STATE OF NORTH DAKOTA
BEFORE THE NORTH DAKOTA DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH SECTION, AIR QUALITY DIVISION

In the Matter of:

Proposed Determination of the Adequacy of the North Dakota State Implementation Plan to Prevent Significant Deterioration.

On March 28, 2002, the North Dakota Department of Health (Department) gave notice of a hearing seeking comment and testimony concerning a Proposed Determination of the Adequacy of the North Dakota State Implementation Plan (SIP) to Prevent Significant Deterioration (PSD) of air quality in North Dakota pursuant to 40 CFR § 51.166.

On April 12, 2002, the state health officer, Dr. Terry Dwelle, appointed a hearing officer to conduct the public hearing and to make recommended findings to the Department regarding the adequacy of the SIP to Prevent Significant Deterioration of air quality.

The notice of hearing solicited comments on six specific issues relating to the proposed determination by the Department;

The public hearing was conducted at the Brynhild Haugland Room, State Capitol, Bismarck, North Dakota, on May 6, 7, and 8, 2002;

The record of the hearing remained open for written comments on the proposed determination and issues through May 24, 2002;

The recommended Findings and Conclusions, for the public hearing on the proposed determination of the adequacy of the North Dakota State Implementation Plan to Prevent Significant Deterioration, was submitted to the state health officer for consideration on July 3, 2002.

Additional public comments on the recommended findings were accepted by the state health officer until July 18, 2002.

Having considered the comments, testimony and exhibits submitted into the record and based on the recommended findings proposed by the appointed hearing officer, the Department makes the following findings and conclusions:

Findings and Conclusions

The recommended Findings and Conclusions of the hearing officer are adopted and incorporated by reference, except as changed, modified, or restated herein.

1. The Department considered ambient air quality monitoring data available for the Class I areas in determining whether air quality has deteriorated in the Class I areas. There is no evidence based on actual monitoring data that air quality in the Class I areas has deteriorated.

2. Congress expected EPA and the states to develop and utilize the most accurate and feasible modeling techniques available, and to use actual air quality data to establish the baseline, which is defined in terms of existing ambient concentration levels on the PSD minor source baseline date.

3. Congress intended that monitoring would impose a certain discipline on the use of modeling techniques, through the development of sophisticated monitoring techniques by which modeling techniques would be held to earth by a continual process of confirmation and reassessment, a process that enhances confidence in modeling, as a means for realistic projection of air quality.

4. The Department's approach of using both modeling and monitoring to determine whether air quality is deteriorating in Class I areas is within the Department's permissible discretion and consistent with Congressional intent, except that the Department's use of Calpuff modeling did not comply with N.D.A.C. 33-15-15-01(4)(f).

5. The administrative record, including all public testimony (written and verbal) received before, during, and after the May 6, 2002, hearing, demonstrates that North Dakota's SIP and PSD program are adequate to prevent the significant deterioration of air quality.

6. The Department's technical assessment and proposed determination, indicating that there are no violations of the applicable PSD sulfur dioxide increments, are reasonable based on the evidence and comments received into the record. However, a final determination cannot be made as the Department did not follow its rules prior to the use of the Calpuff model.

In addition to the above-referenced findings, the Department shall:

1. Initiate appropriate action to gather public comment on the potential revision of N.D.A.C. ch. 33-15-15 and N.D.A.C. ch. 33-15-19 to recognize the Calpuff air modeling system as an acceptable method for predicting expected ambient sulfur dioxide concentrations in PSD Class I areas and for visibility impact analysis.

2. Explore the potential benefits and potential implementation of the use of MM-5 data with the Calpuff air modeling system.

3. Evaluate the need and potential implementation of statewide sulfur dioxide emission caps from major stationary sources to ensure no future violations of Class I increment.

4. Continue to maintain and expand, if necessary, the air quality monitoring network to ensure the collection of accurate and defensible actual ambient sulfur dioxide data. Data should be collected at strategic locations designed to track trends in sulfur dioxide concentrations in Class I areas and to assess model performance.

