

Missouri
Department of
Natural Resources

DRAFT MCKENZIE CREEK TMDL
PUBLIC COMMENTS

Public Notice
June 4 – July 4, 2004

McKenzie Creek
WBID #2787

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

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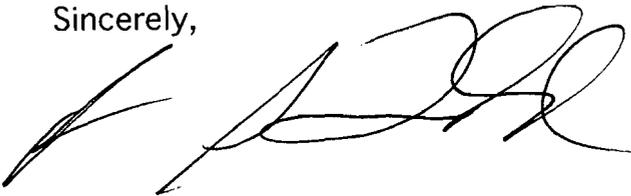
Department of Natural Resources
WWP/Water Quality Monitoring and Assessment
P.O. Box 176
Jefferson City, MO. 65102

June 10, 2004

Regarding the recent listing of McKenzie Creek in Wayne County, I'd just like to say this situation is nothing new. And I understand the solution if fairly simple - filtering drainage into the creek through some limestone gravel.

Seems odd to me that something wasn't done long ago. A shame we have to get involved in a "process" instead of just doing it.

Sincerely,

A handwritten signature in black ink, appearing to read 'Bob Todd', written over a horizontal line.

Bob Todd
Route 4, Box 4396
Piedmont, MO 63957

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Bob Holden, Governor • Stephen M. Mahfood, Director

www.dnr.mo.gov

July 8, 2004

Mr. Bob Todd
Route 4, Box 4396
Piedmont, MO 63957

Dear Mr. Todd:

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

The reason we went through this "process" is we wanted to get to the cause of the low pH in the creek. Our investigation suggests that atmospheric deposition/acid rain is the most likely source of acidity in Trace Creek, locally caused by the Glover Smelter. So, limestone "filters" may not be the answer in this case.

Even when the cause of low pH is something that lends itself to the limestone remedy, such as acid mine drainage, it is not as simple as it might seem. Just one of the complicating factors is that the limestone soon gets "armored" (coated with metal precipitates) and is no longer effective in buffering the flow. If you are interested in just how an effective anaerobic wetland-alkalinity producing system works, look up the Cedar Creek TMDL (Section 9 - Implementation plans). It can be found on our website at <http://www.dnr.mo.gov/wpscd/wpcp/tmdl/wpc-tmdl-EPA-Appr.htm>

Your 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



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

PAS:apj

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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

Ms. Anne Peery
Missouri Department of Natural Resources
PO Box 176
Jefferson City, MO 65102-0176

Dear Ms. Peery:

RE: McKenzie Creek TMDL

The following are the comments of the Missouri Department of Conservation concerning the draft TMDL for McKenzie Creek TMDL.

The pollution source for McKenzie Creek is listed in the document as "natural". Some clarification as to how and why the source was defined as such would be helpful. I don't consider either acid precipitation or acid mine drainage to be "natural." If the source is suggested to be the Tilk-Secesh complex, are their other areas of similar geology and soil types which have documented stream acidity problems?

Although it is possible that acid precipitation from the Glover Smelter is impacting McKenzie Creek, the data presented in the TMDL is not conclusive. Prevailing winds, blowing from the SSW, should drive acid precipitation north of the smelter. In 1997, the Missouri Department of Conservation, in cooperation with the USEPA (and possible MDNR) documented acid precipitation impacts to forest vegetation to the north of the Glover Smelter. The listed segment of McKenzie Creek is 17 miles south of the smelter. If the area around McKenzie Creek was being impacted from the smelter, then the Big Creek watershed and other streams in the area with similar geology should also be impacted. Documentation of impairment of adjacent streams area was not included in the TMDL. Are there other possible sources of acid precipitation to the south of the impacted segment? Additional data collection, both in McKenzie Creek and surrounding watersheds, is needed to discern possible contributions of acidity and determine their contribution.

COMMISSION

STEPHEN C. BRADFORD
Cape Girardeau

ANITA B. GORMAN
Kansas City

CYNTHIA METCALFE
St. Louis

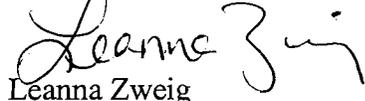
LOWELL MOHLER
Jefferson City

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MDC encourages permit compliance by the Gad's Hill Quarry facility to be the simple, first step to minimizing the impairment of McKenzie Creek and requests that MDNR continue to work with the permittee to prevent further violations.

