To: Fox, Tyler[Fox.Tyler@epa.gov]
From: Thurman, James
Sent: Fri 5/13/2016 12:46:39 PM
Subject: FW: Labradie modeling
Sierra Club - Missouri.pdf

[redacted]

Exemption 5: Deliberative

James A. Thurman, Ph.D.

U.S. EPA/OAQPS/AQAD

Air Quality Modeling Group (C439-01)

109 T.W. Alexander Drive

Research Triangle Park, NC 27711

Phone: (919) 541-2703

Fax: (919) 541-0044

Email: thurman.james@epa.gov

From: Wayland, Richard
Sent: Friday, May 13, 2016 8:31 AM
Subject: FW: Labradie modeling

I hate to keep beating this horse, but I probably need to get some time with you guys and make sure I know exactly what they did in modeling the Labradie source as this one is going to be contentious. Besides the merging of the units, did they do anything else we would consider unacceptable or questionable? Can we find a few minutes next week to go through this one?

Also, I am confused as to who modeled what. I was told by R7 that the source, the state and SC all submitted modeling. The SC quote below seems to be referring to the source's modeling. Were the state and source modeling the same??

Again, sorry to belabor this one, but we need to hash this one out a little bit more in detail.

Thanks

Chet

Richard A. "Chet" Wayland | Director | Air Quality Assessment Division - Mail Code C304-02 | Office of Air Quality Planning & Standards | U.S. Environmental Protection Agency | Research Triangle Park, NC 27711 | Desk: 919-541-4603 | Cell: 919-606-0548 | Fax: 919-541-4511 |

From: Hawes, Todd
Sent: Friday, May 13, 2016 8:24 AM
To: Wayland, Richard <Wayland.Richard@epa.gov>; Naess, Liz <Naess.Liz@epa.gov>
Subject: FW: Labradie modeling

Cut and paste from Sierra Club report. My understanding is that LOWWIND 3 was not used in these scenarios, so that aspect is not of concern. The other items (merged stacks, background concentration, calculation of actual flow rates) are the critical ones.

Todd Hawes | USEPA | OAQPS|AQAD|Phone (919) 541-5591

C. Absent Each and Every One of Ameren's Poorly-Justified Changes to MDNR's Model, Ameren's Beta Options Model Shows Nonattainment.

Unpacking Ameren's modeling reveals why, in addition to employing the beta options, Ameren

made other poorly-justified changes to MDNR's model. It took using the current version of

AERMOD with the beta LOWWIND3 option employed, coupled with merging the

emissions

from units 3 and 4, changing the background concentration data source to a remote,

agriculturally-sited monitor, and calculating actual stack flows in a manner that inflates exit

velocities and dispersion in order for Ameren's modeling to (just barely) suggest attainment.

With these changes Ameren's model predicts a peak 99th percentile 1-hour average concentration

of 193 ug/m3, which is just 3.2 ug/m3 below the NAAQS.

Reverse *any* of the changes Ameren made to MDNR's model and its demonstration of attainment

collapses like a house of cards. We ran Ameren's beta options model three times using all of

Ameren's inputs, except that we reversed, one at a time, the three changes Ameren made to

MDNR's model (beyond the use of the current version of AERMOD with the beta options

employed). When Ameren's model is run exactly as Ameren ran it, except that units 3 and 4 are

modeled as separate release points, it predicts a peak 99th percentile 1-hour average

concentration of 225.2 ug/m3.[38] When Ameren's model is run exactly as Ameren ran it, except

that hourly velocities are calculated from standard stack flows from EPA's Emissions Modeling

Clearinghouse, it predicts a peak 99th percentile 1-hour average concentration of 226.4 ug/m3.[39]

And when Ameren's model is run exactly as Ameren ran it, except using MDNR's background

concentration based on the East St. Louis monitor, it predicts a peak 99th percentile 1-hour

average concentration of 198 ug/m3.[40] These results, all of which are above the NAAQS, are

summarized in Table 1. Violating receptors under each scenario are shown in Figures 3, 4, and 5,

below.

Table 1. Results of Ameren's Beta Options Model With Each Change Separately Reversed

Modeling Run	Emissions From Units 3 & 4	Flow Used to Calculate Exit Velocities	Background Monitor Used	Peak 99th Percentile 1-Hour Concentration (µg/m³)	Attainment? (Yes/No)
Ameren's Modeling as Submitted	Merged	Actual	Nilwood, IL	193.0	Yes
Emissions From Units 3 & 4 Split	Split	Actual	Nilwood, IL	225.2	No See Figure 3
Standard Flow Used to Calculate Velocities	Merged	Standard	Nilwood, IL	226.4	No See Figure 4
MDNR Background Monitor	Merged	Actual	East St. Louis, IL	198.0	No See Figure 5

[35] Lance Avey, personal communication, January 15, 2016.

[36] *Id.*

[37] *Id.*

[38] Modeling files that show Ameren's beta options model except that units 3 and 4 are modeled as separate release

points are attached hereto as Appendix C, Exhibit 6. Because units 3 and 4 are combined in Ameren's hourly rate file,

we do not have hourly stack temperatures and velocities (based on actual stack flows) for units 3 and 4, nor are we able

to back-calculate them. Therefore, we used the hourly stack parameters for the combined stack ("lab34") for both units

to evaluate the effect of modeling them separately. Given that the combined stack parameters were derived by

averaging the parameters for units 3 and 4, this should provide a reasonable approximation.