5. Continue to engage with the U.S. Environmental Protection Agency through dialogue and technical information exchange with the intent of advancing the air quality program and finding resolution to any outstanding issues.

Dated at Bismarck, North Dakota, this 8th day of August, 2002.

STATE DEPARTMENT OF HEALTH

Terry L. Dwelle, MD, MPHTM
State Health Officer

State of North Dakota
Before the North Dakota Department of Health
Environmental Health Section, Air Quality Division

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The notice of hearing solicited comments on six specific issues relating to the proposed determination by the Department;

The public hearing was conducted at the Brynhild Haugland Room, State Capitol, Bismarck, North Dakota on May 6, 7, and 8, 2002;

The record of the hearing remained open for written comments on the proposed determination and issues through May 24, 2002;

Having considered the comments, testimony, and exhibits submitted into the record, the hearing officer makes the following:

Recommended General Findings and Conclusions:

General Findings

0.1 In establishing National Ambient Air Quality Standards to protect health and welfare, Congress recognized that some areas of the nation had air quality resources that were much cleaner than the standards. Congress further recognized that the air quality in those areas should not be allowed to deteriorate to levels set to protect health and welfare. The Prevention of Significant Deterioration provisions of the Clean Air Act (CAA) were intended to provide a framework for flexible state management of air quality consistent with two national goals – development of industrial capacity and energy resources and protection of highly valued clean air resources.

0.2 North Dakota has an EPA approved PSD program under the CAA. The Department is the state agency delegated authority under the CAA to administer the program. EPA approved North Dakota's PSD regulations on November 2, 1979 (44 *Federal Register* 63103), and again on September 18, 1984, after North Dakota substantially revised its state PSD regulations to be consistent with changes EPA made to the EPA PSD regulations promulgated on August 7, 1980 (49 *Federal Register* 36501 and 40 CFR 52.21). North Dakota's SIP is found at 40 CFR Part 52, §§ 1820-1835.

0.3 Unlike a "delegated" PSD program where a state merely adopts text by simply incorporating the federal rules by reference and thereafter implements EPA's PSD regulations, North Dakota has an "approved" PSD program with its own independently drafted and adopted SIP rules that, satisfactory to EPA, functionally implement the federal PSD requirements in a manner consistent with the federal provisions.

0.4 This is apparently the first periodic review hearing ever conducted in any state pursuant to 40 CFR § 51.166. The Department and other states have done PSD increment modeling analyses for New Source Review (NSR), but apparently no state has ever conducted a periodic review or PSD increment compliance assessment outside of NSR, and no rule or guidance has been adopted for such proceedings.

0.5 The Department conducted its PSD increment compliance modeling and made its proposed determination based upon the legal analysis in the draft memorandum "Legal Issues Relating to PSD Baseline and Increment Consumption."

0.6 EPA prepared a draft assessment of the adequacy of the State's SIP.

0.7 There is no evidence based on actual monitoring data that air quality in the Class I areas has deteriorated. The evidence demonstrates that air quality in the Class I areas has remained the same or improved.

0.8 The Elkhorn Ranch site has been part of the Theodore Roosevelt National Park since the creation of the unit as a national memorial park on April 25, 1947 (61 Stat. 52, 16 U.S.C. § 241 as amended).

General Conclusions

0.9 The Department has authority and jurisdiction over this matter. Section 51.166, 40 CFR requires the Department to review the adequacy of the SIP on a periodic basis. The hearing followed the procedures required by 40 CFR § 51.102 and the North Dakota SIP. The Department has statutory authority to hold the hearing. See N.D.C.C. § 23-25-03(9); N.D.C.C. § 23-01-23. See also General Findings 0.2.

