Message

From: Holst, Linda [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=97E4A65ADDD9494FA193C98DD5D12B55-LHOLST]
Sent: 4/7/2016 7:28:13 PM
To: Kathleen Mayo [Mayo.Kathleen@epa.gov]
Subject: FW: St. Louis River sulfate data

Kathy – I'm confirming that you didn't receive this information before I ask Nancy to send it. We had a conversation with her on PolyMet earlier this week and she mentioned they had data, and that they shared it with us. Katie says she doesn't have it, and forwarded this string of emails.

Begin forwarded message:

From: "Mayo, Kathleen" <mayo.kathleen@epa.gov>
Date: January 29, 2016 at 4:49:47 PM CST
To: "Pfeifer, David" <pfeifer.david@epa.gov>, "Holst, Linda" <holst.linda@epa.gov>
Subject: FW: St. Louis River sulfate data

You've probably already see the cumulative effect document, but thought I"d forward the info I asked Nancy to share. Hopefully we'll get a look at their updated info next week (I'm especially interested in the fish tissue data).

Kathleen Mayo
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Phone: 312-353-5592 (office hrs. 9:45-6:00)

From: Nancy Schuldt [NancySchuldt@FDLREZ.COM]
Sent: Friday, January 29, 2016 4:36 PM
To: Mayo, Kathleen
Subject: St. Louis River sulfate data

Kathy – good talking with you this afternoon! I'll have Kari Hedin pull together all of our St. Louis River chemistry data, including sulfate and mercury. We collected fish last summer for analysis but don't yet have that data, but there is some fish mercury data from downstream of the reservation (the AOC) from a couple years ago. Fish in the estuary, even normalized for species and length, are higher in mercury than fish upstream in the river or out in Lake Superior. This is likely attributed to several factors, including legacy hotspots of higher mercury (in the estuary, in the Minnesota Power reservoirs), extensive wetland complexes and shallow embayments that provide great methylating environments, plenty of DOC to feed the methylating microbes, and just enough sulfate being loaded to the river that it overcomes sulfate limitation for the sulfur-reducing bacteria (SRB).

I'm attaching our tribal Cumulative Effects Analysis that was published in the PolyMet SDEIS (Appendix C), which includes our analysis of the downstream extent of both sulfate and specific conductance, originating in mine discharges (p. 16-18, p.28-33). I have the raw data too, with actual sulfate concentrations all the way down the river. Natural background sulfate

concentrations should range between 3-5 mg/l, which is limiting. Estuary concentrations that I've seen range between ~8-16 mg/l, which is sufficient enrichment for SRBs to be happy.

Mike Berndt's research for DNR Lands & Minerals has extensive data as well:
http://www.dnr.state.mn.us/lands_minerals/dnr_so4_research.html
check out especially Berndt and Bavin 2012b: confirms that most of the sulfate in the SLR at Mile 36 (that's just downstream of the reservation) is derived from the Iron Range mining district; mostly the waste rock stockpiles, less from the pit dewatering and tailings basin discharges.

I'm also attaching Brian Branfireun's expert opinion on the mercury analysis in the PolyMet FEIS. It's worth reading.

Nancy Schuldt
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