

# **Mississippi Department of Environmental Quality**

**2016**

## **Air Quality Data Summary**



## **Table of Contents**

<a href="#"><u>Introduction.....</u></a>	<a href="#"><u>3</u></a>
<a href="#"><u>MDEQ Air Monitoring Network Information.....</u></a>	<a href="#"><u>4-5</u></a>
<a href="#"><u>Ground-Level Ozone.....</u></a>	<a href="#"><u>6-7</u></a>
<a href="#"><u>Particulate Matter.....</u></a>	<a href="#"><u>8</u></a>
<a href="#"><u>PM<sub>2.5</sub>.....</u></a>	<a href="#"><u>9-10</u></a>
<a href="#"><u>PM<sub>10</sub>.....</u></a>	<a href="#"><u>11</u></a>
<a href="#"><u>Carbon Monoxide.....</u></a>	<a href="#"><u>12</u></a>
<a href="#"><u>Nitrogen Dioxide.....</u></a>	<a href="#"><u>13-14</u></a>
<a href="#"><u>Sulfur Dioxide.....</u></a>	<a href="#"><u>15-18</u></a>
<a href="#"><u>Appendix 1 – 10 Year Data Trends by County.....</u></a>	<a href="#"><u>19-74</u></a>
<a href="#"><u>Appendix 2 – Data Completeness by Pollutant.....</u></a>	<a href="#"><u>76-83</u></a>

## **Introduction**

Under the Clean Air Act, the U.S. Environmental Protection Agency (EPA) establishes primary air quality standards to protect public health, including the health of “sensitive populations such as people with asthma, children, and older adults”. EPA also sets secondary standards to protect public welfare. This includes protecting ecosystems, including plants and animals, from harm, as well as protecting against decreased visibility and damage to crops, vegetation, and buildings.

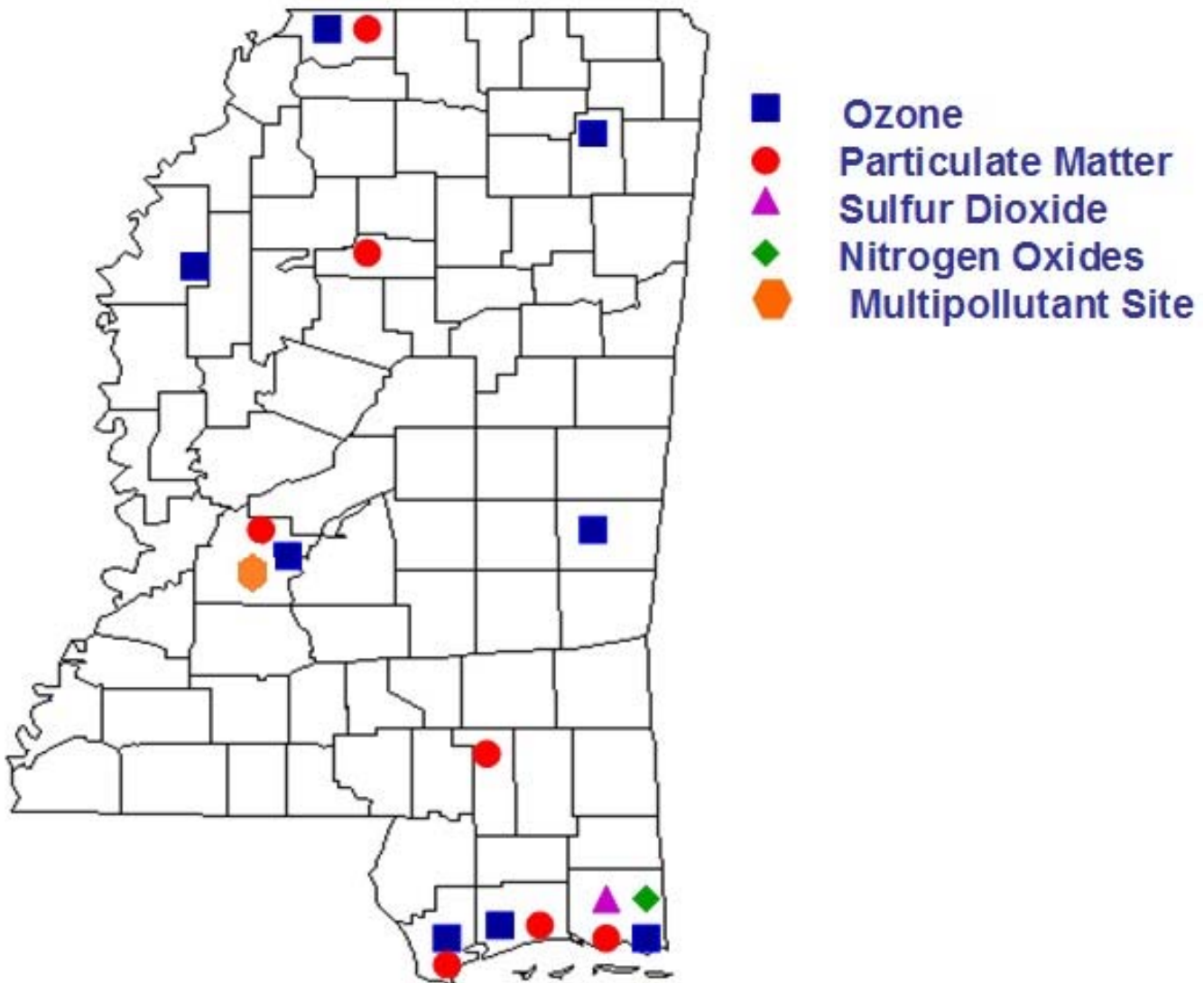
EPA has set national ambient air quality standards (NAAQS) for six principal air pollutants (also called criteria pollutants): Ground-Level Ozone (O<sub>3</sub>), Particulate Matter (PM), Nitrogen Dioxide (NO<sub>2</sub>), Sulfur Dioxide (SO<sub>2</sub>), Carbon Monoxide (CO), and Lead (Pb). The Mississippi Department of Environmental Quality (MDEQ) monitors all of these pollutants with the exception of lead (Pb) as MDEQ ceased lead monitoring, June 30<sup>th</sup>, 2016.

This report looks at the reported levels of the criteria pollutants in 2016 at various monitoring sites located in Mississippi. It compares these levels to the NAAQS to determine how the state is doing in meeting these standards. As it is stated, Mississippi is meeting all of the NAAQS.

In July 2012, due to its proximity to the Memphis area, part of DeSoto County was designated as part of the Memphis Nonattainment Area by EPA. EPA re-designated DeSoto County to Attainment in May of 2016. In October 2015, EPA lowered the primary and secondary ozone standards from 75 ppb to 70 ppb. Although Mississippi is meeting this standard for the 2014-2016 period, EPA will designate attainment/nonattainment areas based on 2014-2016 ozone data.

In March 2015, Jackson Metro (Hinds Co. 28.049.0010) FS-19 site was shut down and relocated in April 2015 (Jackson Metro Hinds Co. 28.049.0021) with EPA approval to Hinds Community College, located at latitude 32.346722 and longitude -90.225667. MDEQ restarted operation of its multi-pollutant site (N-CORE) in July 2013.

## 2016 MDEQ Air Monitoring Network



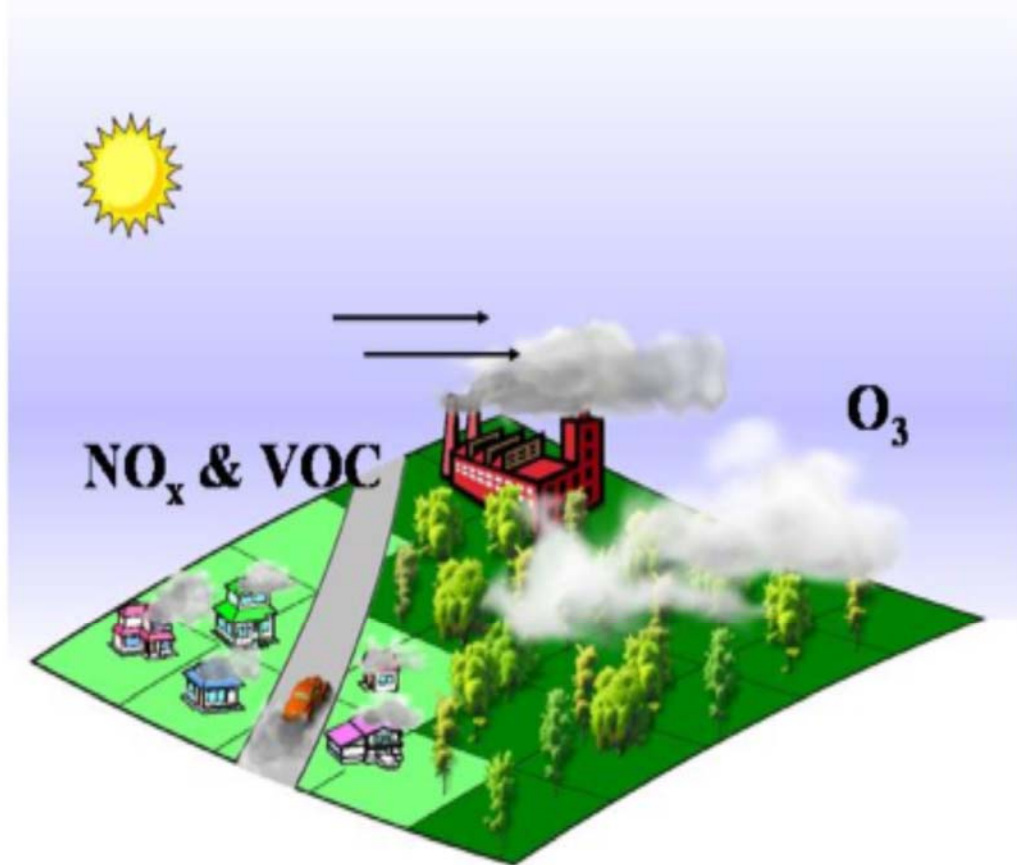
## **Monitoring Network Information**

County	City	Monitoring Site ID	Pollutants Monitored	Latitude			Longitude		
				Deg.	Min.	Sec.	Deg.	Min.	Sec.
Bolivar	Cleveland	28-011-0001	Ozone	33	44	45	-90	43	23
DeSoto	Hernando	28-033-0002	Ozone, PM <sub>2.5</sub> 3-Day, PM <sub>2.5</sub> Continuous	34	49	14	-89	59	16
Forrest	Hattiesburg	28-035-0004	PM <sub>2.5</sub> 3-Day, PM <sub>2.5</sub> Continuous	31	19	23	-89	17	15
Grenada	Grenada	28-043-0001	PM <sub>2.5</sub> 3-Day	33	50	04	-89	47	34
Hancock	Waveland	28-045-0003	Ozone, PM <sub>2.5</sub> 3-Day	30	18	3	-89	23	45
Harrison	Gulfport	28-047-0008	Ozone, PM <sub>2.5</sub> 3-Day, PM <sub>2.5</sub> Continuous	30	23	24	-89	02	59
Hinds CC	Jackson	28-049-0021	Ozone, PM <sub>2.5</sub> 3-Day, PM <sub>2.5</sub> Continuous	32	20	48	-90	13	32
Hinds	Jackson N-CORE	28-049-0020	Ozone, PM <sub>2.5</sub> 3-Day, PM <sub>2.5</sub> Continuous, Speciated PM <sub>2.5</sub> , PM <sub>10-2.5</sub> , CO, NOy, SO <sub>2</sub>	32	19	45	-90	10	58
Jackson	Pascagoula	28-059-0006	Ozone, PM <sub>2.5</sub> 3-Day, NO, NO <sub>2</sub> , NOx, SO <sub>2</sub>	30	22	42	-88	32	03
Lauderdale	Meridian	28-075-0003	Ozone	32	21	52	-88	43	53
Lee	Tupelo	28-081-0005	Ozone	34	15	54	-88	45	58

## Ground-Level Ozone ( $O_3$ )

Ozone is a gas composed of three atoms of oxygen. Ozone occurs both in the Earth's upper atmosphere and at ground level. Ozone can be good or bad, depending on where it is found. It occurs naturally in the stratosphere approximately 6 to 30 miles above the Earth's surface where it forms a protective layer that shields us from the sun's harmful ultraviolet rays. In the Earth's lower atmosphere, near ground level, ozone occurs naturally in lower amounts and additional ozone is formed when nitrogen oxides ( $NO_x$ ) and volatile organic compounds (VOCs) emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources react chemically in the presence of sunlight. Because this reaction takes time to occur, ozone is usually formed downwind of emission sources.

