total phosphorus, a load limit must also be a part of the NPDES permit. The load limit would be determined as follows:

Daily load limit for facility, pounds of total phosphorus per day = (monthly average concentration, mg/L) \* (8.33) \* (design flow applicable for 2002, million gallon per day)

For example, a facility with a design flow of 1.5 million gallon per day in the year 2002 would have a daily load limit specified in their NPDES permit of:

$$\text{Daily load limit, \#/day} = (0.2) * (8.33) * (1.5) = \sim 2.5\#/day$$

By using the design flow effective for 2002 this method will prevent facilities from requesting increases in design flow to avoid meeting the intent of the regulation to essentially eliminate the impact of wastewater treatment discharges from being the number one cause of the nutrient impairment of the Elk River.

Because plant upsets, both reported and unreported, are large contributors to the nutrient loading, it is recommended that a Management System be adopted in each of the treatment facilities. Management Systems have been developed over more than 3 decades that have proven effective at eliminating the environmental impact of upsets. The original system was developed by the DuPont Company as a profit based system to decrease the high cost of industrial accidents. The original system has been adopted and adapted to a

broader need in the environmental and safety arena. The basis of the system is that all upsets or accidents are preventable. They are caused by work practices and attitudes that can be changed by implementing a management system that detects flawed practices by identifying every-day events that could lead to an upset and then correcting those practices. Each upset is not an isolated event, but is associated with tens or even hundreds of related events that are the result of flawed work practices that just did not advance to the magnitude of a full-blown upset. By identifying such events and taking the appropriate actions, all upsets can be avoided. A good documentation of the Management System is presented in EPA 744-R-00-011. In companies and facilities where such systems have been fully implemented, the result is a positive contribution to the bottom line by avoiding the high cost to remedy the impact of upsets.

Implement a monitoring system in at least two of the larger wastewater facilities to continuously monitor the total phosphorus concentration. Such a system has been reported as very helpful in the rapid progress made by the city of Rogers, Arkansas in achieving a discharge performance of 0.2 mg/L in TP. It is recommended that one of the monitoring systems be placed in a large publicly operated plant and the second system be placed in a large privately operated facility. Each system should be a required part of the DMR for that facility and a matter of public record to help restore the confidence in the self-monitoring system currently in operation. An additional benefit of the monitoring system would be to document the actual loading of total phosphorus and allow correlations to be developed to determine loading from the sparse data set normally reported in the DMRs. It is a common myth that wastewater discharges are the contributors to low flow loading and that runoff is the major contributor at high flow. We have repeatedly seen wastewater ponds rapidly depleted during summer high flow events.

We request that the Tyson treatment plant at Noel be selected as one of the continuously monitored facilities because of its high loading of TP in the past and the repeated upsets that have been reported. Such continuous monitoring would be a great benefit to rapidly bring the facility into a high level of performance. This is likely a very significant single, specific action that can be taken with respect to a treatment facility that will directly benefit the improvement of the water quality in the Elk River.

**Bacterial Pollution**--It is requested that bacterial pollution be added to the nutrient pollution in the TMDL. High levels of nutrients act as a facilitator for the extended survival and even growth of bacteria introduced into the surface waters. The data collected for the Elk River at the Highway 43 bridge and reported in the 2002 Beneficial Use Monitoring Program by the Oklahoma Water Resources Board (10) show that the beneficial use of primary body contact--recreation was not supported because of high levels of enterococci.

In studying the bacteriological characteristics of other streams in the area, we find that the standard of 33cfu/100ml for enterococci is often violated even when the fecal coliform is below 200cfu/100ml and E. coli is below 128cfu/100ml. Therefore, since the foundation studies of Dufour (11) show that swimming related illness is directly correlated both with the levels of E. coli and enterococci, we request that the enterococci

standard be adopted as the bacterial standard for the Elk River Watershed. The adoption of this standard would be more protective for recreational users of the waters. Since part of the studies of Dufour was conducted at Keystone Lake near Tulsa, it is evident that the findings should be applicable to waters in this general vicinity.

**Nonpoint Sources**--The contribution of the nonpoint sources to the nutrient pollution of the Elk River Watershed is much less than the contribution of the point sources. Even so, we believe a focused program should be initiated to locate and address the larger potential nonpoint sources. We believe that an excellent way to focus the effort would be to use one of the computer programs that is available to identify sites that have high potential to contribute and then to adopt practices to control the actual contribution of TP from such sites. The critical steps to successful implementation of this program are:

- Identify and adopt a robust and well-defined computer model that accounts for the important features of the Elk River Watershed. One such model (The Soil and Water Assessment Tool) is reported to have been used in the Eucha/Spavinaw Study (3) (reported by Storm, etal, referenced in that study).
- Carefully develop the required input data such as hydrologic characteristics, land use practices, soil test phosphorus and etc.
- Calibrate the model to the Elk River Watershed characteristics that are unique and significant for identifying high potential contributing sites.
- Validate the results of the model by statistically selecting a representative number of individual sites for detailed analysis and onsite verification of the potential.

When the high potential sites have been identified that possess both a source of phosphorus and a transport capability, then use well-recognized practices to control the actual contribution of total phosphorus to the surface waters. (12,13)

**Correction to Information Sheet**--The information in the sheet and the presentations made to the public attempts to perpetuate the erroneous information that the source of the nutrient pollution is nonpoint. Such false information severely damages the public trust and confidence that is required for the Department of Natural Resources to successfully conduct its mission as delegated by the EPA. Urgent action is needed to again restore the public trust. We find this conduct unacceptable and unprofessional.

## **REFERENCES**--

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- 11-- Dufour, Alfred P., Health Effects Criteria for Fresh Recreational Waters, EPA-600/1-84-004, August 1984
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## Elk River near Tiff City, Missouri

Station AT189000 (121600030440-001AT) is a permanent ambient trend monitoring station located on the Elk River in Missouri. Situated in the west central portion of McDonald county, the site was established south-southeast of the town of Tiff City on Missouri SH 43. The station is positioned near the midpoint of stream segment 121600030440 and is classified within the Elk River 8 digit HUC watershed (11070208). Water enters the stream system from several tributaries including the Buffalo Creek, among others.



This station on the Elk River has been active for all water quality variables since May of 1999. The following assessment of beneficial uses is based on data collected from May of 1999 through September of 2003. For purposes of reporting, this station is representative of the Elk River from its entrance into Oklahoma near Tiff City, Missouri (94.2950, 36.5510) downstream to confluence of the Elk River with Grand Lake (94.6177, 36.6250). As per Appendix A, Table 1 of OAC 785:45, this water quality management segment is assigned the following designated beneficial uses: 1) Public and Private Water Supply (PPWS), 2) Cool Water Aquatic Community—Fish and Wildlife Propagation (CWAC), 3) Agriculture—Class I Irrigation (AG), and 4) Primary Body Contact—Recreation (PBCR).

The PPWS beneficial use is supported. The CWAC beneficial use is supported. Dissolved oxygen (a), pH (b), turbidity (c), and toxicants met the criteria prescribed in the CWAC beneficial use. The AG beneficial use is supported for total dissolved solids (TDS), chlorides, and sulfates (d and e). Although 16% of the TDS concentrations exceeded the sample standard of 206.0 mg/L, the values are below the minimum standard of 750 mg/L. The PBCR beneficial use is not supported (). Of the twenty-seven (27) enterococci concentrations, three (3) samples exceeded the prescribed screening level of 406 cfu/mL, and the geometric mean (50.1 cfu/mL) exceeded the prescribed mean standard of 33 cfu/mL. This segment of the Neosho River is not nutrient-threatened. The total phosphorus and nitrate/nitrite median values were below the threshold medians of 0.36 mg/L and 5.0 mg/L, respectively (f).

**Table 1.** Exceedances of fecal coliform, enterococci, and *E. coli* screening limits in HUC 1107. Only values leading to a determination of not supporting for the Public and Private Water Supply and the Primary Body Contact Recreation beneficial uses are included.

STATION #	STATION NAME	DATE	Fecal Coliform (cfu/mL)	Enterococci (cfu/mL)	<i>E. coli</i> (cfu/mL)
AT178050	BIRD CREEK, SH 266, PORT OF CATOOSA	06/22/1999	760	470	700
		07/27/1999	2800		
		09/28/1999	1000	4700	2613
		06/28/2000	690		583
		08/02/2000	1200		
		09/27/2000	2100	900	428
		05/07/2001		31000	766
AT175500	CANEY RIVER, OFF US 75, RAMONA	06/04/2001		800	
		06/22/1999	1789	470	
		09/28/1999		1100	
		06/28/2000	530		
		08/02/2000	2000		
AT189000	ELK RIVER, SH 43, TIFF CITY (MO)	09/10/2001	2200		
		05/24/2000		440	
		06/28/2000		1100	
AT189090	HONEY CREEK, OFF SH 25, GROVE	06/05/2001		1300	
		06/28/2000		1090	
AT176000	VERDIGRIS RIVER, SH 20, KEETONVILLE	08/07/2001		600	
		09/28/1999		630	
		06/28/2000		2000	
AT171000	VERDIGRIS RIVER, SH 10, LENEPAH	06/04/2001		430	
		06/22/1999		430	
		09/28/1999		900	
		05/07/2001		7000	
AT178900	VERDIGRIS RIVER, SH 51, WAGONER	09/26/2001		500	
		07/31/2000	500		
		09/28/2000	7000		
		05/30/2001	700		

STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

Bob Holden, Governor • Stephen M. Mahfood, Director

[www.dnr.state.mo.us](http://www.dnr.state.mo.us)

January 30, 2004

Mr. Riley Needham, President  
Concerned Citizens for Green Country Conservation  
32700 South 660 Road  
Grove, OK 74344

Dear Mr. Needham:

Thank you for your comments on the Elk River Total Maximum Daily Load (TMDL) document. Staff in the Missouri Department of Natural Resources have reviewed and carefully considered your comments, and we wish to share our responses to those comments with you.