0.10 The CAA creates a partnership between the states and the federal government. The federal government, through the EPA, determines the ends – the standards of air quality – but Congress has given the states the initiative and a broad responsibility regarding the means to achieve those ends through state implementation plans.

0.11 Where state statutes and rules govern, and state rules of statutory construction apply, EPA must defer to state construction of state law if it is consistent with the CAA and is reasonable. The state (Department) is entitled to make reasonable interpretive choices where the law is unclear.

0.12 Individual states with an approved PSD program may manage their increment to reflect local needs and conditions.

0.13 In addressing PSD issues, the Department may exercise appropriate discretion in management of the consumption of the allowable increments provided the Department's discretion "is based on a permissible construction of the statute" and the construction "in the context of this particular program is a reasonable one." Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc., 467 U.S. 837, 843, 845 (1984).

0.14 In considering whether or not significant deterioration has occurred, it is appropriate that all resources to conduct such an assessment should be considered. Tools such as modeling and monitoring in conjunction with each other should be used to make such an assessment. Modeling should be used for predictive purposes and monitoring should be used to determine actual impacts.

0.15 The Department's decisions on model inputs and post processing of model outputs are based on a permissible construction of the relevant governing statutes and rules, and the Department's construction in making its proposed determination based on this analysis in the context of this particular program is a reasonable one. However, the Department failed to follow N.D.A.C. 33-15-15-01(4)(f) prior to the use of the Calpuff model.

Proposed Findings on Each of the Six Hearing Issues

1.0 Modeling and Technical Assessments as well as ambient air quality monitoring data (Issue 1 in the Notice of Hearing)

With the exception of proposed finding 1.2, the hearing officer finds the Department's proposed determination, including a modeling and technical assessment, is based on a permissible construction of the relevant governing statutes and rules, and in the context of this particular program is a reasonable one.

1.1 The testimony indicated uniform support for the Department's use of the Calpuff air quality modeling system. The Calpuff air quality modeling system is accepted by EPA, Federal Land Managers and others as a modeling system for predicting expected ambient concentrations of sulfur dioxide at distances greater than 50 kilometers (31 miles) from sources where that sulfur dioxide is emitted into the atmosphere.

1.2 Section 33-15-15-01(4)(f), N.D.A.C., requires that all estimates of ambient concentrations must be based on air quality models, data bases, and other requirements specified in the "Guidelines on Air Quality Models" as supplemented by the "North Dakota Guideline for Air Quality Modeling Analyses." It further provides that any modified or nonguideline model must be subject to notice and opportunity for public comment. The Calpuff air quality modeling system is not recognized in Appendix W of 40 CFR Part 51. The Calpuff model has not been approved by EPA as a federal Air Quality Guideline model nor adopted by the Department in accordance with Section 33-15-15-01(4)(f). Accordingly, until properly adopted, the Department cannot use the Calpuff model to make final determinations.

1.3 It was within the Department's discretion to use an average concentration among receptors geographically spaced in a Class I area as on a Cartesian grid to obtain a numerical representation of the concentration of sulfur dioxide occurring in that Class I area during any consecutive time block averaging period.

1.3.1 Neither the Calpuff model nor any other model is capable of perfectly predicting expected ambient sulfur-dioxide concentrations in a time sequence at its receptors that temporally correlate with actual, measured ambient concentrations taken by monitoring instruments at the locations of those specific receptors.

1.3.2 Models cannot predict differences in real world sulfur dioxide concentrations with reliable accuracy at receptors that are spaced a few kilometers apart at locations that are 100 to 200 kilometers from the emission sources.

1.3.3 Averaging the predicted concentrations over the receptors in each Class I area provides a more realistic concentration for the time period of interest.

1.4 The Calpuff modeling methods as applied to assess the status of consumption of the PSD increments for sulfur dioxide adequately represent actual ambient sulfur dioxide concentrations in Class I areas. These methods used actual average sulfur dioxide emission rates and computed an average predicted model concentration for the model's receptors during each sequential time block over a year. In contrast the model performance

assessment used actual hourly emissions of sulfur dioxide from major sources paired with hourly meteorological data.