## Ozone is Usually Formed Downwind of Emission Sources



## Ozone Standard

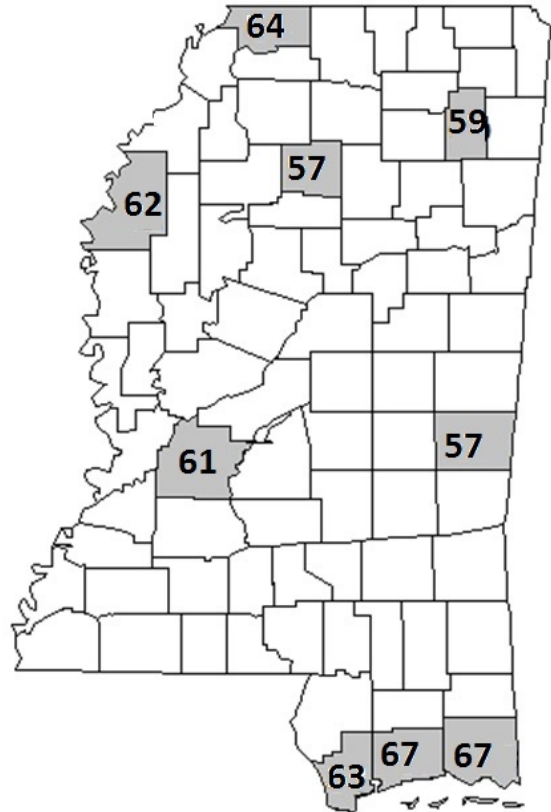
There is one primary and secondary ozone standard – the 8-hour average. MDEQ monitors ozone continuously from March 1 through October 31 each year at the monitoring sites listed below. Ozone is monitored year around at our N-CORE site located in the Jackson MSA.

### Primary and Secondary 8-Hour Ozone Standard

The 8-hour standard is met when the 3-year average of the annual fourth highest daily maximum 8-hour average concentration (also known as the design value) is less than or equal to 0.070 parts per million (ppm) or 70 parts per billion (ppb).

### 8-Hour Ozone Design Values Standard – 70 ppb

County	City	2016 Design Values (ppb)
Bolivar County	Cleveland	62
DeSoto County	Hernando	64
Hancock County	Waveland	63
Harrison County	Gulfport	67
Hinds County	Jackson	*
Hinds County	Jackson/N-CORE	61
Jackson County	Pascagoula	67
Lauderdale County	Meridian	57
Lee County	Tupelo	59



\*Incomplete Data: Hinds CC Site not operational until April 2015

# Particulate Matter

In general, particulate matter consists of a mixture of larger materials, called “coarse particles”, and smaller particles, called “fine particles”. Coarse particles have diameters ranging from 2.5 micrometers ( $\mu\text{m}$ ) to more than 40  $\mu\text{m}$ , while fine particles, also known as  $\text{PM}_{2.5}$ , include particles with diameters equal to or smaller than 2.5  $\mu\text{m}$ . MDEQ also monitors  $\text{PM}_{10}$ , which refers to particles less than or equal to 10  $\mu\text{m}$  in diameter.

These tiny particles come in many shapes and sizes and can be made up of hundreds of different chemicals. Some particles are emitted directly from a source, while others form in complicated chemical reactions in the atmosphere.





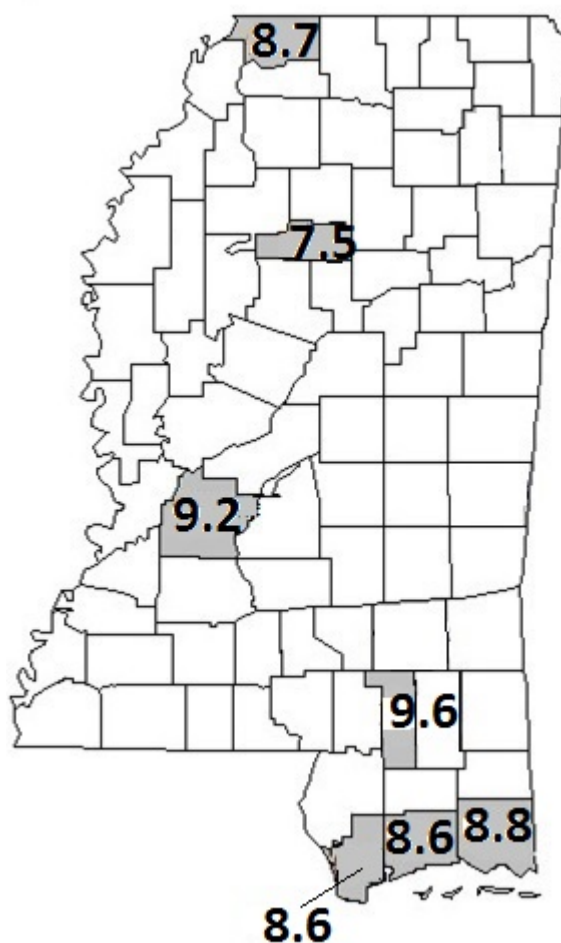
## PM<sub>2.5</sub> Standards

There are two primary and secondary PM<sub>2.5</sub> standards: (1) Annual Average and (2) 24-Hour Average. MDEQ monitors PM<sub>2.5</sub> every 3<sup>rd</sup> day at the monitoring sites listed below.

### Primary and Secondary Annual Average Standard – 12.0 µg/m<sup>3</sup> and 15.0 µg/m<sup>3</sup>

The annual average primary standard is met when the three-year average of the annual averages does not exceed 12.0 micrograms per cubic meter (µg/m<sup>3</sup>). The annual average secondary standard is met when the three-year average of the annual averages does not exceed 15.0 micrograms per cubic meter (µg/m<sup>3</sup>).

County	City	2016 Annual Average Design Value (µg/m <sup>3</sup> )
DeSoto County	Hernando	8.7
Forrest County	Hattiesburg	9.6
Grenada County	Grenada	7.5
Hancock County	Waveland	8.6
Harrison County	Gulfport	8.6
Hinds County	Jackson	*
Hinds County	Jackson/N-CORE	9.2
Jackson County	Pascagoula	8.8

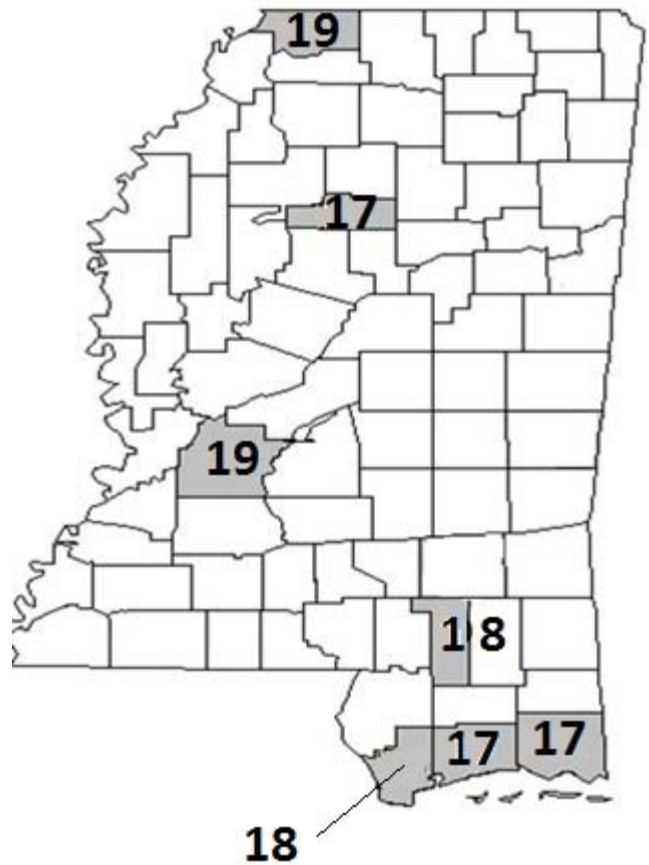


\*Incomplete Data: Hinds CC Site not operational until April 2015.

## Primary and Secondary 24-Hour Average Standard (98<sup>th</sup> Percentile) – 35 µg/m<sup>3</sup>

The 24-hour average standard is met when the three-year average of the annual 98<sup>th</sup> percentiles of the 24-hour averages does not exceed 35 micrograms per cubic meter (µg/m<sup>3</sup>).

County	City	2016 24-Hour Average Design Value (µg/m <sup>3</sup> )
DeSoto County	Hernando	19
Forrest County	Hattiesburg	18
Grenada County	Grenada	17
Hancock County	Waveland	18
Harrison County	Gulfport	17
Hinds County	Jackson	*
Hinds County	Jackson/N-CORE	19
Jackson County	Pascagoula	17



\*Incomplete Data: Hinds CC Site not operational until April 2015.

## PM<sub>10</sub> Standards

### Primary and Secondary 24-Hour Average Standard – 3 Year Average of the Annual 2<sup>nd</sup> Max – 150 µg/ m<sup>3</sup>

The 24-hour average standard is met when the annual second max does not exceed 150 micrograms per cubic meter (µg/m<sup>3</sup>) over the average of three years. MDEQ monitors PM<sub>10</sub> every 6<sup>th</sup> day at the monitoring sites listed below.

County	City	2016 24-Hour Average Design Value (µg/m <sup>3</sup> )
Hinds County	Jackson/NCORE	46



## Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56% of all CO emissions nationwide. Other non-road engines and vehicles (such as construction equipment and boats) contribute about 22% of all CO emissions nationwide. Other sources of CO emissions include industrial processes, residential wood burning, and natural sources such as forest fires.

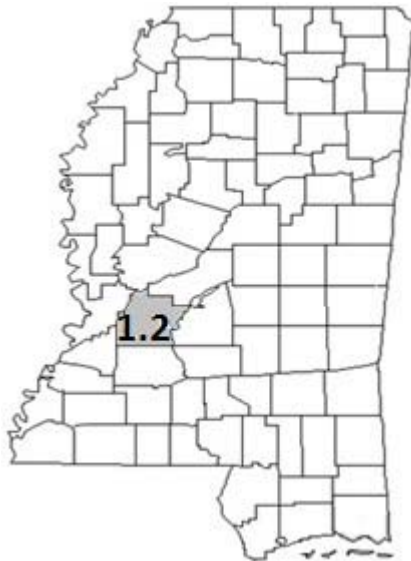
## Carbon Monoxide Standards

There are two carbon monoxide standards: (1) 8-Hour Average and (2) 1-Hour Standard. MDEQ monitors carbon monoxide continuously year-round at the monitoring site listed below.

### Primary CO Standard – 8-Hour 9 ppm 1-Hour 35 ppm

The 8-hour average standard is met if the 8-hour average of 9 parts per million (ppm) is not exceeded more than once per year. The 1-hour average standard is met if the 1-hour average of 35 parts per million (ppm) is not exceeded more than once per year.

County	City	2016 Annual 2 <sup>nd</sup> Max (ppm)
Hinds County	Jackson	8 - Hour: 1.2
	NCORE	1 - Hour: 1.8



8-Hour Carbon  
Monoxide



1-Hour Carbon  
Monoxide

# **Nitrogen Dioxide**

Nitrogen dioxide (NO<sub>2</sub>) can often be seen as a reddish-brown layer. Nitrogen dioxide forms when fuel is burned at high temperatures, as in a combustion process. The primary manmade sources of nitrogen dioxide are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels. It can also be formed naturally.

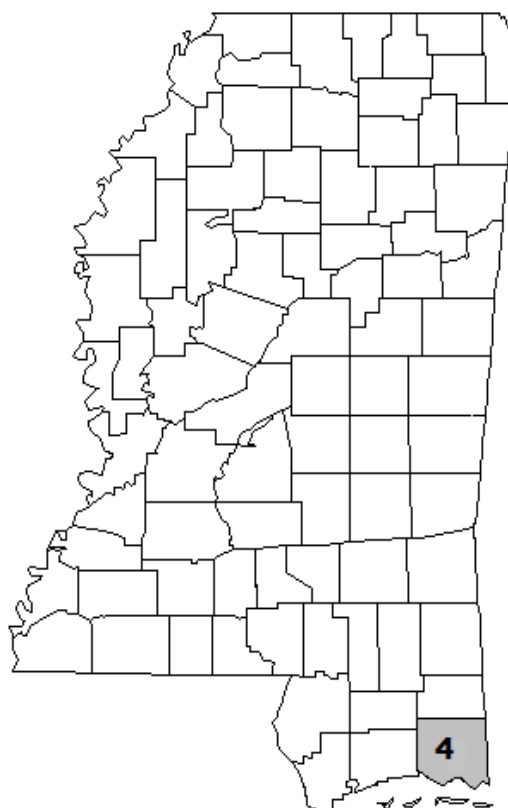
## **Nitrogen Dioxide Standards**

There are two NO<sub>2</sub> standards: (1) Annual Average (Primary and Secondary) and (2) 1-Hour Average (Primary). MDEQ monitors nitrogen dioxide continuously year-round at the monitoring site listed below.

### **Primary and Secondary Annual Average Standard – 53 ppb**

The annual average NO<sub>2</sub> standard is met when the annual average does not exceed 53 parts per billion (ppb).

County	City	2016 Annual Average (ppb)
Jackson County	Pascagoula	4



**Primary 1-Hour Average Standard –**  
**100 ppb**

The 1-hour average NO<sub>2</sub> standard is met when the three-year average of the annual 98<sup>th</sup> percentiles of the 24-hour averages does not exceed 100 parts per billion (ppb).

<b>County</b>	<b>City</b>	<b>2016 1-Hour Average Design Value (ppb)</b>
Jackson County	Pascagoula	29



## **Sulfur Dioxide**

Sulfur dioxide (SO<sub>2</sub>) belongs to the family of sulfur oxide gases (SO<sub>x</sub>). These gases dissolve easily in water. Sulfur is prevalent in all raw materials, including crude oil, coal, and ore that contains common metals like aluminum, copper, zinc, lead, and iron. SO<sub>x</sub> gases are formed when fuel containing sulfur, such as coal and oil is burned, and when gasoline is extracted from oil and metals are extracted from ore. SO<sub>2</sub> dissolves in water vapor to form acid, and interacts with other gases and particles in the air to form sulfates and other products that can be harmful to people and their environment.

