Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Bryan W. Shaw, Ph.D., *Commissioner*
Mark R. Vickery, P.G., *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 25, 2008

Jim Martin
Executive Director
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80246-1530

Dear Mr. Martin:

The purpose of this letter is to share with Colorado the information that the Texas Commission on Environmental Quality (TCEQ) has developed for Texas on emissions that modeling and analysis indicate affect a Class I area in your state. The TCEQ also requests confirmation from you that Texas' projected emissions reductions will be adequate to meet Texas' apportioned part of the reductions necessary for your state to meet its reasonable progress goal for its Class I area.

As you know, under the Regional Haze Rule, 40 Code of Federal Regulations §51.308, a state must consult with neighboring states on emission strategies and reasonable progress goals for emissions that may be reasonably anticipated to contribute to visibility impairment in Class I areas in those states. This letter is intended to be the culmination of our consultation process for this initial Regional Haze state implementation plan (SIP) submittal.

The information in this letter regarding emissions and probable impacts was developed as part of the Central Regional Air Planning Association (CENRAP) planning process. The TCEQ has been involved in the CENRAP since its inception in 1999. The CENRAP's evaluation of regional haze sources in the central states and beyond has been invaluable in the member states' combined effort to determine the impacts of regional haze on Class I areas in the region and to assess the effectiveness of future control efforts. As contemplated in the Regional Haze Rule, regional planning organizations like the CENRAP are the vehicle through which states agree on regional haze impacts and emissions reduction apportionment obligations.

As described in our proposed Regional Haze SIP revision, the TCEQ provided the CENRAP emissions inventory information for all source categories in Texas. The CENRAP conducted Particulate Matter Source Apportionment Technology (PSAT) modeling to determine the contribution from each source area to visibility impairment at Class I areas in the region. These results are enclosed for Great Sand Dunes Wilderness Area. The TCEQ participated fully in the analysis of this data, base period visibility impairment, natural visibility condition estimates, and 2018 projections based on current and anticipated future state and federal controls. The PSAT modeling indicates that the probable impact of Texas sources will be reduced by 2018 in the Great Sand Dunes Wilderness Area due to the expected emissions reductions from current and planned controls.

As required under the Regional Haze Rule, a review of Texas sources and the impact of emissions on regional haze will be conducted for all of the five-year progress reports and 10-year SIP revisions in order to determine the efficacy of current controls.

The TCEQ is requesting Colorado's concurrence on this assessment and a verification that your state is not depending on any additional reductions from Texas sources in order to meet your reasonable progress goal(s). So that we may prepare and submit our Regional Haze SIP revision to the United States Environmental Protection Agency by this summer, we would appreciate a response within 30 days. If you have any questions or comments on this letter or wish to set up a time to consult further, please contact Margaret Earnest at mearnest@tceq.state.tx.us or 512-239-4581.

Sincerely,

Susana M. Hildebrand, P.E.
Air Quality Division Director

SMH/ME/ts

Enclosures

cc: Greg Nudd, TCEQ
Margaret Earnest, TCEQ
Ray Mohr, CDPHE

Measured 2002 and Projected 2018 Visibility Impacts on the Great Sand Dunes Wilderness Area in Colorado Including the Impact of Texas' Emissions

The following table shows the 2002 measured visibility impacts and the 2018 projected visibility impacts from all source areas on the Great Sand Dunes Class I area in Colorado and the impacts apportioned to be from Texas. According to the modeling, Texas' impact at each of the other Class I areas in Colorado is smaller than its impact on the Great Sand Dunes Wilderness Area. The associated figures show the apportioned impacts at Great Sand Dunes Wilderness Area from all source areas that the modeling separated, including three areas of Texas.

CENRAP produced these results using particulate matter source apportionment technology (PSAT) modeling and relative response factors according to EPA regional haze modeling guidance. The data are from the August 27, 2007, version of the PSAT tool that Environ produced for CENRAP. The database file is available from the CENRAP web site at http://cenrap.org/projects.asp under the listing "27 Aug 2007 Updated CENRAP PSAT Visualization Tool - 36 MB zip."

