BEFORE THE ENVIRONMENTAL QUALITY COUNCIL
STATE OF WYOMING

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

RESPONDENT DEPARTMENT OF ENVIRONMENTAL QUALITY'S MEMORANDUM IN SUPPORT OF MOTION FOR PARTIAL SUMMARY JUDGMENT

Exhibit No. 2 – Rairigh Affidavit

BEFORE THE ENVIRONMENTAL QUALITY COUNCIL
STATE OF WYOMING

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

AFFIDAVIT OF KEN RAIRIGH IN SUPPORT OF THE WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY'S MOTION FOR PARTIAL SUMMARY JUDGMENT

STATE OF WYOMING)
)ss.
County of Laramie)

Ken Rairigh, 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 Mechanical Engineering, with a Minor in Economics, which I received from the University of Wyoming in 1993.

4. In 1995, I began working for the Department of Environmental Quality, Air Quality Division ("DEQ") as an Environmental Specialist. My job responsibilities during that time period included evaluating compliance with Wyoming's air quality regulations, conducting inspections of industrial facilities consisting of both major and minor sources, determining compliance with National Ambient Air Quality Standards ("NAAQS") and Prevention of Significant Deterioration ("PSD") regulations through air quality dispersion modeling analyses, writing ambient air impact reports, writing air quality permits and waivers, completing engineering analyses based on air pollution control technologies, performing detailed analyses regarding impacts on Air Quality Related Values at sensitive Class I areas using complex

models, performing visual emissions observations, and issuing permits for prescribed burning and open burning projects in Wyoming.

5. In 1997, I was promoted to the position of Environmental Project Analyst. My job responsibilities during that time period included: assisting the Engineering Supervisor and District Engineers in reviewing modeling analyses for the New Source Review ("NSR") program; providing atmospheric dispersion modeling guidance and technical support to the regulated community; completing atmospheric dispersion modeling analyses and evaluating compliance based on NAAQS and PSD regulations; evaluating emissions data and other detailed engineering documents for accuracy and completeness; developing burn tracking and PM_{10} emission inventory systems, and assisting the Engineering Supervisor in evaluating meteorological data for use in air quality modeling studies in Wyoming.

6. In 1998, I was promoted to the position of Environmental Senior Analyst. My job responsibilities during that time period included: developing modeling and permitting guidance documents for NSR, Coal Bed Methane, and Coal mines throughout the State of Wyoming; developing emission inventories for cumulative dispersion modeling assessments for Wyoming; generating plots of pollutant impacts based on predicted values from dispersion models; and assisting the Engineering Supervisor in evaluating meteorological and land-use data for use in air quality studies in Wyoming involving Long Range Transport of atmospheric pollutants.

7. In 1999, I was promoted to the position of Environmental Program Principal. My job responsibilities during that time period included: assisting the Engineering Supervisor in the management of the state's dispersion modeling program; evaluating engineering proposals and process designs based on a practical knowledge of air quality compliance; assessing air quality impacts at Class I and other sensitive areas; evaluating 3-dimensional wind fields based on

knowledge of atmospheric dynamics, generating plots of wind fields from mesoscale meteorological models; and maintaining and updating DEQ's modeling computers, related software, and emissions databases.

8. In June of 2007, I was promoted to the senior level position I currently have of Environmental Scientist 1. My current job responsibilities include: planning, organizing, and directing air quality modeling analyses in support of the NSR program, negotiating technical requirements necessary to protect air quality and to assure compliance with rules and regulations of the DEQ, serving as project leader on project requiring air dispersion modeling, including the Best Available Retrofit Technology ("BART") and Regional Haze modeling analyses; designing air quality modeling studies; designing, enhancing, and maintaining the DEQ's databases; and GIS capabilities; and updating permitting and modeling guidance.

9. In my experience, I have conducted or assisted in the modeling analyses for approximately 78 major source permit applications, of which 50 were PSD reviews.

10. Based on my experience, when DEQ is contacted by a prospective permittee with a proposed project requiring a construction air permit, DEQ meets with the party to discuss the requirements of the permit application as well as the requirements for the modeling analyses.

11. The prospective applicant and DEQ work together to develop a set of procedures by which the modeling will be conducted through pre-application meetings which fosters the development of a modeling protocol. This is often an iterative process before a final protocol is approved by the DEQ.