Over 65% of SO<sub>2</sub> released to the air comes from electric utilities, especially those that burn coal. Other sources of SO<sub>2</sub> are industrial facilities that derive their products from raw materials like metallic ore, coal, and crude oil, or that burn coal or oil to produce process heat. Examples are petroleum refineries, cement manufacturing, and metal processing facilities.

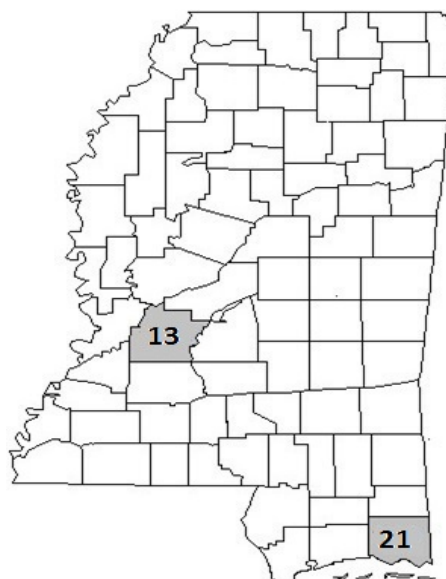
## **Sulfur Dioxide Standards**

There are three primary sulfur dioxide standards – the 1-Hour average, the annual, and the 24-hour average. There is one secondary sulfur dioxide standard – the 3-Hour average. MDEQ monitors sulfur dioxide continuously year-round at the monitoring site listed below.

### **Primary 1-Hour Average Standard – 75 ppb**

The 1-hour average SO<sub>2</sub> standard is met when the three-year average of the annual 99<sup>th</sup> percentiles of the 1-hour averages does not exceed 75 parts per billion (ppb).

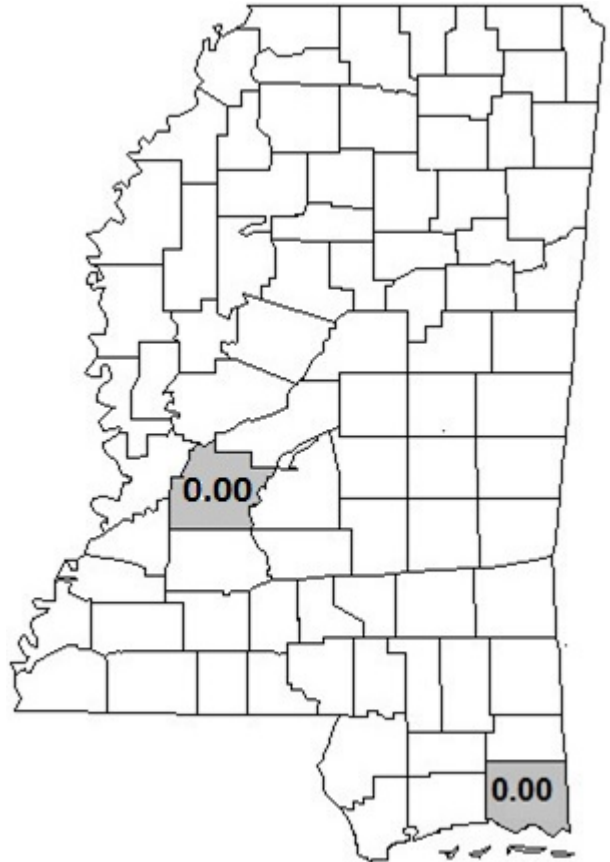
County	City	2016 1-Hour Average Design Value (ppb)
Hinds County	Jackson/N-CORE	13
Jackson County	Pascagoula	21



**Primary Annual Standard –**  
**0.03 ppm**

Annual SO<sub>2</sub> standard is met when the maximum annual average does not exceed 0.030 parts per million (ppm).

County	City	2016 Annual Average (ppm)	2016 Number of Exceedances
Hinds County	N-CORE	0.00	0
Jackson County	Pascagoula	0.00	0

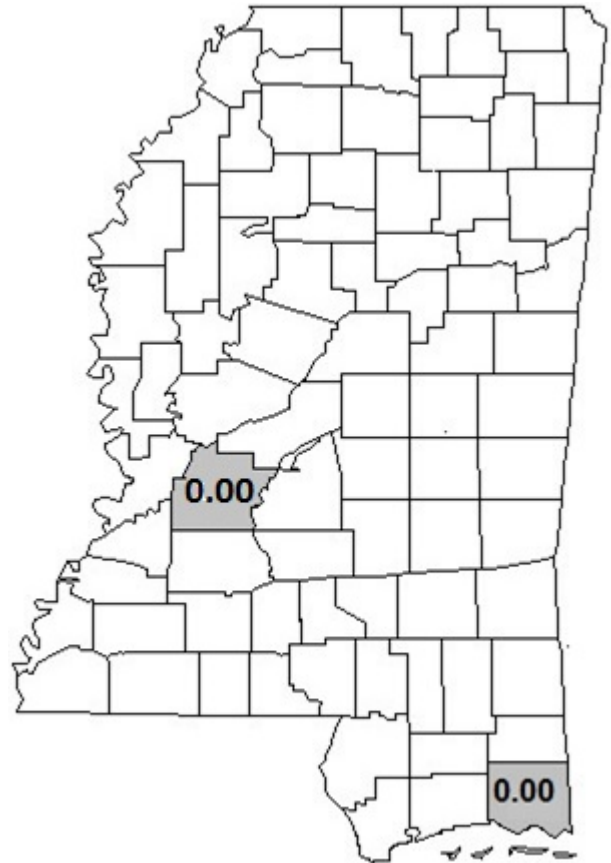




**Primary 24-Hour Standard –**  
**0.14 ppm**

24-Hour SO<sub>2</sub> standard is met when the maximum annual average concentration of 0.14 parts per million (ppm) is not exceeded more than once per calendar year.

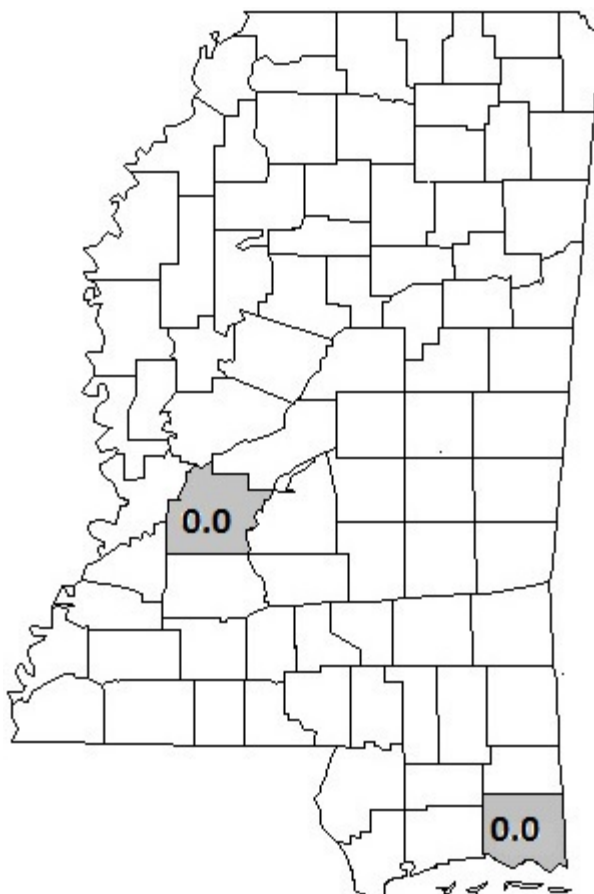
County	City	2016 2 <sup>nd</sup> Maximum 24-Hour (ppm)	2016 Number of Exceedances
Hinds County	N-CORE	0.00	0
Jackson County	Pascagoula	0.00	0



## Secondary 3-Hour Average Standard – 0.5 ppm

The 3-hour average SO<sub>2</sub> standard is met when the maximum 3-hour average concentration of 0.5 parts per million (ppm) is not exceeded more than once per calendar year.

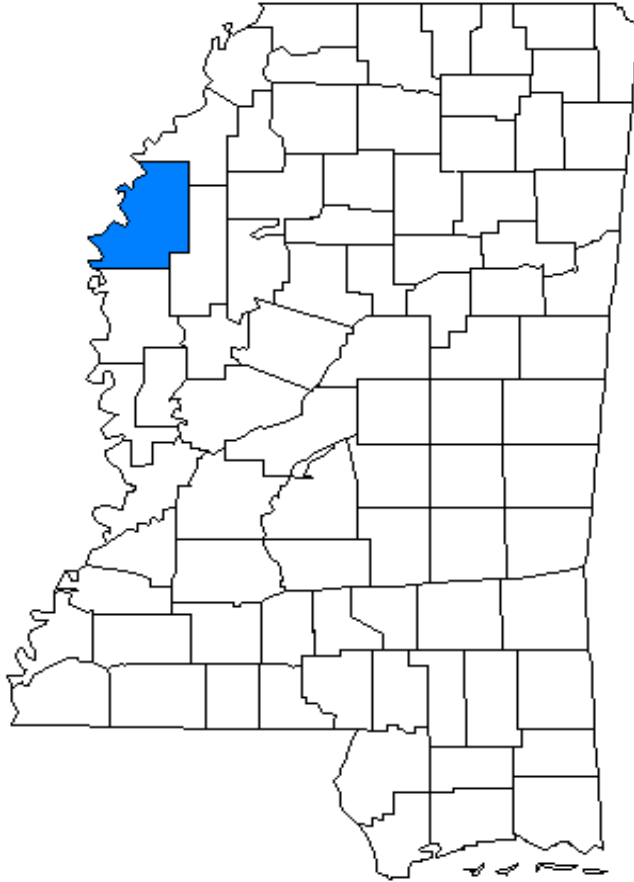
County	City	2016 2 <sup>nd</sup> Maximum 3-Hour Average (ppm)	2016 Number of Exceedances
Hinds County	N-CORE	0.0	0
Jackson County	Pascagoula	0.0	0



