

Exhibit No.:  
Issues: Environment  
Witness: Block M. Andrews  
Sponsoring Party: Aquila Networks-MPS  
Case No.: EA-

Before the Public Service Commission  
of the State of Missouri

Direct Testimony

of

Block M. Andrews

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**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MISSOURI  
DIRECT TESTIMONY OF BLOCK M. ANDREWS  
ON BEHALF OF AQUILA, INC.  
D/B/A AQUILA NETWORKS-MPS  
CASE NO. EA-\_\_\_\_\_**

1 Q. Please state your name and business address.

2 A. My name is Block M. Andrews. My business address is 20 W. 9<sup>th</sup> Street, Kansas City,  
3 Missouri.

4 Q. By whom are you employed and in what capacity?

5 A. I am employed by Aquila, Inc. (“Aquila” or “Company”) as Director of Environmental  
6 Services.

7 Q. What are your responsibilities in this role?

8 A. My primary responsibility is compliance with environmental rules and regulations for all of  
9 Aquila’s operations.

10 Q. What is your experience with regard to rules and regulations concerning electrical  
11 generation peaking facilities located in Missouri?

12 A. I have been with Aquila for three years and prior to my work with the Company, I was a  
13 Professional Engineer and environmental consultant with Burns and McDonnell for  
14 thirteen years. In this role, I was responsible for permitting many peaking plants around  
15 the country, including Missouri. In Missouri, I did permitting for Associated Electric’s  
16 Nodaway and Essex plants. For Great Plains Energy, I did permitting for the Hawthorn  
17 plant’s coal-fired boiler and combustion turbine.

18 **Executive Summary**

1 Q. What is the purpose of your direct testimony?

2 A. I will discuss Aquila's record of and commitment to environmental compliance, address  
3 specific environmental testing and results at the South Harper Peaking Facility, and will  
4 describe Aquila's actions in response to concerns that have been raised by Cass County  
5 residents pertaining to noise and air quality.

6 **Record of Compliance**

7 Q. What is Aquila's environmental compliance record?

8 A. In the eight states in which we operate, Aquila's service territory is comprised of  
9 hundreds of facilities with environmental requirements. Aquila has had no notice of  
10 violations (NOVs) of environmental rules or regulations in 2005.

11 **South Harper Environmental Test Results**

12 Q. What was your role for the environmental work performed at South Harper?

13 A. I was responsible for acquiring the required construction and operating permits as well as  
14 any pertinent environmental studies. Burns & McDonnell was retained by Aquila to help  
15 perform the environmental permits and studies. A list of these studies and permits can be  
16 found in the January 20, 2006 Special Use Permit Application that Aquila attempted to  
17 file with Cass County, specifically in Sections 3.1 – 3.5, 3.7-3.10, 4, 5.1, 5.2 and  
18 Appendices H, I, and J.

19 Q. When was the environmental work prepared?

20 A. The environmental studies were performed prior to plant construction except for the  
21 water discharge permit and a second noise study. Aquila had several options to dispose  
22 of the evaporative cooler blowdown water. It was decided in the Fall of 2004 to pursue a

1 no-discharge water permit which would use the blowdown water for irrigation facility  
2 landscaping of the on-site vegetation. The application was submitted in the Spring of  
3 2005. The permit was obtained in December 2005. During the summer of 2005, Aquila  
4 contacted the Missouri Department of Natural Resources (“MDNR”) to determine if the  
5 evaporative cooler water blowdown could temporarily be used for on-site dust  
6 suppression. The MDNR indicated that it had no issues with allowing Aquila to use the  
7 water in this manner.

8 A noise study was performed prior to construction of the facility. This noise study  
9 measured existing background noise levels (prior to plant operations) and used a noise  
10 model to project potential noise levels after the plant was constructed. Based on the  
11 noise study, Aquila concluded it would be prudent to purchase a stack that would provide  
12 a high level of noise mitigation. A second noise study was performed after the plant was  
13 operational to determine actual plant noise levels.

14 Q. What were the results?

15 A. The noise studies previously mentioned indicate that the plant’s noise levels were  
16 typically several decibels lower than the Cass County residential noise ordinance levels  
17 of 60 dBA during the daytime and 55 dBA during the nighttime. Some nearby residences  
18 are still concerned with the noise levels so Aquila is continuing to pursue and employ,  
19 where reasonable, additional noise attenuation at the site and also expect to perform  
20 additional noise testing.

