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**Jim Ruby, Executive Secretary
Environmental Quality Council**

**BEFORE THE ENVIRONMENTAL QUALITY COUNCIL
STATE OF WYOMING**

IN THE MATTER OF)
MEDICINE BOW FUEL & POWER) Docket No. 09-2801
AIR PERMIT CT-5873)

**AFFIDAVIT OF CHAD SCHLICHTEMEIER
IN SUPPORT OF DEQ'S MOTION FOR 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

**MEDICINE BOW
EXHIBIT FFF
PRE-HRG MEMO**

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 (Prevention of Significant Deterioration (PSD)) emitting 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 (PSD) emitting 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.

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 about 14; conducting final review of all PSD permit applications; and making recommendations to the DEQ/AQD Administrator. I reviewed the technical analysis initially completed by, and worked with Andrew Keyfauver and Josh Nall on AP-5873. I also reviewed public comments, the DEQ/AQD decision documents, correspondence and other documents before I made final recommendations 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 air quality statutes and guidance documents because I have used these documents to perform my former and/or current job responsibilities.

9. Since 1996, the DEQ/AQD has issued over 12,500 construction or modification permits and waivers. Of those construction or modification permits, over 40 were PSD new source and modification permits for major sources such as refineries, large compressor stations, and coal-fired power plants.

10. As part of my current job responsibilities, I have reviewed various documents DKRW submitted as part of the permit application and review process for the Medicine Bow Facility, including the documents attached hereto.

11. 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 electric power generating units combusting coal in a boiler; coal to liquids units which through a chemical process convert coal to a synthetic gas (Syngas) for combustion in a turbine; natural gas fired turbines, and syngas turbines.

12. The Medicine Bow Facility met Wyoming's definition of a "major emitting facility" and was therefore subject to both a new source construction permit (NSR) review under Chapter 6, § 2 of the WAQSR and a PSD review under Chapter 6, § 4 of the WAQSR. A true and correct copy of Chapter 6, §§ 2 and 4 of the WAQSR are attached hereto as Exhibit 1.

13. On February 8, 2007, URS Corporation submitted the PSD Modeling protocols for the Medicine Bow Facility to the DEQ/AQD. A copy of the Modeling Protocols is attached hereto as Exhibit 3.

14. On June 20, 2007, the DEQ/AQD received a permit application from Medicine Bow Fuel & Power, LLC (Application AP-5873) to construct an underground coal mine (Saddleback Hills Mine) and an industrial gasification and liquefaction plant (Medicine Bow IGL Plant) (collectively the Medicine Bow Facility) for the production of transportation fuels and other products.

15. On December 31, 2007, the DEQ/AQD received a revised PSD permit application for the Medicine Bow Facility (Application). A copy of Medicine Bow's December 2007 Application is attached hereto as Exhibit 4. On January 7, 2008, the DEQ/AQD notified Medicine Bow that it had received the revised application and replaced the previous application in its entirety. A copy of the January 7, 2008 letter is attached hereto as Exhibit 5. Receipt of the application starts the DEQ/AQD review process wherein the DEQ/AQD requests additional information until assured that the application is technically complete.

16. Following a January 18, 2008 meeting, on February 13, 2008, Medicine Bow submitted certain revisions to its December 2007 Application. A copy of the revision letter is attached hereto as Exhibit 6. The revisions changed emission calculations and the near field air quality modeling analysis.

17. On March 10, 2008, the DEQ/AQD notified Medicine Bow that the permit application for the Medicine Bow Facility was complete (Completeness Determination) and noted that the DEQ/AQD would proceed with its technical review and may request additional technical information or clarification from Medicine Bow. A copy of the Completeness Determination is attached hereto as Exhibit 7.

18. On April 9, 2008, the DEQ/AQD received Medicine Bow's request to schedule a public hearing during the public comment period. A copy of Medicine Bow's request is attached hereto as Exhibit 8.

19. On April 23, 2008, URS submitted additional information regarding coal mine emissions, near-field air dispersion modeling, startup/shutdown emissions and planned flaring operations. A copy of URS' submittal is attached hereto as Exhibit 9.

20. On June 4, 2008, URS submitted additional information and revised permit application pages reflecting changes to the mercury emission rate calculation and equipment leak calculations. A copy of URS' letter is attached hereto as Exhibit 10.

21. On June 19, 2008, the DEQ/AQD completed its Application Analysis for the Facility, concluding that the Facility would comply with the WAQSR and proposing to issue a permit to Medicine Bow for the Facility. A copy of the Analysis is attached hereto as Exhibit 11.

22. On June 25, 2008, the DEQ/AQD notified Medicine Bow that it had completed its initial analysis and proposed approval of the Application. A copy of this notification letter is attached hereto as Exhibit 12.

23. On July 3, 2008, the DEQ/AQD advertised its proposed decision in the Rawlins Daily Times and providing for public comment through August 4, 2008. A copy of the publisher's affidavit and public notice is attached hereto as Exhibit 13.

24. Following the advertisement, and up through the public hearing held on August 4, 2008, the DEQ/AQD received comments about the proposed decision, including comments from DKRW, EPA Region VIII, various non-governmental organizations and private individuals. I read the written comments and attended the public hearing.