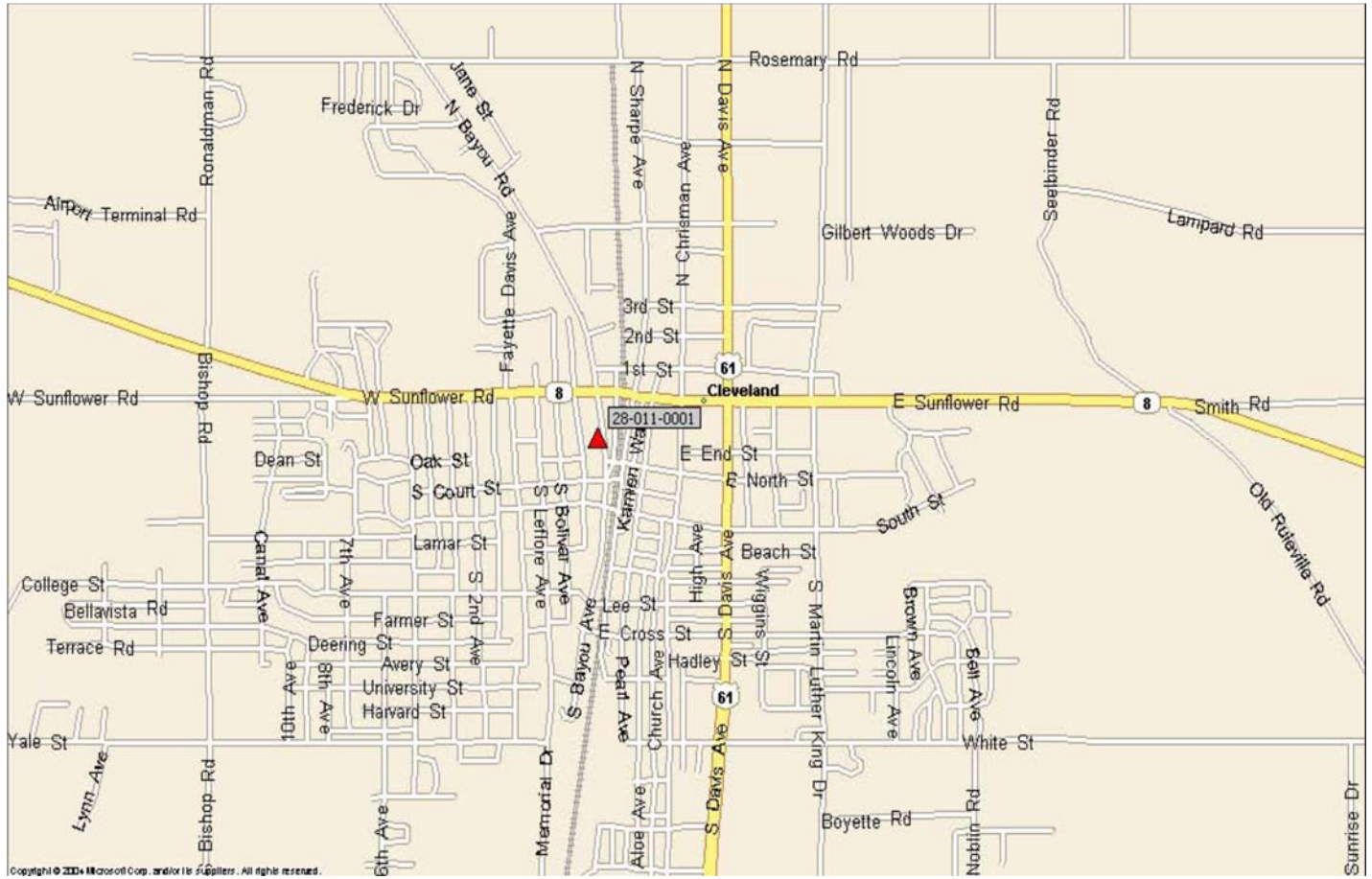
# Appendix 1

## 10-Year Data Trends By County

# Bolivar County

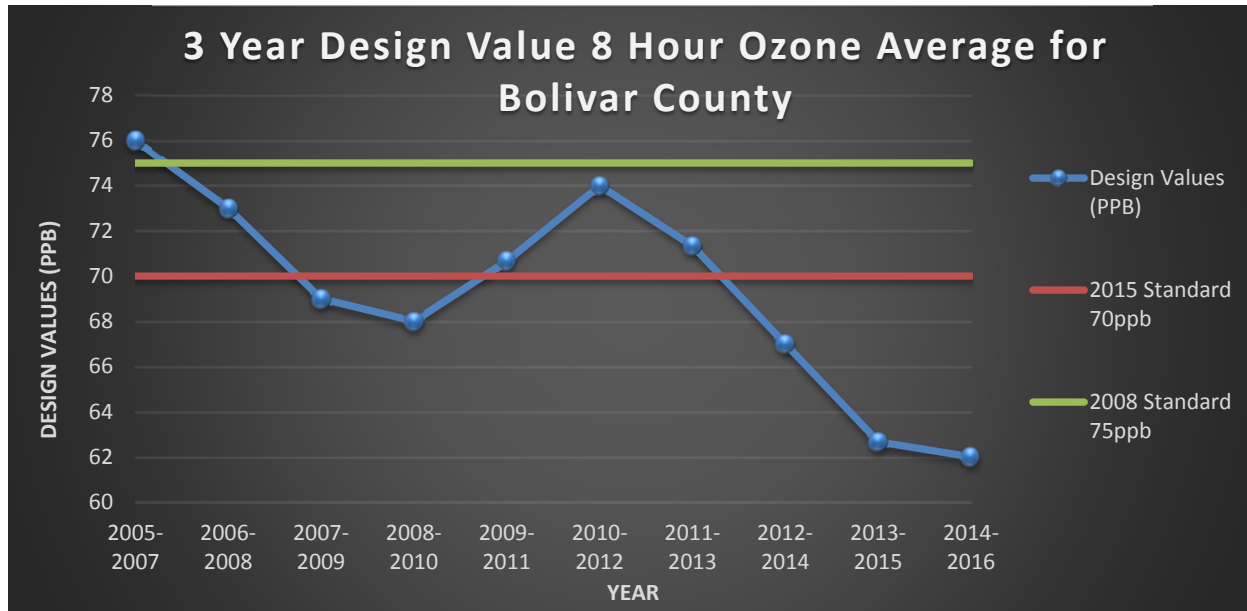


**Bolivar County**  
**Monitoring Site No. 28-011-0001**  
**Location**

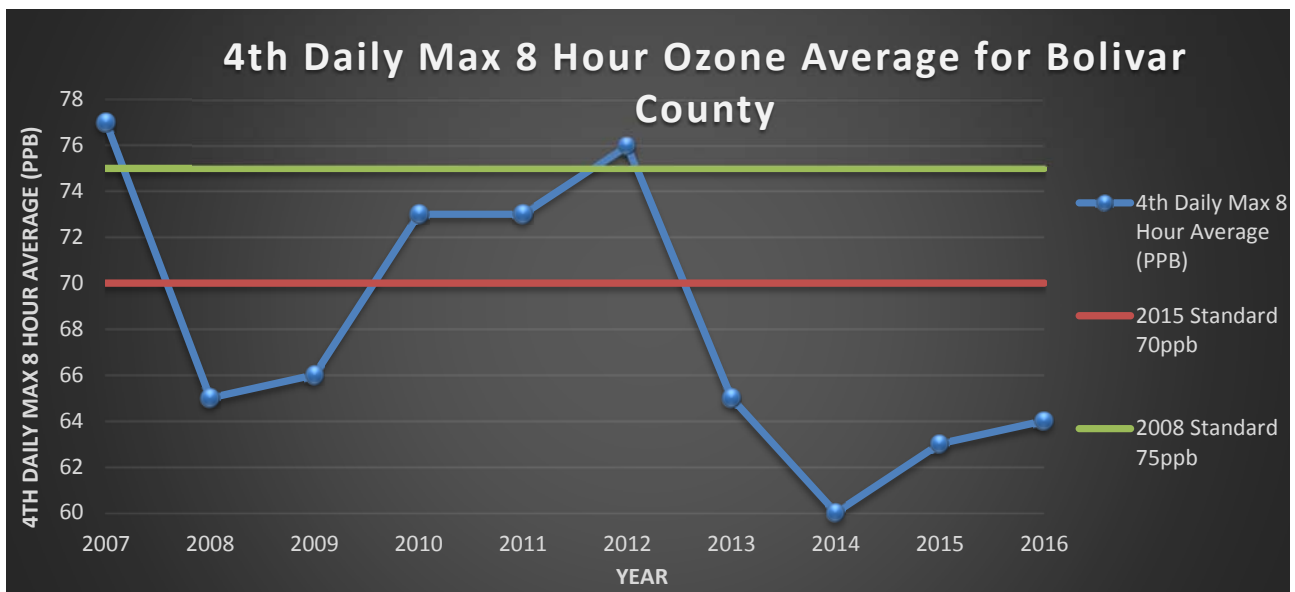


## Bolivar County 8-Hour Ozone (ppb)

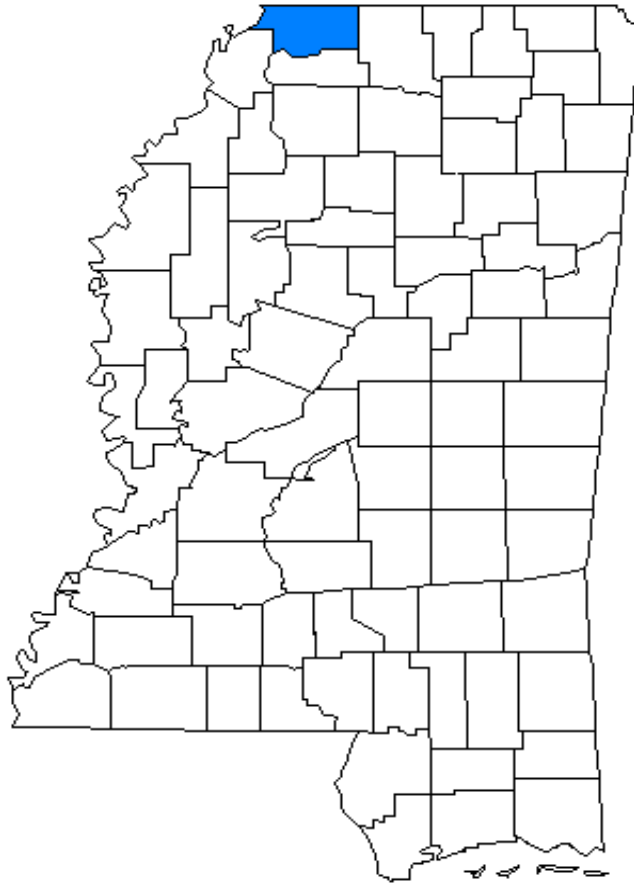
3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
Design Value	76	73	69	68	70	74	71	67	62	62



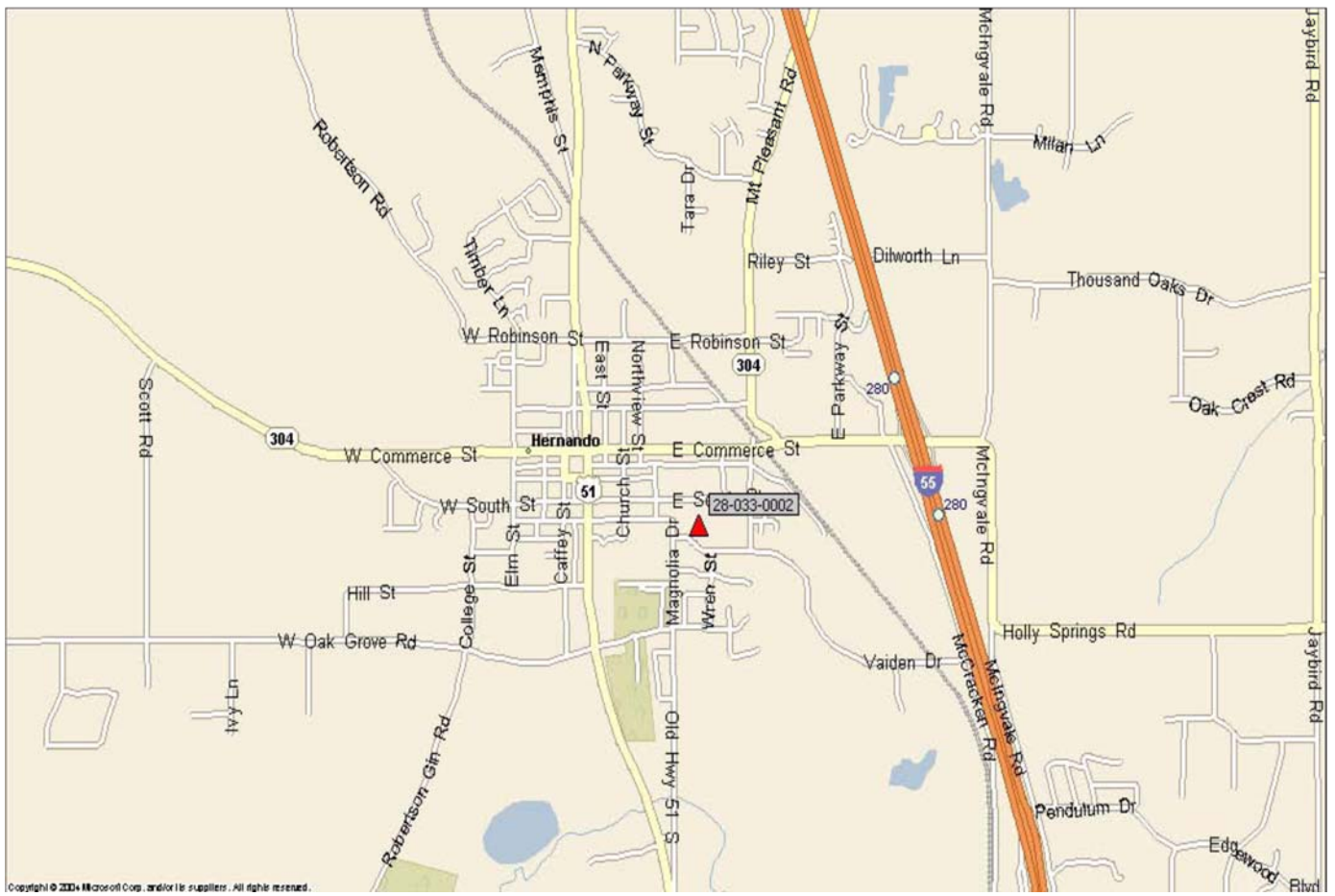
Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 4 <sup>th</sup> Max. 8-Hour Avg.	77	65	66	73	73	76	65	60	63	64



# DeSoto County



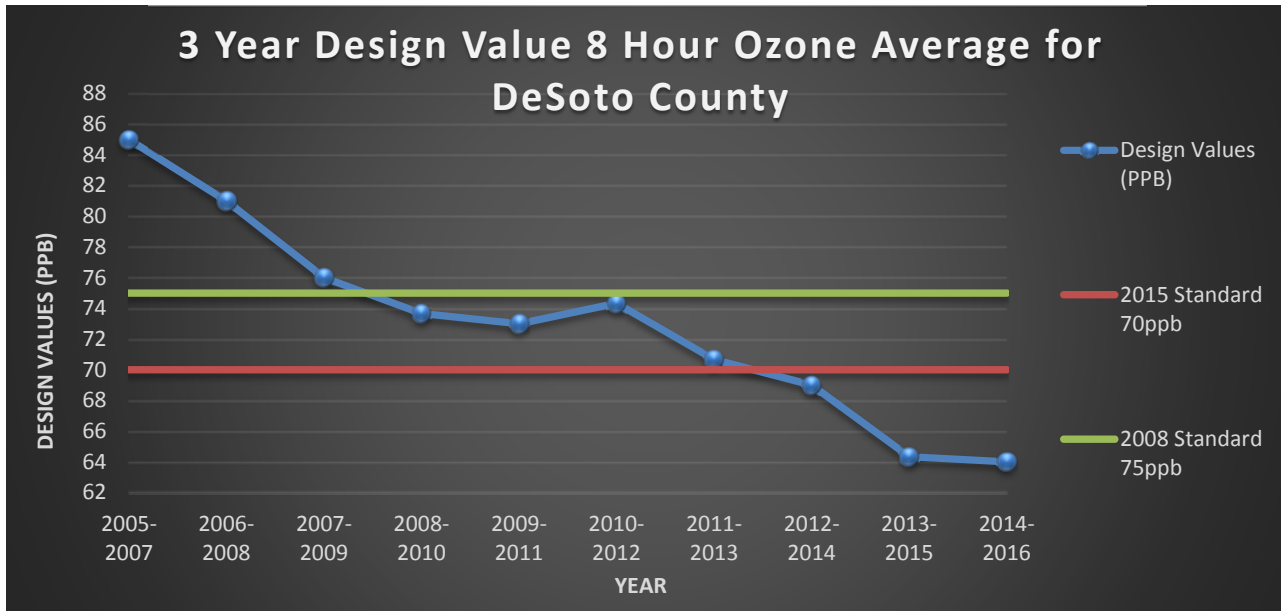
**DeSoto County**  
**Monitoring Site No. 28-033-0002**  
**Location**