21 Q. Have there been other studies or actions performed after the plant was operational?

22 A. Yes. The air construction permit issued by the MDNR requires stack testing and

1 certification testing of the Continuous Emissions Monitoring Systems (“CEMS”). Based  
2 upon the local citizens concerns, Aquila voluntarily performed additional hazardous air  
3 pollutant stack testing. The results of the study were given to two toxicologists, (Drs.  
4 Duoll and Rozman) with the University of Kansas Medical Center, for independent  
5 evaluation. In short, the study concluded that, if not for the heat, standing in the center  
6 of the stack would result in an acceptable work environment. It was the toxicologists’  
7 opinion that there could not possibly be any adverse health impacts to those living in the  
8 immediate vicinity.

9 Q. What conclusions were reached as a result of these other studies?

10 A. The stack testing witnessed by MDNR showed that the emissions levels were below the  
11 permit levels listed in the air permit. The CEMS testing confirmed that the monitors met  
12 the Environmental Protection Agency (“EPA”) standards. The hazardous air pollutant  
13 testing confirmed that the levels were much lower than the values represented in the  
14 permit and a supplemental effort by the KU toxicologists generated a determination of no  
15 anticipated health impacts from any air emissions from the South Harper facility. Their  
16 letter was provided to Cass County officials and the plant’s neighbors. A copy of the  
17 letter is attached as Schedule BMA-1.

18 Q. Are there any other operational standards that Aquila is required to meet?

19 A. Yes. The storm water permit requires that the Company stabilize the soil after  
20 construction. Seeding and planting vegetation have occurred. We expect to receive an  
21 air and water operating permit for the facility which could have additional testing,  
22 monitoring and recordkeeping requirements.

1 Q. To date, do you believe Aquila has met all environmental requirements?

2 A. Yes.

3 Q. Do you expect to meet environmental requirements going forward?

4 A. Yes. Our environmental record shows that Aquila is committed to complying with  
5 environmental regulations.

6 **Response to Area Residents' Concerns**

7 Q. Has Aquila provided the neighbors of the South Harper facility with environmental  
8 information?

9 A. Yes. Our South Harper website has environmental information; we have had meetings  
10 with the local residents; we have measured noise studies at some of the residences and  
11 have offered any of them the opportunity to talk with our noise consultants and KU  
12 toxicologists.

13 Q. Do the neighbors still have environmental concerns?

14 A. Yes.

15 Q. What concerns are you aware of?

16 I have been told that the neighbors still have noise concerns. As I mentioned earlier, Aquila  
17 continues to investigate and implement additional noise reductions. The following noise  
18 upgrades have been performed since the unit went commercial:

- 19
- Turbine Units – acoustic insulation has been added to the exterior of the air inlet  
20 ducting
  - Turbine Unit Fuel Gas Vents – individual silencers have been installed
  - Turbine Unit Gas Yard Vents – individual silencers have been installed
- 21
- 22

- 1           • Turbine Unit Compressed Air Vents – individual silencers have been installed
- 2           • Fire Alarm System - relocated to inside of building from outside location
- 3           • Starting Motor Package – acoustic skirting and ventilation silencers installed

4           In addition to taking these specific actions, we are also building sound walls to reduce  
5           transformer sound noise and taking an additional series of measures to further reduce the level  
6           of noise emanating from the plant.

7           Since Aquila is not now in the peak electrical usage period and has not consistently run  
8           the turbines, the extent of our noise improvements is not known at this time. We do  
9           believe, however, that the noise levels are well below residential noise standards.

10   Q.     Have you responded to any specific concerns regarding air quality?

11   A.     Yes. One neighbor has written an article on the StopAquila.Org website. His concerns  
12           are about air emissions from the facility. He compared the plant emissions to a heavy  
13           duty truck. He further claimed that the emissions of our plant are equivalent to 1000  
14           heavy duty truck emissions.

15   Q.     What is the Company's response?

16   A.     Aquila has refuted this claim based on the following analysis.

17           1. The 300 MW plant is about 400,000 horsepower which would equate to the power of  
18           about 1,000 heavy duty pickup trucks. However, one horsepower of plant emissions  
19           are much cleaner than one horsepower of diesel truck emissions.

20           2. As stated in the KU toxicologists letter, there are no anticipated health effects from  
21           the South Harper combustion turbine air emissions.



