

BEFORE THE ENVIRONMENTAL QUALITY COUNCIL
STATE OF WYOMING

IN THE MATTER OF:)
BASIN ELECTRIC POWER COOPERATIVE)
DRY FORK STATION,) Docket No. 07-2801
AIR PERMIT CT-4631)

**AFFIDAVIT OF CHAD SCHLICHTEMEIER IN SUPPORT OF THE
WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY'S MOTION FOR
PARTIAL SUMMARY JUDGMENT**

STATE OF WYOMING)
)ss.
County of Laramie)

Chad E. Schlichtemeier, being first duly sworn, deposes and says as follows:

1. I am over the age of 21 and am competent to make this affidavit.
2. The facts and matters stated herein are within my personal knowledge, and are true and correct.
3. I have a Bachelor of Science degree in Chemical Engineering, with a Minor in Mathematics, which I received from the Colorado School of Mines in 1988.
4. In 1989, I began working for the Department of Environmental Quality, Air Quality Division (DEQ/AQD) as an Environmental Specialist. I was promoted to the position of Environmental Project Analyst in 1990; Environmental Analyst in 1991; and Senior Environmental Analyst in 1992. My job responsibilities during that time period included inspecting various air pollution sources and determining compliance status; reviewing ambient monitoring network and continuous emission monitoring data; reviewing performance tests; and conducting technical analyses for air quality permit applications. I also reviewed Best Available Control Technology (BACT) analyses for minor and major emitting (Prevention of Significant Deterioration (PSD)) facilities under the direction of the District Engineer.

5. In 1994, I was promoted to the position of Environmental Program Principal. I held that position until 1998. My job responsibilities during that time period included performing higher level air quality inspections at a level which required knowledge of industrial processes, control equipment and operational practices; compiling detailed inspection reports and reviewing monitoring reports; and supervisory duties including performance evaluations and district wide work schedule management. My job responsibilities also included air quality permitting within Districts 1 and 2. I conducted technical analyses for all New Source Review (NSR) permit applications within the districts, which included minor and major emitting (PSD) facilities. Part of the technical analysis included reviewing BACT analyses.

6. In 1998, I was promoted to the position of Environmental Program Supervisor. I held that position until January, 2007. My job responsibilities during that time period included day-to-day management of the PSD and minor source construction and modification permitting programs which is also referred to as New Source Review (NSR); assisting the program manager in directing the operational, personnel and planning functions of the NSR program; reviewing permit analyses for technical accuracy and ensuring that all applicable requirements, rules and regulations have been addressed; monitoring and delegating work related to processing applications within the regulatory time frame; meeting with applicants to discuss DEQ/AQD's interpretation of applicable regulations, policy and guidance; supervise and train staff; and provide day-to-day staff assistance regarding technical issues and regulatory interpretations. I reviewed the technical analysis for the Dry Fork Station (DFS). I worked very closely with the reviewing engineer on the BACT analysis and, because of the NSR program manager's retirement, I made the final BACT level recommendations to the DEQ/AQD Administrator.

7. On February 1, 2007, I was promoted to the position I currently have of NSR Program Manager. My current job responsibilities include overall management of the NSR permitting program; directing the operational, personnel and planning functions of the NSR program; regulation development activities; policy development activities; managing a staff of fourteen (14); conducting final review of all PSD permit applications; and making recommendations to the DEQ/AQD Administrator. After learning that Basin's SO₂ control technology would be a circulating dry scrubber (CDS) rather than a spray dry absorber, I requested Basin re-address SO₂ BACT, which resulted in a lower BACT level for this pollutant. I also reviewed comments and the DEQ/AQD decision document for the DFS permit before recommending to the DEQ/AQD Administrator that the permit should be issued.

8. As part of my current and/or former job responsibilities, I have routinely applied and interpreted the Wyoming Air Quality Standards and Regulations (WAQSR), and other air quality policy and guidance documents. I am familiar with the WAQSR, federal statutes and regulations, and guidance documents attached hereto because I have previously or continue to use these documents to perform my current and/or former job responsibilities.

9. BACT is defined in Chapter 6, § 4 of the WAQSR. BACT is determined on a case-by-case basis. A true and correct copy of WAQSR, Ch. 6, § 4, including the definition for BACT is attached hereto as Exhibit A.

10. For determining BACT, the DEQ/AQD generally follows the Environmental Protection Agency's (EPA) five-step, top-down process outlined in the EPA's *New Source Review Workshop Manual* (Draft, Oct. 1990) (NSR Manual). True and correct copies of the NSR Manual chapters related to BACT, air quality analysis and Class I impact analysis which the DEQ/AQD generally follows is attached hereto as Exhibit B.