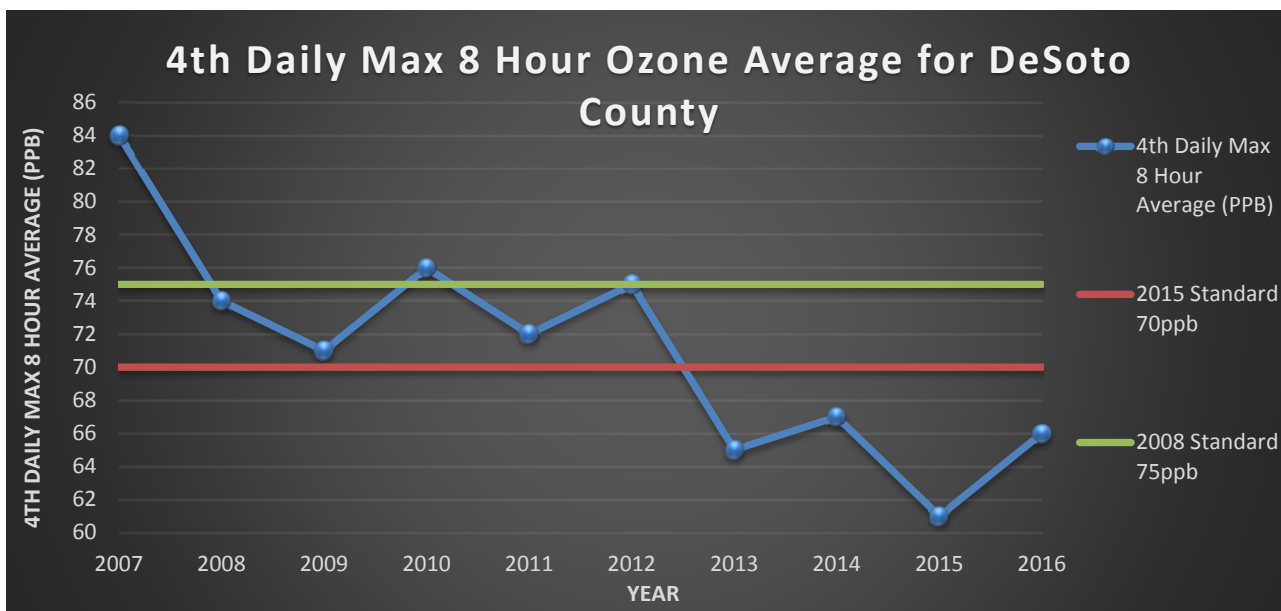


## DeSoto County 8-Hour Ozone (ppb)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
Design Value	85	81	76	73	73	74	70	69	64	64

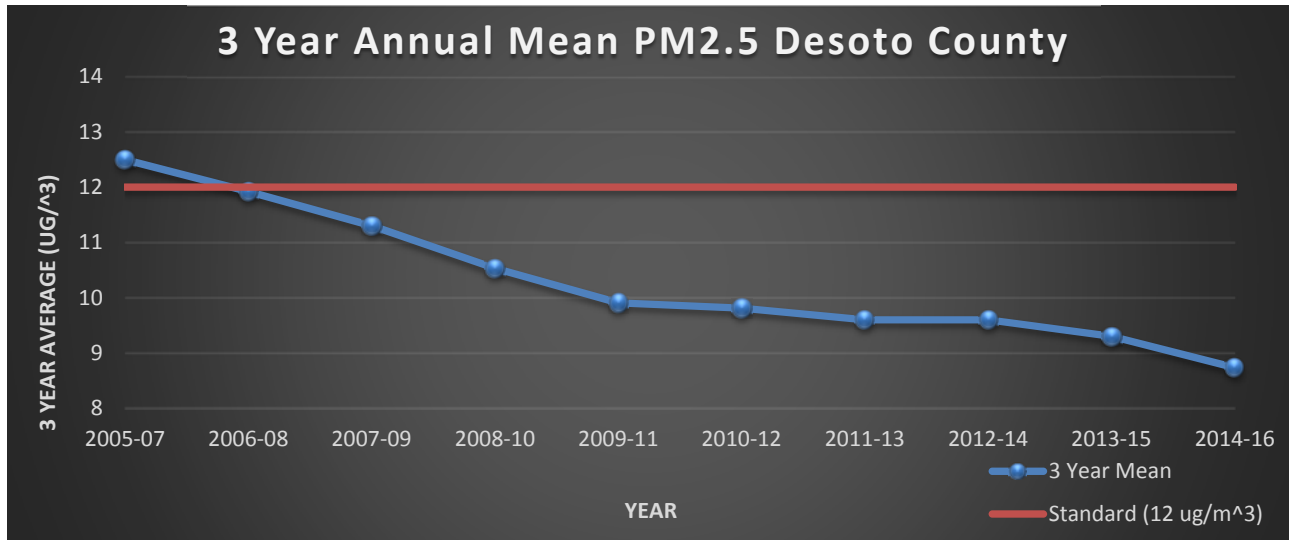


Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 4 <sup>th</sup> Max. 8-Hour Avg.	84	74	71	76	72	75	65	67	61	66

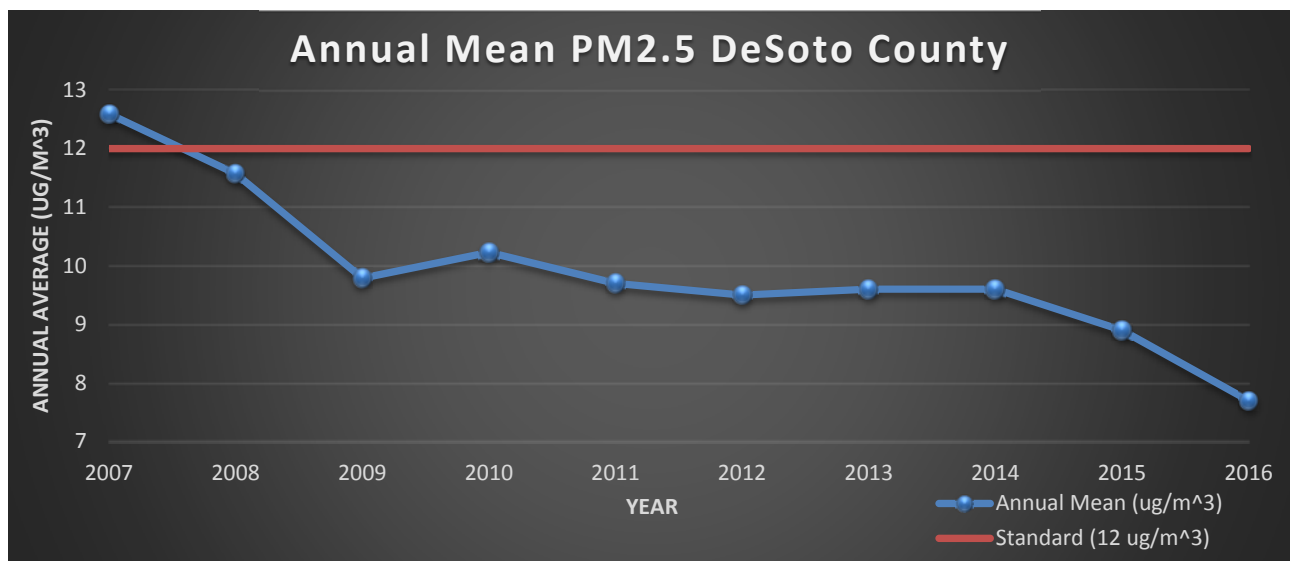


**DeSoto County**  
**PM<sub>2.5</sub>**  
**Annual Mean (µg/m<sup>3</sup>)**

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual Means	12.5	11.9	11.3	10.5	9.9	9.8	9.6	9.6	9.3	8.7*



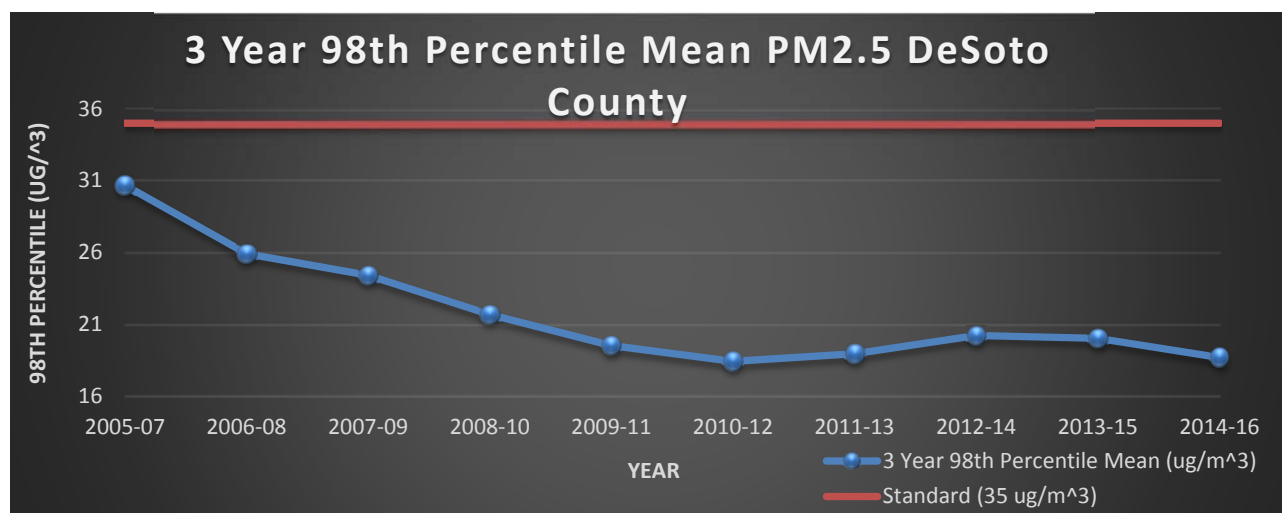
Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual Mean	12.6	11.6	9.8	10.2	9.7	9.5	9.6	9.6	8.9	7.7*



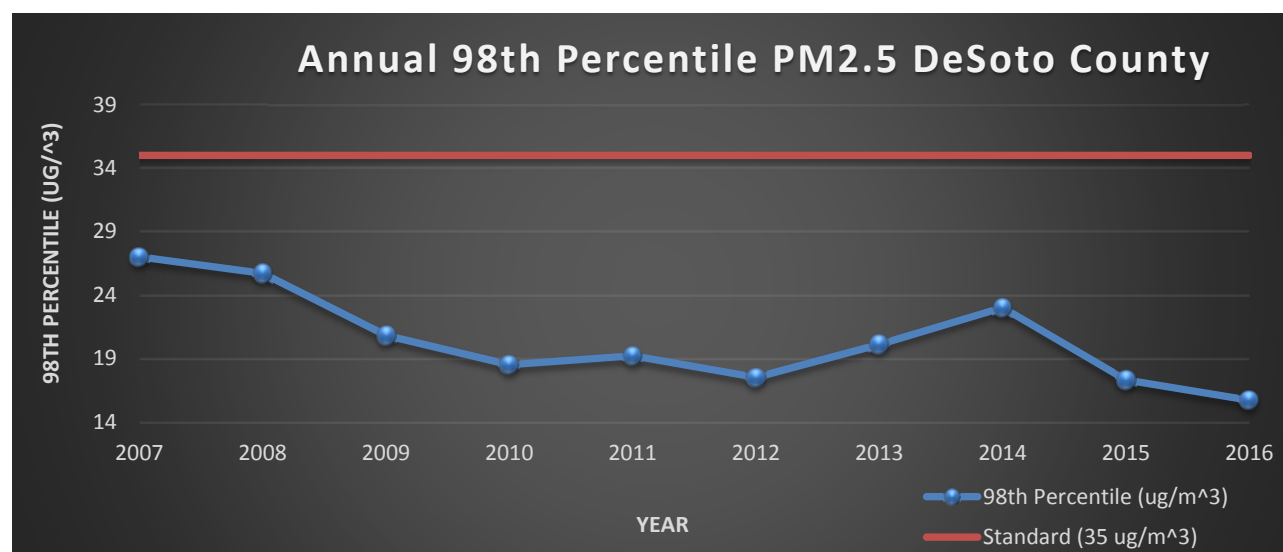
\*Incomplete Data

**DeSoto County**  
**PM<sub>2.5</sub>**  
**24-Hour Average (µg/m<sup>3</sup>)**

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual 98 <sup>th</sup> Percentiles	31	26	24	22	20	18	19	20	20	19*

