

# **Appendix D**

## **Mendenhall Data Replacement Documentation**

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## OVERVIEW

Data from the fourth quarter of 2006 at Mendenhall is incomplete due to construction at the monitoring site and complications in relocating the site. The NCDAQ had to move the site since the school where the monitoring site is located constructed a two-story field house immediately adjacent to the monitoring site (letter to USEPA Region 4, Appendix D). The school had not notified the NCDAQ of its intention to build the field house. During a routine site visit, the NCDAQ discovered that construction had started within four meters of the monitoring site. At that point, the monitor no longer met the ambient monitoring siting criteria and had to be shut down and moved.

A new site was promptly found and appropriate permits were applied for. It took the NCDAQ four months (instead of an estimated 3 weeks) to resolve all the necessary permits and complete the relocation of the monitor. This unfortunate circumstance resulted in most of the fourth quarter to go unmonitored.

The USEPA guidance does not address missing monitoring data for an entire quarter. The NCDAQ decided the best option was to develop regressive analysis between Mendenhall and surrounding monitors.

Since there were no fourth quarter 2006 data with which to calculate a proper Mendenhall design value, the NCDAQ decided to present to the USEPA Region, IV an estimate of what the missing Mendenhall PM<sub>2.5</sub> sample values would have been if they had been properly observed, along with the resulting design value summary statistics for their consideration. The estimate is based on linear regression using data acquired during the four years, 2002 through 2005 at surrounding sites. The monitors examined were Lexington (Davidson County, ID 370570002), Hattie Ave (Forsyth County, ID 370670022), Hopedale (Alamance County, ID 370010002), and Cherry Grove (Caswell Co., ID 370330001). Of the 4 monitors, a regression using a combination of the Hopedale and Lexington monitors proved to be the best predictor for PM<sub>2.5</sub> at the Mendenhall monitor.

An estimated fourth quarter 2006 value for Mendenhall is then computed via a regressive analysis using the fourth quarter 2006 data from the Hopedale and Lexington monitors. The computed fourth quarter average at Mendenhall is 12.92 µg/m<sup>3</sup>. This value is then used to obtain annual design values. The Mendenhall monitor has never violated the PM<sub>2.5</sub> standards and has consistently had annual averages that were 1 – 2 µg/m<sup>3</sup> below the annual PM<sub>2.5</sub> NAAQS. The NCDAQ is confident that had the monitor been operating during the 2006 fourth quarter, the ambient air quality levels would have been consistent with the estimated values the NCDAQ has

developed. The USEPA has also proposed to determine that the Greensboro/Winston-Salem/High Point nonattainment area has attained the 1997 PM<sub>2.5</sub> NAAQS (74 FR 51249).

Attached are the correspondence with the USEPA Region IV regarding this issue as well as the regression analysis for developing the estimated 2006 fourth quarter average.

# Memorandum

**To:** Hoke Kimball  
**CC:** Joelle Burleson, George Bridgers  
**From:** Wayne L. Cornelius  
**Date:** 2007-05-09 (revised 2008-12-16 and 2009-04-14)  
**Re:** **Mendenhall PM2.5 Data Imputation for 4Q2006**

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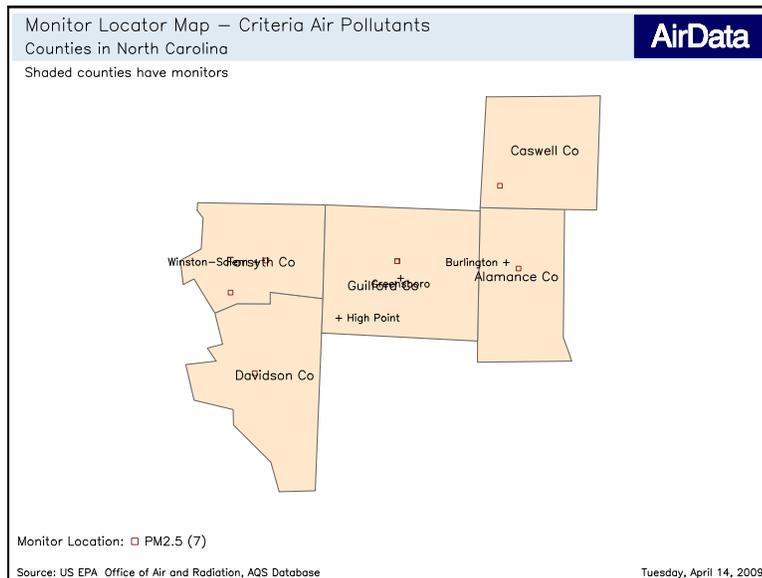
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## Introduction

The North Carolina Division of Air Quality (DAQ) is in nonattainment for Davidson County for PM2.5 from the monitoring station in the city of Lexington (AQS Site ID: 370570002). DAQ has performed design value calculations with the PM2.5 data for 2005-2008 for Lexington. These calculations indicate that the design value for this monitor will be in attainment for this time period and thus DAQ will be applying for PM2.5 nonattainment redesignation. Redesignation requires assessing the PM2.5 data from PM2.5 monitors at Mendenhall (Guilford Co., ID 370810013), Lexington (Davidson Co., ID 370570002) and Hattie (Forsyth Co., ID 370670022).

The design value calculations for 2005-2008 for the Mendenhall site are incomplete because no valid PM2.5 data were collected during the fourth quarter of 2006. This happened because of major complications in having to move the site. DAQ moved the site about 100 yards because a 2 story field house that was constructed

immediately adjacent to the monitoring site (unpublished letter to Artra Cooper, 12 December 2006). The construction was started without DAQ's knowledge. When DAQ realized what was happening it was too late to stop the project, the new field house was built, and the site no longer met ambient siting criteria.



**Figure 1 Map of Monitor Locations**

Since there were no 4Q2006 data with which to calculate a proper Mendenhall Design value, the DAQ Planning and Ambient staff decided to present to EPA Region IV an estimate of what the missing Mendenhall PM2.5 sample values would have been if they had been properly observed, along with the resulting Design value summary statistics. The estimate is based on linear regression using data acquired during the four years, 2002 through 2005 at surrounding sites including those in the MSA and also Hopedale (Alamance County, ID 370010002) and Cherry Grove (Caswell Co., ID 370330001). These monitor locations are shown in Figure 1 (an extraneous PM2.5 monitoring site at Clemmons, southwest Forsyth County, is also shown for reference but was not used in the analysis).

## Methods

The estimation procedure is as follows:

1. Fit a linear regression to the 2002-2005 PM2.5 data of the regressors to determine equation coefficients
2. Estimate missing sample values for Mendenhall by substituting the corresponding observed PM2.5 data in 4Q2006 into the regression equation
3. Compute quarterly averages for Mendenhall including the imputed 4Q2006 data using actual data where available and imputed data where provided by the regression procedure
4. Compute weighted averages for each year
5. Compute the completed Design value for Mendenhall derived by averaging the weighted annual means

## Results

I applied two regression fits to the data, starting with the most inclusive possible model, using Lexington, Cherry Grove, Hopedale and Hattie Avenue all as predictors. Estimates from this model are shown in Table 1. In this combination, Lexington, Cherry Grove and Hattie Avenue are not significant predictors for Mendenhall.