11. Since 1996, the DEQ/AQD has issued approximately twelve thousand five hundred (12,500) construction or modification permits and waivers. Each minor and major source construction or modification permit and waiver undergoes a BACT analysis. Since 1996, the DEQ/AQD has issued over forty (40) PSD new source and modification permits for major sources such as refineries, large compressor stations, coal fired power plants.

12. As part of my current and/or former job responsibilities, I routinely reviewed BACT analyses submitted by permit applicants and regulatory BACT analyses conducted by DEQ/AQD staff. I have also personally prepared, reviewed or read regulatory BACT analyses prepared for major and minor air pollution sources such as subcritical pulverized coal-fired electric power generating unit which combust coal in a boiler; circulating fluidized bed boilers which combust coal in a different manner than a PC boiler; a supercritical unit which combust coal but require specific materials, boiler and turbine designs due to high steam pressures and temperatures; coal to liquids units which through a chemical process converts coal to a synthetic gas (Syngas) for combustion in a turbine; natural gas fired turbines, and syngas turbines.

13. As part of my current and former job responsibilities, I have reviewed various documents Basin Electric Power Cooperative (Basin) submitted as part of the permit application and BACT review process for the Dry Fork Station (DFS), including the documents attached hereto.

14. The DFS met the definition of "major emitting facility" and was subject to both a construction permit review under WAQSR Ch. 6, § 2 and a PSD review under WAQSR Ch. 6, § 4. A true and correct copy of WAQSR, Ch. 6, § 2 is attached hereto as Exhibit C. The DEQ conducted a BACT analysis for NO_x, SO₂, PM/PM₁₀, carbon monoxide (CO), volatile organic compounds (VOC), H₂SO₄, fluorides, mercury, and beryllium.

15. On November 10, 2005, Basin submitted an air quality construction permit application to the DEQ/AQD for the DFS (Permit Application). A true and correct copy of Basin's Permit Application is attached hereto as Exhibit D. The permit application starts the BACT review process in which the DEQ/AQD reviews the applicant's BACT analysis, asks questions and requests additional information. The DEQ/AQD continues reviewing information and asking questions until assured that the application is technically complete.

16. On December 21, 2005, after completing an initial review of the Permit Application, the DEQ/AQD sent a Completeness Review for Permit Application No. 1 to Basin (Completeness Review No. 1) requesting in part that Basin address the technical feasibility and cost effectiveness of achieving more stringent SO₂, NO_x, and PM₁₀ BACT short term emission limits for the PC Boiler, and rerun the Class II PM₁₀ annual modeling analysis with a different meteorological data set and address other modeling issues. A true and correct copy of Completeness Review No. 1 is attached hereto as Exhibit E.

17. On or about March 6, 2006, the DEQ/AQD received Basin's response to Completeness Review No. 1, including additional SO₂, NO_x and PM₁₀ BACT analyses and additional modeling information (Basin Response No.1). A true and correct copy of Basin's Response No. 1 is attached hereto as Exhibit F.

18. On March 28, 2006, the DEQ/AQD issued its second Completeness Review (Completeness Review No. 2) requesting Basin model Colstrip Units #3 and #4 using the short-term permitted SO₂ emission rates (also referred to as "maximum allowable" or "potential to emit") for those sources, providing Basin with a 1 kilometer (km) receptor grid to be used in further modeling analyses for the Northern Cheyenne Indian Reservation (NCIR), and requesting

additional information on the condensable particulate emission rates from the boiler. A true and correct copy of Completeness Review No. 2 is attached hereto as Exhibit G.

19. On May 3, 2006, the DEQ/AQD issued its third Completeness Review (Completeness Review No. 3) noting that it had reviewed Basin Response No. 1, and requesting Basin address NO_x emission levels of 0.03 lb/million British thermal units (MMBtu) and 0.035 lb/MMBtu in the BACT analysis for the auxiliary boiler, and provide a BACT analysis for mercury. A true and correct copy of Completeness Review No. 3 is attached hereto as Exhibit H.

20. On May 30, 2006, the DEQ/AQD issued its fourth Completeness Review (Completeness Review No. 4) noting that it had further reviewed the NO_x and SO₂ BACT analysis submitted in Basin Response No. 1, and requesting Basin address the technical feasibility and cost effectiveness of a NO_x emission level of 0.05 lb/MMBtu, 30-day average limit and a SO₂ emission level of 0.07 lb/MMBTU, 30-day average using a circulating dry scrubber (CDS) and a SO₂ emission level of 0.06 lb/MMBtu, 30-day average using wet flue gas desulfurization (FGD). A true and correct copy of Completeness Review No. 4 is attached hereto as Exhibit I.

21. On June 19, 2006, the DEQ/AQD received Basin's response to Completeness Review No. 2 (Basin Response No. 2), including revised Class I cumulative SO₂ increment consumption modeling for the NCIR, additional documentation of condensable PM₁₀ boiler emissions, a revised sulfuric acid mist (H₂SO₄) BACT analysis, revised permit emission limits, revised Class I visibility modeling . A true and correct copy of Basin Response No. 2 is attached hereto as Exhibit J.