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,

A handwritten signature in black ink that reads "Leanna Zweig". The signature is written in a cursive style with a large, stylized "L" and "Z".

Leanna Zweig
Environmental Services Biologist

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Bob Holden, Governor • Stephen M. Mahfood, Director

www.dnr.mo.gov

July 8, 2004

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

Dear Ms. Zweig,

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

We listed the source as “natural” when we found the sawmill was no longer the problem and did not know where else the acidity might be coming from. Listing the source as “Unknown” would have been more appropriate. The second footnote in the TMDL acknowledges that: “While the pollutant source is listed as “natural” in the 2002 303(d) list, this document suggests that atmospheric deposition/acid rain is the most likely source of acidity in McKenzie Creek.” We agree that acid rain is not natural.

We also agree that the data concerning acid precipitation resulting from emissions from the Glover Smelter is not conclusive. That would require modeling of long term air quality and climatic data, which has not been done at this point. However, supporting evidence was found during our research on another low pH TMDL that is soon to be forthcoming on Trace Creek. Trace Creek is about 16 miles directly east of the smelter. Like McKenzie Creek, 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. While many creeks and rivers in the area have yielded more neutral readings, most of those have been taken from segments further downstream, where the geology shifts and includes more dolomite and limestone exposure, and thus more buffering capacity. Increased volume of flow is also considered likely to dilute localized pockets of stream acidity.

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Leanna Zweig
Page Two

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, particularly on headwater areas underlain by inert geology, is governed to a great degree by proximity to the emission source, as wind direction varies considerably throughout the year. 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.

While we continue our study of air deposition sources for low pH in McKenzie Creek, we are also taking steps to assure pH control of the effluent from the Gad's Hill Quarry. The TMDL calls for the minimum pH in the discharge from Gad's Hill Quarry to be raised from 6.0 to 6.5.

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



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

PAS:apj

**Environmental
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Management**

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2 July 2004

Missouri Department of Natural Resources
Water Protection Program
WQMA Section
P.O. Box 176
Jefferson City, MO 65102-0176



RE: Comments on MDNR Draft TMDL Document
McKenzie Creek, Wayne County, Missouri

Ladies and Gentlemen:

On behalf of the GS Roofing Products Company Gads Hill Quarry, a subsidiary of CertainTeed Corporation (NPDES Permit No. MO0110051), Environmental Resources Management, Inc. (ERM) submits the following comments on the draft Total Maximum Daily Load (TMDL) evaluation for pH performed by the Missouri Department of Natural Resources (MDNR) on a reach of McKenzie Creek to which effluent from Gads Hill Quarry is discharged. Comments on the draft TMDL document are focused on the following areas:

- database for TMDL development,
- impact of Gads Hill Quarry discharges on McKenzie Creek under current and increased-pH-limit conditions,
- potential economic consequences of MDNR's proposed TMDL, and
- pertinent regulatory considerations.

These items are discussed in greater detail in the following subsections.

Database for TMDL Development

Within the impaired reach of McKenzie Creek, the draft TMDL Information Sheet (p. 3) indicates only three data points from the Creek and two data points from the unnamed tributary to the Creek, to which the facility's Outfalls 001 and 002 discharge. This small data set is less than one-half the minimum size required for valid statistical evaluations. Moreover, only one of these data points was taken in the last three years (cf USEPA's time criterion for the usability of data for NPDES

permitting), and this datum was from McKenzie Creek, not the unnamed tributary to which the facility discharges. Thus, the TMDL study on this creek and the study's conclusion that Gads Hill Quarry must, alone, bear the burden of increasing McKenzie Creek's pH is based upon insufficient data.

The facility has been collecting pH data on McKenzie Creek and the unnamed tributary to the Creek since 2002, summarized as follows.

McKenzie Creek pH (S.U.) 10 yds upstream of Unnamed Tributary			No. of Observations
Year	Average	Range	
2002	5.6	5.1-6.7	101
2003	5.7	5.2-6.3	112
2004	6.1	5.1-7.1	70 (to 6/21/04)
Unnamed Tributary pH (S.U.) 10 yds upstream of McKenzie Creek			No. of Observations
Year	Average	Range	
2002	6.3	5.7-7.5	135
2003	6.4	5.9-8.9	117
2004	6.5	6.2-7.2	69 (to 6/21/04)

As may be seen from these data, the tributary carrying the Outfall 001 discharge from the facility is already consistently higher in pH than the water in McKenzie Creek. Thus, GS Roofing is certainly not the source of the depressed-pH water in the Creek. In fact, in 2004, the facility's discharge elevated the entire tributary's pH to 6.5 on average.