**Table 1 Regression Analysis using the Lexington, Cherry Grove, Burlington and Hattie Avenue PM2.5 data**

Call: lm(formula = MH ~ LX + UC + HD + HA, data = MH4q.md3, na.action = na.exclude)				
Residuals:				
Min	1Q	Median	3Q	Max
-3.763	-1.161	-0.3787	0.5814	11.34
Coefficients:				
Regressor	Value	Std. Error	t value	Pr(> t )
(Intercept)	0.6105	0.5347	1.1417	0.2565
LX	0.1615	0.1165	1.3861	0.1690
UC	0.0791	0.0947	0.8346	0.4061
HD	0.4782	0.1495	3.1982	0.0019
HA	0.2466	0.1414	1.7445	0.0844
Residual standard error: 2.111 on 93 degrees of freedom				
Multiple R-Squared: 0.8798				

The second regression removed Cherry Grove and Hattie Avenue from the model. The resulting model had a residual standard error of 2.094 and  $R^2 = 0.877$ . Both Lexington and Hopedale were significant in this regression, but the intercept term was not significant, so I fit the model with its intercept forced to zero. This model's estimates are shown in Table 2. The regression equation is shown as equation (1)

$$MH = 0.3464 * LX + 0.6322 * HD \text{ (Equation 1)}$$

I fit (1) to the Lexington and Mendenhall data values acquired during 4Q2006. Table 3 shows the regressors for the 22 days with valid data for both regressors, and the resulting Mendenhall estimates. The average of the 22 imputed samples is 12.92.

**Table 2 Regression Analysis using the Lexington and Hopedale PM2.5 data**

Call: lm(formula = MH ~ -1 + LX + HD, data = MH4q.md3, na.action = na.exclude)				
Residuals:				
Min	1Q	Median	3Q	Max
-4.258	-0.9024	-0.1271	0.915	11.67
Coefficients:				
Regressor	Value	Std. Error	t value	Pr(> t )
LX	0.3464	0.0891	3.8873	0.0002
HD	0.6322	0.0957	6.6042	0.0000
Residual standard error: 2.103 on 107 degrees of freedom				

Table 4 shows the quarterly averages for 2004, 2005 and 2006, including the imputed value for 4Q2006 and the 11 actual values for the remaining quarters. Finally Table 5 shows the 3 annual means and the overall Design value result that obtains from them, 14.01.

**Table 3 Imputed Raw Data**

Sampling_Date	Mendenhall	Hopedale	Lexington
10/02/2006	11.485813	11.1	12.9
10/05/2006	23.900103	24.6	24.1

Sampling Date	Mendenhall	Hopedale	Lexington
10/08/2006	6.785218	7.5	5.9
10/11/2006	13.710670	14.4	13.3
10/20/2006	11.761229	11.7	12.6
10/26/2006	11.848665	11.4	13.4
11/01/2006	16.130242	16.2	17.0
11/04/2006	12.507779	13.1	12.2
11/07/2006	10.703944	12.0	9.0
11/16/2006	4.536147	4.6	4.7
11/22/2006	3.983631	4.0	4.2
11/25/2006	16.255683	14.7	20.1
11/28/2006	18.157377	15.9	23.4
12/01/2006	4.790717	4.4	5.8
12/04/2006	9.893171	8.8	12.5
12/10/2006	16.526730	14.8	20.7
12/13/2006	25.615500	24.3	29.6
12/19/2006	18.599245	18.9	19.2
12/22/2006	8.990912	9.4	8.8
12/25/2006	6.246493	6.1	6.9
12/28/2006	14.394680	13.4	17.1
12/31/2006	17.455206	17.2	19.0

Table 4 Quarterly Summaries

Period	CY2004	CY2005	CY2006
1Q	11.76	11.45	10.55
2Q	14.40	13.12	13.71
3Q	16.54	19.25	19.07
4Q	13.19	12.21	12.92

Table 5 Weighted Annual Means and Design Value

Period	CY2004	CY2005	CY2006	2004-2006 D.V.
Mean	13.97	14.01	14.06	14.01

**Discussion**

I maintain that the estimated Design value presented in Table 5 is an accurate prediction of the result that would have been obtained from Mendenhall for 2004-2006, had siting conditions not changed during 4Q2006. The imputed average is also the most accurate and appropriate value to use for the 2006-2008 Design value calculations at Mendenhall to assist with the redesignation package for the Lexington site.

**Recommendations**

Design value calculations for the Greensboro-Winston-Salem-High Point MSA (or any subsequently redefined area that includes Greensboro) for any group of years that includes 2006 should use the imputed 4Q2006 value as a surrogate for the missing “actual” 4Q2006 at the Mendenhall site.

For future consideration, we can *apply* (1) to data acquired after 2006 from Lexington, Hopedale and Mendenhall. We can also repeat the regression fitting exercise using data acquired from the regressor sites in 2007 and later instead of 2002-2005 Either of these actions can be used to demonstrate how well the moved site location “represents” the original location.



North Carolina Department of Environment and Natural Resources  
Division of Air Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary  
B. Keith Overcash, P.E., Director

*Mailed Express*  
*Overcash → OPS*  
*12/12*  
*(tracking sheet attached)*

December 12, 2006

Ms. Artra B. Cooper  
U.S. EPA Region IV  
Atlanta Federal Center  
61 Forsyth Street  
Atlanta, GA 30303-8960

Subject: Mendenhall Monitoring Site (370810013) in Greensboro, North Carolina

Dear Artra:

On September 21, 2006, The North Carolina Division of Air Quality (NCDAQ) during a routine site visit discovered construction activities occurring at the Mendenhall Middle School monitoring site (370810013) in Greensboro, North Carolina. Figures 1 through 16 show the construction activities as they appeared on September 27, 2006. A parent built bleachers and a field house in memory of her son, who had been a student at the school before his untimely death, immediately adjacent to our monitoring site. The field house is a two-story building about 4 meters away from our monitoring building. It creates an obstruction for monitoring with the current location of the monitors.

Because of the dirt and construction traffic, the monitors were shutdown effective September 21, 2006, the day on which construction activities were noticed, although we did not actually physically discontinue monitoring until September 27 and 28. The school informed us that construction would be completed by October 21, 2006. As a result, a temporary monitoring site was not sought. However, after we discovered that the school was building a two-story field house so close to our monitors, we realized that the monitors would be obstructed by the field house in their current location. We sought permission from the assistant principal to move the monitors. He needed to obtain permission from the school board and we also needed to obtain bids from electricians and fencing contractors to get the site moved to another location on the school property. All of these activities have taken longer than the original 3 to 5 weeks we anticipated.