12. For PSD permit applications/projects, the DEQ also contacts federal agencies which have authority over designated Class I and sensitive Class II areas located within approximately 300 kilometers of the proposed source where the air quality may be impacted by

the emissions from the proposed source or project under consideration. These agencies can include, National Park Service, Bureau of Land Management, United States Forest Service, as well as other federal agencies.

13. Once the modeling protocol is approved by the DEQ, taking into account comments received from the federal land managers, the prospective applicant can begin the modeling analysis of the proposed source based on the methodologies, procedures, and data inputs to the model(s), as established in the modeling protocol.

14. The next step for DEQ occurs when the applicant formally submits its application to DEQ for formal review.

15. DEQ receives the applicant's modeling analyses in addition to the other permit-related information and DEQ proceeds to review and verify the applicant's modeling procedures, inputs, and results.

16. Based on EPA guidance, the use of Class II significant impact levels ("SILs") is appropriate to use as a tool for requiring cumulative air quality analysis in Class II areas. *See* EPA's 1990 guidance, Draft New Source Review Manual ("NSR Manual").

17. If a modeling analysis results in impacts which do not exceed the Class II SILs, no further modeling analysis is typically required.

18. If the results do exceed Class II SILs, a cumulative modeling assessment is conducted to evaluate the ambient air quality in the area (Wyoming Ambient Air Quality Standards ("WAAQS") and Class II increment consumption) where the proposed source would be located.

19. If the results of the cumulative analyses reveal an existing modeled exceedence of the air quality standards or Class II increments, and the source's impact is below the applicable

Class II SIL, then the modeled impact(s) are deemed to be *de minimis* indicating the proposed new source does not contribute significantly to a modeled exceedence (WAAQS or Class II increments), the reviewing authority may issue an air quality permit to the proposed source, based upon the determination of a *de minimis* air quality impact.

20. Once the applicant demonstrates through modeling that the proposed source will not exceed the National Ambient Air Quality Standards ("NAAQS") or any applicable increment, the reviewing agency typically does not require further modeling analyses.

21. The use of the Class II SILs in modeling assessments is well established in past DEQ PSD permitting decisions and has been used since implementation of the PSD program in 1980.

22. While EPA has proposed Class I SILs to be used as a tool to avoid costly analyses, the use of Class I SILs has not been finalized by EPA. However, DEQ employs the Class I SILs and associated guidance on applying the SILs to Class I issues based on the reasoning that a *de minimis* threshold is needed to screen out potentially insignificant sources.

23. In the past six years, DEQ has applied the Class I SILs to approximately ten (10) permit applications as a screening tool. These facilities include WYGEN 2, ExxonMobil, Solvay, Opal, OCI, Basin Dry Fork, WYGEN 3, and Two Elk Unit 2.

I. Timeline of DEQ Dry Fork Permit Application Process

24. DEQ has dedicated significant time and resources on the permit review and analysis process for the Dry Fork Station. As part of my current and former job responsibilities, I have reviewed various documents Basin submitted as part of the permit application process for the Dry Fork Station project.

25. DEQ's involvement with Dry Fork dates back to December of 2004 when Basin Electric Power Cooperative ("Basin") announced its plans to construct the proposed coal-fired power generating station know as the Dry Fork Station.

26. On August 5, 2005, Basin, DEQ, the National Park Service ("NPS") and CH2M Hill met to discuss modeling protocols that would be used to guide the modeling analyses associated with evaluating potential air quality impacts from the Dry Fork Station. Revised protocols were submitted in August and DEQ's approval letter was provided to the applicant on October 4, 2005.

27. On November 10, 2005, Basin submitted its air construction permit application to Wyoming DEQ to construct the Dry Fork Station.

28. As a part of the application, Basin conducted an analysis of the air quality impacts on Class I areas located within 300 kilometers of the proposed Dry Fork Station. *See* Schlichtemeier Aff., Exhibit D at DEQ Bates No. 000138 (modeling discussion).

29. Based on the results of Basin's significance analysis at the Northern Cheyenne Indian Reservation ("NCIR"), a cumulative 24-hour SO_2 increment consumption analysis was conducted at the NCIR Class I area to determine whether Class I SO_2 24-hour increment was exceeded at any receptor within the NCIR for any 24-hour period in the three years that were modeled. Three years of meteorological data were used (2001, 2002, and 2003) in these modeling analyses. *See* Schlichtemeier Aff., Exhibit D at DEQ Bates No. 000138.