It is also interesting to note that the most recent average pH of McKenzie Creek is 6.1 S.U., which matches the June 2004 pH measurement of ground water in the Gads Hill Quarry production well. Assuming that flow in McKenzie Creek in August represents primarily base flow (the stream was dry during periods of this month) this water had a pH of 5.3-5.4 S.U. in 2002, and 5.5-5.6 S.U. in 2003. This acidic ground water is (per Attachment 1) estimated to make up 360 gpm (0.52 MGD) of the water flowing in McKenzie Creek, or 12% of flow, on an annual average. Thus, even absent direct inflow to the Creek from acidic rainfall/surface runoff, the pH of the ground water/stream base flow in the area appears to be significantly below the Missouri minimum stream pH limit of 6.5

S.U. Note that this base flow is entering McKenzie Creek independent of the GS Roofing discharges.

Impact of Gads Hill Quarry Discharges on McKenzie Creek pH

To assess the impact of Quarry discharges on the creek, the last three years of flow data from facility Outfalls 001 and 002 were evaluated, in conjunction with pH data for McKenzie Creek. Flow data for Outfalls 001 and 002 are provided in the following table.

Outfall 001 Flow (MGD)			No. of Observations
Year	Average	Range	
2002	0.318	0-1.5	147
2003	0.179	0.0137-1.305	146
2004	0.114	0.0256-0.6	71 (to 6/21/04)
Outfall 002 Flow (MGD)			No. of Observations
Year	Average	Range	
2002	0.093	0-0.8	144
2003	0.006	0-0.864	141
2004	0	0	69 (to 6/21/04)

Flows for McKenzie Creek, estimated for the southern drainage basin boundary immediately below the facility's Outfall 002, are provided in Attachment 1. The estimates indicated an annual average flow rate of 3,000 gpm (4.32 MGD), with a maximum annual average flow rate of approximately 4,800 gpm (6.9 MGD) at the downgradient edge of the defined drainage basin. Average flows for the facility's two outfalls combined are as follows:

Year	Sum of Average Outfall 001 and 002 Flows (MGD)
2002	0.411 MGD
2003	0.185 MGD
2004	0.144 MGD
Avg.	0.237 MGD

To assess the effect of the combined Outfall 001/002 flows at varying pH values on McKenzie stream pH, the mixing equation approach was employed, assuming no significant buffering. Input parameters and

resultant mixed pH values were as follows:

Assumed Outfall 001/002 Discharge pH (S.U.)	Average Annual McKenzie Creek Flow=4.32 MGD; Average Annual GS Roofing flow=0.237 MGD; Average McKenzie Creek pH upstream of Outfalls 001/002= 5.75	Maximum Average McKenzie Creek Flow=6.9 MGD; Maximum Average GS Roofing flow=0.411 MGD; Average McKenzie Creek pH upstream of Outfalls 001/002=5.75
	Resultant McKenzie Creek pH after Mixing	Resultant McKenzie Creek pH after Mixing
6	5.76	5.76
6.5	5.77	5.77

From this evaluation, two findings are apparent:

- Increasing the pH of the GS discharges by 0.5 S.U. will not have any significant impact on stream pH and certainly will not raise the stream's pH to the desired level of 6.5 S.U.
- There was no difference between maximum average and average annual flow ratios in terms of the ultimate pH of McKenzie Creek.

Given the above findings, there is indeed no technical justification or public policy benefit to changing the NPDES pH limitation to 6.5 S.U. for the Gads Hill Quarry, as one would have to discharge water at a hydronium ion concentration two orders of magnitude lower to achieve the desired pH of water in McKenzie Creek. Moreover, as discussed below, imposition of a higher (more stringent) pH lower bound, as well as a zero-tolerance requirement for pH excursions below this lower bound limitation (p. 9 of the TMDL document) will require installation of costly final pH adjustment facilities that will provide only negligible improvement of stream pH.