**Item 1 - Total Phosphorus Standard**

I understand your suggestion and rationale for suggesting a limit of 0.04 mg/L phosphorus in the Elk River Basin. I want to assure you that my staff carefully considered the appropriate target for the TMDL and worked closely with the Environmental Protection Agency (EPA) in developing the proposed target. In doing so, we took into account the limit established by Oklahoma for scenic rivers in its state. As you know, the concern in the Elk River is a violation of the general criteria relative to algae. The information available to us indicates that prior to 1985, nuisance algae were not a problem in this watershed, so it is reasonable to conclude that the level of nutrient loading prior to 1985 will be protective of the resource today. Statistical analysis of the data from the Elk River indicates increased nutrient loading began in 1985 and coincided with the growth of human population as well as the poultry industry in the area. Prior to 1985, the average total phosphorus (TP) concentration in the Elk River at Tiff City, Missouri, which is near the Oklahoma state line, was 0.06 mg/L.

Please keep in mind that the Elk River TMDL target is specific to this watershed. We believe it is most appropriate to apply a target specific to the watershed when that can be done. Further discussion of how the nutrient target was set is available in the Elk River TMDL document itself, which is available on the department's web site: <http://www.dnr.mo.gov/wpscd/wpcp/tmdl/wpc-tmdl-draft.htm>.

The State of Missouri is developing a plan for development of water quality standards for nutrients. Information is scheduled to be available to the public in the fall of 2004. Initially, standards will be developed for lakes and reservoirs, followed by standards for rivers and



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streams. Until that time, the target established by the TMDL provides assurance that progress will be made on remediating the nutrient impairments in the Elk River watershed, prior to the promulgation of numeric criteria.

### **Item 2 – Point Source Regulations**

- a) The effluent limit is expressed as a concentration to comply with Missouri's Water Quality Standards; however, every wastewater treatment facility must operate within its design flow. Consequently, the facility is discharging with a pre-determined load (load = concentration x flow x conversion factor). In addition, it is more efficient to sample concentration rather than to calculate a daily load. We are unaware of any scientific basis for assigning a different total phosphorus limit for different sized discharges as you suggest, but would appreciate receiving copies of any published research or studies supporting such an approach.

Your concern that facilities will request higher design flows to avoid nutrient limits is addressed by the point source implementation plan in the TMDL document which specifies that any facility that requests a design flow greater than 22,500 gallons/day will have nutrient limits included in their permit. The TMDL document also states that facilities with design flows below that level may also receive permit limits if they have a high nutrient concentration in their effluent.

- b) I appreciate your suggestion that Environmental Management Systems (EMS) be in place at all wastewater facilities in the basin. The department currently offers a voluntary program to encourage any business or facility to develop and use an EMS. We will forward your suggestion to the staff who implement that program.
- c) Your suggestion of continuous monitoring of phosphorus for certain discharges was carefully evaluated. My staff and I are not aware of any technology that would allow for accurate, continuous monitoring that also meets EPA-accepted methods for analyzing total phosphorus. My staff contacted Arkansas Division of Environmental Quality (DEQ) to request information on how Rogers is monitoring at their facility. Staff at Arkansas DEQ were unfamiliar with the continuous monitoring issue and stated it is not a requirement in their permit. The monitoring required by the permit essentially is the same method and frequency as would be required by the State of Missouri. They were also unaware of a valid method for doing continuous monitoring of total phosphorus. Again, we would welcome copies of any published sources of information regarding this issue.

### **Item 3 – Add bacterial pollution to the Elk River TMDL**

I appreciate your comments regarding bacterial pollution in the Elk River watershed. I anticipate that revisions to Missouri's Water Quality Standards will be proposed this year and will include a proposal to use *E. coli* rather than fecal coliform as the indicator organism for the state's bacterial standard. As a matter of procedure, please understand that any change to the state's water quality standards must be done through the state's administrative rulemaking process. We cannot make use of another state's standards to evaluate water quality in Missouri. Evaluation

Mr. Riley Needham

Page 3

based on Missouri's water quality standards have not identified a bacterial impairment of these streams. However, because these waters are designated for whole body contact recreation, wastewater facilities in Missouri currently must meet bacterial limits in their effluent discharges to these waters.

**Item 4 – Nonpoint Sources**

As you no doubt observed, the TMDL document addresses nonpoint sources as well as point sources just as you suggest. While we are working toward quantification of nutrient loads from nonpoint sources and reductions in those loads, our primary focus is on encouraging the implementation of practices that are known to protect water quality. The department has directed substantial grant funding to the watershed in recent years to help provide education, demonstration and cost-share for implementation of practices to address nonpoint source pollution. The department is currently working with a model called STEP-L to quantify reductions in pollutant loads from these efforts.

**Item 5 - Correction to Information Sheet**

The information sheets you mention were developed to help citizens understand impaired waters and 303(d) listings. They were based on Missouri's 1998 303(d) list. At the time of that listing, the impairment source for the Elk River was identified as nonpoint source runoff from livestock production. On the 2002 Missouri 303(d) list, which was released by EPA just a few weeks ago, the source was changed to livestock production. As data was collected and analyzed in the TMDL process, it became apparent that nonpoint sources were not the only concern. However, I disagree that this general information document should be revised and mailed out as you direct. We will revise the Elk River Information Sheet when the Elk River TMDL document is approved to incorporate that information and will post it, as we do all such information sheets, on the department's web site. I also want to point out that EPA does not solicit additional public comment on final TMDL documents. If a serious error were identified, EPA would work with department staff to correct it. They are not, however, required to consider or respond to any comments submitted after the state public notice.

Again, thank you for taking the time to comment. Your participation in the TMDL process and concern for water resources is appreciated. If you have other questions, please contact Gail Wilson of the Water Quality Monitoring and Assessment Section at (573) 751-7428 or at Missouri Department of Natural Resources, Water Protection Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM



Becky L. Shannon, Chief  
Watershed Protection Section

BLS:gwd

c: Jim Penfold, Environmental Assistance Office, Missouri Department of Natural Resources

1 January 2004

**RECEIVED**

**JAN 05 2004**

**WPCP**

Department of Natural Resources  
WPCP, Planning Section  
P.O. Box 176  
Jefferson City, Mo. 65102-0176

Attention: Sharon Clifford

I live on the Elk River and would like to ask that the Phosphorus level at the Tiff City Bridge on highway 43 be .037 mg/l which would be consistent with that accepted for scenic rivers.

Health reasons are a major concern for those of us who swim, or boat on the Elk River. Also, because the water supply is from Grand Lake.

The impairment of the Elk River is based on exceedence of the general criteria contained in Missouri Water Quality Standards. "Water shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses".

The most important aspect of establishing a reasonable TMDL for the Elk River Basin (.037mg/l), in my opinion, should be the concern for public health risks. Hence, the objective should be to set a standard that will allow the water of the Elk River to be used as a source for drinking water and for "whole body contact recreation" without associated health concerns.

Sincerely,



Cheryl Johnson  
66400 E 255 Rd  
Grove, OK 74344

STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

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January 27, 2004

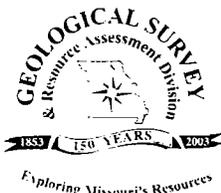
Ms. Cheryl L. Johnson  
66400 East 255 Road  
Grove, OK 74344-6143

Dear Ms. Johnson:

Thank you for your comments on the Elk River Total Maximum Daily Load (TMDL) document. Staff here in the Missouri Department of Natural Resources have reviewed and carefully considered your comments, and we wish to share our responses to those comments with you.

I appreciate your suggestion that we establish a limit of .037 mg/L phosphorus at Tiff City, Missouri. I want to assure you that my staff carefully considered the appropriate target for the TMDL and worked closely with the Environmental Protection Agency (EPA) in developing the proposed target. In doing so, we did take into account the fact that Oklahoma has established this limit for scenic rivers in its state. However, the concern in the Elk River is a violation of the general criteria relative to algae. The information available to us indicates that prior to 1985, nuisance algae were not a problem in this watershed, so it is reasonable to conclude that the level of nutrient loading prior to 1985 will be protective of the resource today. Statistical analysis of the data from the Elk River indicates increased nutrient loading began in 1985 and coincided with the growth of human population as well as the poultry industry in the area. Prior to 1985, the average total phosphorus (TP) concentration in the Elk River at Tiff City was 0.06 mg/L. Further discussion of how the nutrient target was set is available in the Elk River TMDL document itself which is available on the department's web site:  
<http://www.dnr.state.mo.us/wpscd/wpcp/wpc-tmdl.htm>.

I also appreciate your comments regarding your desire to protect the waters in this basin for drinking water and whole body contact recreation. Please keep in mind that these waters are not designated in the state's regulation to be used as drinking water sources; therefore, we cannot apply drinking water standards to them. While these waters are designated for whole body contact recreation use, we have not identified a bacterial problem in these waters so the TMDL document cannot address that issue.



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Ms. Cheryl L. Johnson  
Page 2

The Elk River TMDL document is a phased TMDL, using an adaptive management approach. This means we set a target based on available data, then implement actions to ensure the target is met and continue to collect data. If the data indicates the initial target is not protective, the target will be lowered. This approach allows progress to be made on fixing the impairment, rather than waiting to collect large amounts of data over a long period of time to develop an even more accurate target. As I've mentioned, however, we believe existing data supports the target established in the current TMDL document.

Again, thank you for commenting. Your participation in the TMDL process and concern for water resources is appreciated. If you have other questions, please contact Gail Wilson of the Water Quality Monitoring and Assessment Section at (573) 751-7428 or at Missouri Department of Natural Resources, Water Protection Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM

A handwritten signature in black ink, appearing to read "Becky L. Shannon". The signature is fluid and cursive, with a long horizontal stroke at the end.

Becky L. Shannon, Chief  
Watershed Protection Section

BLS:gwd

## Elk River Basin TMDL - Comments

RECEIVED  
JAN 06 2004  
WPCP

**I live on the Elk River and recommend that the same standard as Oklahoma has established for their scenic rivers of .037mg/l be established for the Elk River Basin TMDL for the following reasons:**

The EPA water quality criteria states that phosphates should not exceed .05 mg/l if streams discharge into lakes or reservoirs, .025 mg/l within a lake or reservoir, and .1 mg/l in streams or flowing waters not discharging into lakes or reservoirs to control algal growth (USEPA, 1986). **Surface waters that are maintained at .01 to .03 mg/l of total phosphorus tend to remain uncontaminated by algal blooms.**

The impairment of the Elk River is based on exceedence of the general criteria contained in Missouri Water Quality Standards.