1.5 There are a number of problems with the EPA's assessment.

1.5.1 EPA did not include many baseline sulfur dioxide emissions that may be increment expanding, including those from oil and gas sources, the Mandan refinery and Colstrip units 1 and 2.

1.5.2 EPA did not properly identify baseline emissions for those baseline sources included in their analysis. EPA must defer to the State's discretion in establishing baseline emission rates.

1.5.3 EPA improperly included emissions that had received certifications of no adverse impact as increment consuming emissions.

1.5.4 EPA indicated "...that the 90th percentile cumulative emission rate (i.e., the sum of all of the 90th percentile emission rates at each facility) did actually occur several times." That is different than finding that all facilities emitted at their 90th percentile rate at the same time.

1.5.5 EPA's methodology that examines model output on an increment consumption only basis without considering baseline concentration levels may be a useful screening methodology, but the State's methodology must be used to determine compliance with the Clean Air Act.

1.5.6 EPA used 1999 CEMS data that is inaccurate due to quality assurance problems.

1.5.7 While EPA's methodology is protective of the increment, EPA must defer to the State as the Clean Air Act and EPA regulations provide that states (not EPA) must periodically review their plans for preventing significant deterioration and states are responsible for managing the increment.

2.0 <u>How to treat sulfur dioxide emissions from sources given Class I variances under CAA § 165 (Issue 2 in the Notice of Hearing)</u>

The hearing officer finds the Department's proposed determination, including a modeling and technical assessment, is based on a permissible construction of the relevant governing statutes, rules and guidance, and in the context of this particular program is a reasonable one.

CAA § 165 specifically establishes a stepped up alternative Class I increment for facilities granted a FLM "no adverse impact" certification. CAA § 165(d)(2)(C)(iv);

N.D. Admin. Code § 33-15-15-01(4)(j)(4)(b). The Department may recognize Class I certifications granted by the U.S. Department of Interior for North Dakota sources in assessing consumption of Class I PSD sulfur dioxide increment, and to count emissions from such sources only against the alternative increment established for such sources at CAA § 165. The FLM recognized the alternative increments apply to sources in the most recent certification of no adverse impact made in 1993. Sulfur dioxide emissions from Little Knife and DGC consume increment against the alternative Class I increment under CAA § 165(d)(2)(C)(iv), 42 U.S.C.A. § 7475(d)(2)(C)(iv) and N.D. Admin. Code § 33-15-15-01(4)(j)(4)(b), but not the Class I increment under CAA § 163(b)(1), 42 U.S.C.A. § 7473(b)(1). The alternative Class I increments do not apply to existing facilities not granted variances.

3.0 Utilization of actual annual average sulfur dioxide emissions and what the relevant statutes and promulgated rules require the Health Department to use in modeling sulfur dioxide emission rates from sources that affect PSD Class I increments for sulfur dioxide (Issue 3 of the Notice of Hearing)

The hearing officer finds the Department's proposed determination, including a modeling and technical assessment, is based on a permissible construction of the relevant governing statutes, rules and federal guidance, and in the context of this particular program is a reasonable one.

3.1 The representation of emitted sulfur dioxide from minor and major sources during PSD baseline (for example, 1976 and 1977) and during the current period (for example 2000 and 2001) is based upon an average rate of actual sulfur dioxide emissions. An average rate was used because available data on the emitted sulfur dioxide conform to provisions of rule and interpretive regulation as well as achieving a consistent expression of rates. The actual emissions representative of the baseline concentration or the baseline level must be expressed as an actual rate of emissions of a contaminant from an emissions unit, and must equal the average rate, in tons per year, at which the unit actually emitted the contaminant during a two-year period which precedes the particular date and which is representative of normal source operation. N.D. Admin. Code § 33-15-15-01(1)(a) & (a)(1). The actual emissions definition provides that the rate for both the baseline concentration and baseline level must equal the average rate, in tons per year, at which the unit actually emitted the contaminant.