The new monitoring site is located halfway between the field house and the trees at the edge of the field. Pictures of the new site are provided in Figures 17 through 24. The trees at the edge of the field are estimated to be 22 meters tall. The monitors will be located about 50 meters from the trees and 50 meters from the field house. We obtained permission from the assistant principal to leave the 10-meter meteorological tower in its current location. The tower is taller than the field house and if we moved it to the new location it would be closer to the trees. Due to the difficulty of moving the tower and the potential increased obstruction caused by the trees, we decided the tower is still optimally located at its current location.

Monitors located at this site that were impacted by this site shutdown and relocation:

37-081-0013-44201-1 (ozone monitor)

**Ambient Monitoring Section**

1641 Mail Service Center, Raleigh, North Carolina 27699-1641  
2728 Capital Blvd., Raleigh, North Carolina 27604  
Phone: 919-715-0665 / FAX 919-733-1812 / Internet: www.ncair.org

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37-081-0013-88101-1 (primary fine particle federal reference method monitor) and all associated parameters  
37-081-0013-88101-2 (precision fine particle federal reference method monitor) and all associated parameters  
37-081-0013-88501-3 (fine particle continuous monitor – raw data)  
37-081-0013-88502-3 (fine particle continuous monitor – acceptable AQI data)  
37-081-0013-88502-5 (fine particle manual speciation monitor) and all associated parameters  
37-081-0013-81102-1 (primary PM10 federal reference method monitor)  
37-081-0013-81102-2 (precision PM10 federal reference method monitor)  
37-081-0013-11101-1 (TSP monitor)

We are requesting approval for shutting down this site for the construction activities and for relocation of the monitors to the new location on the same property. The site and monitors will retain their current identification number because the new location is not significantly different from the current location; however, it should provide sufficient clearance from the new field house and the existing trees to allow the air to be monitored without being obstructed. We anticipate the monitors will be up and operational at their new location by December 22, 2006.

If you have any questions or additional comments, please contact me at (919) 733-1487. We thank you for your assistance in this matter.

Respectfully,



Hoke P. Kimball  
Chief

cc: Keith Overcash/Brock Nicholson (1 copy) Karen Harris (NC DAQ)  
Wayne Cornelius (NC DAQ) Margaret Love (WSRO)  
Chengqing Xaio (WSRO) Joette Steger (NC DAQ)  
Richard Guillot, EPA, Region IV Michelle Tutor (NCDAQ)  
Charles O. Davis (NC DAQ) Jatinderpaul Chauhan (NCDAQ)