Economic Considerations

As indicated on p. 9 of the TMDL document, the future pH limitation to be applied to GS Roofing's discharges will require that "there be no deviation from the pH standard." We presume, based upon this language, that any discharge pH of less than the proposed new limit of 6.5 S.U. will constitute an enforceable violation of the facility's future

NPDES permit conditions. In view of this, the facility has assumed that it will need to install additional final neutralization facilities to ensure consistent compliance with such a limit. Given the wide range of flows to be treated at each of the two outfalls potentially affected by the TMDL, an estimated \$105,000 in capital costs alone could be incurred *per outfall* to ensure compliance with this proposed limitation. In addition to these capital costs, additional operations and maintenance costs would be incurred, estimated at \$10,000-\$20,000 annually.

The Gads Hill Quarry is, like most quarrying operations, not a high-profit-margin industry. The chief factor that continues to make this Quarry viable is its proximity to its rock processing operations. Over the past few years, the work force at this quarry has already declined from 47 to 38 employees. Nonetheless, the facility, primarily because of its fixed assets, paid to Wayne County \$262,000 in real estate and personal property taxes in 2002 alone and is responsible (through wages paid to employees) for payments to the state treasury of an estimated \$95,000 in personal income tax revenue. This single facility's payment of school taxes comprises approximately 2% (\$178,500) of the approximate \$8 million budget of the Clearwater School System.

We urge MDNR to not put the viability of this facility in jeopardy by imposing TMDL requirements that will not significantly improve the pH in McKenzie Creek but that may cost GS Roofing capital and additional operations outlays approximately equal to its total tax burden! We also urge MDNR to consider the negative financial impact the loss of the Quarry as an operating business would have, especially on local school district and county finances.

Regulatory Considerations

In the draft TMDL document (p. 9), MDNR states its intention to reopen the Gads Hill Quarry NPDES permit in Summer 2004 to tighten the pH limitation lower limit from 6 to 6.5 S.U.

While we acknowledge MDNR's existing statewide minimum pH limitation of 6.5 standard units (S.U.), we wish to parenthetically urge MDNR, in future rulemaking, to consider aligning its minimum pH limitation with that of the states bordering on Missouri's southeastern corner. Arkansas, Tennessee, and Kentucky all have a minimum pH limitation of 6 S.U. In fact, the Black River, to which McKenzie Creek

ultimately flows, enters the State of Arkansas. It is economically punitive and inequitable to require a granite quarry located by necessity in a noncarbonate, low-buffering-capacity area, to artificially elevate natural pH levels to those naturally achievable in more favored geologic areas of the state.

In reviewing historical correspondence between the Gads Hill Quarry and MDNR, a 30 March 1995 letter from MDNR to Mr. Jerry Blossom (Union Pacific Resources Minerals [a G. S. Roofing predecessor in title]) suggested that the Quarry's permit might be modified "so as to credit the low pH water in such a way that effluent limits are not exceeded due to naturally occurring phenomena." This position is consistent with USEPA's Mineral Mining and Processing Point Source Category regulations (40 CFR 436), Crushed Stone Subcategory (Subpart A), which call for discharges to have a pH of 6 to 9 S.U. except "in the case of a discharge into receiving waters for which the pH, if unaltered by man's activities, is or would be less than 6.0 and water quality criteria in water quality standards approved under the [Clean Water] Act authorize such lower pH, the pH limitations for such discharge may be adjusted downward to the pH water quality criterion for the receiving waters. In no case shall a pH limitation outside the range of 5.0 to 9.0 be permitted." However, on 12 September 1995 MDNR indicated to Mr. Blossom that no relief could be granted from the 6-9 S.U. pH limit. This latter position is only partially in accordance with 10 CSR 20-7.015 (9)(G), which indicates that discharges from industrial wastewater treatment facilities shall meet the requirements of USEPA's regulations at 40 CFR 405-471 [e.g. 40 CFR 436 above, which incorporates limited pH limitation relief] and that "pH shall be maintained in the range from six to nine (6-9) standard units..."

MDNR has indicated in the draft TMDL document (p. 10) that, 'much of the acidification in McKenzie Creek is due to factors that are beyond the control of the only point source discharger in the watershed, GS Roofing'. Moreover, MDNR has indicated on p. 8 of the draft TMDL document that "The Glover Smelter shutdown and unspecified reductions in SO₂ air emissions may have already resulted in this load allocation [that prescribes that runoff will achieve a pH of 6.5 to 9]. Future monitoring will track the goal." We urge MDNR to defer decisionmaking on a modified pH limit for the Gads Hill Quarry until sufficient data are available to assess whether the state's in-stream pH goal has been met through improved air quality. This approach would not only avoid potentially misdirected investment on the part of Gads

Hill Quarry, but also avoid the potential pitfall of the antibacksliding provisions contained in U.S. Title 33, Chapter 26, Subchapter IV, Section 1342(o). Specifically, if Gads Hill Quarry is assigned a pH minimum of 6.5 S.U. in a revised NPDES permit, and it is then found that natural conditions have resulted in an instream quality that meets the 6.5 S.U. criterion, MDNR may not then be able to relax the pH limitation back to 6 .U., because of the antibacksliding provisions.