22. On July 17, 2006, the DEQ/AQD received Basin's response to Completeness Review No. 3 (Basin Response No. 3), addressing mercury (Hg) and noting that a true top down

BACT analysis was not possible for three reasons: a) control technologies for mercury are still in the developmental stage; b) cost effectiveness analysis is not possible without current technology alternatives and cost information; and, c) commercially available mercury control systems and associated vendor guarantees are very limited. Basin proposed a mercury optimization study for the DFS. A true and correct copy of Basin Response No. 3 is attached hereto as Exhibit K.

23. Also on July 17, 2006, the DEQ/AQD received Basin's response to Completeness Review No. 4 (Basin Response No. 4), proposing a NO_x emission limit of 0.07lb/MMBtu based on a 30-day rolling average as BACT and proposing a SO₂ emission limit of 0.10 lb/MMBtu based on a 30-day rolling average and a 3-hour SO₂ permit limit of 380.1 lb/hr. A true and correct copy of Basin Response No. 4 is attached hereto as Exhibit L.

24. On August 18, 2006, the DEQ/AQD notified Basin that the Permit Application was complete (Completeness Determination) and noting that the DEQ/AQD would proceed with its technical review of the Permit Application and may request additional technical information or clarification from Basin. A true and correct copy of the Completeness Determination is attached hereto as Exhibit M.

25. On February 5, 2007, the DEQ/AQD completed its Permit Application Analysis for the DFS, concluding that the DFS would comply with the WAQSR and proposing to issue a permit to Basin for the DFS. A true and correct copy of the Permit Application Analysis is attached hereto as Exhibit N.

26. On February 26, 2007, the DEQ/AQD advertised its proposed decision in the Gillette News Record (Publisher's Affidavit No. 1) and providing for public comment. A true and correct copy of Publisher's Affidavit No. 1 is attached hereto as Exhibit O.

27. On April 20, 2007, I spoke with Jerry Menge, Basin Electric, and asked for additional information including Basin's selection of a PC Boiler instead of an IGCC facility, or Supercritical or Ultrasupercritical boilers. A true and correct copy of the file memorandum documenting the conversation is attached hereto as Exhibit P.

28. On June 4, 2007, the DEQ/AQD again advertised its proposed decision in the Gillette News Record (Publisher's Affidavit No. 2) and providing for public comment through the close of the public hearing set for June 28, 2007. A true and correct copy of Publisher's Affidavit No. 2 is attached hereto as Exhibit Q.

29. On June 11, 2007, the DEQ/AQD received Basin's response to our April 20, 2007 request for additional information noting that Basin had previously submitted a "Coal Power Plant Technology Evaluation for Dry Fork Station" prepared by CH2MHill (dated November 1, 2005) and was preparing an additional analysis addressing Supercritical and Ultrasupercritical boilers. A true and correct copy of Basin's response is attached hereto as Exhibit R. See Exhibit T at DEQ/AQD Bates Nos. 004182-004240 (copy of CH2MHill evaluation).

30. On June 18, 2007, the DEQ/AQD received Basin's response to our April 20, 2007 request for additional information with respect to Supercritical and Ultrasupercritical boilers. A true and correct copy of Basin's response is attached hereto as Exhibit S.

31. Following the advertisement, and up through the public hearing held on June 28, 2007, the DEQ/AQD received comments about its proposed decision, including comments from Basin, EPA Region VIII, the National Parks Service, various non-governmental organizations, and private individuals. I read the written comments and attended the public hearing.

32. On October 15, 2007, the DEQ/AQD issued its response to comments including its determination that a permit would be issued to Basin allowing construction of the DFS (DEQ

Response to Comments and Decision). A true and correct copy of the DEQ Response to Comments and Decision is attached hereto as Exhibit T.

33. Also on October 15, 2007, the DEQ issued air quality construction permit No. CT-4631 (Permit) to Basin for the DFS. A true and correct copy of the Permit is attached hereto as Exhibit U.

34. Since I began working at the DEQ/AQD in 1989, the DEQ/AQD's BACT analysis and the range of emission limits and control measures considered in that analysis have been driven by the definition of the facility proposed by the applicant. BACT is determined on a case-by-case basis. In this case, Basin proposed a mine-mouth 422 megawatt (MW)(gross)/385MW (net) pulverized coal-fired (PC) electric power generating unit. Therefore, the DEQ/AQD conducted a site-specific BACT analysis for the DFS.

