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April 5, 2012

Mr. Terry O'Clair
Director, Division of Air Quality
North Dakota Department of Health
918 E. Divide Ave.
Bismarck, ND 58501-1947

RE: Coal Creek NOx BART Analysis

Dear Mr. O'Clair:

We are herewith responding to your letter of February 28, 2012, in which you requested that Great River Energy ("GRE") provide additional information to assist the North Dakota Department of Health ("NDDH") with its ongoing Best Available Retrofit Technology ("BART") determination for Coal Creek Station ("CCS"). You requested that GRE address some issues with its year 2000 visibility modeling, verify certain costs and data related to various pollution control options, and address some inconsistencies between GRE's cost analysis and the U.S. EPA's Control Cost Manual for certain cost components.

Enclosed is GRE's Supplemental Best Available Retrofit Technology Refined Analysis for NOx Emissions, April 5, 2012 ("BART Supplement"), which provides a supplemental BART analysis that addresses the issues raised in the February 28, 2012 letter (as well as issues raised in your January 19, 2012 letter). In particular, GRE asked Barr Engineering to rerun the visibility modeling analysis as requested by NDDH. The revised visibility modeling, reflected in both Table 3.2 and Appendix D of the BART Supplement, demonstrates that the incremental visibility improvement of adding SNCR to Units 1 and 2 is essentially non-existent at only 0.106 deciviews. The BART Supplement also includes additional cost information from URS addressing your questions about the EPA Control Cost Manual and URS's departures from assumptions that EPA makes about costs. Barr Engineering also has included the cost/economic analyses regarding the impact of ammonia contamination on fly ash marketability and disposal costs based upon information provided by Golder Associates. Those costs are reflected in Table 3.1 of the BART Supplement. The costs reflect the expected costs depending on whether 0%, 30% or 100% of the fly ash becomes unmarketable due to ammonia contamination. Barr Engineering concluded that, even if no costs are attributable to ammonia contamination, installing SNCR on to already existing or planned controls would reduce NOx emissions at Unit 2 at a rate of $4,688/ton and $8,534/ton at Unit 1. Thus, SNCR remains well outside the range of cost-effective control technologies.

Since your February 28, 2012, letter, the U.S. EPA has issued its *Approval and Promulgation of Implementation Plans; North Dakota; Regional Haze State Implementation Plan; Federal Implementation Plan for Interstate Transport of Pollution Affecting Visibility and Regional Haze*, 76 Fed. Reg. _____(April __, 2012) ("EPA FIP"). In the EPA FIP, the Agency rejected NDDH's BART determination for CCS and imposed a NOx emission limitation of 0.13 lbs/mmBtu, based on EPA's determination that a combination of low-NOx burners and selective non-catalytic reduction ("SNCR") is BART.

GRE's analysis of the EPA FIP, EPA's basis for rejecting the NDDH BART for CCS, and EPA's own BART determination is also enclosed. See *Legal and Technical Review of U.S. EPA's BART Determination for Coal Creek Station* ("FIP Analysis"). The FIP Analysis concludes that EPA's rejection of NDDH's BART determination is ill-founded and EPA's own BART determination is severely flawed and inconsistent with the Clean Air Act and EPA's own regional haze regulations. EPA rejected NDDH's BART because of its cost analysis, primarily NDDH's reliance on certain cost values resulting from ammonia contamination of fly ash. GRE has corrected that value. EPA also questioned the retrofit factor for SNCR at CCS, but gave no basis for rejecting the factor applied by URS, GRE's consultant. On the basis of these two issues, EPA rejected NDDH's BART determination and substituted its own judgment for NDDH's regarding all five BART factors. The FIP Analysis addresses EPA's critique of the prior cost analysis and demonstrates that the cost of SNCR remains prohibitively high, particularly in light of the other four BART factors.

The FIP Analysis also examines EPA's own BART determination and concludes that it is severely flawed. EPA's cost analysis failed to consider the existing NOx controls at CCS in conducting its cost analysis and expressly ignored the incremental costs of installing SNCR beyond the existing and planned LNC3+ burner controls at CCS. Both of these decisions directly violate the statute and are inconsistent with EPA's guidelines and regulations. The effect of these two decisions is to greatly distort the actual cost-effectiveness of SNCR. Second, EPA utterly ignored the lack of any demonstrated visibility improvement that would result from investing tens of millions of dollars to install and operate SNCR. The EPA visibility modeling indicates that the greatest potential visibility benefit resulting from installation of SNCR would be 0.105 dv, which is only one-tenth the level that EPA asserts is discernable by the human eye. Additionally, given the many sources of variability of inputs to CALPUFF's visibility analysis versus actual impacts, a difference of around 0.1 dv between options may reflect no real difference at all.

The FIP Analysis also demonstrates that EPA's conclusion that SNCR can be operated in a manner to avoid any fly ash contamination is unsupported. EPA's assertion that SNCR can be operated with a 2 ppm ammonia slip or less is not supported by the literature and studies EPA cites. Further, Golder Associates demonstrates that, even at a 2 ppm threshold, there will be significant fly ash wastage due to ammonia contamination. Consequently, the actual costs of utilizing SNCR will almost certainly be even higher and EPA's disregard of the collateral environmental impact of its BART selection is unjustifiable.

GRE's revised BART analysis provided today includes a refined cost analysis that examines the average and incremental cost, and cost-effectiveness, of various levels of NOx emissions control as well as a revised visibility impact analysis of various levels of control. In light of the lack of any discernable visibility improvement at any Class I area, NDDH would be justified in supporting its initial BART determination at any cost level, including EPA's artificially low average cost of less than $2,500 per ton. The actual incremental cost of SNCR will be in excess of $4,500 per ton for Unit 2 and over $8,000 per ton for Unit 1, even if no costs are assigned to the loss of merchantable fly ash. The actual costs will be even higher.

GRE greatly appreciates NDDH's continued work on the CCS BART. Please do not hesitate to contact me or my staff if you would like to discuss any of these matters in greater detail.

Sincerely,

Mary Jo Roth
Manager, Environmental Services

Enclosures

c: William M. Bumpers, Esq.
Eric Olsen, GRE
Deb Nelson, GRE