**“Water shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses”.**

The most important aspect of establishing a reasonable TMDL for the Elk River Basin (**.037mg/l**), in my opinion, should be the concern for public health risks. **With this being a primary focus, the objective should be to set a standard that will allow the water of Elk River to be used as a source for drinking water and for “whole body contact recreation” without associated health risks.**

Health Effects: Phosphate levels greater than 1.0 may interfere with coagulation (the process by which a liquid changes into a semisolid mass) in water treatment plants. As a result, organic particles that harbor microorganisms may not be completely removed before distribution. (See <http://www.chemsoc.org/exemplarchem/entries/2001/duncan/page-3.htm>)

Also consider future growth issues. As the population in the Elk River Basin and chicken processing operations continue to expand, **it will be even harder to set a lower standard if we don't do it now. This is an opportune time to establish a health conscious level that can be achieved within a reasonable phased timeframe using new technology and new approaches.**

As an example of how new approaches can make a difference. Rogers Arkansas has achieved a level of .23mg/l since implementing their new online monitoring system. (According to Mike Lawrence, Manager of the Rogers Pollution Control Facility.)

“With this online analyzer, we can see instantly what’s happening. The automated system uses a paging system that automatically warns the plant staff if levels of a particular pollutant is too high. If you know you have phosphorus reduction as a priority, and you can monitor it continuously, you can respond to problems much better.”

If this approach or others that work can be applied to those in the Elk River Basin, than a standard that is similar to the scenic river standard set by Oklahoma, is achievable in a phased approach.

In the latest Arkansas/Oklahoma tentative agreement, it is my understanding that they are given a phased approach until 2012 to achieve the target phosphorus levels for the Illinois River. The first target is to achieve 1.0 mg/l for each of the cities.

Fayetteville already complies, Springdale has until 2007, but

for the last two months has had an average under that of .06mg/l.

Rogers is also below that level at this time and Siloam Springs has until 2009.

*David Forrester*

*12/30/03*

**David Forrester**  
**66240 E. 253rd**  
**Grove, Ok. 74344**

STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

Bob Holden, Governor • Stephen M. Mahfood, Director

[www.dnr.state.mo.us](http://www.dnr.state.mo.us)

January 27, 2004

Mr. David Forrester  
66240 East 253<sup>rd</sup>  
Grove, OK 74344

Dear Mr. Forrester:

Thank you for your comments on the Elk River Total Maximum Daily Load (TMDL) document. Staff in the Missouri Department of Natural Resources have reviewed and carefully considered your comments, and we wish to share our responses to those comments with you.

I understand your suggestion and rationale for suggesting a limit of .037 mg/L phosphorus in the Elk River Basin. I want to assure you that my staff carefully considered the appropriate target for the TMDL and worked closely with the Environmental Protection Agency (EPA) in developing the proposed target. In doing so, we did take into account the fact that Oklahoma has established this limit for scenic rivers in its state. However, as you noted in your comments, the concern in the Elk River is a violation of the general criteria relative to algae. The information available to us indicates that prior to 1985, nuisance algae were not a problem in this watershed, so it is reasonable to conclude that the level of nutrient loading prior to 1985 will be protective of the resource today. Statistical analysis of the data from the Elk River indicates increased nutrient loading began in 1985 and coincided with the growth of human population as well as the poultry industry in the area. Prior to 1985, the average total phosphorus (TP) concentration in the Elk River at Tiff City, Missouri, which is near the Oklahoma state line, was 0.06 mg/L.

Please keep in mind that the EPA documents you cite are very general; the Elk River TMDL target is specific to this watershed. We believe it is most appropriate to apply a target specific to the watershed when that can be done. Further discussion of how the nutrient target was set is available in the Elk River TMDL document itself, which is available on the department's web site: <http://www.dnr.state.mo.us/wpscd/wpcp/wpc-tmdl.htm>.



*Integrity and excellence in everything we do*



Mr. David Forrester

Page 2

I also appreciate your comments regarding your desire to protect the waters in this basin for drinking water and whole body contact recreation. Please keep in mind that these waters are not designated in the state's regulation to be used as drinking water sources; therefore, we cannot apply drinking water standards to them. While these waters are protected for whole body contact recreation, we have not identified a bacterial problem in these waters so the TMDL document cannot address that issue.

The Elk River TMDL document is a phased TMDL, using an adaptive management approach. This means we set a target based on available data, then implement actions to ensure the target is met and continue to collect data. If the data indicates the initial target is not protective, the target will be lowered. This approach allows progress to be made on fixing the impairment, rather than waiting to collect large amounts of data over a long period of time to develop an even more accurate target. We understand your concern regarding challenges in lowering the target at a later date; however, the department will take this action if the scientific data supports such a change. As I've mentioned, however, we believe existing data supports the target established in the current TMDL document.

Again, thank you for commenting. Your participation in the TMDL process and concern for water resources is appreciated. If you have other questions, please contact Gail Wilson of the Water Quality Monitoring and Assessment Section at (573) 751-7428 or at Missouri Department of Natural Resources, Water Protection Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM



Becky L. Shannon, Chief  
Watershed Protection Section

BLS:gwd

RECEIVED

JAN 08 2004

January 5, 2004

WPCP

Due to the arrival of your letter during an extended vacation during the holidays I have missed your deadline of 1/04/04. I hope you will at least read the enclosed articles and consider that the poultry and cattle industry is actually in decline in the Big Sugar watershed however the canoe and camping industry is not. I understand that limiting the recreational use of this river system would be unpopular with many people who are only interested in votes or dollars, but in my opinion until someone is willing to attack the real problem the river quality will continue to decline.



Doyle Herrin  
858 Dead End Lane  
Pineville, MO. 64856

417-223-4973

Letter To The Editor

Dear Sir;

In 1975 we had a riffle on Big Sugar Creek where it flowed through our farm. Hundreds of fresh water mussels thrived here as well as an abundance of crawdads throughout the stream. The river gravel on the bottom was bright and clean. Since shellfish are early victims of polluted water, we have had no mussels for many years and my wife and I located two crawdads in a twenty minute search on a recent weekend. Each and every piece of rock on the river bottom is algae coated. The Environmental Protection Agency reports the source is largely chicken litter and nearby cattle farms. Those of you who lived here in 1975 will no doubt remember that we had large numbers of both poultry and cattle with absolutely no controls regulating waste disposal, yet, to use a tired old word from the past our streams were "PRISTINE".

No doubt something has changed. It is my opinion that the major factor is a very large increase in the amount of human waste deposited in this watershed. Our resident population increases constantly and probably will continue to do so. Approximately seventy-two percent of our county population live outside our small towns and use septic systems. The other twenty-eight percent live in town using both treatment plants and septic systems. Both methods are plagued with problems which often result in discharge that is undesirable to say the least and due to the law of gravity ends up in one of our streams.

The other more important change, in my opinion is the ever increasing number of people who use these streams for recreation during the summer months when the water temperature is higher and the water flow is lower. I have seen estimates of seven to twenty thousand for the number of people who may be on our river system on any given weekend, all depositing their waste in either campgrounds that have septic systems constructed near the river bank or, from my observation directly on the gravel bars as they travel downstream. Some effort has been made to partially address this problem with Porta-Potties which if placed near enough to the stream to generate much use are subject to flood. I already have one on my property and my neighbor has another brought by high water, crushed, but no doubt well flushed.

Please consider this- If every resident of Anderson, Goodman, Southwest City, Noel and Lanagan were invited to come to the creeks some weekend to do their bathroom stuff that would be a total of 6142 people according to the 2000 census. Whoever invited them would likely be lynched on the Pineville square.

I can't claim having an answer but I can easily predict an outcome. If the addition of campgrounds and canoe traffic continues to increase unrestricted we are going to see these once beautiful streams become even more of an open sewer than they are today. When it gets bad enough it will not only reduce the people who would like to live here but also reduce the camping/canoeing pressure so maybe the solution is to just sit back and let the rivers die a quiet death. We will all be proud!

Do I hear the Goose That Laid The Golden Egg calling?

Doyle Herrin  
858 Deadend Road  
Pineville, MO. 64856  
417-223-4973  
spikes@olemac.net

Roadside Review is a quarterly newsletter published by the Public Information and Outreach, and Maintenance units of the Missouri Department of Transportation. It is mailed to Adopt-A-Highway volunteers and other interested groups to keep them informed about the program.

After reading, please share this newsletter with others. Additional copies are available upon request.

If you have any comments or questions, please contact:

**Communications**

Missouri Department of Transportation  
105 W. Capitol Ave.  
Jefferson City, MO 65102

Rich Hood, Director of Communications  
Kathy White, Public Information and Outreach Director

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State Adopt-A-Highway Coordinator  
Melissa Black  
Outreach Coordinator

Missouri Highways and Transportation Commission  
W. L. (Barry) Orscheln, Chairman  
Ollie W. Gates, Vice Chairman  
James B. Anderson  
William P. McKenna  
Duane S. Michie  
Marge Schramm  
Henry Hungerbeeler  
MoDOT Director

For more information about the Adopt-A-Highway program:

**1-888 ASK MODOT**  
[aah@mail.modot.state.mo.us](mailto:aah@mail.modot.state.mo.us)  
[www.modot.org](http://www.modot.org)

 This newsletter was printed on recycled paper to help preserve our environment.



**Roadside Review**  
Missouri Department of Transportation  
P.O. Box 270  
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Jefferson City, MO 65102

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**MR. DOYLE HERRIN  
HERRIN, MR. DOYLE  
858 DEAD END RD  
PINEVILLE MO 64856-8303**

## TALKIN' TRASH

### Roadsides Can Be Doggone Dirty

Not all harmful litter is attributed to people – according to a recent survey, improperly disposed of pet waste can affect an area's water quality. And while the pets may leave it in your yard or others, it's up to pet owners to dispose of it properly.