Ms. Artra B. Cooper, December 12, 2006

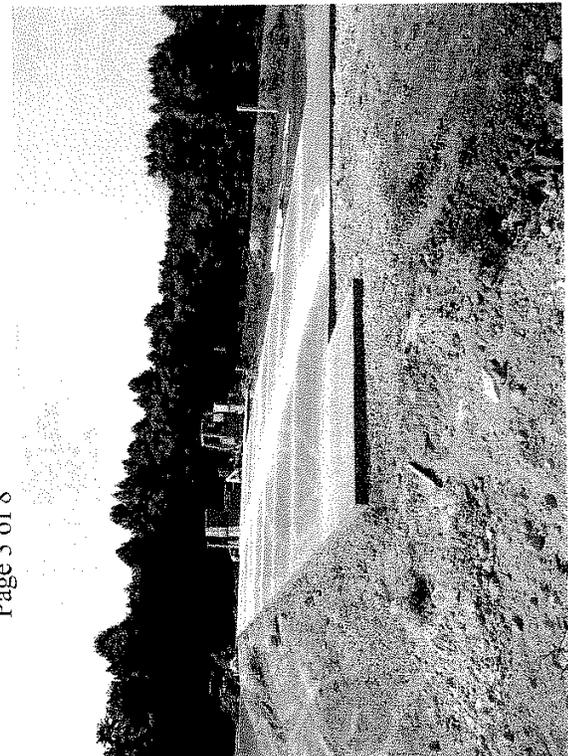


Figure 2. Construction of Bleachers South of Monitoring Site

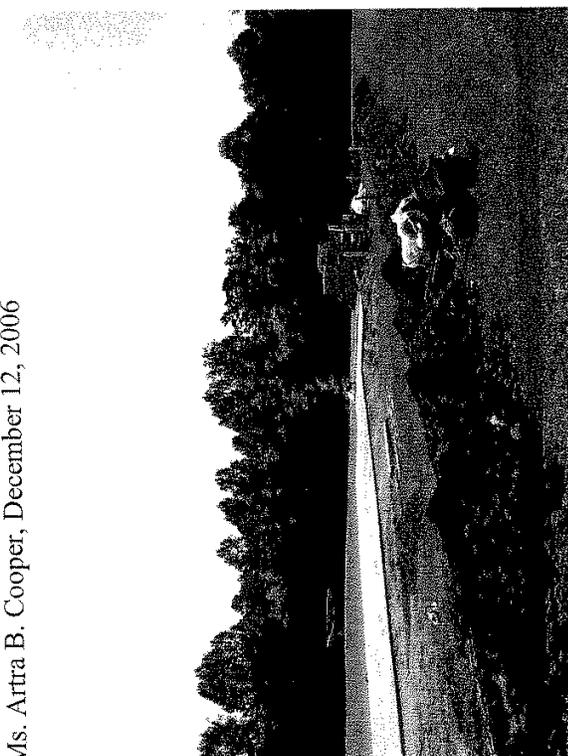


Figure 1. Construction of Bleachers Southeast of Monitoring Site

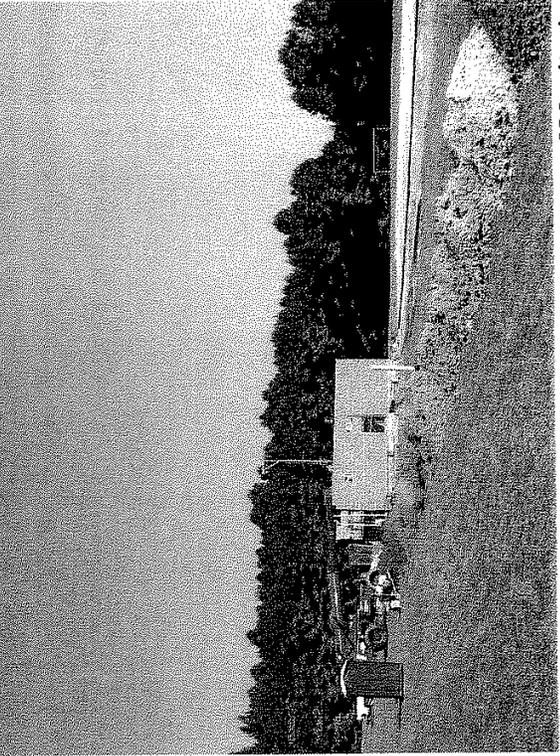


Figure 4. Construction of Field House Northeast of Monitoring Site



Figure 3. Construction of Field House Southeast of Monitoring Site

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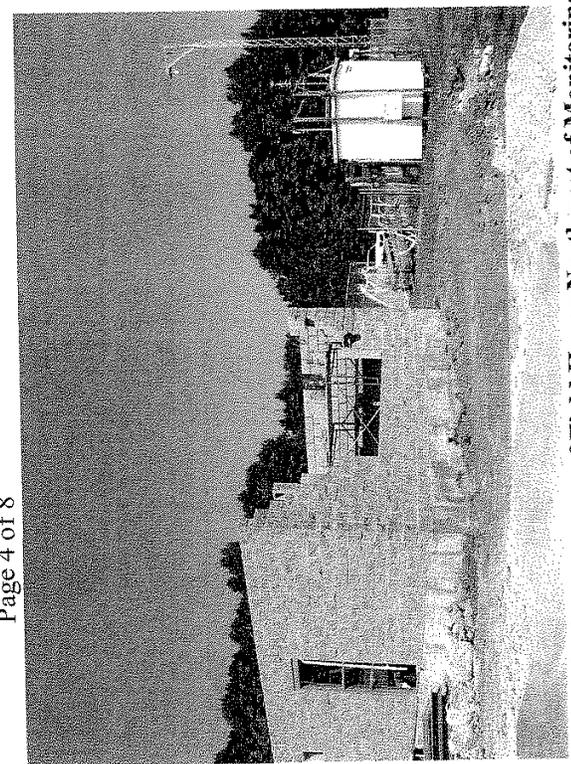