Finally, we urge MDNR to revisit the net-gross provisions in USEPA's 40 CFR 122.45(g) in its consideration of limitations for the Gads Hill Quarry. 40 CFR 122.45 (g)(1) pertains under both criterion (i) [cf 40 CFR 436.22(c)]and (ii) [see discussion in Section 2 of this comment document]. The ground water that supplies certain quarry operations is the same ground water that is the base flow to McKenzie Creek. The stormwater runoff that is used in part in the quarry's operations is the same runoff that ultimately enters McKenzie Creek. Moreover, as is shown by Section 2 of this comment document, the waiver contained in 40 CFR 122.45 (g)(4) pertains, as no environmental degradation can be shown to result from the Quarry's discharges. Rather, the Quarry's discharges have a small, but measurable, positive impact on stream quality with respect to pH.

Summary

As indicated above, we believe that the imposition of more stringent pH requirements on the facility's discharges of stormwater and groundwater unjustly places the economic and technical burden of general stream improvement on an innocent party. As stated above, the draft TMDL document states that much of the acidification in McKenzie Creek is due to factors that are beyond the control of GS Roofing. We note that facility operations do not contribute acidic materials to the stormwater and groundwater discharged. In fact, the facility's operations actually improve stream quality with respect to pH. However, GS Roofing does not discharge enough wastewater to McKenzie Creek to be able to bring about any substantive change in Creek pH through increasing the pH of its own discharges to the statewide instream pH minimum standard. Thus, we trust that MDNR will alter the TMDL document to relieve GS Roofing from MDNR's proposed more stringent pH limitations.

Through the information provided in this comment document, we hope that we can cause MDNR to focus its resources on more appropriate and

effective means of elevating McKenzie stream pH to an acceptable level. Specifically, we suggest that MDNR consider stream treatment similar the treatment successfully conducted for acid-mine-drainage-affected streams, if the stream does not recover on its own over the next several years. In addition, given that the former Glover smelter is believed to be generally downwind from the Quarry, we suggest that MDNR consider the historic sulfur dioxide emissions of power plants located to the west and southwest for potential upwind sources of acidic materials deposition.

We appreciate having had the opportunity to comment on this draft TMDL. Should you have any questions on the comments contained herein, please contact Mr. David LaBelle, Director – HSE Services Group for the CertainTeed Exterior Products Group, at (610) 341-7215.

Very truly yours,

Ruth E Baker

Ruth E. Baker, P.E.
Project Manager

*David A. LaBelle
@Saint-gobain
.com*

REB/ms

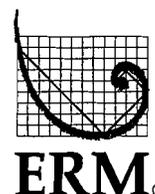
Attachment 1
McKenzie Creek Flow Estimates

Memorandum

Environmental
Resources
Management

To: David LaBelle
Company: CertainTeed
From: Henry He
File number: 19705
Date: 29 June 2004
Subject: Estimation of McKenzie Creek Flows

350 Eagleview Boulevard
Suite 200
Exton, PA 19341
(610) 524-3500
(610) 524-7335 (fax)



This memo summarizes the development of flow estimates for the McKenzie Creek watershed encompassing the Gads Hill Quarry and its NPDES Outfalls Nos. 001 and 002. The size of the McKenzie Creek watershed at this point is approximately 5.67 square miles. This area was determined using USGS topographic maps.

