

Missouri
Department of
Natural Resources

DRAFT TRACE CREEK TMDL
PUBLIC COMMENTS

Public Notice
July 30 – Aug. 29, 2004

**Trace Creek
WBID # 2850**

Wayne County, Mo.

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



MISSOURI DEPARTMENT OF CONSERVATION

Headquarters

2901 West Truman Boulevard, P.O. Box 180, Jefferson City, Missouri 65102-0180

Telephone: 573/751-4115 ▲ Missouri Relay Center: 1-800-735-2966 (TDD)

JOHN D. HOSKINS, Director

REPLY TO: Columbia Research Center
1110 S. College Ave.
Columbia, MO 65201
Telephone: 573/882-9880
FAX: 573/882-4517

June 24, 2004

Mr. Phil Schroeder
Missouri Department of Natural Resources
PO Box 176
Jefferson City, MO 65102-0176

Dear Mr. Schroeder:

The following are the comments of the Missouri Department of Conservation concerning the draft TMDLs for Trace Creek and the tributary to Big Otter Creek.

Trace Creek

As with McKenzie Creek, it is possible that acid precipitation from the Glover Smelter has impacted the Trace Creek Watershed. However, the data presented in the TMDL is inconclusive. Additional data collection in the Trace Creek, McKenzie Creek and surrounding watersheds, is needed to discern possible contributions of acidity and determine their contribution. MDC offers assistance in collecting data in these watersheds as is possible.

Big Otter Creek

I have no specific comments for this TMDL but support continued monitoring efforts and additional reclamation in the tributary as necessary.

The Department supports efforts by Department of Natural Resources to improve Missouri's aquatic resources and appreciates the opportunity to comment on these TMDLs. Please let me know if you have questions concerning these comments.

Sincerely,

Leanna Zweig
Environmental Services Biologist

COMMISSION

STEPHEN C. BRADFORD
Cape Girardeau

ANITA B. GORMAN
Kansas City

CYNTHIA METCALFE
St. Louis

LOWELL MOHLER
Jefferson City

file

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Bob Holden, Governor • Stephen M. Mahfood, Director

www.dnr.mo.gov

August 31, 2004

Ms. Leanna Zweig
Missouri Department of Conservation
Columbia Research Center
1110 S. College Avenue
Columbia, MO 65201

Dear Ms. Zweig,

Thank you for reviewing the Trace Creek TMDL and taking the time to comment on behalf of the Missouri Department of Conservation (MDC).

We agree that the data concerning acid precipitation resulting from emissions from the Glover Smelter is inconclusive. That would require modeling of long term air quality and climatic data, which has not been done at this point.

The prevailing winds are from the SSW mainly during the warm season, when vegetative growth is active and therefore more likely to be exposed to the effects of acid rain. That would explain why most of the impacted vegetation was found to the north of the smelter. However, long term impact is governed to a great degree by proximity to the emission. There is no other known point source of acidifying emissions besides the Glover Smelter in the immediate vicinity.

These factors do not prove beyond all doubt that the Glover Smelter is a primary source of stream acidity in McKenzie and Trace Creeks, but they do offer strong circumstantial evidence that this is the case. Such strong evidence deserves further study.

Like McKenzie Creek, which we explained in our response to you dated July 8, 2004, the impaired segment is near the headwaters of the stream, and the underlying geology and soil regimes are similar, which suggests that soil pH may play some role in the low pH in the stream. Data on stream pH in the St. Francois Mountains is limited. Except for ambient water quality monitoring scheduled for next year (FY2005), the department does not have the time or money to do more in-depth monitoring of these low pH watersheds. Therefore, we sincerely appreciate MDC's offer to assist in collecting data in these watersheds. John Ford will be in touch with you soon about the particulars, if he hasn't already.

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Leanna Zweig
Page Two

As always, MDC's participation in the TMDL process 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 Anne Peery of the Water Protection Program, Water Quality Monitoring and Assessment Section, P.O. Box 176, Jefferson City, MO 65102-0176 or by telephone at (573) 526-1426.