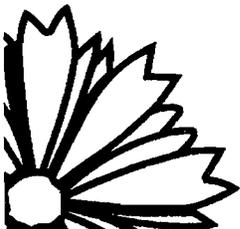
As part of its ongoing water-quality campaign, the Mid America Regional Council and local government partners are educating citizens on how pet waste affects the quality of water in streams, rivers and lakes when not disposed of properly. The campaign is part of the larger good neighbors care about clean water initiative that targets household behaviors and their effects on water quality.

A recent U.S. Geological Survey study of streams and creeks in the Kansas City area showed that bacteria associated with pet waste was the source of approximately one-quarter of the bacteria in samples collected from local waterways. Every time it rains, the potential exists for thousands of pounds of pet waste to wash down storm drains and into streams, rivers and lakes. If not disposed

of properly, pet waste flows directly into nearby waterways without being treated at wastewater treatment facilities. Pet waste should never enter storm drains or surface water.

And it's not only when your dog leaves his waste in the neighbor's yard – waste left in your yard should be handled properly as well. Many local communities require pet owners to pick up after pets when away from their property, and to pick up waste from their property if it attracts flies and can pose a health risk. Pet waste can be disposed of in the trash, though the bag should be carefully sealed. So, next time you're taking your dog for a walk, don't forget the plastic bag. ■

Source: [www.marc.org](http://www.marc.org)



# LEAD Agency, Inc.

## GRAND RIVERKEEPER®

19257 S. 4403 Dr. Vinita, OK 74301

(918) 256-5269 [ehatley@neok.com](mailto:ehatley@neok.com) [www.leadagency.org](http://www.leadagency.org)

RECEIVED

JAN 06 2004

WPCP

December 28, 2003

Water Pollution Control Program  
Missouri Department of Natural Resources

This letter is in response to a comment period regarding phosphorus standard for a TMDL assessment for the Elk River Basin. I am the Grand Riverkeeper for the upper Grand River Watershed. This area includes Grand Lake O' the Cherokees and its tributaries, including Elk River. The Grand Riverkeeper program is a project of LEAD Agency, Inc (Local Environmental Action Demanded), a non-profit citizens group and the Waterkeepers Alliance, a non-profit national organization.

I, and my organization, are concerned about the standards set within the watershed and possible impacts to the environment and public health of the area. Oklahoma has set a phosphorus standard in high quality streams to .035 mg/l. This standard will soon be approved by the EPA. The EPA water quality criteria states that phosphates should not exceed .05 mg/l if streams discharge into lakes or reservoirs, .025 mg/l within a lake or reservoir, and .1 mg/l in streams or flowing waters not discharging into lakes or reservoirs to control algal growth (USEPA, 1986). Surface waters that are maintained at .01 to .03 mg/l of total phosphorus tend to remain uncontaminated by algal blooms.

Currently, 16 segments of the upper Grand River watershed are on Oklahoma's 303(d) list of impaired streams. The impairment of Elk River, in Missouri is based on exceedence of the general criteria contained in the Missouri Water Quality Standards:

“Water shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.”

Nutrients and bacteria are two of the primary causes of impairments to the streams feeding Grand Lake in Oklahoma. Elk River is one of those streams contributing to the problem. Elk River should be protected and maintained for the important uses of drinking water and whole body contact recreation. I have observed the algal blooms, over time, in the Elk River and watch the bottom become covered with bottom deposits. A lot of the time, the bottom cannot be seen any more.

LEAD Agency/MDNR  
12-28-03  
Page 2

We know that Arkansas towns are having success with reaching the phosphorus standards we recommend. Rogers, Fayetteville and Springdale are already achieving the Oklahoma standard. LEAD Agency recommends that Missouri adopt a phosphorus standard that will insure the health of Elk River and all streams, and that you adopt a standard compatible with Oklahoma's standard.

Thank you for your consideration of this comment. If I can be of further assistance, please do not hesitate to contact me.

Sincerely,



Earl L. Hatley  
Grand Riverkeeper  
Lead Agency, Inc.

STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

Bob Holden, Governor • Stephen M. Mahfood, Director

[www.dnr.state.mo.us](http://www.dnr.state.mo.us)

January 27, 2004

Mr. Earl L. Hatley  
19257 South 4403 Drive  
Vinita, OK 74301

Dear Mr. Hatley:

Thank you for your comments on the Elk River Total Maximum Daily Load (TMDL) document. Staff here in the Missouri Department of Natural Resources have reviewed and carefully considered your comments, and we wish to share our responses to those comments with you.

I understand your suggestion and rationale for suggesting the Elk River TMDL use the same phosphorus limit established in Oklahoma for scenic rivers. I want to assure you that my staff carefully considered the appropriate target for the TMDL and worked closely with the Environmental Protection Agency (EPA) in developing the proposed target. In doing so, we did take into account the limit established by Oklahoma for scenic rivers in that state. However, as you noted in your comments, the concern in the Elk River is a violation of the general criteria relative to algae. The information available to us indicates that prior to 1985, nuisance algae were not a problem in this watershed, so it is reasonable to conclude that the level of nutrient loading prior to 1985 will be protective of the resource today. Statistical analysis of the data from the Elk River indicates increased nutrient loading began in 1985 and coincided with the growth of human population as well as the poultry industry in the area. Prior to 1985, the average total phosphorus (TP) concentration in the Elk River at Tiff City, Missouri, which is near the Oklahoma state line, was 0.06 mg/L.

Please keep in mind that the EPA documents you cite are very general; the Elk River TMDL target is specific to this watershed. We believe it is most appropriate to apply a target specific to the watershed when that can be done. Further discussion of how the nutrient target was set is available in the Elk River TMDL document. The document is available on the department's web site: <http://www.dnr.state.mo.us/wpscd/wpcp/wpc-tmdl.htm>.



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Mr. Earl L. Hatley

Page 2

The Elk River TMDL document is a phased TMDL, using an adaptive management approach. This means we set a target based on available data, then implement actions to ensure the target is met and continue to collect data. If the data indicates the initial target is not protective, the target will be lowered. This approach allows progress to be made on fixing the impairment, rather than waiting to collect large amounts of data over a long period of time to develop an even more accurate target. As I've mentioned, however, we believe existing data supports the target established in the current TMDL document.

Again, thank you for commenting. Your participation in the TMDL process and concern for water resources is appreciated. If you have other questions, please contact Gail Wilson of the Water Quality Monitoring and Assessment Section at (573) 751-7428 or at Missouri Department of Natural Resources, Water Protection Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM

A handwritten signature in cursive script, appearing to read "Becky L. Shannon".

Becky L. Shannon, Chief  
Watershed Protection Section

BLS:gwd

**RECEIVED**

January 3, 2004

**JAN 05 2004**

**WPCP**

Department of Natural Resources  
WPCP, Planning Section  
P.O. Box 176  
Jefferson City, MO 65102-0176

**Re: Public Comment on Draft Elk River TMDL**

I support the comments submitted by the Concerned Citizens for Green Country Conservation regarding the Draft Elk River TMDL.

I am an individual who formerly enjoyed the natural beauty of the Elk River. In my lifetime, I have witnessed the degradation of the Elk River because of growth and land use changes in the Elk River basin.

Serious attempts must be made to control pollution from point and nonpoint sources, especially phosphorus contamination.

Establishment of a TMDL for the Elk River, which includes both a numeric limit for total phosphorus and bacterial pollution is essential if water quality and safety is desired.

In addition, greater emphasis must be placed on management of nonpoint sources of pollution and in the operation and management of public and private wastewater treatment plants in the basin.

I support the position of the Concerned Citizens for Green Country Conservation and strongly urge you to adopt a numeric limit of 0.040 mg/L total phosphorus for the Elk River.

Having been very closely involved in the establishment of a numeric limit for phosphorus for Oklahoma Scenic Rivers, I believe the 0.040 mg/L figure is both reasonable and achievable.

Sincerely,



Ed Brocksmith  
24369 E. 757 Rd.  
Tahlequah, OK 74464-1949  
(918) 456-3407

**Date: 1/03/04**

*faxed on 1/3/04 EB*

**To: Department Natural Resources  
WPCP, Planning Section  
Missouri Department of Natural Resources**

**Fax number: 573 526-5797**

**From: Ed Brocksmith  
918 456-3407  
Tahlequah, OK**

**NOTE: THIS FAX WILL BE FOLLOWED BY MAILED  
COMMENT.**

STATE OF MISSOURI      Bob Holden, Governor • Stephen M. Mahfood, Director  
**DEPARTMENT OF NATURAL RESOURCES**

---

www.dnr.state.mo.us

January 28, 2004

Mr. Ed Brocksmith  
24369 East 757 Road  
Tahlequah, OK 74464-1949

Dear Mr. Brocksmith:

Thank you for your comments on the Elk River Total Maximum Daily Load (TMDL) document. Staff here in the Missouri Department of Natural Resources have reviewed and carefully considered your comments, and we wish to share our responses to those comments with you. I particularly thank you for your interest in taking steps to protect this important resource.

I understand your suggestion and rationale for suggesting a limit of .04 mg/L phosphorus in the Elk River Basin. I want to assure you that my staff carefully considered the appropriate limit for the TMDL and worked closely with the Environmental Protection Agency (EPA) in developing the proposed limit. In doing so, we did take into account the limit established by Oklahoma for scenic rivers in its state. As you know, the concern in the Elk River is a violation of Missouri's general water quality criteria relative to algae. The information available to us indicates that prior to 1985, nuisance algae were not a problem in this watershed, so it is reasonable to conclude that the level of nutrient loading prior to 1985 will be protective of the resource today. Statistical analysis of the data from the Elk River indicates increased nutrient loading began in 1985 and coincided with the growth of human population as well as the poultry industry in the area. Prior to 1985, the average total phosphorus (TP) concentration in the Elk River at Tiff City, Missouri, which is near the Oklahoma state line, was 0.06 mg/L. We believe it is most appropriate to apply a target specific to the watershed when that can be done. Further discussion of how the nutrient target was set is available in the Elk River TMDL document itself and it is available on the department's website: <http://www.dnr.state.mo.us/wpscd/wpcp/wpc-tmdl.htm>.

