



4-Factor Analysis Evaluation Response

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Todd Wetzel resigned from GeoStrata, accepted a management position with an industrial production operation in the mid-west and moved out of Utah in mid-August. Mr. Wetzel is no longer available to advise on the DAQ comments or conclusions.

US Magnesium has re-evaluated the status of the Riley boiler (RILEY BOILER ENERGY ASSESSMENT - US Magnesium LLC, Rowley Plant - Tooele County, GeoStrata, March 2021: Submitted to the Utah Division of Air Quality on March 12, 2021) and the Riley boiler NOx emission factor utilized in US Magnesium's 2018 air emission inventory (AEI) that was the basis for the 4-factor analysis of that unit. In summary, the US Magnesium 2018 AEI grossly overstated the NOx emissions associated with the Riley boiler in two ways: 1) the Riley boiler is a 60 MMBTU boiler but the AP42 emission factor in the 2018 AEI is for a >100 MMBTU boiler, and 2) the Riley boiler, from the time of its installation, is outfitted with a low NOx burner, but the AP42 emission factor in the 2018 AEI is for an "uncontrolled burner." The implications are summarized below:

Riley Boiler 2018	NOx emission factor	AP 42 Table 1.4-1. Emission Factors for NOx and CO from Natural Gas Combustion		Estimated NOx emissions (TPY)
AEI as submitted	190 lbs/MMscf	>100MMBTU (Large)	Uncontrolled	45.2499
AEI corrected for actual status of Riley boiler	50 lbs/MMscf	<100MMBTU (Small)	Controlled - Low NOx burner	11.9074

Corrected 2018 NOx emissions for the Riley boiler, implications on the 4-factor analysis:

Using the same reductions assumed for FGR (up to 50% NOx), the estimated reduction would be about 6 tons/year.

Using the same reductions assumed for SCR (up to 90% NOx), the estimated reduction would be about 10.7 tons/year.

Using DAQ's modified calculation for FGR: \$1,880/ton * 22.5 tons = \$42,000/yr. Correcting to 6 ton / yr reduction = \$7,050/ton.

Using DAQ's modified calculation for SCR: \$18,800/ton * 40.7 tons = \$765,160/yr. Correcting to 11.9 ton / yr reduction = \$64,300/ton.

US Magnesium submits this information to correct the record and as an addendum to the 4-factor analysis. US Magnesium concurs with DAQ's overall assessment that "None of the other equipment requires additional evaluation, as each is currently well controlled."

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