Sincerely,

WATER PROTECTION PROGRAM

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

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

PAS:apj

c: John Ford, Chief, Water Quality Assessment Unit

EDITORIAL and
COMMENTS ON TRACE CREEK TMDL

Ann C.

William Jud
3429 Madison 423
Fredericktown MO 63645-7084

W. Jud

19 August 2004

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AM 10:34

RECEIVED
WATER PROTECTION PROGRAM

GOD AS POLLUTER

Trace Creek in Madison County, Missouri, south of Fredericktown, is a natural chemical reactor. Always has been. And now, federal and Missouri state government agencies have decreed that Trace Creek's water chemistry violates the rigid bureaucratic requirements for stream water pH. Because of the pH violation, Trace Creek and the entire Trace Creek watershed could come under the heel of federal and state water quality regulations that, ultimately, could stop all land use within the watershed.

pH is a chemistry term used to describe the acidity or alkalinity of water in Trace Creek. pH of 7.0 is neutral. pH less than 7.0 is acidic, and over 7.0 is alkaline. The government-mandated range of acceptable pH for Trace Creek is 6.5 on the acid side, to 9.0 on the alkaline side. Where Trace Creek water is outside those pH limits, the water violates Section 303 of the Clean Water Act. Missouri Water Quality Standards for pH found in 10 CSR 20-7.031 (4)(E) state that water contaminants shall not cause pH to be outside the range of 6.5-9.0 SU (Standard Units.)

The problem first drew attention during the early 1990s when leachate runoff from the local sawmill's pile of sawdust waste got into Trace Creek and turned the water into a stinking, acidic mess. Since then, the sawmill manager has fixed the problem and little or no additional leachate enters Trace Creek.

Trace Creek drains a watershed developed on preCambrian-age volcanic igneous rock. The rock is naturally acidic. Water becomes acidic when draining from a watershed of acidic igneous rock. Rocks, naturally acidic rain water, and the pine and oak trees which cover almost all of the watershed, all contribute to acidic drainage. pH of stream water draining from igneous rocks in the forested upper watershed is about 5 to 6.

Farther downstream, sedimentary carbonate rocks line the valley and cover the igneous rocks. In addition, Trace Creek turns from a NE/SW stream bed orientation in the upper watershed, to an almost due-N/S orientation where the valley encounters a fault or shear zone cutting through the rocks. Where the shear zone leaves the valley farther downstream, stream bed orientation returns to the regional NE/SW orientation.

There are many small springs which empty into Trace Creek along the shear zone. The springs are formed in carbonate rock, known as "dolomite," and carry dissolved calcium/magnesium carbonate. Water issuing from the springs has a pH in the range of 9

GOD AS POLLUTER

Page 2

to 10.

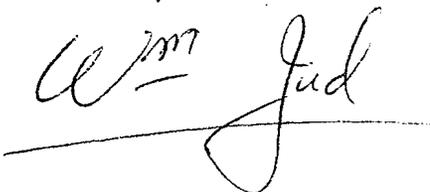
Because of the dissolved calcium/magnesium carbonate in spring water, there is a natural chemical reaction between acidic water from upper Trace Creek and alkaline spring water downstream. Acidity is neutralized. By the time that Trace Creek's streambed leaves the shear zone downstream and returns to NE/SW orientation, mixing of acidic surface runoff and alkaline spring water has restored Trace Creek's water to a more neutral pH value that is well within the bureaucratically-mandated value.

So, the acidic water problem is naturally self-correcting. The remaining problem is bureaucratic. The U.S. Environmental Protection Agency and the Missouri Department of Natural Resources view Trace Creek's upstream acidic water as an opening to impose their control over the Trace Creek watershed and all people living and working within the watershed. They just can't let it go. That would diminish the government agencies' License To Meddle in the affairs of private citizens.

Volcanic igneous rocks in the Trace Creek watershed formed about 1.4 billion years ago. Sedimentary carbonate rocks which contain the springs were laid down in a marine environment around 600 million years ago. Present topography began forming tens of millions of years ago while the last remaining dinosaurs still stomped about, and was modified during the Ice Age which ended ten thousand years ago. Trace Creek's watershed has been around a long time, pre-dates the arrival of Man, and is entirely Natural, including the acidic water that government folks are fussing about. Can something be a "contaminant" if it is a natural part of the watershed? According to Missouri Water Quality Standards, it can and it is.