- 1           3. Both the Missouri Department of Natural Resources and the Environmental  
2           Protection Agency have reviewed our permit and testing results. These agencies  
3           issued an air permit because the plant emissions would not significantly cause or  
4           contribute to a degradation of air quality in the area.
- 5           4. Aquila has paved some sections of roads near the plant which greatly reduce the PM  
6           emissions that were emitted before the plant was constructed. On the EPA website  
7           (epa.gov/ttn/chief/ap42/ch13/final/c130202.pdf), one truck going down one mile of  
8           an unpaved road would result in 2.6 pounds of particulate matter (PM). Aquila has  
9           paved approximately two miles of road. Four trucks/hour driving on two miles of an  
10          unpaved road will produce about 20.8 pounds of emissions. The total PM emissions  
11          from the South Harper plant are about 18 pounds per hour.
- 12          5. The area around the plant is subject to transport of pollutants from the Greater Kansas  
13          City area which are in much greater quantities than the South Harper facility  
14          emissions. During the on the record hearing for Case No. EA-2005-0248 on March  
15          29, 2005, I provided testimony that demonstrated that the plant impacts are far less  
16          than current levels. For example, the EPA website listed Cass County as having a  
17          level of benzene of .95 micrograms per meter cube. We have modeled what the  
18          maximum impact would be from the South Harper facility. The maximum impact is  
19          .00002 micrograms per meter cube. So you can see that compared to the most current  
20          information that EPA has on Cass County benzene levels, they would be impacted  
21          only by a fraction of 1 percent. The impacts of other emissions, such as  
22          formaldehyde, polycyclical aromatic hydrocarbons and acrolein have similar results.

1           The impacts of these emissions were marked as Exhibit 108 and 109 in Case No. EA-  
2           2005-0248 and are attached as Schedule BMA-2 and BMA-3. Also, there is an  
3           existing industrial facility adjacent to the South Harper plant, so the area is not  
4           pristine.

5   Q.    What other concerns have been expressed?

6   A.    A neighborhood resident believes the plant operation has caused the temperature around  
7           his house to significantly increase. On a summer day, he represented that the outdoor  
8           thermometer read 117 degrees Fahrenheit. Aquila believes several factors could have  
9           caused this, but none are related to the plant operations.

10   Q.   Please explain.

11   A.    The primary heat sources from the plant is the stack plume. The gas comes out of the  
12           stack top. The gas coming out of the stack is about 900 degrees Fahrenheit and is  
13           traveling at about 70 ft./second. With the volume of gas, temperature and velocity, this  
14           thermal plume will rise to a level several hundred feet above the ground prior to leaving  
15           the plant property. The relative elevation of the specific local residence is only 10 to 20  
16           feet higher than the plant grade and thus would not be impacted by the thermal exhaust  
17           plume. Aquila can provide air dispersion modeling techniques, if necessary, to confirm  
18           these conclusions.

19   Q.    To what would you attribute the temperature reading?

20   A.    A thermometer in the sun can cause a higher temperature as well as the radiative heat  
21           from structures on the property in question. The National Weather Service has specific  
22           requirements for the location, height and accuracy of their temperature readings. It is

1 possible that the neighbor's temperature measurements did not correctly employ the  
2 National Weather Service criteria.

3 Q. Does this conclude your testimony?

4 A. Yes, it does.

# The University of Kansas Medical Center


School of Medicine  
Department of Pharmacology  
Toxicology and Therapeutics

November 11, 2005

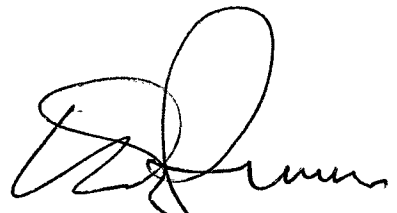
Block Andrews  
Aquila, Inc.  
20 W 9<sup>th</sup> St.  
Kansas City, MO 64105

Dear Mr. Andrews,

We have reviewed levels of pollutants inside the stack compared to ambient concentration, provided for us by your office. In order to establish a perspective, we added a column listing TLVs (Threshold Limit Value) for the pollutants in a separate column. TLVs are occupational exposure recommendations promulgated by OSHA to become legally binding PELs. TLVs are designed to protect nearly all workers from any adverse health effect during 8 hour work days, 5 times a week for a 45 year working life. All pollutants are about 100 to 10 million times lower than the respective pollutants with the exception of nitrogen oxides, carbon monoxide and particulate matter, which are in the range of their respective TLVs. Therefore, from the pollution point of view the inside of the stack represents an acceptable work environment. Considering the enormous dilution of the air leaving the stack, it is our opinion as toxicologists that there cannot possibly arise any adverse health effect in anybody, even if they lived in the immediate vicinity of the stack.