30. The cumulative increment impact analysis requires that regional sources of SO_2 be included in the cumulative analysis to assess the degree of SO_2 increment consumption at all receptors within Class I areas located within 300 km of the proposed source. *See* Schlichtemeier

Aff., Exhibit D at DEQ Bates No. 000142-00143 (sources included in cumulative increment modeling).

31. After reviewing the application on December 21, 2005, DEQ issued the first Completeness Review for Permit Application No. AP-3546 ("Completeness Review No. 1"). In this review, DEQ requested additional information from Basin including:

a. an analysis of the technical feasibility and cost effectiveness of achieving more stringent SO_2 emission limits with both wet and dry flue gas desulfurization control technologies;

b. an analysis of the technical feasibility and cost effectiveness of achieving more stringent NO_x emission limits;

c. an analysis of the technical feasibility and cost effectiveness of achieving more stringent PM_{10} emission limits, and

d. additional information regarding PSD Class II modeling issues.

32. In response to the Completeness Review No. 1, Basin submitted additional technical information to support its permit application. Basin submitted its response on March 7, 2006, which included technical information and a detailed analysis of the technical feasibility and cost effectiveness of achieving more stringent SO_2, NO_x, and PM_{10} emission limits.

33. On March 28, 2006, DEQ issued its second Completeness Review ("Completeness Review No. 2). Completeness Review No. 2 focused on modeling issues and requested additional information on PM_{10} emissions from the main boiler.

34. Specifically, DEQ requested that additional modeling be conducted using the maximum permitted emission rates for Colstrip Units 3 and 4 in Montana.

35. DEQ's request for Basin to use the maximum permitted emission rates for Colstrip Units 3 and 4 was based on DEQ's interpretation of the meaning of "maximum actual emission rates" as used on page C.49 of EPA's NSR Manual. True and correct copies of chapters B and C of the NSR Manual are attached as Exhibit B to the Schlichtemeier Aff.

36. EPA provides discretion to reviewing authorities to use allowable or permitted emissions in lieu of actual emissions.

37. DEQ issued its third Completeness Review on May 3, 2006 ("Completeness Review No. 3") which requested additional technical information for the proposed auxiliary boiler, and a BACT analysis for mercury emissions from the proposed boiler.

38. On May 30, 2006, DEQ issued its fourth Completeness Review ("Completeness Review No. 4") which focused on the technical feasibility and cost effectiveness of achieving lower SO_2 and NO_x emission limits.

39. On June 14, 2006, Basin submitted its response to Completeness Review No. 2 providing additional modeling analyses and discussions of PM_{10} emissions from the main boiler. The results of the additional modeling analyses showed that the modeled impacts based on the permitted short-term emission rates for Colstrip Units 3 and 4 exceeded the Class I SO_2 24-hour increment at the NCIR. A true and correct copy of Basin's results of the modeling analyses is located in the Schlichtemeier Aff., Exhibit J at DEQ Bates No. 000632.

40. DEQ analyzed the instances in which there were modeled exceedences of the Class I SO_2 increment at NCIR and compared those impacts to the modeled 24-hour SO_2 concentrations determined from Dry Fork's significance analysis to evaluate if the modeled exceedences occurred at receptors and time periods when the Dry Fork plant also had a significant impact at NCIR receptors. Based on this analysis, DEQ determined that Dry Fork

would not significantly contribute to any modeled increment exceedence because the modeled exceedences did not occur at receptor locations and time periods in which the modeled exceedences were predicted. The results of the modeling analyses are located in the Schlichtemeier Aff., Exhibit J at DEQ Bates No. 000632.

Dated this 2ND day of September, 2008.

Ken Rairigh

Ken Rairigh

TITLE: Air Quality Engineer

STATE OF WYOMING)
)ss.
County of Laramie)

Subscribed and sworn before me by Ken Rairigh on this 2 day of September, 2008.

Witness my hand and official seal.

DONNA BEHOUNEK - NOTARY PUBLIC
COUNTY OF LARAMIE STATE OF WYOMING
MY COMMISSION EXPIRES APR. 28, 2012

Donna Behounek

Notary Public

My commission expires: April 28, 2012