Blame it on GOD. If God created Earth, then God created the conditions governing pH in Trace Creek's water. If legal or regulatory action is taken by any governmental agency against landowners in the Trace Creek watershed, landowners must insist that EVERYONE involved with the water pH issue be included. Selective enforcement will not be tolerated. God must be listed as a co-defendant and entity subject to Government Regulation.

It's the only fair way to do it.

A handwritten signature in black ink, appearing to read "W. M. Jud". The signature is written in a cursive style with a long horizontal line extending from the bottom of the "J".



When there is little surface runoff during prolonged dry weather, the entire flow of water in upper Trace Creek comes from many small, streamside springs issuing from dolomite rock along the shear zone.

file

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Bob Holden, Governor • Stephen M. Mahfood, Director

www.dnr.mo.gov

August 31, 2004

Mr. William Jud
3429 Madison 423
Fredericktown, MO 63645-7084

Dear Mr. Jud:

Thank you for reviewing the Trace Creek TMDL and taking the time to comment.

Since the source for the low pH was shown as "natural" in our list of impaired waters, we must demonstrate to EPA that there are no other causes linked to human activities. Rest assured that we have no intention or desire (let alone staff, money and time) to regulate landowners in the Trace Creek watershed or any other watershed. Our intention, our mission, is to protect the environment. I am sure you would agree that if someone is harming land, water or air, they should be part of the solution." In any TMDL, we want everyone who is contributing to the problem to be involved. As you can see from reading the TMDL, we concluded that the only possible human-based sources for low pH are the sawmill (rectified) and Glover Smelter. The smelter was cited as a likely source of low pH, and it closed December 2003. We are planning more data collection to investigate this further to be certain there are no residual effects remaining from the plant's operation. If we find the source to be "natural," we will consider alternative or site-specific standards for watersheds like upper Trace and McKenzie creeks, to reflect naturally low pH due to the geology of the area.

Again, thank you for taking the time to comment. Citizen interest and input in the TMDL process 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 Anne Peery of the Water Protection Program, Water Quality Monitoring and Assessment Section, P.O. Box 176, Jefferson City, MO 65102-0176 or by telephone at (573) 526-1426.

Sincerely,

WATER PROTECTION PROGRAM



Phil Schroeder, Chief
Water Quality Monitoring and Assessment Section

PS:apj

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MISSOURI COALITION FOR THE ENVIRONMENT

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September 1, 2004

Department of Natural Resources
WPP, Water Quality Monitoring and Assessment Section
Attn: Anne Peery
P.O. Box 176
Jefferson City, MO 65102-0176

RECEIVED
2004 SEP -1 11:19:05
WATER PROTECTION DIVISION

**Re: Draft TMDL for Trace Creek
Madison County, Missouri**

Dear Ms. Peery:

I submit the following comments on behalf of the Missouri Coalition for the Environment concerning the above referenced draft Total Maximum Daily Load. We believe that the TMDL should be modified to reflect the concerns noted below:

1. We would first like to draw attention to the extraordinary natural setting for this impaired stream. Trace Creek borders the Rock Pile Mountain Wilderness, with County Road 423 running between them providing ready access to the creek and Wilderness alike. In addition, much of the length of the sawmill tributary flows through a block of the Mark Twain National Forest. None of this is acknowledged in the TMDL. Clearly, this significant natural setting and the high recreational use and public interest it attracts should be cause for developing a TMDL that is particularly protective of water quality. That appears, given the following concerns, not yet to be the case.
2. Calculating a load capacity that can then be allocated to point source and nonpoint source loads is, we agree, a challenge when dealing with a pollutant like pH, which is merely a measure of acidity or alkalinity. Nonetheless, it is important to establish a total maximum value for the pollutant (LC) that will allow the calculation of meaningful allocations to point and nonpoint sources and assure an adequate margin of safety ($LC = WLA + LA + MOS$). Merely affirming that the permitted range of pH will be maintained is not a substitute for making measurable determinations of how much of the pollutant is allowed and for making decisions as to how it will be allocated in order to protect the creek. The latter creates a frame for action and accountability; the former does not. And,