Table 1: Texas' apportioned contribution to the measured 2002 and projected 2018 total visibility extinction at Great Sand Dunes Wilderness Area

Particulate Matter Constituent	2002 Impacts at Great Sand Dunes (inverse megameters)		2018 Impacts at Great Sand Dunes (inverse megameters)	
	Texas Total	Total, All Source Areas	Texas Total	Total, All Source Areas
Sulfate	0.66	5.84	0.65	5.32
Nitrate	0.02	1.94	0.02	1.83
Primary Organic Aerosol	0.18	3.34	0.12	3.07
Elemental Carbon	0.10	1.57	0.04	1.08
Fine Soil	0.23	2.84	0.21	2.95
Coarse Mass	0.07	7.36	0.07	7.69
Secondary Organic Aerosol, Anthropogenic	not available[1]	1.38	not available[1]	1.28
Secondary Organic Aerosol, Biogenic	not available[1]	3.61	not available[1]	3.56
Total	1.25	27.88	1.11	26.77

[1] The CENRAP PSAT modeling did not apportion either the anthropogenic or the biogenic secondary organic aerosol (SOA). The reasons are (1) that sulfate and nitrate are generally the main causes of visibility impairment resulting from human activity and (2) that tracking the multiple volatile organic compound constituents and reaction products necessary to apportion SOA would have extended the modeling run times far beyond the time that was available for the modeling.

Figure 1: Measured 2002 extinction on the worst 20 percent of days at Great Sand Dunes Wilderness Area apportioned using PSAT modeling