Please let me also respond to your comment that there should be a numerical limit for bacterial pollution. While these waters are protected for whole body contact recreation, we have not identified a bacterial problem in these waters so the TMDL document cannot address that issue.



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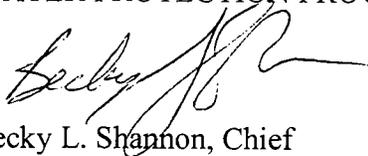
Mr. Ed Brocksmith  
Page 2

The Elk River TMDL document is a phased TMDL, using an adaptive management approach. This means we set a target based on available data, then implement actions to ensure the target is met and continue to collect data. If the data indicates the initial target is not protective, the target will be lowered. This approach allows progress to be made on fixing the impairment, rather than waiting to collect large amounts of data over a long period of time to develop the most accurate target possible. As I've mentioned, however, we believe existing data supports the target established in the current TMDL document.

Again, thank you for commenting. Your participation in the TMDL process and concern for water resources is appreciated. If you have other questions, please contact Gail Wilson of the Water Quality Monitoring & Assessment Section at (573) 751-7428 or at Missouri Department of Natural Resources, Water Protection Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM

A handwritten signature in black ink, appearing to read "Becky L. Shannon", with a long horizontal flourish extending to the right.

Becky L. Shannon, Chief  
Watershed Protection Section

BLS:gwd



**MISSOURI FARM BUREAU FEDERATION**

P.O. Box 658, 701 South Country Club Drive, Jefferson City, MO 65102 / (573) 893-1400

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**JAN - 6 2004**

**WPCP**

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**JAN - 6 2004**

**WPCP**

January 6, 2004

Missouri Department of Natural Resources  
WPCP Planning Section  
P.O. Box 176  
Jefferson City, MO 65102-0176

Dear WPCP Planning Section Staff:

The following comments are submitted on behalf of Missouri Farm Bureau regarding the draft Elk River Total Maximum Daily Load (TMDL) plan.

As the first TMDL proposed to address water quality in streams on Missouri's impaired waters list due to nutrients attributed to livestock production, this proposal is of great interest to Missouri farmers and ranchers. Local Farm Bureau leaders participated in public meetings on this and related watershed management plans. Farm Bureau is also represented at the state level on various water quality stakeholder groups coordinated by DNR, such as the TMDL Policy Advisory Committee.

Draft TMDL Overview

The following excerpt from page 3 of the draft references multiple sources of nutrients in the watershed:

*The Elk River and its tributaries were included on the 1998 303(d) list with nutrients as the listed impairment. There are many potential sources of nutrient impairment. The major source identified on the 303(d) list is nonpoint source pollution from livestock production. In reality, the sources of the nutrient impairment include both point and nonpoint contributions from the livestock production industry and the population growth that has resulted in part from increased job opportunities in the livestock industry.*

The draft TMDL addresses nutrients (phosphorus and nitrogen) from both point and nonpoint sources. DNR states that "the beginning of accelerated phosphorus loading that led to the 1998 listing of eleven stream segments within the watershed" (page 11) correlates with greater phosphorus loading since 1985 from point sources, such as municipal wastewater treatment plants and poultry processing plants (page 15). DNR also states, "About 60% of the time, the nutrient impairment in the Elk River is due to point sources." To reduce phosphorus and nitrogen from point sources in the watershed, DNR proposes revising permit conditions to reduce allowable nutrient discharges.

DNR proposes to reduce nutrients from nonpoint sources using voluntary management practices supported by both existing and planned educational, promotional and technical assistance programs. The following categories of nonpoint sources are identified on pages 19-21: failing on-site septic systems; land application of commercial fertilizers, manure and poultry litter; grazing animals; wildlife; urban development; and recreational use.

DNR also notes that reductions in nutrients from Tyson Foods' poultry processing plant at Noel and poultry producers who supply the plant will be realized as a result of a consent decree with Tyson Foods requiring lower phosphorus discharges from the plant and nutrient management plans for poultry farmers under contract as well as production operations owned or managed by Tyson.

### Discussion Points

Farm Bureau supports the use of voluntary, locally led, incentive-based management practices to address nutrients from nonpoint sources as proposed. Farmers and ranchers are adopting innovative management practices designed to protect and improve water quality over time. Education, promotion and technical assistance programs are key to the success of this approach.

However, one concern raised by this draft TMDL is the process by which DNR derived a numeric standard for nutrients in the Elk River watershed. In the absence of quantitative state water quality standards for phosphorus and nitrogen as nutrients, DNR has set numeric standards for this watershed based on levels of phosphorus recorded prior to "the beginning of accelerated phosphorus loading" in 1985.

The following paragraph from page 2 describes the impairment caused by excess nutrients:

*An overabundance of nutrients, in particular nitrogen and phosphorus, is a serious threat to aquatic ecosystems. The nutrients feed algal growth, also referred to as algal blooms, which will cause significant changes to the waterbody. This phenomenon is called eutrophication. Eutrophication is the natural aging of lakes or streams caused by nutrient enrichment. Cultural eutrophication is the accelerated aging of the natural condition caused by human activities.*

State water quality standards for nitrogen and phosphorus have been under development for years, as indicated by DNR in the **Missouri 2000 303(d) Strategy Document**:

*While there are narrative criteria presently in place within the water quality standards which could be used to determine compliance of these waters with state standards, the subjectiveness of these non-numeric criteria make them very difficult to use...Use of numeric biocriteria now being developed for aquatic macroinvertebrate communities are believed to be a much better approach for defining waters impaired by nutrients and excess algae growth...This biocriteria development program began in 1992 and will be completed in 2001.*

Biocriteria standards have not been proposed, but agency staff indicate that nutrient standards currently under development will be promulgated through the rulemaking process. In addition, the U.S. EPA has issued ecoregional nutrient criteria and directed states to either adopt nutrient standards or submit a plan for developing standards by the end of 2004. It is our understanding that DNR is planning to respond and that stakeholders will have an opportunity to provide input.

The urgency to complete the Elk River TMDL and other TMDLs was created by a consent decree issued in 2000 as a result of a lawsuit filed against the U.S. Environmental Protection Agency by the Sierra Club and other organizations (*American Canoe Association v. Browner*). Nevertheless, the process by which DNR has set numeric standards for nutrients for purposes of this TMDL has implications at several policy levels and raises many questions, such as:

- Will these numeric standards for nutrients in the Elk River watershed be used in other watersheds? If so, what criteria will determine whether they are appropriate for another watershed? Will these standards become de facto state water quality standards enforced by DNR as though they had been promulgated like other state water quality standards through the administrative rulemaking process?
- How do the Elk River nutrient standards compare to the pending proposed biocriteria standards and nutrient standards under consideration as a result of U.S. EPA's directive?
- If eutrophication is a natural process, what rate of cultural eutrophication is considered too fast and why? Do the proposed Elk River nutrient standards reflect an allowable amount of nutrients for meeting an acceptable rate of cultural eutrophication?

Thank you for the opportunity to comment. We look forward to continuing to work with the department and others to promote the adoption of voluntary management practices by Missouri farmers and ranchers to address water quality.

Sincerely,



Leslie Holloway  
Director, State and Local Governmental Affairs

cc: Members of the Missouri Clean Water Commission  
Senator David Klindt  
Senator Doyle Childers  
Representative Merrill Townley  
Representative Peter Myers  
Representative Marilyn Ruestmann  
Representative Kevin Wilson  
Representative Dennis Wood

February 13, 2004

Ms. Leslie Holloway  
Missouri Farm Bureau Federation  
P.O. Box 658  
Jefferson City, MO 65102

Dear Ms. Holloway:

Thank you for your comments on the Elk River Total Maximum Daily Load (TMDL) document. Staff in the Missouri Department of Natural Resources have reviewed and carefully considered your comments, and we wish to share our responses to those comments with you.

I appreciate your statement of support for the use of voluntary, locally led, incentive-based management practices to address nutrients from nonpoint sources. As you indicated, the TMDL document proposes just such an approach. You may be aware of the work by the department to target substantial grant funding to the Elk River watershed in recent years to demonstrate and provide cost-share for water quality protection practices addressing nonpoint sources. These efforts and the work of individuals such as members of your organization provide a tremendous opportunity for protecting the quality of water in this watershed.

As noted in your comments, the TMDL document includes a target nutrient load for this watershed. Please recognize that this is not a water quality standard, but rather a science-based target that, if achieved, we conclude should result in the waters of this watershed meeting existing water quality standards.

The department is continuing to work toward the development of water quality standards for nutrients and also biocriteria. The adoption of such standards would be necessarily through the state's rulemaking process. The department is currently developing a strategy for addressing the Environmental Protection Agency's (EPA's) request that the state provide a plan for nutrient criteria development. The issue is particularly complex in Missouri because of the significant geological and topographic differences across the state as well as the diversity of types of waters, from the Missouri and Mississippi Rivers to small ozark streams.

Response to your specific questions are included here:

1. The numeric target for phosphorus in the Elk River watershed is specific to that watershed. The development of water quality standards in the state would be based on appropriate scientific information. We would not anticipate taking a target from the Elk River or any other TMDL document and applying that broadly. The development of state water quality standards would necessarily be conducted through the rulemaking process.
2. At present, we do not have a pending proposed nutrient standard. The request from EPA, as I understand it, is for the development of a plan. The department is working with other states in EPA's Region 7 and with EPA to address the issue of nutrient criteria in lakes and streams. The

technical advisory group working on this issue has focused primarily on nutrient criteria for lakes, working with the University of Missouri to analyze the substantial data available for Missouri's lakes. The department is closer to completion of biocriteria, however biocriteria was not used as a target within the Elk River TMDL document.

3. Each stream system is unique and at this point we do not have sufficient information to specify what rate of cultural eutrophication is too fast. One school of thought is that any amount of nutrient increase that changes the natural aquatic floral and faunal communities of a stream is an indication of too much eutrophication. However, at this point we believe it is logical to target the nutrient levels of a few decades ago rather than trying to use the aquatic community as a target. In the case of the Elk River system, we have documented obvious increases in nutrient levels and resultant changes in biological communities. As we continue to evaluate water quality in the watershed we will gain a better understanding of the issues you raise.