3.2 The representation in modeling of emitted sulfur dioxide for major sources during PSD baseline from data on the rate at which such sources actually emitted the sulfur dioxide, rather than on source-specific allowable emissions, is necessary to establish the baseline concentrations at the PSD minor-source baseline date. The baseline concentrations are necessary to calculate actual amounts of improvement or deterioration in PSD Class I area ambient sulfur-dioxide concentrations after the PSD minor-source baseline date.

4.0 Utilization of methodology to measure increment consumption based on ambient concentration of sulfur dioxide caused by baseline sources as compared to increment consuming sources, pursuant to N.D. Admin. Code ch 33-15-15 and how the relevant statutes and promulgated rules require the Health Department to measure and determine the maximum allowable increase in concentrations of sulfur dioxide under CAA § 163 over the "baseline concentration" established under CAA § 169 (Issue 4 of Notice of Hearing)

The hearing officer finds the Department's proposed determination, including a modeling and technical assessment, is based on a permissible construction of the relevant governing statutes, rules and federal guidance, and in the context of this particular program is a reasonable one.

4.1 Reliable actual, measured sulfur-dioxide concentration data in PSD Class I areas do not exist around the PSD minor-source baseline date.

4.2 The Calpuff air quality modeling system and an inventory of emitted sulfur dioxide by minor and major sources, representative of circumstances occurring around the PSD minor-source baseline date, provide predicted baseline concentrations in PSD Class I areas that are adequate to calculate subsequent improvement or deterioration of ambient sulfur dioxide concentration in those areas.

5.0 How to establish baseline concentrations for sources in existence on the minor source baseline date using "actual emissions" while taking into consideration "normal source operation" (Issue 5 of the Notice of Hearing)

The hearing officer finds the Department's proposed determination, including a modeling and technical assessment, is based on a permissible construction of the relevant governing statutes, rules and guidance, and in the context of this particular program is a reasonable one.

5.1 The terms "representative" and "normal source operation" arise out of the definition of "actual emissions" at N.D. Admin. Code § 33-15-15-01(1)(a)(1) as adopted and incorporated from the '80 regulations promulgated at 45 FR 52675 et seq. This definition allows the Department to establish the baseline concentration for all relevant sources based on a source's "operation after the baseline date" if it is "more representative" of "normal source operation" in establishing the "baseline concentration."

5.2 There is no reliable monitoring data for the Department to use from the two years preceding the minor source baseline date to help establish a baseline concentration for SO2 based on monitoring.

5.3 Many baseline sources provided additional information on their baseline emissions and normal source operations. The Department should evaluate

this additional information and determine if any adjustments to the baseline emission inventory needs to be made.

6.0 Because the Department issued PSD and construction permits prior to the Fort Peck Indian Tribe redesignation of its tribal lands in Montana to Class I in 1984, and because the Montana Class I areas are beyond 200 km (124.4 miles) from almost all major sources in North Dakota, the Department proposes to not retroactively apply Class I sulfur dioxide increments to sources in existence at the time of redesignation (Issue 6 of the Notice of Hearing)

6.1 The Department issued PSD and construction permits prior to the Fort Peck Indian Tribe redesignation of its tribal lands in Montana to Class I in 1984.

6.2 The Fort Peck tribe was served with a copy of the notice of hearing but did not appear at the hearing or provide written comments.

6.3 EPA did not provide substantive written comments regarding the State's proposal not to apply Class I SO2 increments to the Fort Peck Indian Reservation.

6.4 In the opinion of the hearing officer, the legal issues raised by the State's proposal not to apply Class I SO2 increments to the Fort Peck Indian Reservation have not been adequately briefed. Absent a substantive brief on this issue from EPA or the Fort Peck tribe, the hearing officer declines to make a legal conclusion regarding Issue 6 of the Notice of Hearing. The hearing officer recommends that the Department work with the Fort Peck tribe and EPA in an effort to resolve this issue.