35. The DEQ/AQD has previously received comments that alternative sources should be included in the BACT analysis. I recall in 2002, the DEQ/AQD addressed comments that CFB boilers and IGCC should be included in the BACT analysis for Black Hills' WYGEN 2 pulverized coal fired electric generating facility. The DEQ/AQD's comment response stated in part: "The Division does not consider the BACT process a means to redefine the source." True and correct copies of the Permit CT-3030 for the WYGEN 2 facility and the corresponding Decision document are attached hereto as Exhibit V.

36. The BACT analysis results in an emission limit, design, equipment, work practice or operational standard or combination of those items, to obtain the maximum degree of reduction of each NSR regulated pollutant which will be emitted from the proposed source and which the DEQ/AQD administrator determines is achievable for that source.

37. The DEQ/AQD establishes the most stringent or “top” control technology as BACT unless the applicant has demonstrated to our satisfaction that other considerations in the BACT analysis justify the conclusion that such technology is not BACT. Some of the considerations that may result in rejecting a technology as BACT include technical feasibility, economic reasonableness and other factors. If the DEQ/AQD rejects the most stringent or top control technology as BACT, we continue the process and consider the next most stringent alternative until we reach BACT.

38. Step one of the BACT analysis is to identify all control technologies for the relevant pollutant for the proposed facility. This step typically includes reviewing the applicant’s BACT analysis, conducting an internet search to identify control technologies, and accessing EPA’s RACT/BACT/LAER Clearinghouse to review recently issued permits to evaluate what emission limits other permitting agencies have concluded is BACT.

39. Step two of the BACT analysis is to review the technical feasibility of various control technologies to achieve BACT. Technically infeasible options, as shown by physical, chemical or engineering principles, are eliminated at this step. This step typically includes contacting vendors to verify the applicant’s claim that an option is technically infeasible. The DEQ/AQD may also review EPA’s Clean Air Markets which has emissions data to review what levels are achievable in actual operations.

40. Step three of the BACT analysis is to rank emission rates for the remaining control technologies by their control effectiveness. Control effectiveness evaluates the percent of pollutant removed, emission rates, emission reductions, energy impacts, environmental impacts and economic impacts.

41. Step four of the BACT analysis is to evaluate the most effective controls and document the results. This step also involves case by case consideration of collateral impacts (energy, environmental and economic impacts, collateral impacts).

42. Step five of the BACT analysis is to select BACT.

43. Following the BACT analysis, a BACT emission limit, design, equipment, work practice or operational standard or combination thereof, may be translated into a permit condition where appropriate.

44. Control technologies are a means to reduce emissions. Control technology examples for PM include fabric filters (baghouse), electrostatic precipitators (ESP), and wet scrubbers. Control technology examples for NO_x include low NO_x burners, selective catalytic reduction (SCR), and non-selective catalytic reduction (SNCR). Control technology examples for SO₂ include spray dryer/absorber (Dry FGD), Circulating Dry Scrubber (CDS), and Wet Flue Gas Desulfurization (FGD).

45. Subcritical pulverized coal-fired electric power generating units, CFB, Supercritical, Ultrasupercritical, and IGCC sources are not control technologies, they are examples of various types of major source facilities that generate electric power.

46. I am aware that other types of facilities may generate electric power such as solar, wind, hydroelectric, nuclear. These types of facilities are also alternatives to, not control technologies for, an electric power generating unit.

47. It is my understanding that in the twenty-nine (29) years of DEQ/AQD's PSD program, and in the nineteen (19) years I have worked for the DEQ/AQD, and in the more than forty (40) PSD permit reviews conducted by the DEQ/AQD since 1996, the DEQ/AQD's policy has been not to require redefinition of a source in a BACT analysis.

48. Since 1997, the DEQ/AQD has followed EPA's guidance addressing the "Interim Implementation of New Source Review Requirements for PM_{2.5}" (Seitz Memo) and has used PM₁₀ as a surrogate for PM_{2.5}. To the best of my recollection, approximately ten (10) of the PSD permitting actions since 1997 were significant for PM₁₀. A copy of the Seitz Memo followed by the DEQ/AQD is attached here to as Exhibit W.

49. As reflected in the permit review invoices, the time incurred by DEQ/AQD NSR staff in reviewing, analyzing and processing the Permit Application totaled at least one thousand three hundred seventy five (1375) hours. True and correct copies of the permit application review invoices are attached hereto as Exhibit X.

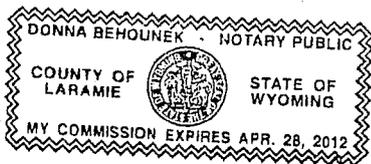
Dated this 2nd day of September, 2008.

Chad Schlichtemeier
Chad Schlichtemeier
NSR Program Manager
DEQ/AQD

State of Wyoming)
)
County of Laramie)

Subscribed and sworn before me by Chad Schlichtemeier on this 2nd day of September, 2008.

Witness my hand and official seal.



Donna Behounek
Notary Public

My commission expires: April 28, 2012