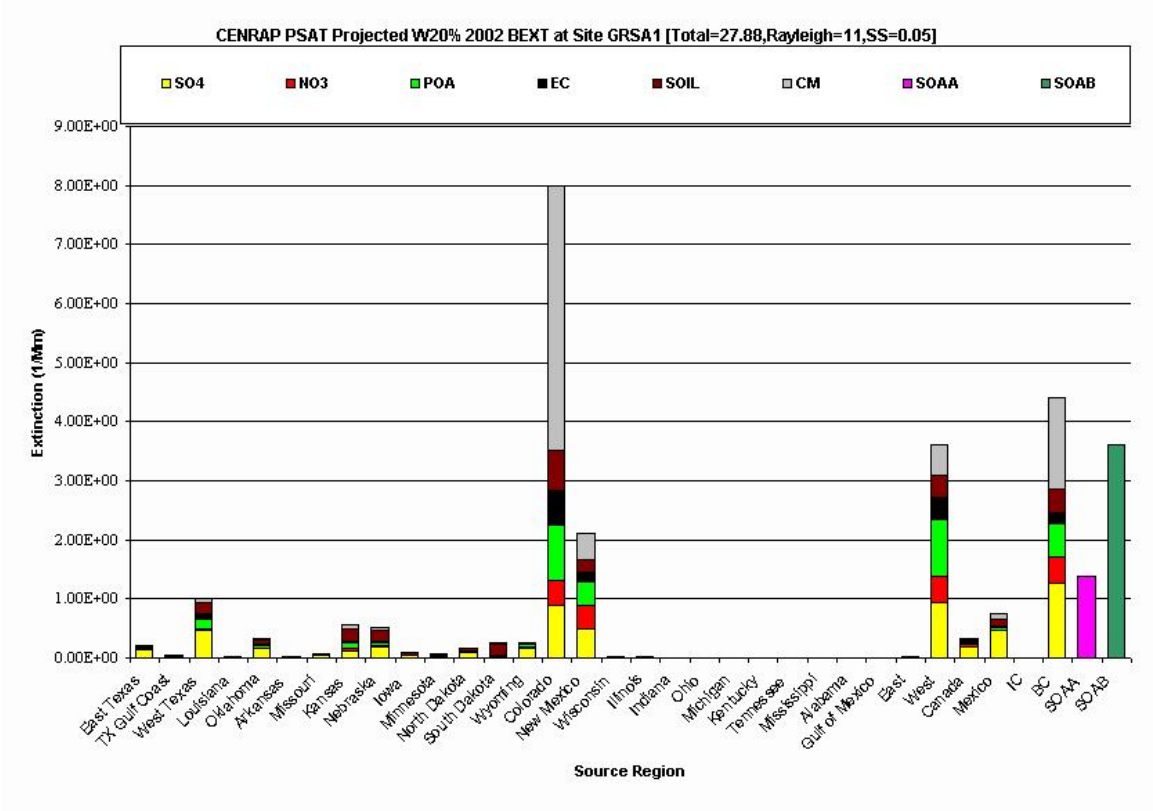
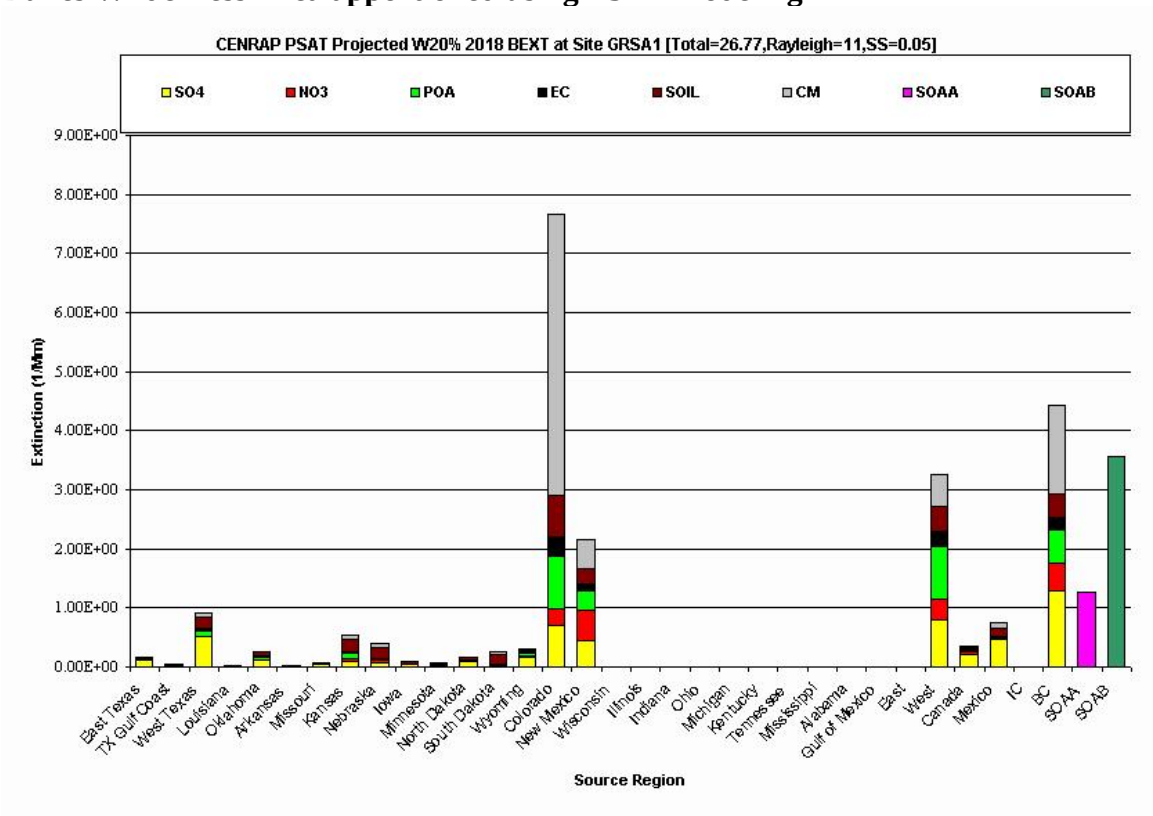


Figure 2: Projected 2018 extinction on the worst 20 percent of days at Great Sand Dunes Wilderness Area apportioned using PSAT modeling



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DIVISION

STATE OF COLORADO

Bill Ritter, Jr., Governor
James B. Martin, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

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Colorado Department
of Public Health
and Environment

June 19, 2008

Susana M. Hildebrand, P.E, Director
Air Quality Division
Texas Commission on Air Quality
P.O. Box 13087
Austin, Texas 78711-3087

RE: March 25, 2008 correspondence from Texas Commission on Environmental Quality on interstate consultation on Regional Haze

Dear Ms. Hildebrand,

This is in response to your letter of March 25, 2008 to Colorado Department of Public Health and Environment's Executive Director, Jim Martin requesting confirmation that projected emissions reductions in the Draft Texas Regional Haze SIP revision will be adequate to meet Texas' apportioned part of reductions necessary for Colorado to meet the Reasonable Progress Goals (RPGs) for the Colorado Class I areas.

