

FW: Comments on September 25, 2017 draft homolog pattern analysis

Nickel, Brian <Nickel.Brian@epa.gov>

Wed 10/4/2017 3:40 PM

To: Dave Dilks <ddilks@limno.com>;

Dave:

Thanks for answering my questions verbally during the TTWG meeting today.

Regarding the relatively high in-river result at Mirabeau, perhaps it would make sense to calculate the cosine- θ between that specific river result and the upgradient wells at Kaiser. As you said, most of the results for that segment don't indicate a significant load entering the river. So, by averaging in those low-concentration results, to a degree, you're analyzing the effect of the groundwater wells upgradient from Kaiser upon a load that didn't exist at the time the river was sampled. It would be interesting to see how the homolog profile of those wells correlates to the river load, specifically in the sample in which it was observed.

I realize there are a lot of other unknowns about that segment that would require additional monitoring to address (e.g., how often and under what conditions is that apparent load present), but I still think that could be informative.

Thanks,

Brian Nickel, E.I.T.

Environmental Engineer

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<http://epa.gov/r10earth/waterpermits.htm>

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From: Nickel, Brian

Sent: Tuesday, October 03, 2017 4:00 PM

To: Dave Dilks <ddilks@limno.com>

Subject: Comments on September 25, 2017 draft homolog pattern analysis

Dave:

In some respects, the pre-processing of the river data, prior to the cosine θ comparison, is unclear. The report states that both the river and well data were blank censored, and that negative changes in homolog loads were set to zero. What is unclear to me is the statistic used to quantify the loading to the river from the mass balances. I seem to recall from the discussion at the meeting on 9/27 that the arithmetic mean was used, but I can't find this in the report (and I'm not completely confident in my recollection of the meeting discussion). The report should state the statistic used to quantify the river loading estimates from the mass balances.

I understood from the discussion at the meeting on 9/27 that there was a concern that some of the river loading values were influenced by one data point that was much higher in concentration than the others, such as the result of 231 pg/L at Mirabeau Park in the 2015 synoptic survey (the next-highest result at that location was 17 pg/l). Perhaps this could be

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addressed by dropping suspected outliers from the river data and reporting the cosine- θ values calculated both with and without outliers.

Thanks,

Brian Nickel, E.I.T.

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