Again, thank you for commenting. Your participation in the TMDL process and concern for water resources is appreciated. If you have other questions, please contact me at (573) 751-7428 or at Missouri Department of Natural Resources, Water Protection Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM

Becky L. Shannon, Chief  
Watershed Protection Section

BLS:gwd



STEVEN A. THOMPSON  
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

RECEIVED  
JAN 12 2004  
BRAD HENRY  
Governor  
WPCP

January 5, 2004

Ms. Sharon Clifford  
Department of Natural Resources  
WPCP, Planning Section  
P.O. Box 176  
Jefferson City, MO 65102-0176

Dear Ms. Clifford:

On behalf of the various Oklahoma environmental agencies, ODEQ applauds the efforts of Missouri DNR to produce a well-thought-out nutrient TMDL for the Elk River watershed. The results of this report will be of particular benefit to our own efforts to address nutrient impairments in Grand Lake and its watershed.

As we develop the TMDL for the Grand Lake watershed, please note that we will incorporate the results of MDNR's Elk River TMDL where appropriate. As our TMDL development progresses, however, it is possible that areas of concern may arise with the current wasteload allocations and load allocations outlined in the Elk River TMDL report. We look forward to working with you and your staff on any adjustments that may be necessary to protect the natural resources of both our great states.

Thank you for the opportunity to review and comment on this report.

Sincerely,

Mark Derichsweiler, P.E., Manager  
Watershed Planning Section  
Water Quality Division



STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

Bob Holden, Governor • Stephen M. Mahfood, Director

www.dnr.state.mo.us

January 26, 2004

Mark Derichsweiler, P.E., Manager  
Watershed Planning Section  
Water Quality Division  
Oklahoma Department of Environmental Quality  
P.O. Box 1677  
Oklahoma City, OK 63202-1677

Dear Mr. Derichsweiler:

Thank you for taking the time to comment regarding the Elk River Total Maximum Daily Load (TMDL) document.

On behalf of the Missouri Department of Natural Resources, I want to express my appreciation of the support your office has extended in development of the Elk River TMDL document. The development of this document has underlined the necessity of working with neighboring states and stakeholders to craft the best document possible.

Again, thank you for your comments. Your agency's interest in the Elk River TMDL and concern for the health of Missouri's water resources is appreciated. If you have other questions or wish to discuss this further, please contact Gail Wilson of the Water Quality Monitoring and Assessment Section at (573) 751-7428 or at Missouri Department of Natural Resources, Water Protection Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM



Becky L. Shannon, Chief  
Watershed Protection Section

BLS:gwd



*Integrity and excellence in everything we do*



1-03-2004  
Elk River Watershed Improvement Association (ERWIA)  
980 Fairview Rd.  
Stella, MO 64867

RECEIVED  
JAN 04 2004  
WRPCP

Department of Natural Resources  
Water Pollution Control Program, Planning Section  
P.O. Box 176  
Jefferson City, MO 65102-0176

Reference: Comments on the Draft Elk River TMDL

To Whom It May Concern:

This letter is in response to your Invitation to Comment and is a summary of comments from some of the individuals associated with the ERWIA. Although an email and a subsequent letter from David Forrester of Grove, Oklahoma was sent under separate cover to your office, I have included a copy as "Item 1" for a more comprehensive response from the ERWIA. Although not whole and fully functioning due to our being a relatively young organization, The ERWIA has significant concerns and is willing to help.

First, the ERWIA would like to applaud your efforts for the Draft TMDL in that you have met the requirements with an initial draft and plan with which to move forward in a phased approach that will hopefully, return the waters in the watershed from an impaired condition. We believe with a more comprehensive plan our vision for those in the watershed of "clean abundant water for you and your family now and in the future" can be met.

In Mr. Forrester's letter, he sets forth a strong case for establishing a reasonable TMDL based on the concern for public health risks. We believe this should be a significant consideration in establishing the parameters for the plan. Consideration should also be given as to what can be achieved given the new technology and approaches as referenced in the Rogers Arkansas Pollution Control Facility example. Please note that OWRB received approval notice Monday, December 29, 2003 that the E.P.A. approves Oklahoma's phosphorus criteria for State Scenic Rivers. The limit is .037 mg/L total phosphorus.

Also included is a copy of "INITIAL COMMENTS REGARDING DRAFT TMDL DOCUMENT FOR ELK RIVER WATERSHED" dated December 12, 2003 from several staff members of the Southwest Regional office Water Pollution Control Unit. This document, identified as "Item 2", is included so as to not repeat the findings stated therein.

The following comments reference specific sections of the Draft TMDL:

1. Page 2 - Beneficial uses of Little Sugar in Arkansas should also include livestock watering and irrigation. Identified source on 303(d) list included only Missouri section of Little Sugar. Does not take into account any human population issues.
2. Sect. 1.0 – Does not discuss population explosion in NWA with ensuing septic systems, storm water runoff, increase in roadways, etc.
3. Sect. 1.1 – Big Sugar also has originating tributaries in Benton County, Arkansas. One originating in Pea Ridge, another “feed” stream at Garfield, another through Gateway, another is Otter Creek that is midway between Pea Ridge and Garfield. Note that Pea Ridge is one of the fastest growing areas in Arkansas and where future pollution contributions may occur.
4. Sect. 1.1 – Since forestland is so much better at preventing erosion, mention should be made of the deforestation due to clear-cutting, construction, excavating and development especially with the rapid development of the area.
5. Sect. 1.2 5<sup>th</sup> paragraph – Patterson Creek watershed is mostly in McDonald County (not entirely) and enters Buffalo Creek in Oklahoma. Rosiland and Alvin Layne have a soils map that was included with their conservation plan in McDonald County therefore, some soils information is available in McDonald County.
6. Sect. 1.3 1<sup>st</sup> paragraph – low flow conditions occur in August and sometimes continue to early September.
7. Table 4 page 6 – Ginger Blue Resort – (confirmed recently) WW plant is in existence but is not functioning. The lodge burned down in 2003 and it was the only user.
8. Sect. 1.7 page 8 – History of Basin – The county was essentially without population during the war except for thousands of CSA troops that were on the Cowskin Prairie during most of the war.
9. Page 9 – Re: movie – the horses were not killed in McDonald County but filmed at Lake of the Ozarks. There are many errors on the source web site and should possibly consider deleting this section due to its lack of relevancy.
10. Sect. 3.1 page 12 last paragraph – “Only a quarter of Benton County in Arkansas is in the Elk River watershed. The sub-watershed of Little Sugar Creek originates in Arkansas.” See item 3 above (Big Sugar also originates partially in Arkansas). Although it is only a quarter of Benton County, it is a very fast growing one-quarter county area that should be considered.
11. Sect. 3.4 page 13 - Consider logic of the statement “... while the waste load allocation for point sources remains constant through all flow regimes.” Consider that the WLA for point sources cannot remain constant because they also suffer from storm water overflow from heavy rains.
12. Sect. 4.1 page 15 – Water Year 1940 to Water Year 2002... How can that be since USGS only started testing in 1966 at Tiff City?

Roger Hughes.doc

e!Planning | ~~truncated~~ | ~~TPML~~. Sub-information

MD

MD

ELK

13. Sect. 4.1 page 16 1<sup>st</sup> paragraph – needs review and possible changes based on errors in Tables 3 & 4 on page 6.
14. Table 7 page 16 – Concern was expressed for the seemingly different requirements and the resulting inequity between the large volume contributors and the very small volume contributors where the small volume contributors are given a more generous allocation. Possibly providing the formula and an example (available spreadsheet?) of the calculations would be beneficial. Specifically the disparity between Tyson and the City of Bentonville was noted.
15. Sect. 5.0 page 19 – the categories of non-point sources making contributions to the nutrient load should possibly be expanded to include new and old dirt roads and their grading, deforestation and construction excavation (i.e. forests erode so much less than cleared land). Deforestation and clearing for new homes and pasture lands have increased dramatically in the same timeframe as chicken production increases. This could be quantified and compared to see what significance it has with the other non-point sources listed. Also consider that gravel mining operations are not closely monitored such as the one just down stream from Crag-O-Lea and the one on Pine Creek. There are truck loads removed with no efforts to protect the stream as B&B Sand and Gravel does on Little Sugar.
16. Sect. 5.0 page 20 – under “Land application of commercial fertilizers” - Consider that the Fapri study shows the half life of fecal coliform in animal nutrients too short to be problematic unless directly deposited to water.
17. Sect. 5.0 page 20 – under “Urban Development” – Census information does not include any of the developments that would be outside these listed cities’ limits. The significance may be understated.
18. Sect. 5.0 page 21 – under “Recreation Use” – The statement “... not perceived as a major concern” should be revisited. The landowners along the creek would not agree. Consider major holidays and the high utilization of canoes with the resulting nutrient inputs. There are very few toilet facilities. Exceptions were/are: a two year grant that ran out where port-a-potties were placed along the creek; public toilet available at Shady Beach, just upstream from Noel; in some parts of the county canoe operators provide little boxes for use (effective??); trail riders with direct access to the creek and the resulting horse manure. Clearly, recreation use is a concern that may have significant impact during certain periods.
19. Sect. 7.0 page 23 – it is very positive that these standards apply year around. If they can be met at peak times (spring) they would also be exceeded the rest of the year and thus accelerate improvement of the streams.
20. Sect. 10.1 page 25 – The TP load for Tysons indicates 19 as opposed to the TP load of 20 shown in Table 7 on page 16. Are the calculations rounded or truncated?

The following comments refer to issues not specifically addressed in the Draft TMDL:

1. The document does not discuss the resource of DNA identification of pollution sources. It also ignores concern about bacterial contamination, antibiotics, hormones, pesticides, petrochemical runoff and others. Specifically, the Simmons and Cobb-Vantress operations likely use a lot of antibiotics and possibly hormones. Where are all the spoiled eggs and dead chickens disposed of? These are concerns of the citizens in the watershed but not addressed in the TMDL process.
2. Another topic not addressed is the big water impoundments in Arkansas. It has to have affected Little Sugar. The lakes are grossly contaminated and drain back into the creek. Another is the impoundment at the state line development. Is the data collected and reported accurate?