Figure 6. Construction of Field House Northwest of Monitoring Site

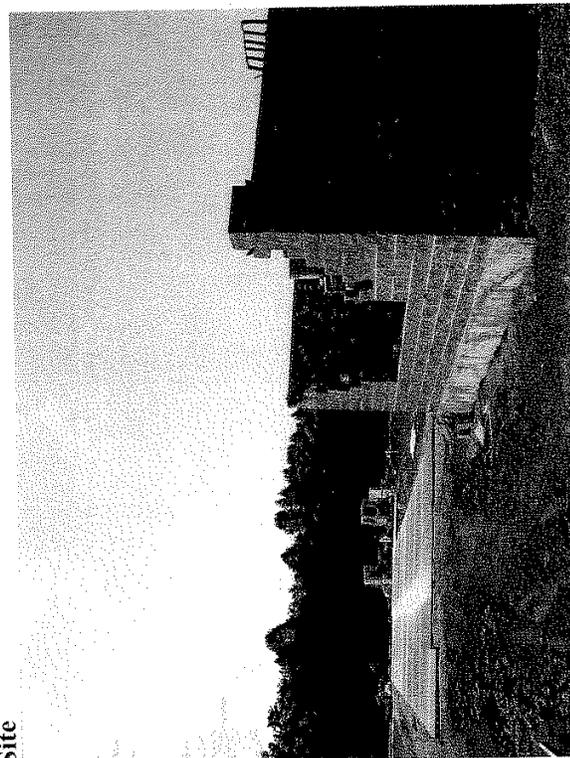


Figure 8. Construction of Bleachers & Field House South of Monitoring Site



Figure 5. Construction of First story of Field House

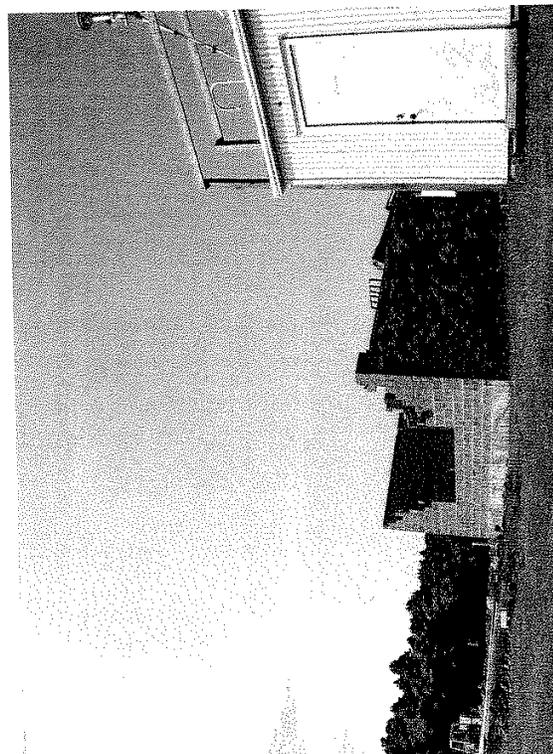


Figure 7. Construction of Field House Southwest of Monitoring Site

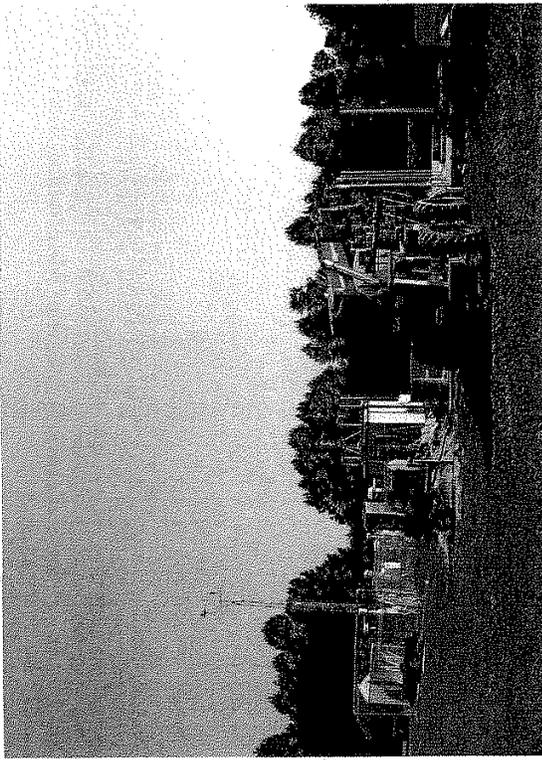


Figure 10. Construction Northeast of Monitoring Site

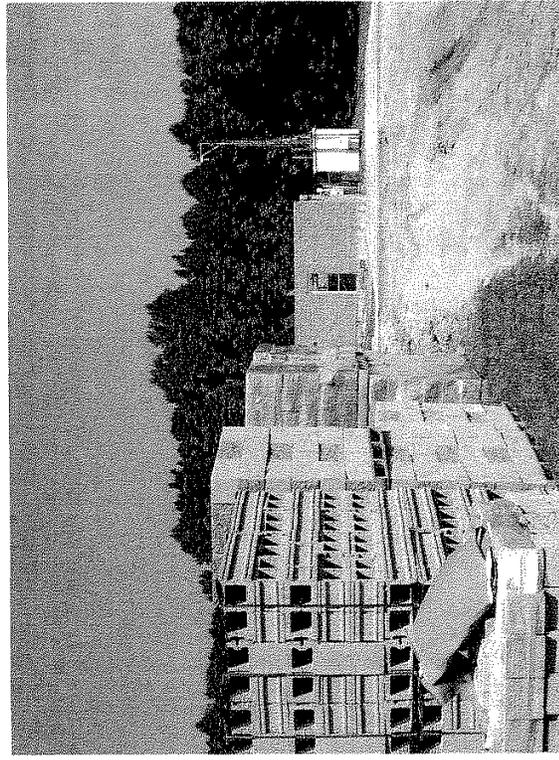


Figure 12. Construction North of Monitoring Site

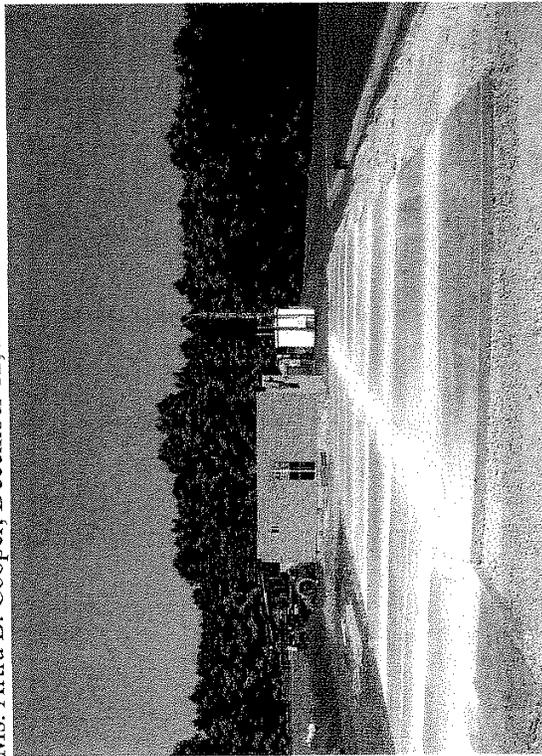


Figure 9. Construction of Field House North of Monitoring Site

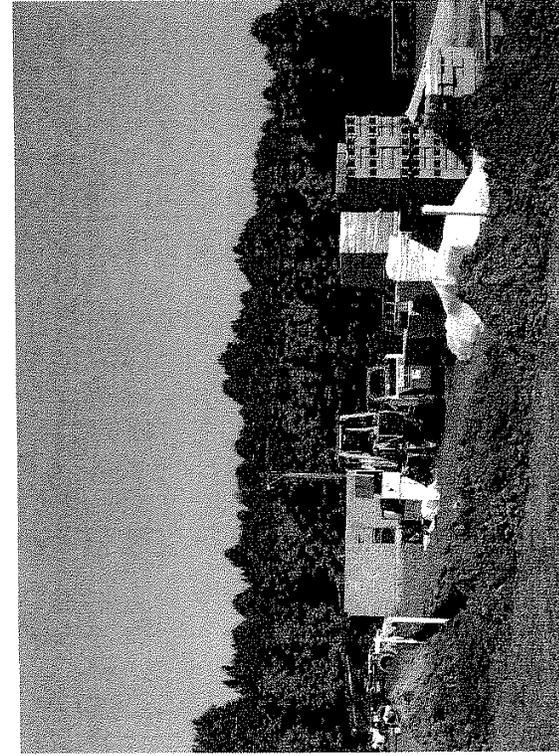


Figure 11. Construction North of Monitoring Site

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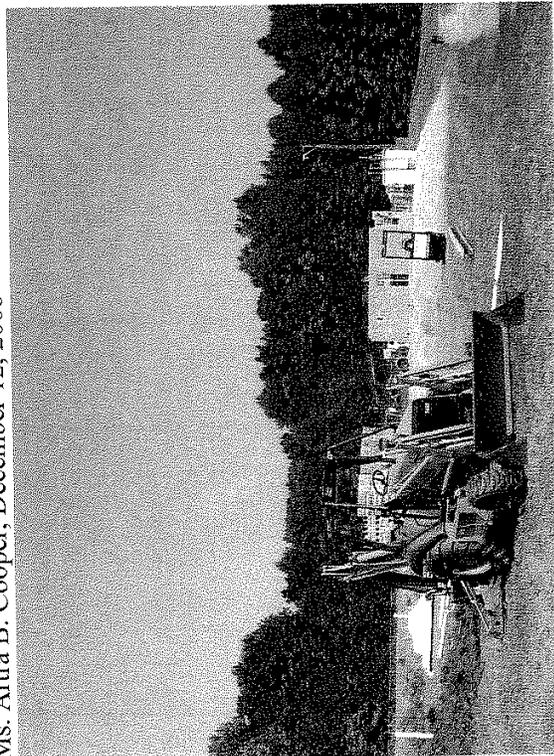