Conclusions

Based on the above findings, the Department makes the following conclusions:

1. The Department considered ambient air quality monitoring data available for the Class I areas in determining whether air quality has deteriorated in the Class I areas. There is no evidence based on actual monitoring data that air quality in the Class I areas has deteriorated.
2. Congress expected EPA and the states to develop and utilize the most accurate and feasible modeling techniques available, and to use actual air quality data to establish the baseline which is defined in terms of existing ambient concentration levels on the minor source baseline date.
3. Congress intended that monitoring would impose a certain discipline on the use of modeling techniques, through the development of sophisticated monitoring techniques by which modeling techniques would be held to earth by a continual process of confirmation and reassessment, a process that

enhances confidence in modeling, as a means for realistic projection of air quality.

4. The Department's approach of using both modeling and monitoring to determine whether air quality is deteriorating in Class I areas is within the Department's permissible discretion and consistent with Congressional intent, except that the Department's use of Calpuff modeling did not comply with N.D.A.C. 33-15-15-01(4)(f).
5. The administrative record, including all public testimony (written and verbal) received before, during, and after the May 6, 2002, hearing, demonstrates that North Dakota's SIP and PSD program are adequate to prevent the significant deterioration of air quality.
6. The Department's technical assessment and proposed determination indicating that there are no violations of the applicable PSD increments are reasonable based on the evidence and comments received into the record. However, a final determination cannot be made as the Department did not follow its rules prior to the use of the Calpuff model.

Recommended Future Considerations by the Department

The public hearing demonstrated that new information is available and that new scientific tools, techniques, and methodologies should be carefully considered. The public and the regulated community should have the benefit of such new techniques and processes that allow the regulatory program to evolve. The Department should continue to refine its assessment to reconcile any outstanding technical issues and should hold further stakeholder meetings to assist in both these efforts and in the development of a definitive regulatory approach for conducting future periodic PSD increment assessments. Following are items that should be considered in future assessments:

- Revise N.D.A.C. ch. 33-15-15 and N.D.A.C. ch. 33-15-19 to recognize the Calpuff air quality modeling system as an acceptable method for predicting expected ambient sulfur dioxide concentrations in PSD Class I areas and for visibility impact analysis.

- Assess the adequacy of the air quality monitoring network to ensure the collection of actual ambient sulfur dioxide data at strategic locations to track trends in sulfur dioxide concentrations in Class I areas and to assess model performance.

- Include a reasonable quantification of the background ambient sulfur dioxide due to distant sources not otherwise included as input to the model in any calculations of ambient concentrations of sulfur dioxide in Class I areas.

- Use a Cartesian grid as locations for the model's receptors in PSD Class I areas of adequate grid scale so as to achieve statistically true time-blocked average concentrations in the Class I areas.

- Consider the use of MM5 data for 2000 along with 2000 CEMS data to evaluate the Calpuff performance compared to 2000 air quality monitoring data from the Class I areas.

- Investigate and remove any bias in CEM data prior to use.

- Consider actual hourly-emitted sulfur dioxide from major sources (e.g., continuous emissions monitoring system data) as the most representative data of emitted sulfur dioxide from these sources for prediction of ambient sulfur dioxide concentrations in PSD Class I areas.

- Review and consider refinements to the oil and gas baseline emission inventory.

- Consider the use of caps or permit adjustments on sulfur dioxide emission from major stationery sources to ensure no future violations of Class I increment.

- Refine the means by which to determine non-routine periodic reviews of Class I increments consumption through the use of trigger mechanisms.

- Provide to federal land managers modeling outputs for individual receptors in Class I areas for assessment of air quality related values impacts.

Dated this 3rd day of July, 2002.

By: _____
Francis J. Schwindt
Hearing Officer

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