according to the draft Tributary to Big Otter Creek TMDL, “the pH criterion alone may not provide sufficient assurance that the proper pH range will be maintained,” due in that case to “possible latent acidity” from mine waste. That TMDL suggests that “net alkalinity is the preferred secondary water quality target” in that it provides a more accurate assessment of a stream’s acidity, and they propose the use of its nearest approximation (total alkalinity) in that case. Given the history of mining in the area around Trace Creek, it would seem reasonable and prudent to use net alkalinity, if possible, to at least assure greater accuracy in determining that state water quality criteria for acidity are being met. Even this measure, however, does not allow load allocations to be made. Since, for example, precipitation—a nonpoint source—continues to more acidic than normal rain, and the area’s igneous geology provides little if any buffering, it’s apparent that the load allocation for nonpoint sources will likely be exceeded. This, by the allocation formula, should then require compensatory reductions in the wasteload allocation from point sources large enough to still provide a margin of safety. A valid and reliable means of determining both total pollution “load” for pH and appropriately protective allocations needs to be established in this case in order to take actions that can assure attainment of water quality standards.

- natural sources,
not non-point*
3. This TMDL effectively lacks an implementation plan, in that it identifies no measures to be undertaken to meet water quality standards for pH. There are in fact actions DNR could take to more completely identify existing sources of pollution and set appropriate discharge and emission standards that would help attain water quality standards in the stream.
 - a. Given that precipitation in the area remains notably more acidic than normal rain and that Doe Run’s Glover Smelter is for the moment not a source of sulfur oxides, the TMDL should identify current sources of sulfur dioxide contributing to acid rain in the region and specify the regulatory means to reduce those emissions.
 - b. New emission standards for the Glover Smelter should be specified in the TMDL and changes made to 10 CSR 10-6.260 to assure that water quality will be protected should the smelter return to operation at any time in the future, including after the stream is removed from the 303(d) list, since a return to previously unregulated emissions from the smelter would ensure a return of the stream’s impairment. The statement in the TMDL’s Reasonable Assurances section suggesting that the smelter would have to be idle for five years before more stringent sulfur dioxide limits could be set does not, however, provide much assurance that effective measures can actually be taken to control the plant’s emissions. What regulatory authority over such emissions can be asserted through the TMDL process? And to the extent that such authority can be asserted, how will it in fact be implemented and enforced to repair and protect this stream? It is by no means clear in this TMDL how controls on this smelter, much less facilities contributing acid rain to the stream, will be put into effect. Without such enforceable controls, there is simply no way that this TMDL

can ensure that water quality standards will be attained and maintained in Trace Creek.

- c. As noted in (2) above, if load allocations from nonpoint sources (acid rain) are contributing more acidity than the watershed can buffer, wasteload allocations from point sources must be reduced to compensate for the former's effects—and must do so to a level that assures an adequate margin of safety. The pH limits for the Madison County Wood Products storm water permit should be changed, then, to a level (perhaps 7-9 SU) that would assist in neutralizing the stream's acidity, a measure that should not be seen as onerous given the years in which acidic leachate from the company's sawdust piles contaminated the creek. New discharges in the watershed should be required to meet the same pH standard.
4. Monitoring is no substitute for positive enforcement actions, such as those suggested above, or for an explicit and measurable margin of safety in ensuring that water quality standards in the stream will be attained. It is, however, vital that adequate monitoring procedures to track trends toward (or away from) attainment and to determine the effectiveness of actions be put in place to correct the impairment. We believe the monitoring plan offered in the TMDL should be amended to include the following:
- a. Net alkalinity should be used as a secondary water quality target and measure to control for the effects residual metals in the stream might have on pH measurements.
 - b. Monitoring should include biological measures, specifically macroinvertebrate assessments, to ensure that pH levels are in fact protecting aquatic life—the use that has been impaired. Molluscs, such as snails, would provide a particularly good measure for pH, since their shells (carbonate) dissolve in low pH water.
 - c. Monitoring should be done four times a year, in every season and at times of the day when pH is typically lowest, to insure that pH remains at all times above 6.5. We are pleased that the trend from the limited data available show improvements in pH levels, but given the variability of pH (temperature, water level, rainfall, etc.), monitoring needs to be conducted more frequently and over a longer term (dry years and wet years, hot years and cold years) than suggested in the TMDL to ensure that the stream remains in attainment in all conditions.
 - d. Monitoring should also be conducted at all six locations in Table 2 to assure that the entire section of the stream previously on the 303(d) list meets water quality standards. We note that the decision to de-list this section was based on very limited data gathered over three months in the spring and early summer of 2000—scarcely representative of flows of the creek throughout the year, much less of other years. It was clearly inappropriate to make the significant determination to de-list that portion of the stream on such inadequate data. Should monitoring show pH below 6.5 in portions of the creek that were de-listed in the 2002 303(d) list, the entire 3-mile de-listed section should be re-listed and the TMDL modified