Like Texas, Colorado is also in the process of completing its Regional Haze SIP. Great Sand Dunes National Park is one of the twelve mandatory Class I areas that we are in the process of setting Reasonable Progress Goals for in this SIP. Our SIP development process has been underway since last August and we are now looking towards the completion of this effort.

Your letter and the attachment was forwarded by Executive Director Martin to the Department's Air Pollution Control Division for response. The Air Division staff completed their review of the information you enclosed, reviewed additional information from the Western Regional Air Partnership (WRAP) and the Central Regional Air Planning Association (CENRAP) web sites and reviewed supplemental material provided by your staff following a phone call on May 15, 2008. For purposes of identifying visibility impacts on Colorado Class I areas that may be of concern, the Colorado Regional Haze SIP has established a threshold criterion to include ≥ 5.0% or a ranking in the top 5 among source regions impacting a particular Class I area. This is documented in the state Air Commission adopted SIP (see Figure 7.2, pg 70 Attachment 1). This chart indicates that the CENRAP states contribute approximately nine percent of the impact at Great Sand Dunes National Park and is the number four

ranked impact source region at Rocky Mountain National Park contributing approximately seven percent of the impairment.

The conference call on the 15th and the subsequent exchange of information between our staffs established the Texas contribution to Colorado's Class I areas. The Texas contribution is summarized in Attachment 2: which shows that the impacts from Texas sources are below both the criteria identified in the Colorado SIP.

However, we do want to note this finding is based on the regional apportionment modeling used to develop the Colorado SIP, the Particulate matter Source Apportionment Technology (PSAT). This regional analysis, was based on what we now understand to be older emission inventory data. We understand that any supplemental modeling being contemplated by either the WRAP or the CENRAP will not include a PSAT analysis. However, if PSAT modeling is conducted and is based on updated emission inventory information, the apportionment results would likely change enough to revisit this issue in the five-year SIP review process required under the Regional Haze Rule.

We trust this will be sufficient to address the interstate consultation requirements under the Regional Haze Rule. If you have any further comments or questions, please contact Ray Mohr at ray.mohr@state.co.us at (303) 692-3110 or Curt Taipale at curtis.taipale@state.co.us or (303) 692-3265.

Sincerely,

Paul Tourangeau, Director
Air Pollution Control Division

Attachments

CC:
Jim Martin, Executive Director Colorado Department of Public Health and Environment
Doug Lempke, Technical Secretary, Colorado Air Quality Control Commission
Margaret Earnest, TCEQ

Attachments

Attachment 1 : Page 70 from the adopted Colorado Regional Haze SIP

7.4 PSAT Modeling Results for 2018

Figure 7-2 provides the four highest source areas contributing sulfate and nitrate at each Class I area. As indicated, boundary conditions (BC) are the highest contributor to sulfate at all Colorado Class I areas. The boundary conditions represent the background concentrations of pollutants that enter the edge of the modeling domain. Depending on meteorology and the type of pollutant (particularly sulfate), these emissions can be transported great distances that can include regions such as Canada, Mexico, and the Pacific Ocean. Colorado appears to be a major contributor of particulate sulfate at those Class I areas near significant sources of SO2.

For nitrate, Colorado appears to be a major contributor at most of our Class I areas except for the Weminuche Wilderness, La Garita Wilderness and Black Canyon of Gunnison National Park. Although, boundary conditions also appear to be a major contributor of nitrate at all our Class I areas.

