

## Comments on the Climate Action Reserve's Nitrogen Management Project Protocol (NMPP) Version 1.0

1. Beginning on page 81 of Appendix A, there are inconsistencies with the Figure numbers and Table numbers as referenced in the narrative portion of the Appendix. As such, this also affects the references in the body of the Protocol, e.g., on Page 14, Table A.9 is referenced, but it should reference Table A.8. The List of Tables and List of Figures in the Table of Contents are also incorrect and incomplete for the tables and figures in Appendix A.
2. Equations 5.11 and 5.12 on Page 31 would be clearer if extra parentheses were added around the term " $NR_{B,o,f} \times 0.8$ " and the correction factor 0.8 was listed first.
3. Section 5.5, Page 36 and Section 5.5.2, Page 37, "Calculating GHG Emissions from Manure Storage (SSR 5)." The NMPP erroneously assumes that reducing the organic nitrogen (N) rate will increase off-site manure storage time thereby increasing secondary emissions, specifically methane emissions. Most manure storages at livestock operations, especially liquid manure storages such as deep pits, lagoons, slurry stores, etc. have a fixed manure storage capacity; therefore, these storages fill up at nearly the same rate every year and the livestock producer cannot "choose" to store the manure longer. When the manure storage is full, it must be pumped out to a land application field. The manure is not stored longer, it is just a matter of which fields receive manure in a given year. The secondary GHG emissions at the manure storage are the same from year to year and are simply being displaced from one field to another field in a given year.

In addition, the manure generated at a given livestock operation may be managed by a different producer than who is managing the participating project field enrolled under this protocol, making the emissions from the manure storage outside of the assessment boundary. Also, including this off-site secondary source of GHG emissions is directly contradictory to excluding emission reductions from the decrease in synthesis of commercial fertilizer (SSR 8). It is recommended that the quantification of "GHG Emissions from Off-Site Storage of Manure (SSR5)" be excluded in this protocol.

4. Equation 5.21, Page 38. The calculation of increased GHG emissions from transportation of organic-N (manure) substituting for synthetic N fertilizer does not appear to take into account baseline emissions for the transportation of the synthetic fertilizer. For example, what if the project participant under baseline conditions is using liquid urea ammonium nitrate (UAN) solution that he is hauling 20 miles one way to the field and under the project scenario, he is hauling an equivalent amount of N in the form of manure 0.5 mile to his field. How is the transportation distance for the synthetic fertilizer accounted for in Equation 5.21?
5. The method in which the nitrous oxide ( $N_2O$ ) emissions reductions are calculated appears to penalize the progressive farmers or early adopters of good N management strategies because their historic baseline emissions calculated on a project-by-project basis or field-

by-field basis will already be lower allowing for minimal opportunities for improvement. If the NMPP used the average N rates by state or average ratio of removed to applied N (RTA) or RTA performance threshold as shown in Tables A.7 and A.8 as “business as usual practices” this would allow (1) greater opportunities for quantifiable emission reductions; and (2) would minimize some of the historical data collection requirements for the project participant or aggregator. Both of these aspects would allow the NMPP to be adopted over a larger-scale area.

6. “Time-stamped digital photographs of the fertilizer management activities” is referenced in Section 7.3.1 and 7.3.1.2. These photographs will not provide the necessary information to document or verify reductions in N rates. It is recommended these references be removed from the protocol.
7. The term “OSN” is used in Tables 8.1 and 8.2. Please define the term OSN.
8. It is not apparent in the protocol if irrigated corn grain or corn silage is eligible. This will have a significant impact on the western corn belt, especially for Nebraska and Kansas.
9. Version 2.0 of this protocol should consider provisions for quantification of nitrous oxide emission reductions when converting annual cropping systems to perennial grasses or other perennial crops that require less N inputs.

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