Figure 13. Construction Northwest of Monitoring Site

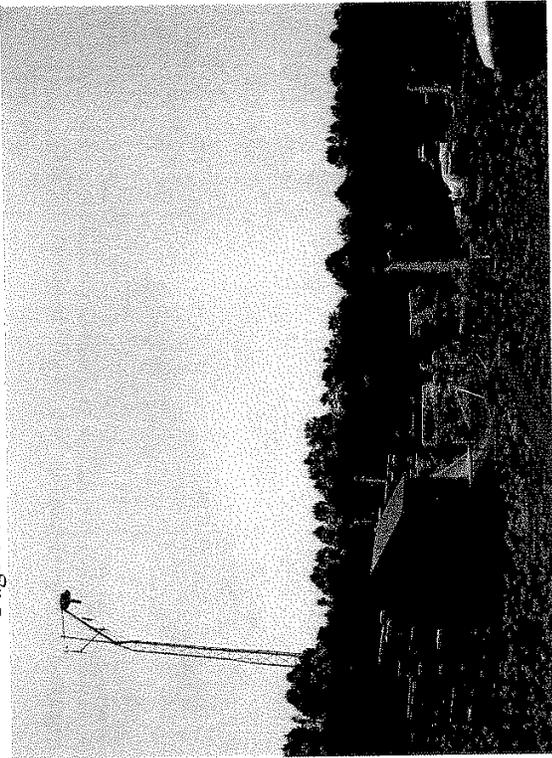


Figure 14. Construction Southeast of Monitoring Site

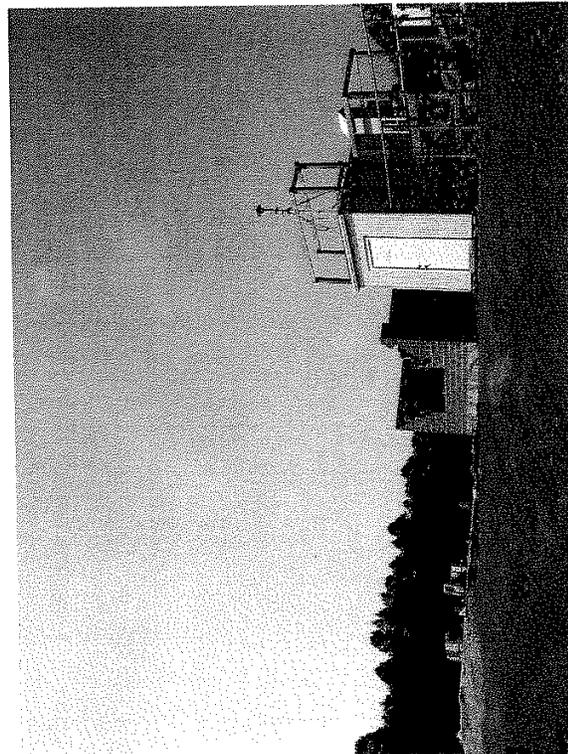


Figure 15. Construction Southwest of Monitoring Site

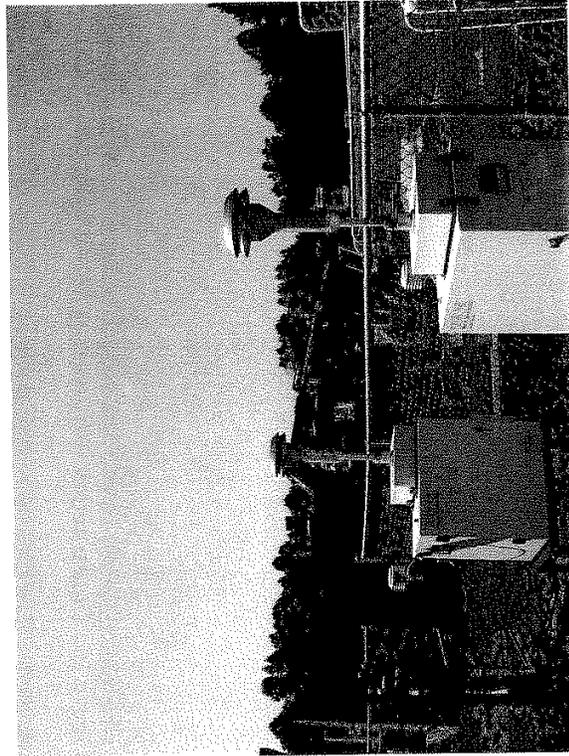


Figure 16. Construction Southwest of Monitoring Site

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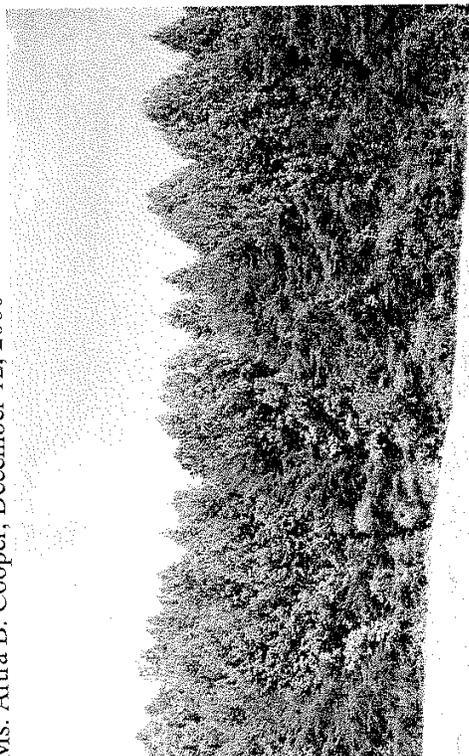


Figure 17. Looking North from new Monitoring Site



Figure 18. Looking Northeast from new Monitoring Site

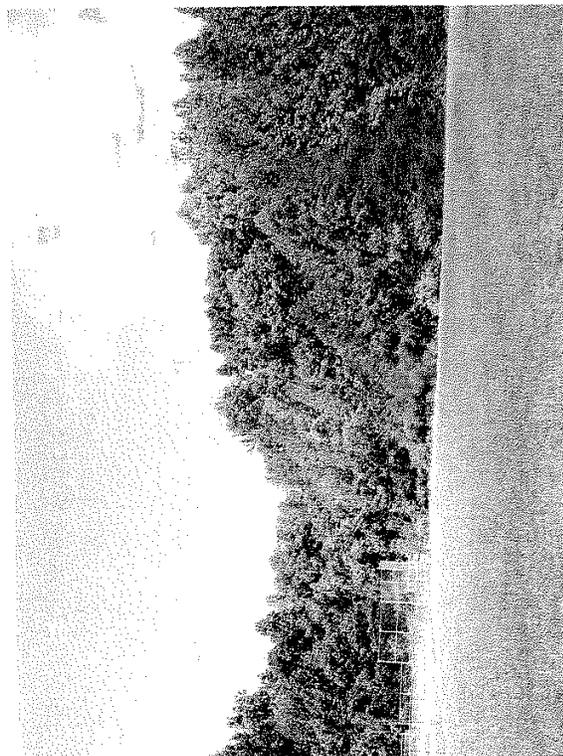


Figure 19. Looking Northwest from new Monitoring Site

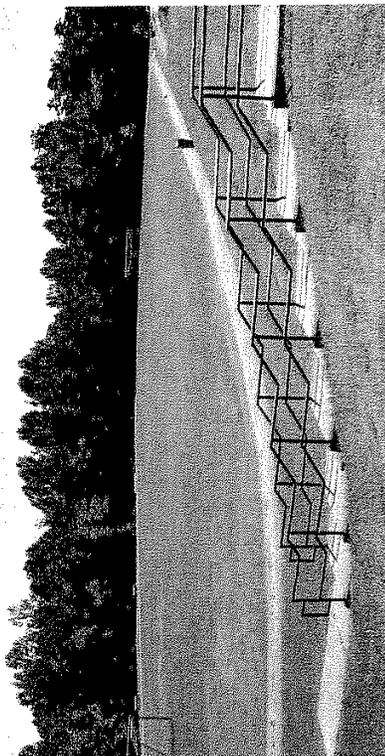


Figure 20. Looking Southeast from new Monitoring Site

Ms. Artra B. Cooper, December 12, 2006

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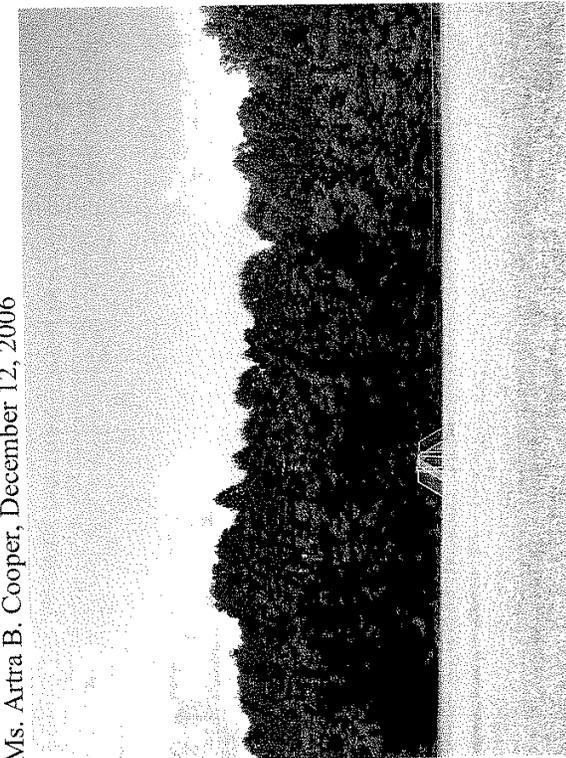