Figure 7-2 Summary of PSAT Modeling for 2018

WRAP - PM Source Apportionment Technology (PSAT) Modeling Results

Results based on 2018b Modeling

Class I Area	2018 Sulfate PSAT - 20% Worst Days Four Highest Regions Impacting the Class I Area					2018 Nitrate PSAT - 20% Worst Days Four Highest Regions Impacting the Class I Area				
	Sources*	1st	2nd	3rd	4th	Sources*	1st	2nd	3rd	4th
Great Sand Dunes National Park & Preserve		BC	CO	NM	MEX		BC	NM	CO	CEN
		38.2%	9.7%	8.1%	7.9%		28.9%	27.2%	12.3%	8.8%
Mesa Verde National Park		BC	NM	MEX	AZ		NM	CO	BC	AZ
		35.4%	17.2%	11.3%	10.2%		60.2%	12.3%	9.7%	9.7%
Mount Zirkel & Rawah Wilderness Areas		BC	CO	WY	UT		CO	BC	UT	WY
		29.3%	20.9%	9.2%	7.6%		41.6%	17.8%	14.1%	10.3%
Rocky Mountain National Park		BC	CO	WY	CEN		CO	BC	WY	UT
		29.0%	23.5%	7.7%	7.2%		33.7%	15.8%	11.0%	5.9%
Black Canyon of the Gunnison National Park, Weminuche & La Garita Wilderness Areas		BC	NM	MEX	PO		NM	BC	CA	AZ
		34.9%	13.2%	10.7%	9.1%		43.7%	19.7%	14.1%	9.9%
Eagles Nest, Flat Tops, Maroon Bells-Snowmass & West Elk Wilderness Areas		BC	MEX	AZ	NM		BC	UT	CO	NM
		40.1%	10.8%	6.8%	6.1%		55.0%	20.0%	15.0%	10.0%

Point Sources
Area Sources
Mobile Sources
Natural Fire

Notes:
** Boundary Conditions not included in Pie Charts*
The abbreviation 'BC' denotes Boundary Conditions
The abbreviation 'CEN' denotes the states comprising the Central Regional Air Partnership (CenRAP)
The abbreviation 'MEX' denotes the county of Mexico
The abbreviation 'PO' denotes the Pacific Ocean

Attachment 2 : Summary of Percent contribution fro m Texas sources on Colorado Class I areas

			Indentified in our RH SIP	
Recepto	Species	Texas Total (w/Natural Sources)	WRAP 2018 PSAT- CENRAP Impact	Overall TX impact
GRSA1	SO4	64.9%	7.466%	4.85%
	NO3	16.5%	8.772%	1.45%
MEVE1	SO4	87.6%	2.329%	2.04%
	NO3	53.2%	0.000%	0.00%
MOZI1	SO4	63.5%	3.221%	2.04%
	NO3	24.9%	0.000%	0.00%
ROMO1	SO4	46.7%	7.227%	3.37%
	NO3	12.8%	5.128%	0.66%
WEMI1	SO4	78.2%	2.893%	2.26%
	NO3	84.7%	0.000%	0.00%
WHRI1	SO4	82.6%	5.896%	4.87%
	NO3	75.5%	0.000%	0.00%

Receptor	Species	Sum of West Texas frac.	Sum of East Texas frac.	Sum of TX Gulf Coast frac.	Texas Total	CENRAP Total
GRSA1	SO4	47.0%	10.9%	2.6%	60.5%	100.0%
	NO3	15.3%	1.1%	0.0%	16.4%	100.0%
MEVE1	SO4	57.0%	19.0%	5.6%	81.6%	100.0%
	NO3	47.6%	3.8%	0.8%	52.2%	100.0%
MOZI1	SO4	51.3%	6.9%	1.6%	59.8%	100.0%
	NO3	23.9%	0.8%	0.2%	24.8%	100.0%
ROMO1	SO4	33.3%	8.7%	1.3%	43.3%	100.0%
	NO3	9.2%	3.1%	0.2%	12.6%	100.0%
WEMI1	SO4	60.9%	8.7%	2.3%	71.9%	100.0%
	NO3	78.2%	3.2%	1.7%	83.1%	100.0%
WHRI1	SO4	61.3%	13.9%	3.0%	78.2%	100.0%
	NO3	67.7%	3.9%	2.4%	74.0%	100.0%