25. On July 31, 2008, URS submitted revisions pages for the Application regarding the work hours per year for each black start generator. A copy of the letter is attached hereto as Exhibit 14. Also attached to URS' letter was a CD containing an electronic version of the complete revised Application. A copy of the Application from the CD is attached hereto as Exhibit 15.

26. Also on July 31, 2008, DKRW provided comments on the DEQ's Application Analysis and proposed additional permit conditions for the Facility. A copy of DKRW's comments and proposed permit conditions is attached hereto as Exhibit 16.

27. On August 4, 2008, the DEQ held a public hearing and received comments.

28. On August 15, 2008, the DEQ requested Medicine Bow address specific comments submitted during the public notice and hearing, including items such as LDAR and section 112 applicability. A copy of DEQ's request for additional information is attached hereto as Exhibit 17.

29. On September 5, 2008, the DEQ requested additional information from Medicine Bow regarding potential ozone impacts and normal startup emissions from the Plant. A copy of DEQ's request for additional information is attached hereto as Exhibit 18.

30. On September 30, 2008, Medicine Bow submitted a response to the DEQ's August 15, 2008 request addressing: section 112 applicability and recalculated equipment leak emissions; lower LDAR levels; applicability of the refinery NSPS and NESHAP regulations; power generation export; and sour water stripper BACT. A copy of Medicine Bow's submittal is attached hereto as Exhibit 19.

31. On October 14, 2008, Medicine Bow submitted a response to the DEQ's September 5, 2008 request addressing ozone and normal startup emissions. A copy of Medicine Bow's submittal is attached hereto as Exhibit 20.

32. On November 11, 2008, Medicine Bow submitted a follow-up to their October 14, 2008 letter, to provide further clarification regarding normal SO₂ emissions. A copy of Medicine Bow's submittal is attached hereto as Exhibit 21.

33. On December 29, 2008, the DEQ requested additional information regarding elemental mercury, visible emission limits for slag operations, and the Black Start Generators hours of operation. A copy of DEQ's request is attached hereto as Exhibit 22.

34. On December 30, 2008, Medicine Bow responded to the DEQ's December 29, 2008, request for additional information. A copy of Medicine Bow's response is attached hereto as Exhibit 23.

35. On February 3, 2009, Medicine Bow responded to a question regarding the PM₁₀ emission calculations and BACT analysis. A copy of Medicine Bow's response is attached hereto as Exhibit 24.

36. On March 4, 2009, the DEQ issued its response to comments including its determination that the Application complied with all applicable WAQSR and that a permit would be issued to Medicine Bow allowing construction of the Medicine Bow Facility. A copy of DEQ's response to comments and decision document is attached hereto as Exhibit 25.

37. Also on March 4, 2009, the DEQ issued air quality construction permit CT-5873 to Medicine Bow for the Facility. A copy of the Permit is attached hereto as Exhibit 26.

38. As reflected in the permit review invoices, the DEQ/AQD NSR staff spent over 807 hours in reviewing, analyzing and processing the Application. Copies of the initial and final invoices are attached hereto as Exhibit 27.

39. The DEQ/AQD determines best available control technology (BACT) for both minor and major (PSD) sources on a case-by-case basis in accordance with Chapter 6 of the Wyoming Air Quality Standards and Regulations (WAQSR). Control technologies are a means for reducing emissions. For minor sources that the DEQ/AQD

frequently permits, the DEQ/AQD may use a condensed top-down process establishing the most stringent or "top" control technology as BACT (unless the applicant has demonstrated to the DEQ/AQD's satisfaction that such technology is not BACT). For PSD sources, 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) (EPA NSR Manual). A true and correct copy of Chapter B related to BACT is attached hereto as Exhibit 2.

40. 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 AQD Administrator determines is achievable for that source.

41. Since I began working at the DEQ in 1989, the DEQ/AQD's BACT analysis and the range of emission limits and control measures considered in the BACT analysis have been driven by the definition of the facility proposed by the applicant.

42. The DEQ/AQD conducted a case-specific BACT analysis for emissions from the Medicine Bow Facility. Emissions of NO_x, CO, VOC, and PM/PM₁₀ were greater than the significant emission rate, so DEQ conducted a PSD BACT analyses for those pollutants. SO₂ and mercury (Hg) emissions were not considered in the PSD BACT analysis, so DEQ conducted a minor source BACT analysis for those pollutants.

43. Under the BACT process, 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.

44. 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 applicants BACT analysis, conducting an internet search to identify control technologies, and assess EPA’s RACT/BACT/LAER Clearinghouse to review recently issued permits to evaluate what emission limits other permitting agencies have concluded is BACT.

45. 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.

46. 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.

47. 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).

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

49. 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.

50. BACT may be more stringent than or as stringent as NSPS or NESHAP, it just cannot be less stringent.

51. When making a PSD applicability determination, the DEQ/AQD evaluates the facility's normal operations as represented in the permit application.

52. Based on information provided by Medicine Bow, warm startup/shutdown events were characterized as part of normal operations and included in the Facility's PTE of 36.6 TPY SO₂. Based on the type of event and frequency, emissions from Initial Startup (commissioning activities), Cold Startup/Shutdowns or malfunction events were excluded from the Facility's PTE.

53. The DEQ/AQD established permit conditions based on review of the Application. However, as startup/shutdown events occur, the DEQ/AQD will be conducting a case-by-case review, including examining the type of startup/shutdown and