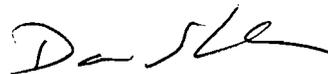
to incorporate it. Similarly, if the sawmill tributary, which incomprehensibly was not listed along with Trace Creek segments previously, has pH levels below 6.5, it too should be added to the 303(d) list and be fully incorporated into a modified TMDL.

5. The draft TMDL states that “monitoring...should provide sufficient data to support the non-anthropogenic nature of acidity in Trace Creek and might be grounds for de-listing the creek during the next 303(d) listing cycle.” Earlier, the TMDL had noted that “atmospheric deposition is most likely the source of stream acidity in Trace Creek” and that “the primary anthropogenic source of acid rain is sulfur dioxide.” Whatever the fate of the Glover Smelter, the other anthropogenic sources of sulfur dioxide noted in the TMDL will likely continue, without identification and controls on their emissions, to contribute acid rain to the creek. It is perhaps premature to be attempting to confirm “the non-anthropogenic nature of acidity in Trace Creek,” and it is definitely premature to be suggesting the creek’s de-listing in the next 303(d) listing cycle, which apparently is imminent. The point of a TMDL is not simply to get a stream de-listed but to make sure that it in fact meets—at all times and for the foreseeable future—water quality standards and provides all designated uses. Only when that point is reached should the machinery to remove the stream from the 303(d) list be set in motion. One or two years of monitoring, regardless of the results, will not be enough to assure that the stream is no longer impaired and that it will continue to meet water quality standards for pH into the future, particularly given the persistence of acid rain. Trace Creek simply should not be a candidate for de-listing in the next 303(d) listing cycle.

It is our opinion that this draft TMDL does not take sufficient steps to ensure that state water quality standards will be met in Trace Creek. Modifications are clearly in order to provide clear standards for allocating pH “loads”, to set and enforce appropriate limits on discharges and emissions, and to create a monitoring regimen that will fully assess the stream’s progress in meeting pH water quality standards. We believe that the state is fully capable of making these modifications, and respectfully request that it do so.

Thank you for considering our comments. Please do not hesitate to call if you have questions.

Sincerely,



Dan Sherburne
Program Associate

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Bob Holden, Governor • Stephen M. Mahfood, Director

www.dnr.mo.gov

September 21, 2004

Mr. Dan Sherburne
Missouri Coalition for the Environment
6267 Delmar Boulevard, 2-E
St. Louis, MO 63130

Dear Mr. Sherburne:

Thank you for the comment letter dated September 1, 2004, regarding the Trace Creek Total Maximum Daily Load (TMDL) document. The responses contained here correspond to the numbers in your comment letter.