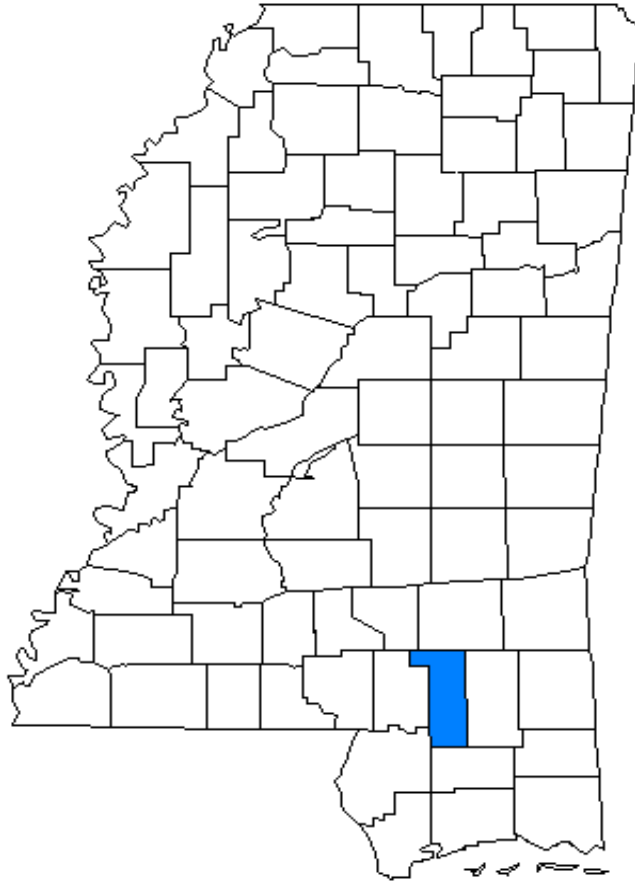


Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 98 <sup>th</sup> Percentile	27	26	21	19	19	18	20	23	17	16*

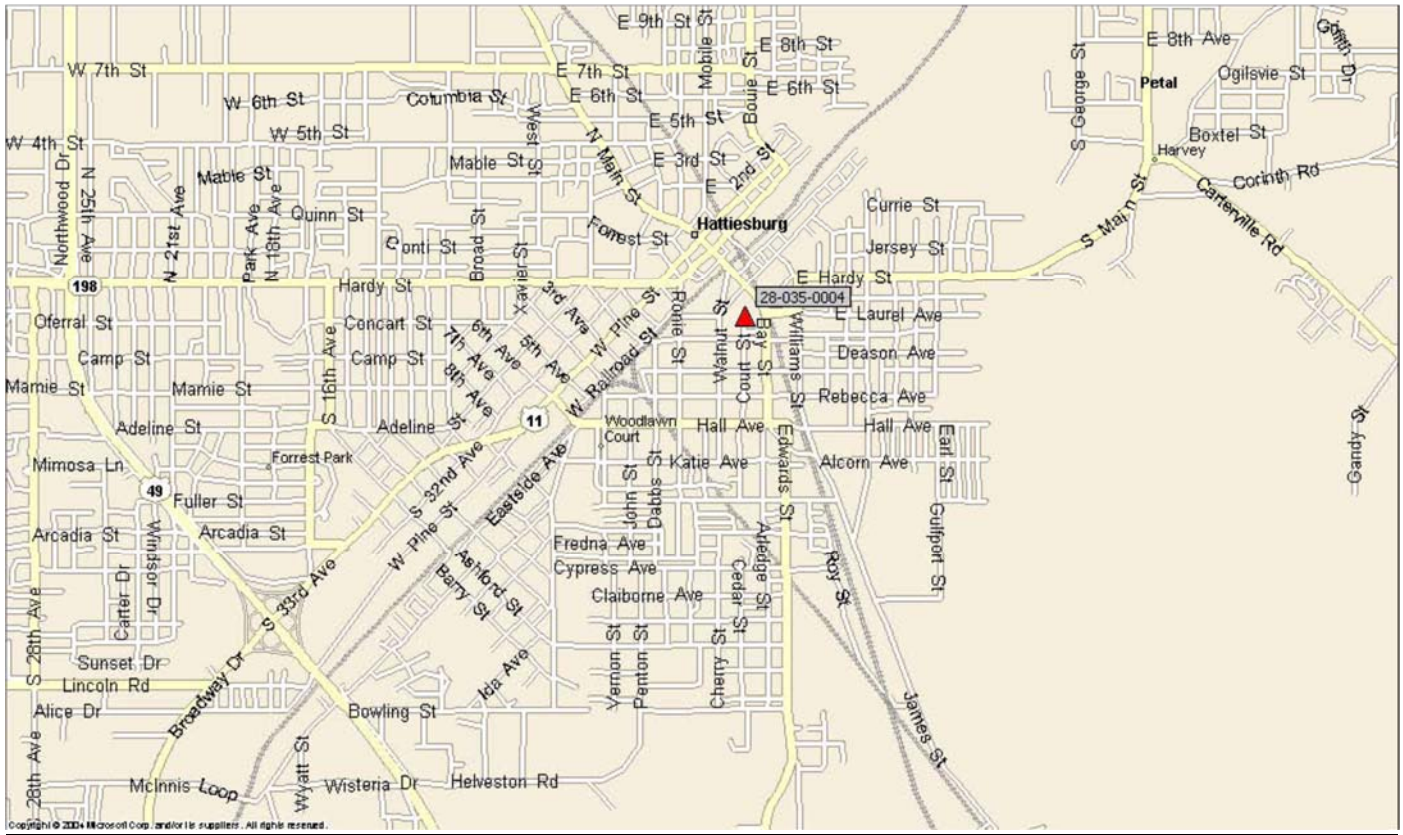


\*Incomplete Data

# Forrest County

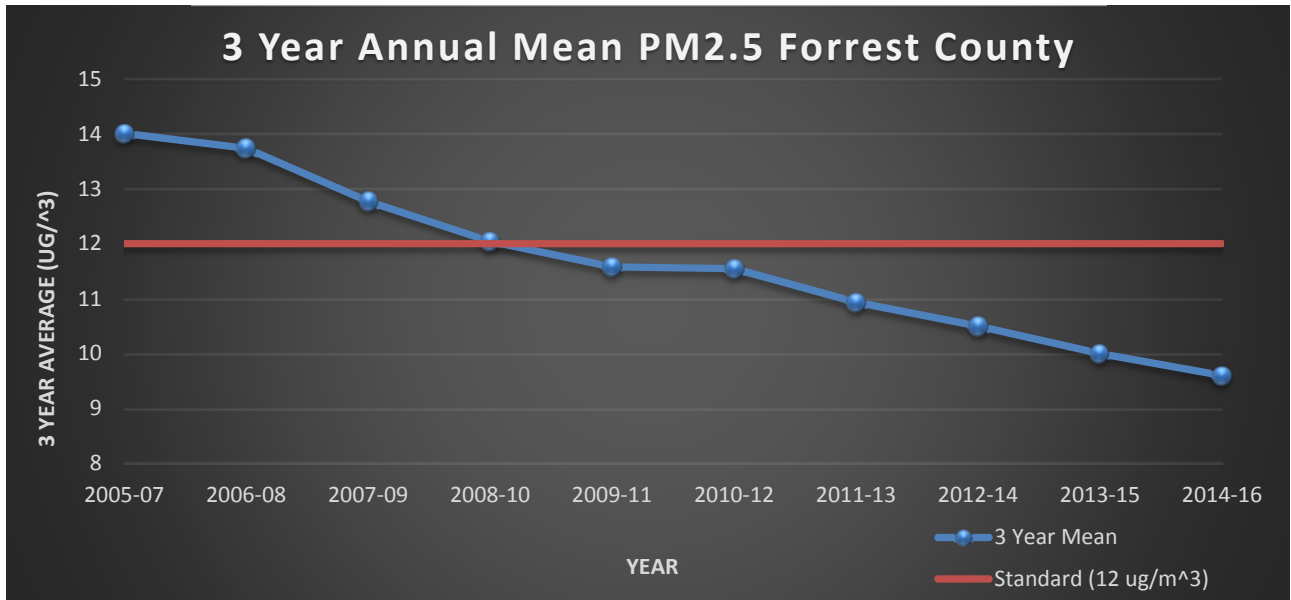


**Forrest County**  
**Monitoring Site No. 28-035-0004**  
**Location**

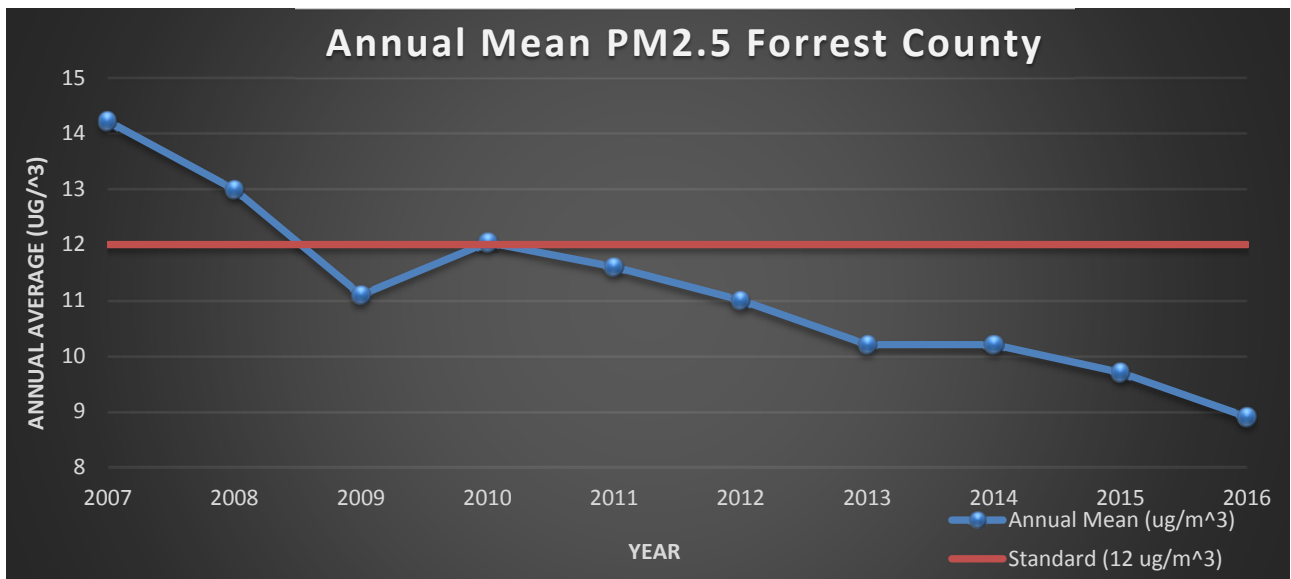


**Forrest County**  
**PM<sub>2.5</sub>**  
**Annual Mean (µg/m<sup>3</sup>)**

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual Means	14.0	13.7	12.8	12.0	11.6	11.6	11	10.5	10.0	9.6

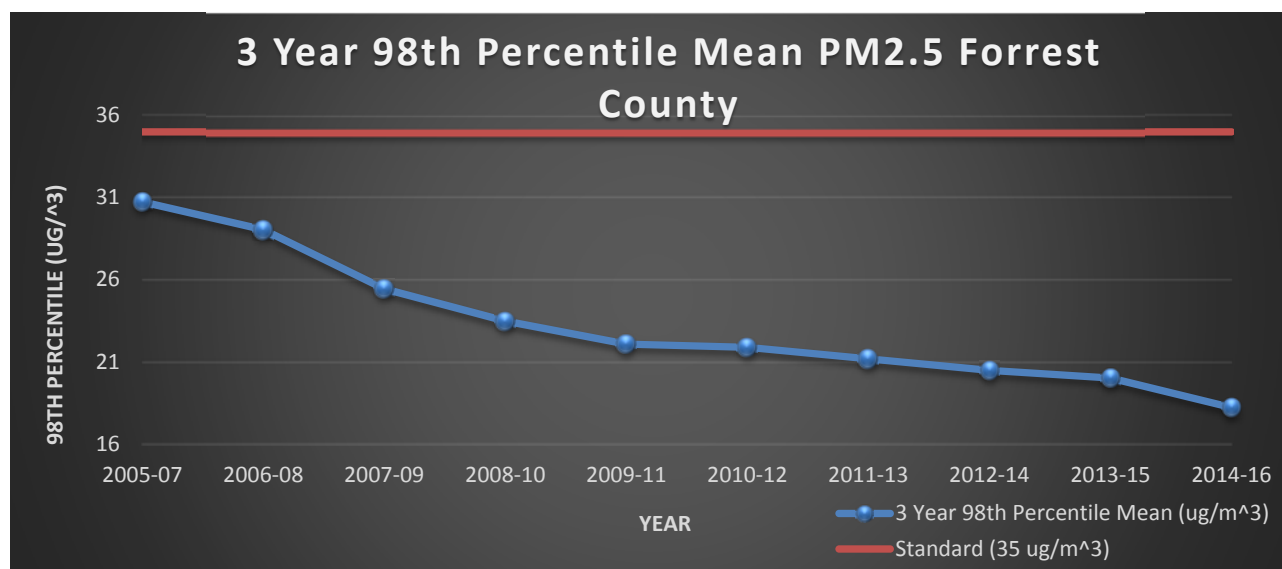


Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual Mean	14.2	13.0	11.1	12.0	11.6	11.0	10.2	10.2	9.7	8.9