Figure 21. Looking West from new Monitoring Site



Figure 22. Looking South from new Monitoring Site



Figure 23. Looking Southwest from new Monitoring Site

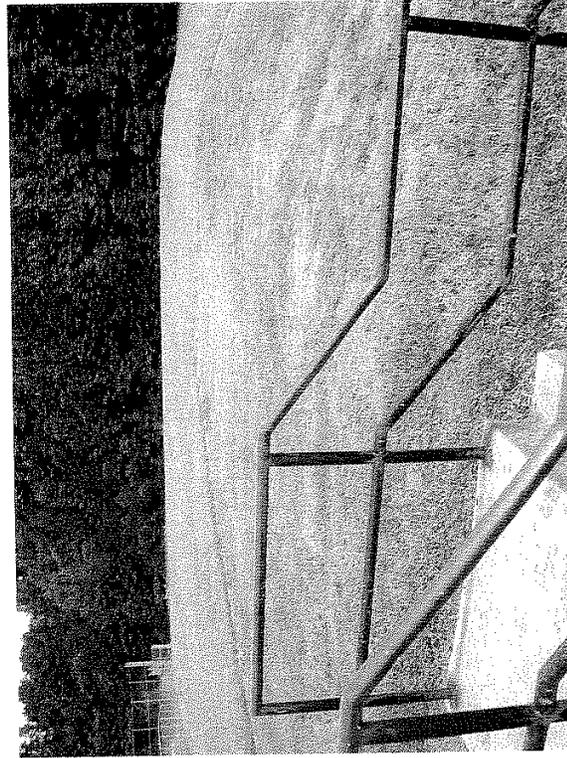


Figure 24. New Monitoring Site Location

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**Atlanta, GA 30303-8960**



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North Carolina Department of Environment and Natural Resources  
Division of Air Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary  
B. Keith Overcash, P.E., Director

June 6, 2007

Ms. Artra Cooper  
Air Toxics and Monitoring Branch  
US EPA Region IV  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street SW  
Atlanta, GA 30303-8960

Subject: Surrogate Data for Mendenhall - Guilford County, NC  
PM 2.5 FRM Data 4th Q 2006 (37-081-0013)  
Reference: December 12, 2006 letter and EPA 454/R-99-008

Dear Artra:

Please reference the December 12, 2006 letter I sent to you requesting permission to shut down the Mendenhall - Guilford County (Greensboro), North Carolina monitors at their current site and for them to be moved to a new location on the same property. We had anticipated this move to be completed in a matter of several weeks. Unfortunately due to innumerable problems and conflicts with the school administration, the holidays, the city inspection process and electrical contractors, the move took 4 months instead of 3 weeks. Consequently data for the 4th Quarter of 2006 were not collected. Sampling of the PM 2.5 FRM data at the Mendenhall site was suspended from September 21, 2006 through January 19, 2007.

I make reference to the EPA document 454/R-99-008, April 1999, "Guidelines on Data Handling Conventions for the PM NAAQS", Item 9 and Item 10 relating to the use of incomplete datasets to demonstrate compliance with the standard. Item 9 lists circumstances under which agencies may be allowed to demonstrate compliance using incomplete data, and Item 10 defines two acceptable methods of replacing missing data with surrogate data for the purpose of the demonstration.

In the case of Mendenhall, we do not meet the condition of the first bullet in Item 9, but we feel we have a compelling reason to demonstrate compliance for this monitor in spite of that. Item 9 also specifies the requirement for us to have the Regional Administrator's approval in order to proceed with a demonstration.

**The purpose of this letter is to propose a set of surrogate data per Item 10 and request the Regional Administrator's approval to use them, as required by 40CFR50 Appendix N.**

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Item 10 of the Guidelines allows two approaches for creating surrogate data to replace the missing samples. The first guideline is to replace the data with collocated data. However, no actual collocated data exist under the circumstances. The second guideline is to replace the data with a historical maximum value. This guideline leads to an absurd result, because in this case it replaces the quarterly mean with an extreme number representing the 99.5<sup>th</sup> percentile of historical data samples.

Our proposal is to re-create the 4th Quarter Mendenhall PM 2.5 data using Alamance, Caswell and Forsyth county monitors surrounding the Mendenhall site. We feel this approach is an acceptable and reasonable surrogate for truly collocated data at Mendenhall. We also propose that the re-created 4th Quarter 2006 data be used to calculate the Design Value for this site for 2004-2006.

Please examine the statistical summary attached with this letter and give us your response as to whether we may use this approach to certify the data for this site for the 4th Quarter of 2006 and to calculate the Design Value for 2004-2006. We would like a response from you before June 30, 2007.

Please contact me at (919)-733-1487 or Dr. Wayne Cornelius at (919)-715-3460 if there are any questions.

Sincerely,



Hoke P. Kimball

Attachments - Statistical Summary and Map

CC: Doug Neeley, Region IV Atlanta  
Keith Overcash/Brock Nicholson  
Hoke Kimball  
Wayne Cornelius  
Joette Steger,  
Sheila Holman  
Laura Boothe  
George Bridgers  
Michelle Tutor  
Margaret Love - WSRO  
Chengqing Xiao - WSRO

Letters\Surrogate Data for Mendenhall - Guilford County PM 25 FRM data 4th Q 2006

4q2006\_imputation-1.txt

Table 0. Mendenhall site (370810013) Imputation Regression Coefficients  
 (Note: 4Q2006 average is imputed using UC, HD and HA sample extrapolations  
 ( UC=Cherry Grove, HD=Burlington ["Hopedale"], HA=Hattie Avenue)

(Intercept)	UC	HD	HA
1.171207	0.2147181	0.459082	0.2734995

Table 1. Mendenhall Imputed Raw Data  
 (Note: 4Q2006 average is imputed using UC, HD and HA sample extrapolations)

	Positions	PM2.5	UC	HD	HA
10/02/2006	00:00:00.000	10.852425	9.0	11.1	9.7
10/05/2006	00:00:00.000	23.820663	22.7	24.6	23.7
10/08/2006	00:00:00.000	8.094220	7.8	7.5	6.6
10/11/2006	00:00:00.000	14.214704	13.4	14.4	13.0
10/20/2006	00:00:00.000	11.235234	9.5	11.7	9.7
10/26/2006	00:00:00.000	11.837998	9.0	11.4	12.8
11/01/2006	00:00:00.000	15.820403	14.1	16.2	15.3
11/04/2006	00:00:00.000	12.641706	10.0	13.1	12.1
11/07/2006	00:00:00.000	11.829500	12.9	12.0	8.7
11/16/2006	00:00:00.000	5.040323	5.0	4.6	2.5
11/22/2006	00:00:00.000	5.067764	4.5	4.0	4.0
11/25/2006	00:00:00.000	13.473881	10.2	14.7	12.3
11/28/2006	00:00:00.000	17.208397	14.2	15.9	20.8
12/01/2006	00:00:00.000	5.675199	5.2	4.4	5.0
12/04/2006	00:00:00.000	9.046332	9.2	8.8	6.8
12/10/2006	00:00:00.000	14.703512	11.0	14.8	16.0
12/13/2006	00:00:00.000	28.251533	38.5	24.3	28.0
12/19/2006	00:00:00.000	18.939152	14.7	18.9	21.7
12/22/2006	00:00:00.000	10.159914	8.9	9.4	10.1
12/25/2006	00:00:00.000	7.068850	6.4	6.1	6.3
12/28/2006	00:00:00.000	14.271922	10.2	13.4	17.4
12/31/2006	00:00:00.000	19.212628	20.5	17.2	21.0