1. We appreciate your pointing out the “extraordinary natural setting” of Trace Creek. This will be included in the TMDL. Trace Creek is a Tier II creek according to the Missouri’s Anti-degradation Policy. This tier requires that there be no lowering of high-quality waters unless a limited lowering of quality is shown to be necessary for “economic and social development”.
2. As you acknowledge, there is no way to calculate a load using pH standard units. Requiring the stream to meet the standard is a frame for action and, further, is enforceable. The reason net alkalinity was not used as a Margin of Safety is that there is little alkalinity or acidity data, and most of that from 1995. These will be collected in future monitoring. Further, there are no current point sources in the area to make compensatory reductions.
3. We appreciate the Coalition’s suggestions for implementation of this TMDL. In fact, there have been efforts to reduce the pH by Madison County Wood Products (MCWP), which have been successful and are why leachate was removed from the 303(d) list as a pollutant. Also, at the request of the Air Pollution Control Program (APCP), we added this language to the Implementation section (changes in bold):

If operations resume at the Glover Smelter, **air quality modeling will be necessary to demonstrate compliance with the National Ambient Air Quality Standard for sulfur dioxide (SO₂). To meet the standard, SO₂ emissions will likely need to be reduced from historic emission rates. These emission reductions, in turn, will help to protect Trace Creek....**

 - a. Our research has determined that there is no other local source for sulfur oxide emissions. If you are aware of a contributing source, please bring it to our attention.

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- b. The TMDL cannot specify changes to the Air Standards. The APCP is aware of the situation and will work with Water Protection on the issue if and when the smelter should resume production. There is a long procedure that must occur through the APCP and the Clean Air Commission for any changes to be made to 10 CSR 10-6.260. APCP did add the following language to the Reasonable Assurances section:

Should the Glover Smelter resume operation **after December 1, 2008 (five years from shut-down)**, the department's Air Pollution Control Program.... Parallel changes in 10 CSR 10-6.260 *Restriction of Emission of Sulfur Compounds*, which establishes specific SO₂ emission limits, will also be necessary. **If Glover Smelter resumes operation prior to December 1, 2008, they must comply with 10 CSR 10-6.260. The regulation prohibits SO_x (all types of sulfur compounds) sources from causing or contributing to violations of the National Ambient Air Quality Standard, which will need to be demonstrated through an air quality modeling study prior to start-up.**
 - c. To give MCWP a higher pH than the standards would require site specific standards, a long process in itself. To do that, more years of data are needed. Due to the natural non-buffering of the upper watershed, we have actually considered going the other way, arguing that the area is naturally low in pH. Without additional data, we are unable to rule out that either aquatic life has adjusted to the pH or that the use (Protection of Aquatic Life) can legitimately be removed through a Use Attainability Analysis. Again, more data would be needed to make that determination.
4. We have considered your comments about monitoring and offer the following response:
- a. Alkalinity and acidity data will be collected so that net alkalinity can be calculated and then possibly used as a way to determine the buffering capacity of the creek.
 - b. Biological monitoring is a good idea and we would like to conduct it on many more sites as budget and staff allow. At present, the department is conducting biological monitoring at 55 sites, mostly nonpoint source issues determined by 303(d) list priorities. However, we do not believe biological monitoring is necessary to achieve restoration of Trace Creek or to prove we have resolved the listing issue.
 - c. One reason monitoring is not scheduled more frequently is that, using best professional judgement, the data collected does not show enough variability to warrant the higher frequency. Another factor is there is no water in the tributary during low-flow conditions, which are considered the critical periods for water quality and collecting more often at low flow will not produce more useable data. However, efforts will be made to collect samples at other flow regimes.
 - d. We will remove the language about delisting Trace Creek. Although the most recent data show an improving trend in pH, Trace Creek will not be considered for delisting in the next listing cycle. You might be interested to know that a draft of the next proposed list will be available in the next two months. You will have ample opportunity to comment on its contents at that time.

Dan Sherburne
Page Three

5. As stated above, we will remove the language about delisting Trace Creek. This is a phased TMDL (as are all Missouri TMDLs). This means that we can adjust the TMDL at any time if new data and/or circumstances indicate it is appropriate.

Again, thank you for commenting. The Coalition's participation in the TMDL process and concern for the health of Missouri's water resources is truly appreciated. If you have other questions or wish to discuss this further, please contact Anne Peery of the Water Protection Program, Water Quality Monitoring and Assessment Section, P.O. Box 176, Jefferson City, MO 65102-0176 or by telephone at (573) 526-1426.

Sincerely,

WATER PROTECTION PROGRAM

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

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

PAS:apj