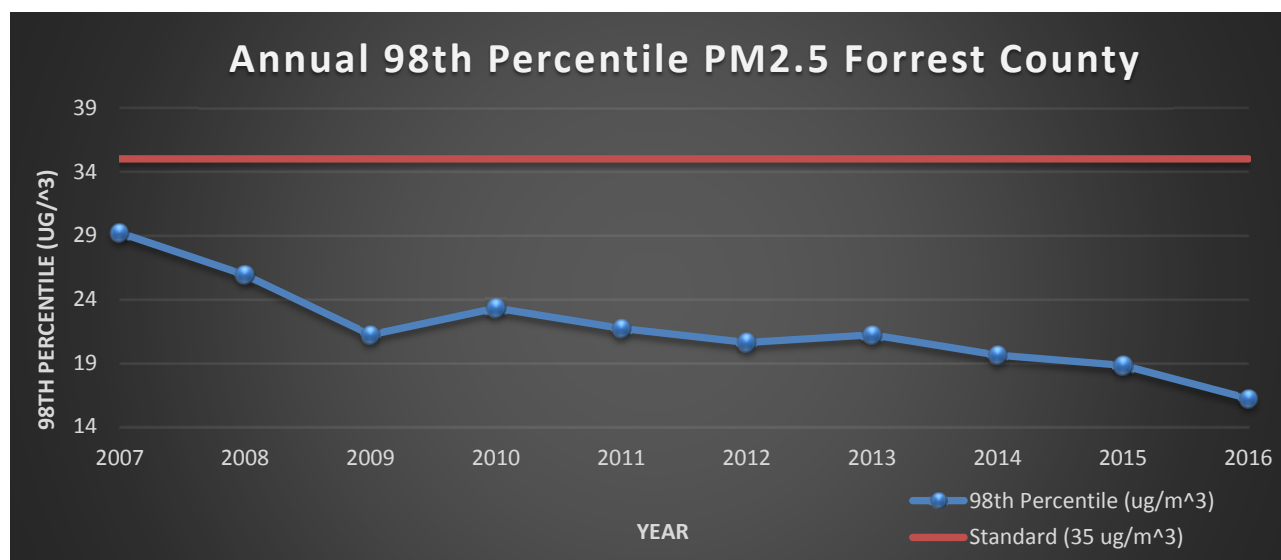


**Forrest County**  
**PM<sub>2.5</sub>**  
**24-Hour Average (µg/m<sup>3</sup>)**

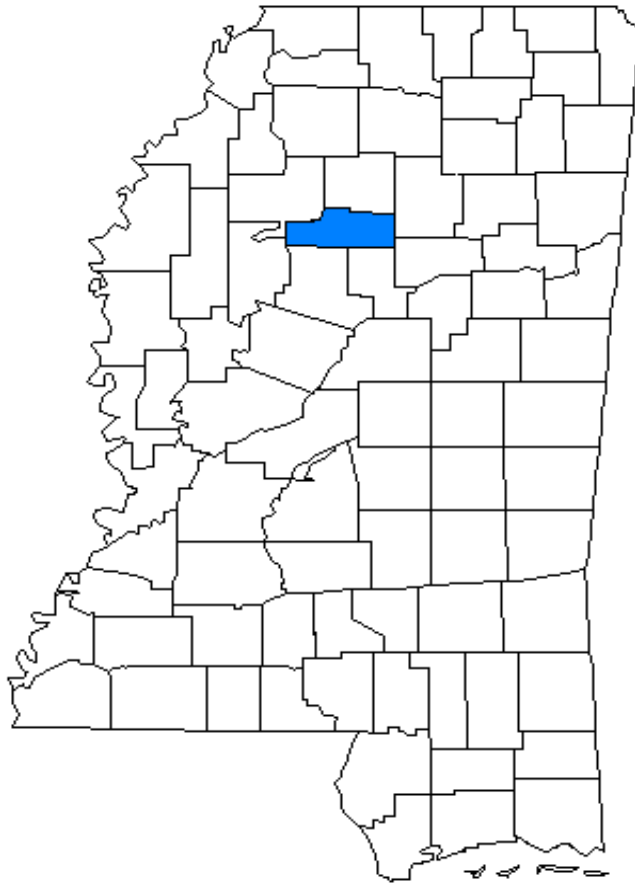
3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual 98 <sup>th</sup> Percentiles	31	29	25	24	22	22	21	20	20	18



Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 98 <sup>th</sup> Percentile	29	26	21	23	22	21	21	20	19	16

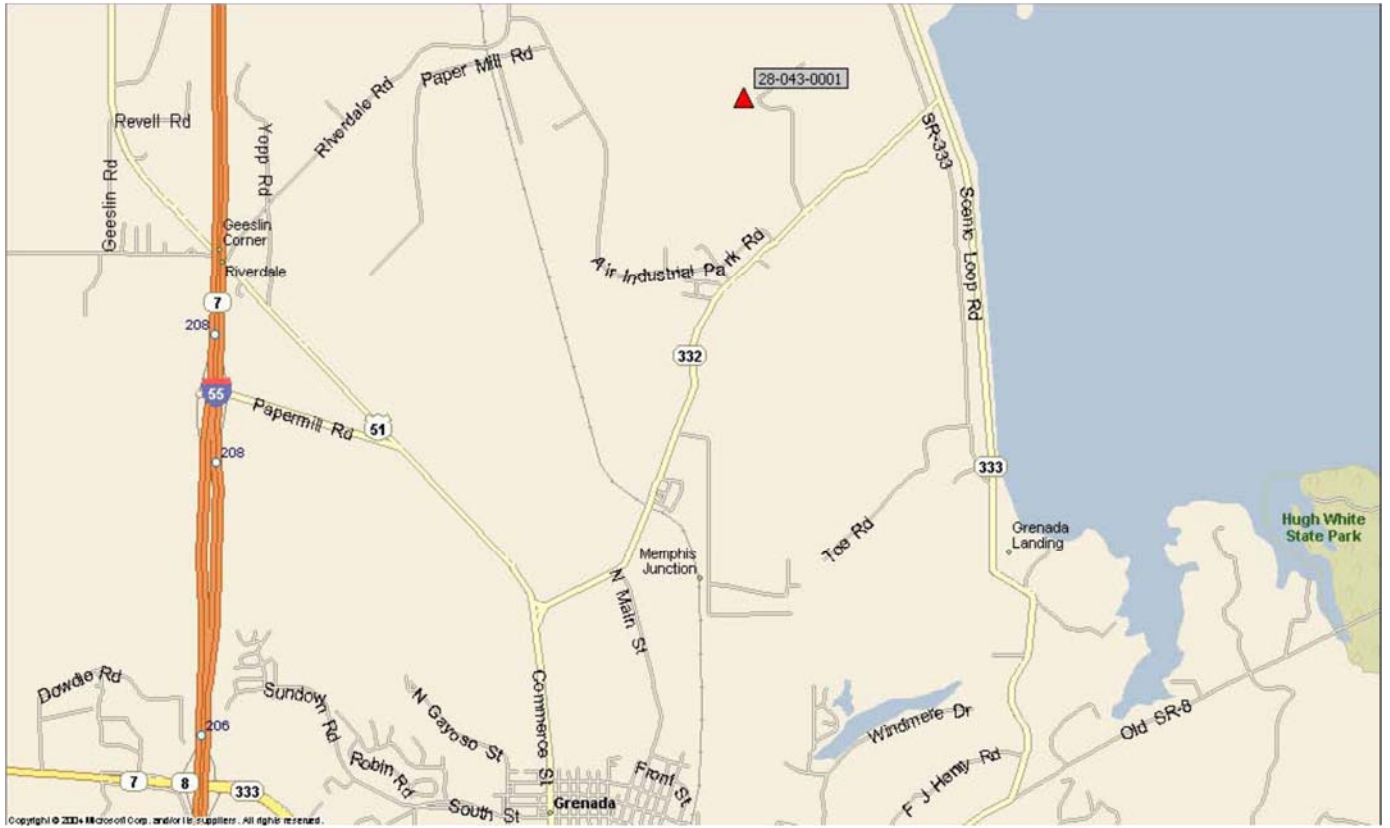


# Grenada County



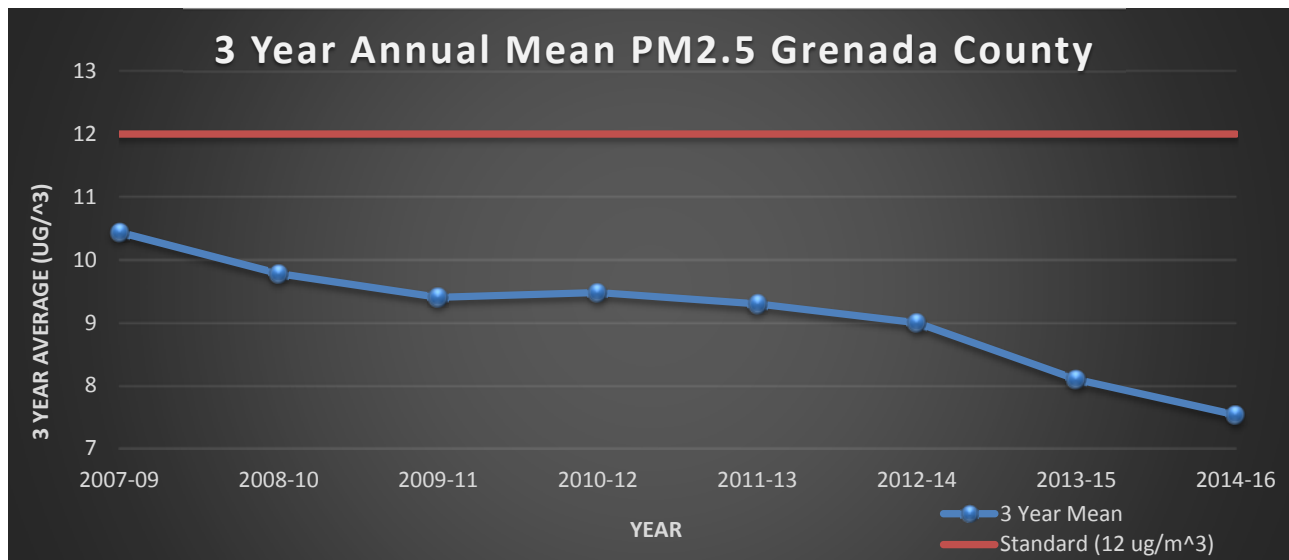


**Grenada County**  
**Monitoring Site No. 28-043-0001**  
**Location**

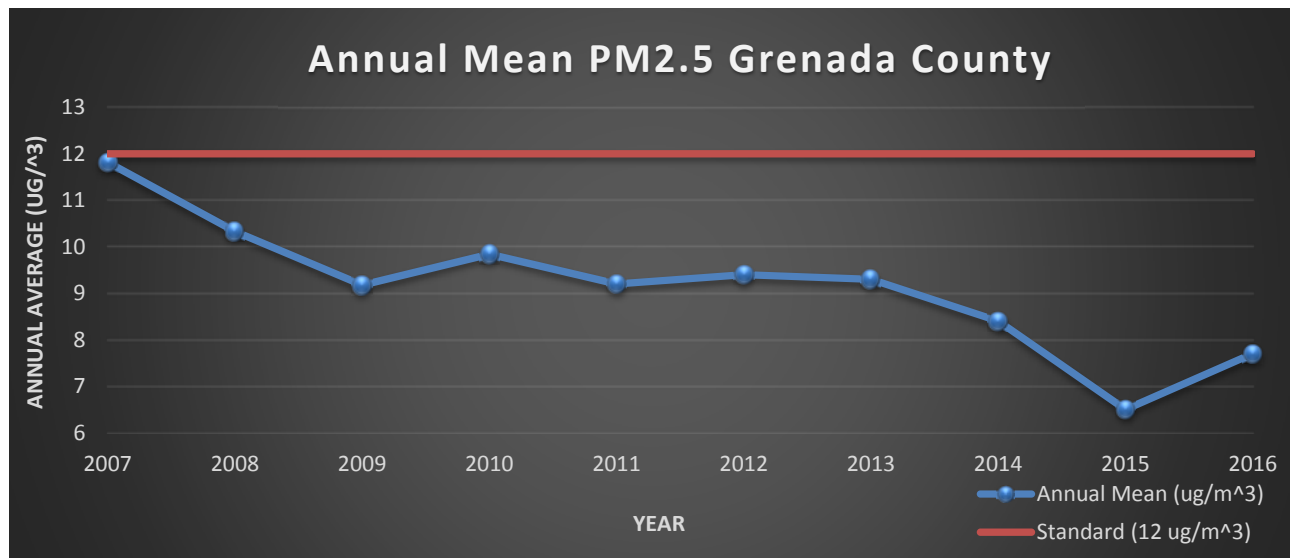


**Grenada County**  
**PM<sub>2.5</sub>**  
**Annual Mean (µg/m<sup>3</sup>)**

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual Means	*	*	10.4	9.8	9.4	9.5	9.3	9.0	8.1	7.5*