Table 2. Mendenhall Quarterly Summary  
 (Note: 4Q2006 average is imputed using UC, HD and HA sample extrapolations)

	2004	2005	2006
1Q	11.76	11.45	10.55
2Q	14.40	13.12	13.71
3Q	16.54	19.25	19.07
4Q	13.19	12.21	13.11

Table 3. Mendenhall weighted Annual Means  
 (Note: 4Q2006 average is imputed using UC, HD and HA sample extrapolations)

	2004	2005	2006
	13.97	14.01	14.11

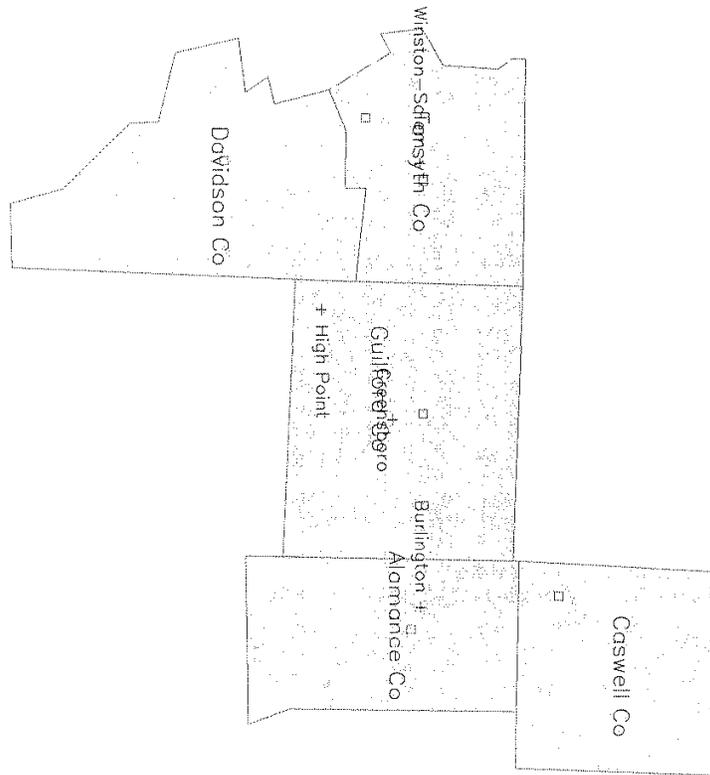
Table 4. Mendenhall Imputed Design value for 2004-2006  
 (Note: 4Q2006 average is imputed using UC, HD and HA sample extrapolations)

14.03 (reported as 14 )

\4q 2006 - imputation-1.txt



Monitor Locator Map – Criteria Air Pollutants  
Counties in North Carolina  
Shaded counties have monitors



Monitor Location: □ PM2.5 (7)

Source: US EPA Office of Air and Radiation, AQS Database

Monday, June 4, 2007

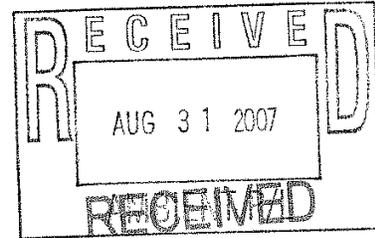
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 REGION 4  
 ATLANTA FEDERAL CENTER  
 61 FORSYTH STREET  
 ATLANTA, GEORGIA 30303-8960

*Jana Broth*

AUG 28 2007



SEP 04 2007

NC DAQ  
 PLANNING SECTION

4APT-ATMB

Hoke P. Kimball, Chief  
 Ambient Monitoring Section  
 Division of Air Quality  
 North Carolina Department of Environment and  
 Natural Resources  
 1641 Mail Service Center  
 Raleigh, NC 27699-1641

Dear Mr. Kimball:

This correspondence is in response to North Carolina Department of Environment and Natural Resource's, Division of Air Quality (NCDAQ), letter dated June 6, 2007, requesting approval to enter particulate matter (PM<sub>2.5</sub>) "surrogate data" for the Mendenhall Middle School monitoring site (AQS # 37-081-0013) into the Air Quality System (AQS) database in place of missing data for the fourth quarter of 2006. The surrogate data were collected from surrounding sites in Alamance County (AQS # 37-001-0002), Caswell County (AQS # 37-033-0001), and Forsyth County (AQS # 37-067-0022).

In a letter dated December 12, 2007, NCDAQ requested to temporarily shut down all sampling at the Mendenhall site from September 21, 2006 through January 19, 2007, due to construction activity. Region 4 granted concurrence to this request in a letter to NCDAQ dated January 18, 2007.

From your letter dated June 6, 2007, EPA's Office of Quality Air Planning and Standards (OAQPS) and Region 4 understand that NCDAQ desires to utilize data collected from monitors in Alamance County, Caswell County and Forsyth County as a surrogate for the missing Mendenhall site data in an effort to meet the data completeness requirements for comparison to the PM<sub>2.5</sub> National Ambient Air Quality Standards (NAAQS) as stipulated in 40 CFR Part 50, Appendix N.

Region 4 and OAQPS have reviewed the data collected from the three surrounding PM<sub>2.5</sub> monitoring sites to data collected from the Mendenhall site. Both Region 4 and OAQPS concur that the current and historical data collected at these sites show favorable correlation to historical data collected at the Mendenhall site. However, neither Appendix N of Part 50 nor the EPA Document 454/R-99-008, April 1999,

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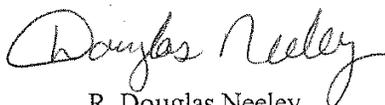
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“Guidelines on Data Handling Conventions for the PM NAAQS,” Chapter 1 (9), allows for data interpretation or extrapolation in the complete absence of data in a calendar quarter.

Furthermore, there is no regulatory vehicle which would allow the data collected from the three specified monitors to be entered into the AQS database as surrogate data for missing data at the Mendenhall site. Region 4 and OAQPS believe that, in support of missing data from the Mendenhall site, the data collected from the surrounding sites can best be utilized as “weight of evidence” when attainment determinations are to be made.

Should you have any questions please contact Artra B. Cooper of EPA Region 4 at (404) 562-9047.

Sincerely,



R. Douglas Neeley  
Chief  
Air Toxics and Monitoring Branch  
Air, Pesticides & Toxics  
Management Division

cc: Danny France