John Doult, MD, PhD  
Professor Emeritus



Karl K. Rozman, PhD, DABT  
Professor of Pharmacology

Schedule BMA-1  
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Pollutant	Measured in stack conc. (ppb)	Background levels (ppb)	TLV conc. (ppb)
PAH	0.092	0.043	not available
Napthalene	0.034	0.017	10,000
1, 3 Butadiene	non detected	0.004	2,000
Benzene	0.8	0.15	500
Ethylbenzene	non detected	0.012	100,000
Toluene	0.42	0.7	50,000
Xylene	non detected	0.02	100,000
Formaldehyde	20.54	28.8	ceiling 300
Acetaldehyde	non detected	0.8	ceiling 25,000
Acrolein	non detected	1.2	ceiling 100
Nitrogen Oxides	12.2 (ppm)	unknown	nitric oxide + nitrogen oxide: 25ppm + 3ppm
Carbon monoxide	21.8 (ppm)	unknown	25 ppm
Particulate (<10 microns)	0.0027 (g/m3)	unknown	<3mg/m <sup>3</sup> respirable or <10mg/m <sup>3</sup> inhalable

\* For Nox, CO and particulate, a modeled ambient concentration can be given if you need it.

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Missouri Public  
Service Commission

# Air Quality in Cass County

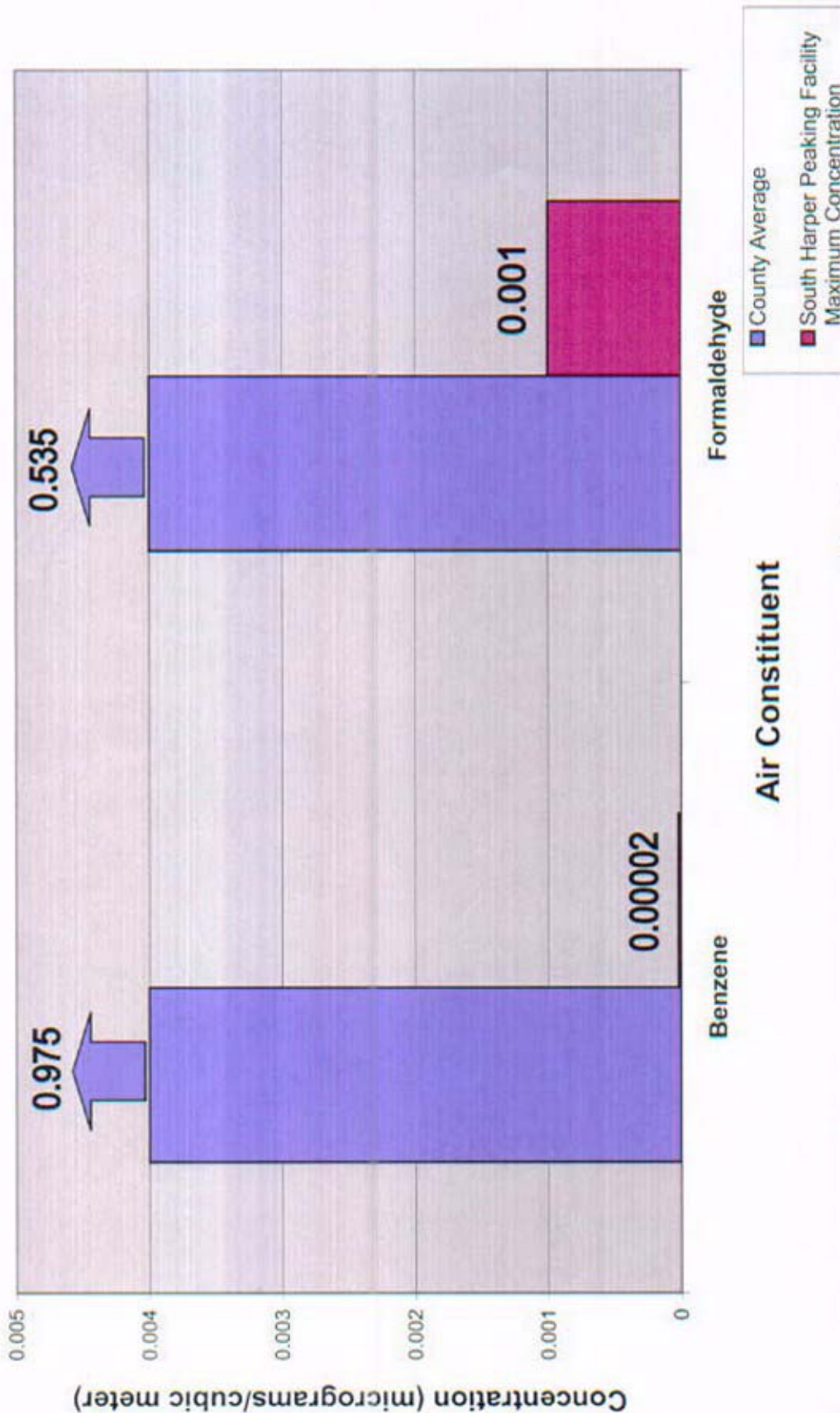


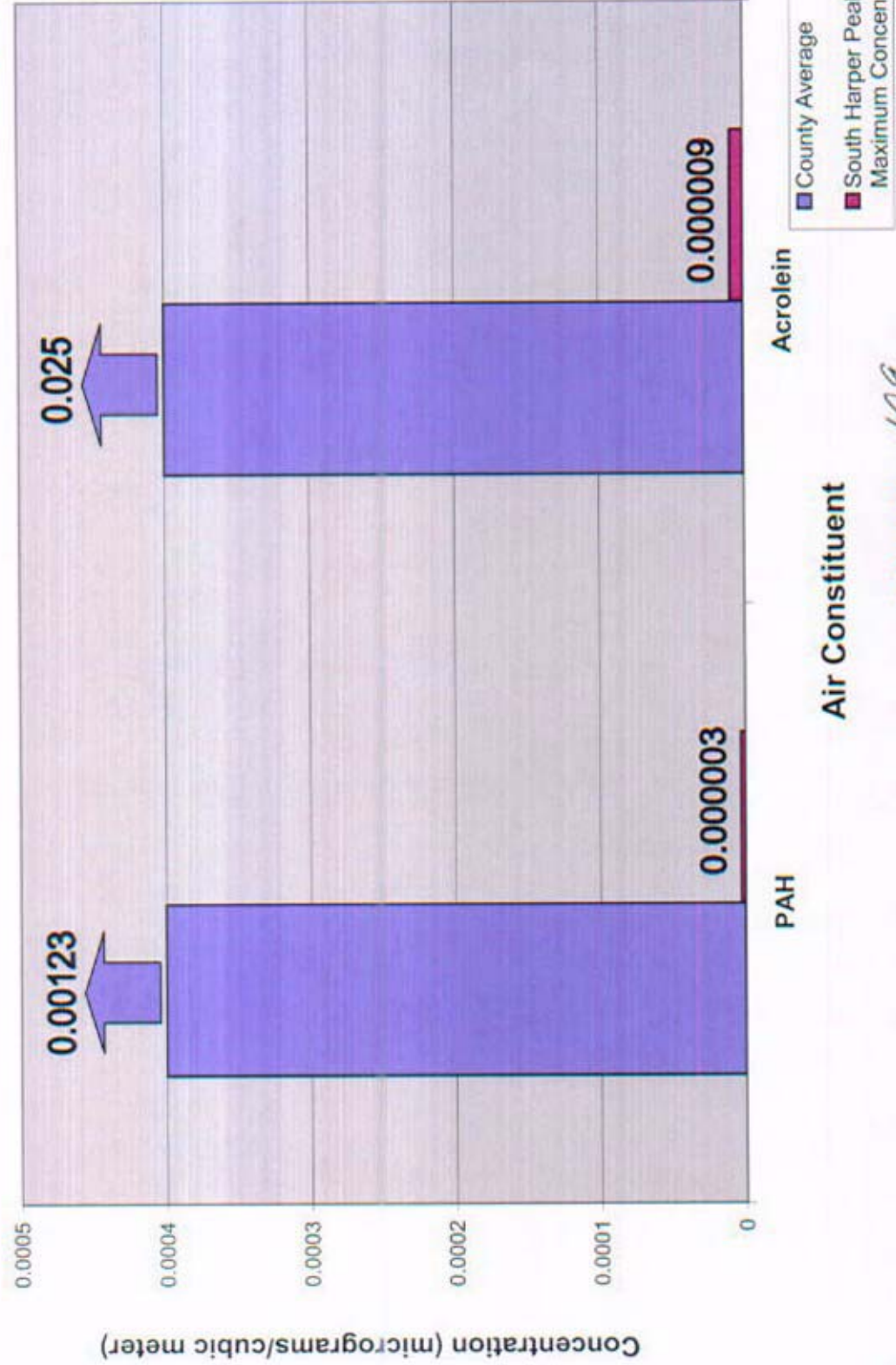
Exhibit No. 108  
Case No(s). EA-2005-0248  
Date 3-29-05 Rptr TL

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APR 19 2005

Missouri Public Service Commission

# Air Quality in Cass County



Air Constituent

Exhibit No. 109  
Case No(s) EA-2005-0248  
Date 2-29-05 Rptr TR