Sincerely for the ERWIA,

A handwritten signature in black ink, appearing to read "Roger Hughes", with a long horizontal flourish extending to the right.

Roger Hughes  
ERWIA Interim Spokesman

ITEM 1

**San/Roger Hughes**

---

**From:** David Forrester [gfsbdforrest@grandfederal.com]  
**Sent:** Saturday, December 27, 2003 1:07 PM  
**To:** Sharon Clifford  
**Cc:** Roger Hughes; Drew Holt; Riley Needham; Duane Heitzman; Paul Koenig  
**Subject:** Elk River Basin TMDL - Comments

---

**Sharon: I live on the Elk River and recommend that the same standard as Oklahoma has established for their scenic rivers of .037mg/l be established for the Elk River Basin TMDL for the following reasons:**

The EPA water quality criteria states that phosphates should not exceed .05 mg/l if streams discharge into lakes or reservoirs, .025 mg/l within a lake or reservoir, and .1 mg/l in streams or flowing waters not discharging into lakes or reservoirs to control algal growth (USEPA, 1986). **Surface waters that are maintained at .01 to .03 mg/l of total phosphorus tend to remain uncontaminated by algal blooms.**

The impairment of the Elk River is based on exceedence of the general criteria contained in Missouri Water Quality Standards.

**“Water shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses”.**

The most important aspect of establishing a reasonable TMDL for the Elk River Basin (.037mg/l), in my opinion, should be the concern for public health risks. **With this being a primary focus, the objective should be to set a standard that will allow the water of Elk River to be used as a source for drinking water and for “whole body contact recreation” without associated health risks.**

Health Effects: Phosphate levels greater than 1.0 may interfere with coagulation (the process by which a liquid changes into a semisolid mass) in water treatment plants. As a result, organic particles that harbor microorganisms may not be completely removed before distribution. (See <http://www.chemsoc.org/exemplarchem/entries/2001/duncan/page-3.htm>)

Also consider future growth issues. As the population in the Elk River Basin and chicken processing operations continue to expand, **it will be even harder to set a lower standard if we don't do it now. This is an opportune time to establish a health conscious level that can be achieved within a reasonable phased timeframe using new technology and new approaches.**

As an example of how new approaches can make a difference. Rogers Arkansas has achieved a level of .23mg/l since implementing their new online monitoring system. (According to Mike Lawrence, Manager of the Rogers Pollution Control Facility.)

“With this online analyzer, we can see instantly what’s happening. The

automated system uses a paging system that automatically warns the plant staff if levels of a particular pollutant is too high. If you know you have phosphorus reduction as a priority, and you can monitor it continuously, you can respond to problems much better.”

If this approach or others that work can be applied to those in the Elk River Basin, than a standard that is similar to the scenic river standard set by Oklahoma, is achievable in a phased approach.

In the latest Arkansas/Oklahoma tentative agreement, it is my understanding that they are given a phased approach until 2012 to achieve the target phosphorus levels for the Illinois River. The first target is to achieve 1.0 mg/l for each of the cities.

Fayetteville already complies, Springdale has until 2007, but for the last two months has had an average under that of .06mg/l. Rogers is also below that level at this time and Siloam Springs has until 2009.

**David Forrester  
66240 E. 253rd  
Grove, Ok. 74344**

## ITEM 2

(The document below was submitted in memo form to the Missouri Department of Natural Resources Water Pollution Control Program TMDL Unit as official comments from the Missouri Department of Natural Resources Southwest Regional Office.)

### **INITIAL COMMENTS REGARDING DRAFT TMDL DOCUMENT FOR ELK RIVER WATERSHED December 12, 2003**

Several staff members of the Southwest Regional Office Water Pollution Control Unit contributed the following comments and questions. The comments are labeled one through twenty-four.

#### **Page 1 - "Table 1: Stream Segments Included in the TMDL"**

1. Big Sugar Creek is missing whole body contact as a beneficial use (10CSR 20-7.031, Table H, page 44).
2. Buffalo Creek (ID # 3273) is missing whole body contact as a beneficial use (10CSR 20-7.031, Table H, page 48).
3. Buffalo Creek (ID # 3269) is missing cold water fishery use (10CSR 20-7.031, Table H, page 48).
4. Elk River is missing whole body contact as a beneficial use (10CSR 20-7.031, Table H, page 62).
5. Indian Creek missing whole body contact as a beneficial use (10CSR 20-7.031, Table H, page 71).
6. Little Sugar Creek missing whole body contact as a beneficial use (10CSR 20-7.031, Table H, page 77).
7. Beneficial uses key is missing the number seven (7) explanation. Does the number 7 refer to a boating/canoe designation?

#### **Page 6 - "Table 3: Missouri General and Storm Water Permits in the Elk River Watershed"**

8. MO-G490217 - Camp Crowder Training Site. The permit was terminated on July 26, 2002.
9. MO-G490279 - McDonald County Ready Mix. The facility was permanently eliminated. The permit was terminated on March 15, 2002.

10. MO-G490319 - Inland River Aggregates. There was a change of ownership. The Inland River permit was terminated on October 22, 2003. MO-G490319 was issued to the Kemp Stone Company at the same location on October 22, 2003.
11. MO-G490347 - Anchor Stone Neosho Quarry. The permit was terminated on November 24, 2003.
12. MO-G500025 - Gina's Gems, Inc. The facility was permanently eliminated. The permit was terminated on November 14, 2000.
13. MO-G500049 - B & B Sand & Gravel. The treatment is mislabeled as storm water (STO R). The treatment should be labeled settling basin (SET B).
14. MO-G500093 - 3D Sand & Gravel. The treatment is mislabeled as storm water (STO R). The treatment should be labeled settling basin (SET B).
15. MO-R203133 - Sunbeam Products, Inc. Requirements for a storm water permit eliminated. The permit was terminated on December 8, 2003.
16. MO-R210016 - Neosho Concrete Products. The permit was terminated on December 20, 2001. The facility is now covered by NPDES permit number MO-G490725.
17. MO-R409047 - Jug Store Liquors. The soil remediation at the site was completed. The permit was terminated on September 4, 2003.
18. The following are missing from Table 3: MO-G500085 - 2 N 1, Inc. and MO-G500107 - Triple L Gravel (permit pending).

**Page 6 and 7 - Table 4: Missouri State NPDES Operating Permits in the Elk River Watershed**

19. MO-0025801 - Anderson WWTF. This facility is an extended aeration, etc. facility, and not just UV disinfection as labeled (UV DI).
20. MO-0096679 - Pineville WWTF. This facility is an oxidation ditch, etc. not contact stabilization (CON S).
21. MO-0108952 - Simmons Hatchery. The facility is consists primarily of a single cell lagoon with land application, not storm water (STO R)
22. MO-0112101 - Talbot Industries-Plant #2. The treatment type should be storm water (STO R) not no treatment (NO T).

January 29, 2004

Roger Hughes  
Elk River Watershed Improvement Association  
980 Fairview Road  
Stella, MO 65102

Dear Mr. Hughes:

Thank you for submitting the Elk River Watershed Improvement Association's (ERWIA) comments regarding the Elk River TMDL. Citizen participation in natural resource management is the only way to ensure a healthy environment now and into the future. The State of Missouri would also like to thank everyone who has participated in ERWIA. The progress of this group is encouraging and the tone set by the interim board members has been positive. The department strongly believes that locally led efforts are the only way to ensure all state waters will meet Missouri's water quality standards. The following responses correspond to the assigned numbers in your comment letter.

1. Page 2

The beneficial use identified in the TMDL for the Little Sugar in Arkansas is "Domestic, Industrial and Agricultural Water Supply". Each state expresses their designated uses differently, but an agricultural water supply includes livestock watering and irrigation for agricultural purposes. The beneficial uses identified were taken directly from Arkansas' water quality standards.

2. Section 1.0

Population growth is discussed in the TMDL under *5.0 Load Allocation for Total Phosphorus and Total Nitrogen, Urban Development* and again under *6.0 TMDL Results Discussion*. The implementation plan for point sources was devised with the potential for population growth in mind. It is why any facility seeking to expand their discharge above a design flow of 22,500 gal/day will have nutrient limits included in their permit. The original source of the Elk River impairment identified on Missouri's 1998 303(d) list was nonpoint source runoff from livestock production. This source was changed on the 2002 303(d) list to simply livestock production, as point sources as well as nonpoint sources are responsible for the loading. The original intent of the TMDL was to address livestock production concerns. Population growth evolved as a secondary concern during the TMDL development process. The goal is to prevent population growth from becoming the major source of nutrient loading in the future, thus thwarting the efforts being made by livestock producers.

3. Section 1.1

Information related to other Missouri waters that originate in Arkansas will be added to the final draft of the TMDL. Although Arkansas DEQ has not committed to a strategy for resolving issues with Pea Ridge and Bella Vista, they are aware that these discharges need to be addressed in the near future. Missouri expects similar demands

being placed on Arkansas' regulated community as are being placed on Missouri permittees. Something the ERWIA should consider acting on is a public meeting in Arkansas sponsored by your organization. This would raise awareness of the concern with the residents of the Little Sugar Watershed, which is a goal of Arkansas DEQ. It may also help motivate municipalities to address the concerns in a timelier manner.

4. Section 1.1

You are correct in your statement that clearing of forestland for development can exacerbate water quality problems. A discussion of this issue will be included under Section 5.0, which addresses stormwater runoff from urban areas. Section 1.1 is a description of the physical characteristics of the basin. It is not the appropriate place to include a discussion of potential threats to water quality.

5. Section 1.2

The language in the TMDL was corrected to say most of the Patterson Creek watershed is located within McDonald County. The soils information used in the Elk River TMDL was obtained from the Natural Resources Conservation Service (NRCS) website: [http://soils.missouri.edu/PDF\\_manuscripts/mcdonald/welcome.pdf](http://soils.missouri.edu/PDF_manuscripts/mcdonald/welcome.pdf). The following verbiage was taken directly from this site:

*Soil Survey of McDonald County, Missouri*

*This soil survey is being completed at the Missouri State NRCS office. You may contact the state office at (573) 876-0907 to request preliminary information for this county. Or you may email the Missouri State Soil Scientist Mr. Dennis Potter with your request.*

It is likely that NRCS staff use the preliminary information for development of conservation plans. NRCS does not, however, want preliminary information used for TMDL decision making, nor do they want it to be published by another agency until the information has been finalized.