The Gads Hill Quarry and its upstream McKenzie Creek watershed are situated within a granite bedrock area that is surrounded by a carbonate (dolomite) formation (*Rueff, A.W., 2000, Mineral Resources In Missouri: Missouri Department of Natural Resources, Division of Geology and Land Survey.*) Similar granite formations are present in the general area of the Gads Hill Quarry, but no flow gauging stations are present in the vicinity of the Gads Hill Quarry. In Madison County, north of Wayne County where Gads Hill Quarry is located, there is a much larger granite area within which the USGS gauging station 07035800 is situated on the St. Francis River near Mill Hill. The long-term average and maximum runoff measured at this station is 16.05 and 25.50 inches per year, respectively (*Hauck, H.S. and Nagel, C.D., 2003, USGS Water Resources Data, Missouri, Water Year 2002: Water-Data Report MO-02-1.*) An analysis of the gauging station's data revealed that the baseflow portion of the stream flow equates to approximately 1.9 inches per year. The baseflow is contributed by ground water discharge to streams.

Assuming the hydrological characteristics of McKenzie Creek and St. Francis River are similar due to their similar climate and geological setting, and applying the annual runoff and baseflow rates observed at St. Francis River to McKenzie Creek, the annual average flow rate of McKenzie Creek near the Gads Hill Quarry is estimated to be approximately 3,000 gpm, the baseflow portion of which is approximately 360 gpm; the maximum annual average flow rate is approximately 4,800 gpm.

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Bob Holden, Governor • Stephen M. Mahfood, Director

www.dnr.mo.gov

September 8, 2004

Ms. Ruth E. Baker, P.E.
Environmental Resources Management
350 Eagleview Blvd.
Exton, PA 19341

Dear Ms Baker:

Thank you for your letter of July 2, 2004, concerning the TMDL for McKenzie Creek in Wayne County, Missouri. In that letter, you presented your case for objection to the proposed requirement that the Gads Hill Quarry change the minimum allowable pH in its discharge to the creek from 6.0 to 6.5 standard units.

We agree that there are other factors beyond the quarry operations that contribute to the acidity of the creek. The proposed change in the NPDES permit was based on the lack of buffering capacity in the stream at that location. Our normal effluent regulation for pH of between 6 and 9 standard units is derived in part from geological factors that favor buffering of acidity in streams throughout most of the state. With normal stream buffering capacity, that is adequate for the water quality standard of a minimum pH of 6.5 to be maintained. From what we have been able to determine, this appears not to be the case at the site of the Gads Hill Quarry.

We considered developing site specific water quality criteria for that area, given that much of the underlying geology does not support buffering of stream acidity, whether it is caused by natural or anthropogenic factors. Such an approach would require analysis not only of chemical parameters but also biological factors. Presently we do not have adequate data available to address this.

There may be a simpler approach to this issue. From the data that we presented in the TMDL and also from the data that you have shown in your letter, there appears to be a climbing trend for pH in McKenzie Creek over the last several years. This may be due to reduced emissions followed by the closure of the Doe Run Company's smelter in Glover. We are not certain of that. We want to continue tracking this trend. If it continues in the right direction, we will be able to remove McKenzie Creek from the 303(d) list without any further burden on your company.

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Ruth E. Baker
Page Two

What we propose is this: We will, at this time, refrain from changing your NPDES permit to require a minimum pH of 6.5 in the discharge from the quarry's outfalls. In return, we would like you to provide us with pH data on a monthly basis both from the outfalls and also from several points in McKenzie Creek as listed below.

#	SITE_ID	WBID	LAT	LONG	DESCRIPTION
1	2787/3.7	2787	37.23640	-90.71410	McKenzie Cr.@ Hwy CC, SWNW Sec.34, 30N,3E
2	2787/3.65/.1	2787	37.23580	-90.71410	Trib. From Gads Hill Quarry @NESW Sec.34, 30N,3E
3	2787/3	2787	37.22610	-90.71480	McKenzie Cr.@ Hwy49 bridge, NWNW Sec.3,29N,3E
4	2787/1.5	2787	37.19790	-90.70760	McKenzie Cr. @county road, SWSE Sec.10,29N,3E

The normal period for implementation of a TMDL is three years, and that would be an appropriate period for collecting this data. This information may help to confirm the main point that you made in your letter, that discharges from the quarry are not significantly contributing to acidity in McKenzie Creek. It will also help us to determine whether the improvement in the stream's pH is a lasting trend or an anomaly. If you would also be willing to provide the pH data that you have already collected over the last several years, it would be very much appreciated.

I hope that you find this proposal agreeable and I look forward to hearing from you. If you have further questions, please contact Ann Crawford at the Water Protection Program, P.O. Box 176, Jefferson City, MO 65102 or by telephone at (573) 751-6623.

Sincerely,

WATER PROTECTION PROGRAM



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

PAS:jc