**Review of EPA MEmo**

**on regional haze data patching, substitution and completeness**

**(April 13, 2020 and revised June 1, 2020)**

Submitted to:

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**MEMO REVIEW**

 Air Resource Specialists (ARS) was asked to review information presented in the April 13, 2020 EPA memo titled: *Recommendation for the Use of Patched and Substituted Data and Clarification of Data Completeness for Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Program*. ARS was specifically asked to review the web links in the footnotes, compare the data presented in the memo’s Appendix A with data received directly from IMPROVE and TSS databases, and provide general comments. (Note that the EPA memo was later revised to address some of the issues ARS originally found.) This memo summarizes ARS’ review and recommendations.

* **Web links in footnotes** – ARS verified that in the revised version of the memo all web links in the footnotes are correct and active.
* **Discussion of patching vs. substitution** – The revised memo corrected language pertinent to this discussion and now correctly states that patching occurs prior to substitution when attempting to fill in missing data.
* **Combination of sites into a single site for regulatory purposes** – The revised memo now states that there have been some “EPA default site combinations.” The memo does not explain how sites have been combined. ARS’ review of the Appendix A data table revealed that in some cases EPA values differ from what IMPROVE and the TSS are reporting (see next bullet).
* **Appendix A data table review** – ARS compared the data from the EPA memo Appendix A data table with data received directly from IMPROVE and TSS databases. The purpose was twofold: 1) to identify any discrepancies between the EPA memo and the data currently available to states, and 2) to identify any discrepancies between the delivered IMPROVE data and the uploaded TSS data (which might indicate a processing problem). ARS found discrepancies between EPA and IMPROCVE data for only three sites: HACR1 (Hawaii), KPBO1 (Alaska) and ZICA (Utah). ARS found no discrepancies between IMPROVE and TSS data. Tables 1 and 2 present these data comparisons with discrepancies highlighted in yellow.

All three of these sites are a second generation monitoring site for their respective regions, and appear to be the “EPA default site combinations” referred to in the EPA memo. Each site pair has a different history, and earlier review of the data sets by ARS and others did not show a simple way to combine the data, although the states involved may have since decided how to do so on their own. It is not clear how EPA combined the data, although in some cases it appears that they selected one of the pair’s natural conditions value for the combined data set. However, in some cases the EPA values do not agree with IMPROVE values.

Not shown in Table 2 is the comparison of E3 Carbon and Dust because no discrepancies were found with the EPA memo data.

**RECOMMENDATIONS**

 The only outstanding issue with the EPA memo appears to be the understanding and handling of data from combined sites. To resolve this issue, ARS recommends two steps:

* **Review data from site combinations** – WRAP and the affected states should discuss with EPA how site data sets were combined so that all parties understand and agree to what has been done in these cases.
* **Update the EPA, IMPROVE and TSS data sets for site combinations** – Once the site combination methodology is understood and acceptable to all parties the EPA, IMPROVE and TSS data sets should be updated to reflect the final decisions. As was done with SYCA1 and SYCA2, whose combined data set in the IMPROVE database is called SYCA\_RHTS, the combined data sets for HACR1/HALE1, KPBO1/TUXE1 and ZICA1/ZION1 should be renamed to distinguish their final data set from the original pairs of sites.

**Table 1**

Comparison of EPA, IMPROVE and TSS values

First Implementation Period Approach (RHR2)



**Table 2**

Comparison of EPA, IMPROVE and TSS values

Recommended Approach (MID)