6. Section 1.3

The verbiage in the TMDL related to when low flows occur has been changed.

7. Table 4, Page 6

Although Ginger Blue Ridge Resort (MO0106135) has not discharged since 2003, its inclusion in the list has no effect on the calculation of the Wasteload Allocation or the point source implementation plan. The permit is not yet been terminated and the potential to become an active discharge still exists. It is theoretically considered to still be an active discharge permit.

8. Section 1.7, Page 8

Verbiage regarding the presence of Confederate troops has been added to the History of the Basin section.

9. Page 9

The information regarding animal rights organizations and the production of movies has been deleted due to the conflicting information that exists regarding the incident.

10. Section 3.1, Page 12

The verbiage in the TMDL was changed to reflect this comment.

11. Section 3.4, Page 13

Your comment regarding stormwater having an impact on treatment plants is accurate, particularly for municipalities that have older collection systems. All NPDES permits have a reporting requirement for flow. If a facility exceeds their design flow, they are in violation of their permit. Under these circumstances, department staff will normally develop a compliance schedule to include in the permit. The schedule typically requires an engineering report that provides options for reducing the infiltration or establishing mechanisms that will provide adequate treatment during wet weather high flows. The allocations derived, by use of the assumption of constant loading from point sources, were a legitimate way to calculate the allocations considering the limited data available. All models require assumptions to be made and verbiage will be included in the TMDL to recognize the concern related to the use of this assumption.

12. Section 4.1, Page 15

USGS has collected flow data at Tiff City since 1939. Hence, there is flow data available from Water Year 1940. Water quality data has been collected by USGS at the same site since 1966. A statement clarifying this information has been added to Section 3.0, Calculation of the Load Capacity.

13. Section 4.1, Page 16

See response to number 7 above. Corrections have been made to Tables 3 & 4, which list all permits in the basin. These corrections have no bearing on the TMDL target or wasteload allocation and require no additional changes to the document.

14. Table 7, Page 16

Both Tyson Noel and the City of Bentonville will have equivalent permit limits for phosphorus removal. There are disparities between the discharge volumes of the two plants, with the Bentonville design flow being larger than Tyson's. At the same time, the concentration of phosphorus in Tyson's discharge is higher than the concentration measured in the Bentonville discharge. Regardless, these two facilities represent the largest point source loads in the basin.

Both facilities agreed to limit their effluent to basically the same TP concentration (Bentonville to 1.0 mg/L as a monthly average and Tyson to 1.5 mg/L as a maximum daily limit). Because the two facilities have different design flows, their TP load contribution is different. The percent reduction was calculated based on their existing load and their permitted design flow using the following formula:

Percent reduction = (existing load – target load)/existing load

The target load is the product of target concentration, design flow, and a conversion factor. Therefore the percent loading reduction is the same for both facilities, but the load is not. This fact does not constitute an inequity, because water quality standards are concentration based.

15. Section 5.0, Page 19

Additional language regarding potential lost of forestland was added to the document in response to item #4. A suggestion will be added to the implementation plan regarding the development of local ordinances to encourage development occur near infrastructure and centralized wastewater treatment. This would have the added benefit of discouraging piecemeal conversion of agricultural and forestlands to urban landuse.

16. Section 5.0, Page 20

Thank you for providing relevant information.

17. Section 5, Page 20

Your statement regarding the TMDL not providing a full accounting of population growth in the watershed is correct. Use of urban census data, however, was seen as an effective way to demonstrate the concern regarding future population growth.

18. Section 5.0, Page 21

Language has been added to the TMDL regarding the concerns of local citizens related to recreational use. As this is not a problem identified by the department based on the available data, the onus for addressing this issue really lies with the watershed partnership. If ERWIA chooses to pursue this issue in the future, contacting the Jacks Fork Watershed Committee for information on the problems and possible solutions for a lack of toileting facilities on a high recreational use river is highly recommended. Their information could prove very helpful to anyone trying to address this issue on the Elk River.

19. Section 7.0, Page 23

Thank you for your support on the year round application of the TMDL targets.

20. Section 10.1, Page 25

The information in Table 7 that is referenced in your comments is documentation of the current loading from the Tyson Noel facility. This facility has an average concentration of 20 mg/L TP in their discharge. That information combined with the flow capacity was used to calculate the current load of total phosphorus from this facility to be 250.868 lb/day. The information regarding loading in Table 9 refers to what the loading will be once the TP limit is in effect. The loading was again calculated using the higher flow capacity being requested by Tyson for this facility in conjunction with the new permit limit of 1.5 daily maximum for total phosphorus. The future TP loading from the Tyson Noel plant will be 29.163 lb/day.

Issues not covered by the TMDL:

1. Waters on the 303(d) list are required to have a TMDL developed that addresses the identified impairment. In order to add an impairment to the list, definitive data must exist to justify the action. For instance, bacteria was not listed as an impairment for the Elk River because the available data did not indicate a violation of Missouri's bacteria standards. The department does not provide for "source tracking" or DNA analysis as these tools are designed to identify sources of bacteria, and bacteria is not a concern that has been identified by the state. Several grants have been obtained by other organizations for source tracking data collection and analysis. The ERWIA could pursue that possibility if the information would be useful to the group. Part of the goal in establishing the Elk River Watershed Improvement Association was to ensure there was a mechanism for address all the concerns of local citizens. The TMDL only addresses one issue that was identified by the state.
2. Missouri did not use data from impoundments in Arkansas when developing the Elk TMDL. The only information available to the agency related to this topic was the study done by the University of Arkansas that evaluated the effectiveness of on-site septic systems in the Bella Vista area. The conclusion of that report was the water quality in the Bella Vista area met Arkansas' water quality standards and at this point in time. I know there has been news stories about the possible contamination of lakes in the Bella Vista area, but did not hear confirmation that the problems were verified through data collection. This could become a point of discussion between Missouri & Arkansas in the future.

The department did receive comments from David Forrester and he will receive a response to his comments. The Southwest Regional office also provided us with their information regarding the inaccuracies related to beneficial uses and permit information. The TMDL has been changed to reflect their information.

Please thank your membership for their comments. Again, it is only through the continued commitment of citizens that we will have healthy water resources in the future.



"Gene Gardner"  
<Gene.Gardner@mdc.  
mo.gov>

01/23/2004 04:10 PM

To: nrclifs@dnr.state.mo.us

cc: "Chris Vitello" <Chris.Vitello@mdc.mo.gov>, "Jane Epperson"  
<Jane.Epperson@mdc.mo.gov>, "Leanna Zweig"  
<Leanna.Zweig@mdc.mo.gov>, "Rick Horton"  
<Rick.Horton@mdc.mo.gov>, "Tim Banek" <Tim.Banek@mdc.mo.gov>

Subject: Elk River TMDL

Sharon, here are the Department's comments and recommendations regarding development of the Elk River TMDL. I realize the public comment period has expired, but we felt our comments were substantive enough for your consideration.

Page 1. Whole Body Contact is not listed as a beneficial use for Big Sugar Creek, Elk River and other streams listed in Table 1. Streams in this area, and particularly Elk River, are heavily used by recreational boaters. Several large canoe liveries operate on Elk River, and use by canoeists is extensive during warmer months. This issue should be re-evaluated.

Page 9, Paragraph 2 (Section 2.0), Line 2. Insert the word "be" at the end of this line and delete the word "on" on the next line to read: "...which contains these sections, may be on found on..." Page 9, Paragraph 4. Insert the following information for further clarification: "Low dissolved oxygen caused by extreme swings in oxygen production by over abundant plant life and oxygen depletion resulting from the decomposition of algae and other plants that can have a negative impact on other aquatic organisms."

Page 5. Existing "reference", pre-1985 data were used to derive the total phosphorus target of 0.06 mg/L. This target value pre-supposes that phosphorus concentrations of this magnitude are representative of conditions before the current period of "accelerated phosphorus loading" and that achieving this level of instream phosphorus will be adequate to attenuate existing problems related to excessive algal production. Only time will tell if reductions to this pre-existing level of phosphorus achieves adequate reductions in algal production. The monitoring protocol discussed in following pages and the adaptive management approach detailed beginning on Page 23 will be crucial to the long-term success of this TMDL effort and should be aggressively implemented. Appropriate adjustments in both P and N targets should be made as monitoring data and changes in algal production warrant.

Page 26, Section 10.2 Nonpoint Sources. The first sentence under this heading states: "All efforts to reduce loading from nonpoint sources will be done on a voluntary basis." As I recall, land applications of poultry wastes are regulated \* by DNR?. If this is the case, then application rates and related monitoring requirements would not be voluntary, but rather a part of either existing operating or land application permits or both. Similarly, there is no discussion of the enforcement of these regulations or permit requirements. This issue should be clarified and any regulated activities should be more thoroughly addressed in this document. There is no mention of ongoing efforts by MDC staff to work with landowners to improve riparian corridor management and limit non-point sources of nutrient runoff.

Thank you for the opportunity to submit these comments.

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To: Department of Natural Resources  
WRCP

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WRCP

In regard to Elk River Basin TMDL:

As a resident of Barry county, I see the saturation of chicken houses and poultry processing plants in my county, McDonald and Newton.

We, along with many friends and family members enjoy the Elk River and Tributaries for recreation. We utilize it for fishing, swimming, canoeing. I also horseback ride along the Elk. It would be an inconvenience to carry water for our horses. The Elk, and Big Sugar offered many fine small mouth from its water. I don't want my family in contact with polluted water and I don't want wildlife to suffer from polluted water.

How can the future Big Sugar Creek State park be developed on land along troubled waters? Recreation is the lifeline to the economy for these counties.

I support the Elk River TMDL process and the prosecution of parties responsible.

My roots run deep in this land and my blood through the water. I want this for the future generations of my family!

Sincerely,  
Katie Anderson