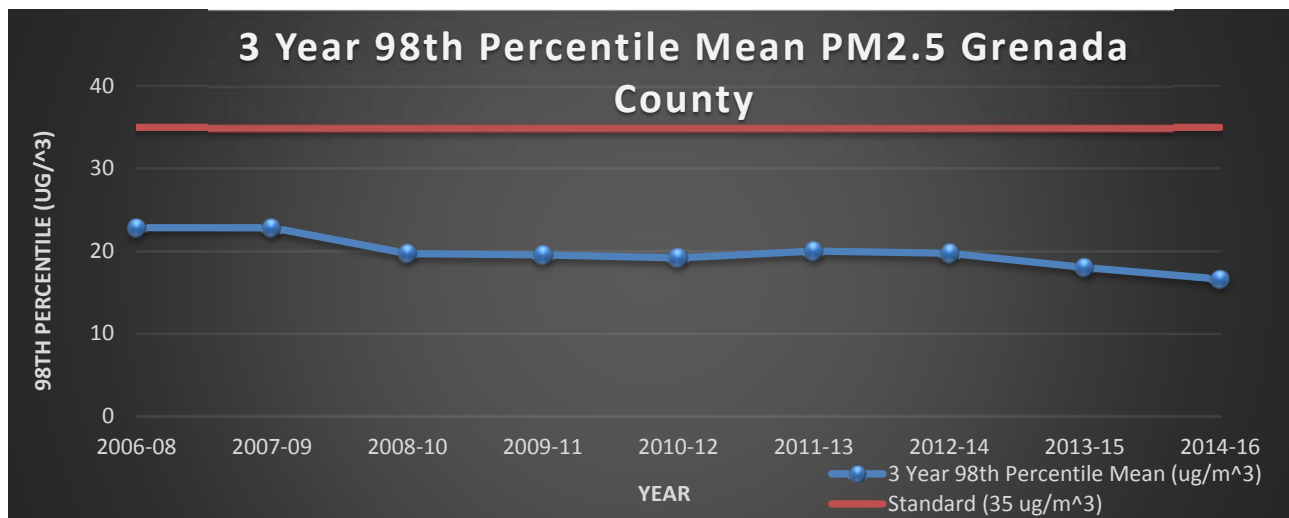
Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual Mean	11.8	10.3	9.2	9.8	9.2	9.4	9.3	8.4*	6.5	7.7*



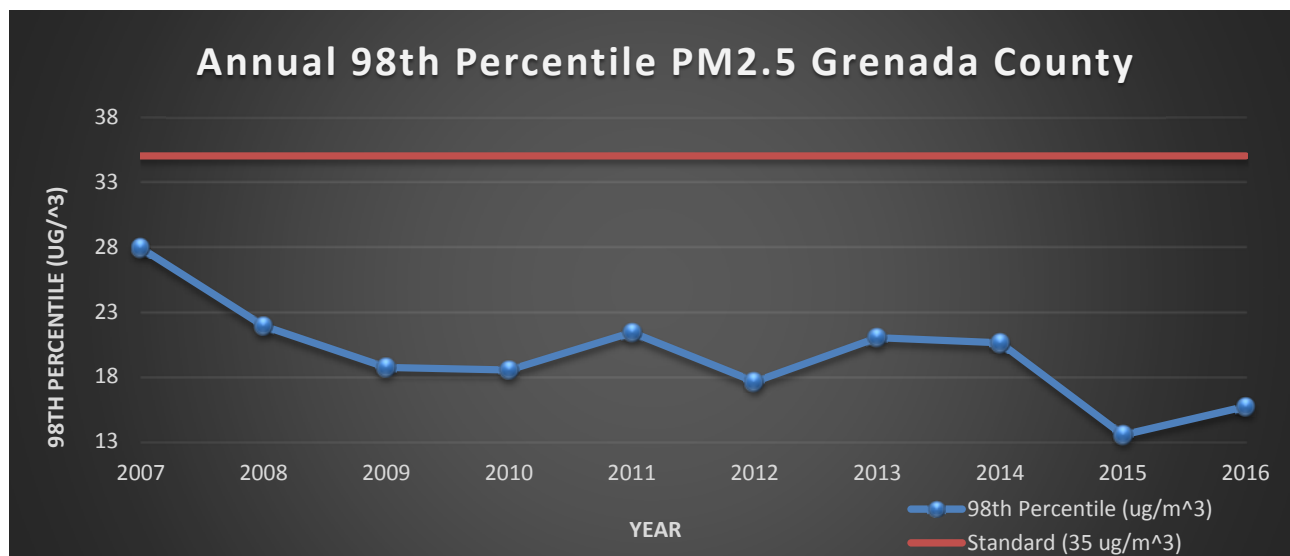
\*Incomplete Data

**Grenada County**  
**PM<sub>2.5</sub>**  
**24-Hour Average (µg/m<sup>3</sup>)**

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual 98 <sup>th</sup> Percentiles	*	23	23	20	20	19	20	20	18	17*

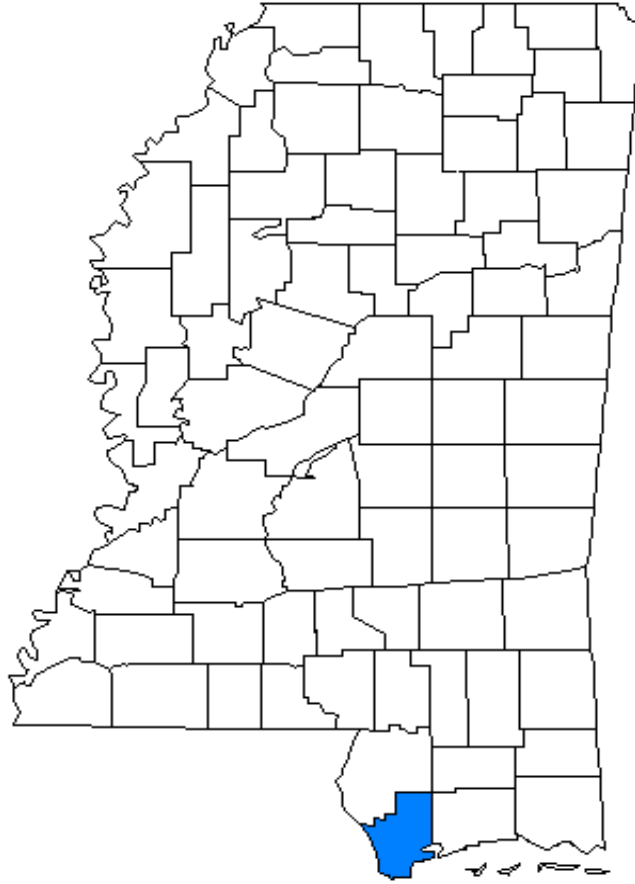


Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 98 <sup>th</sup> Percentile	28	22	19	19	21	18	21	21*	13.5	15.7*

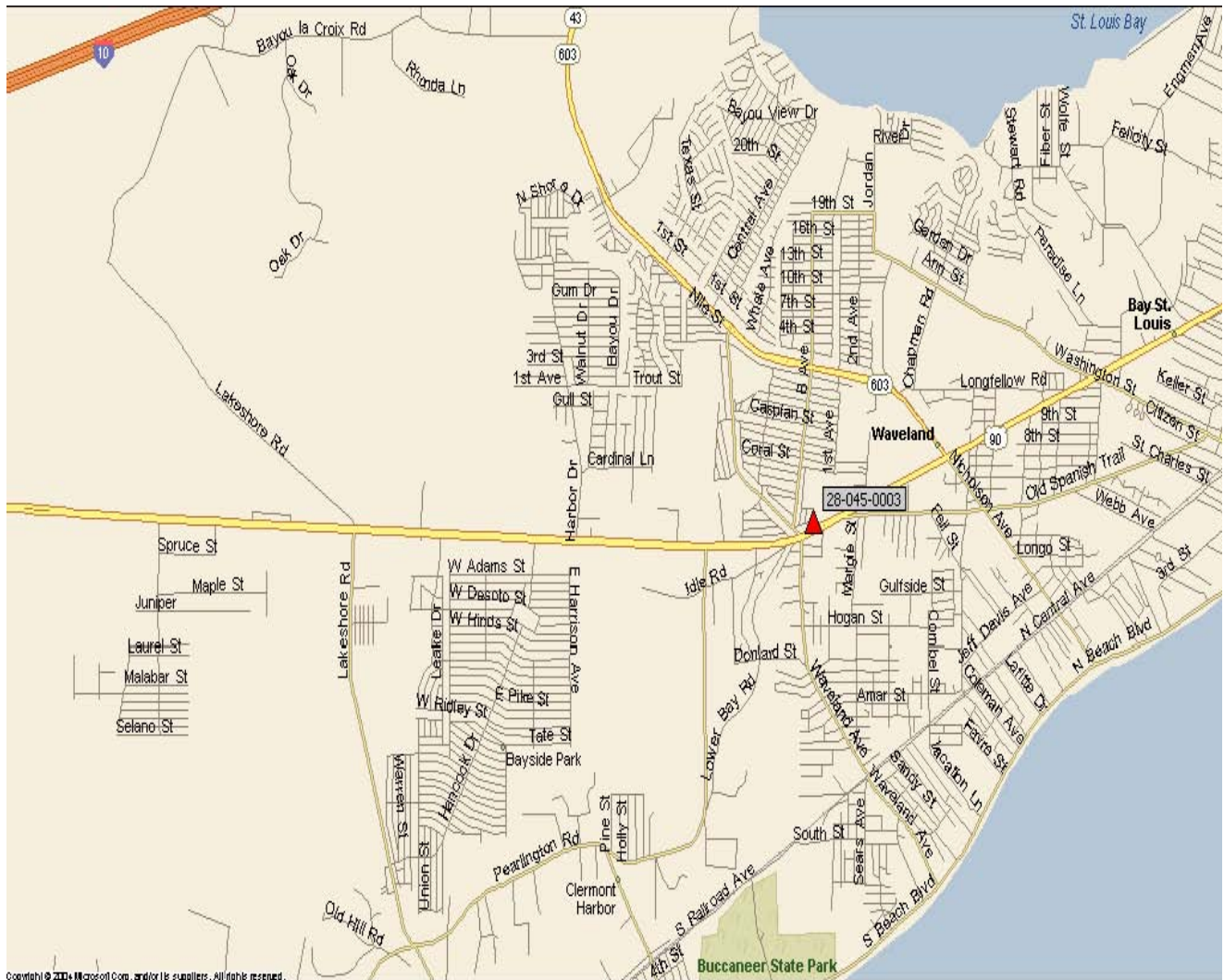


\*Incomplete Data

# Hancock County

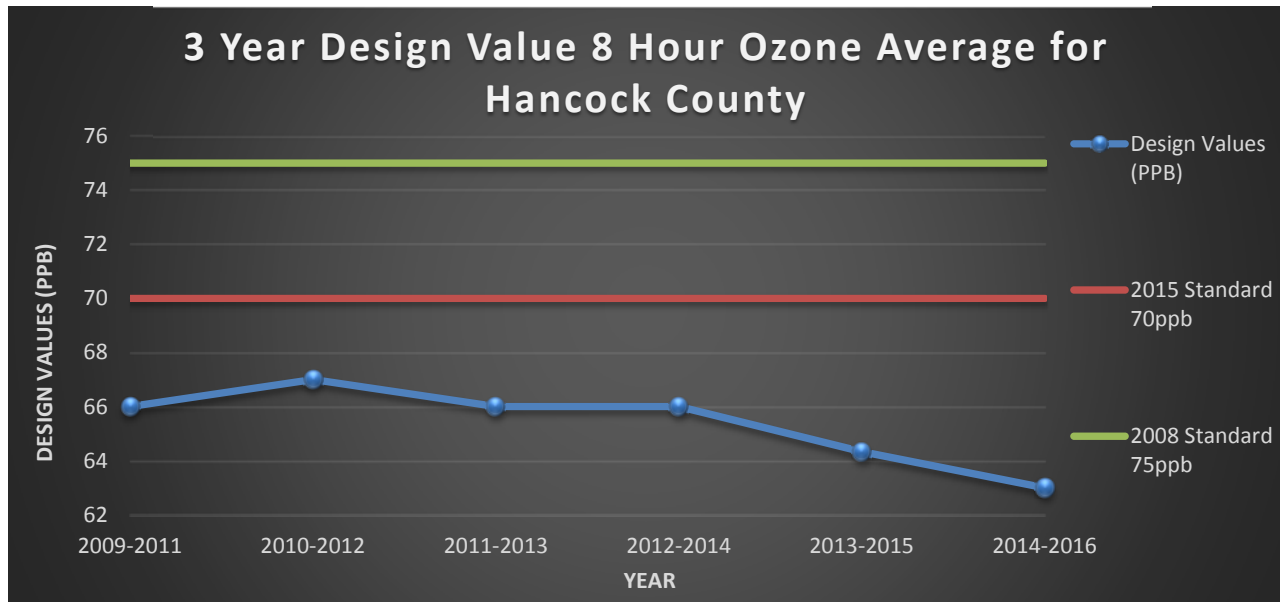


**Hancock County**  
**Monitoring Site No. 28-045-0003**  
**Location**

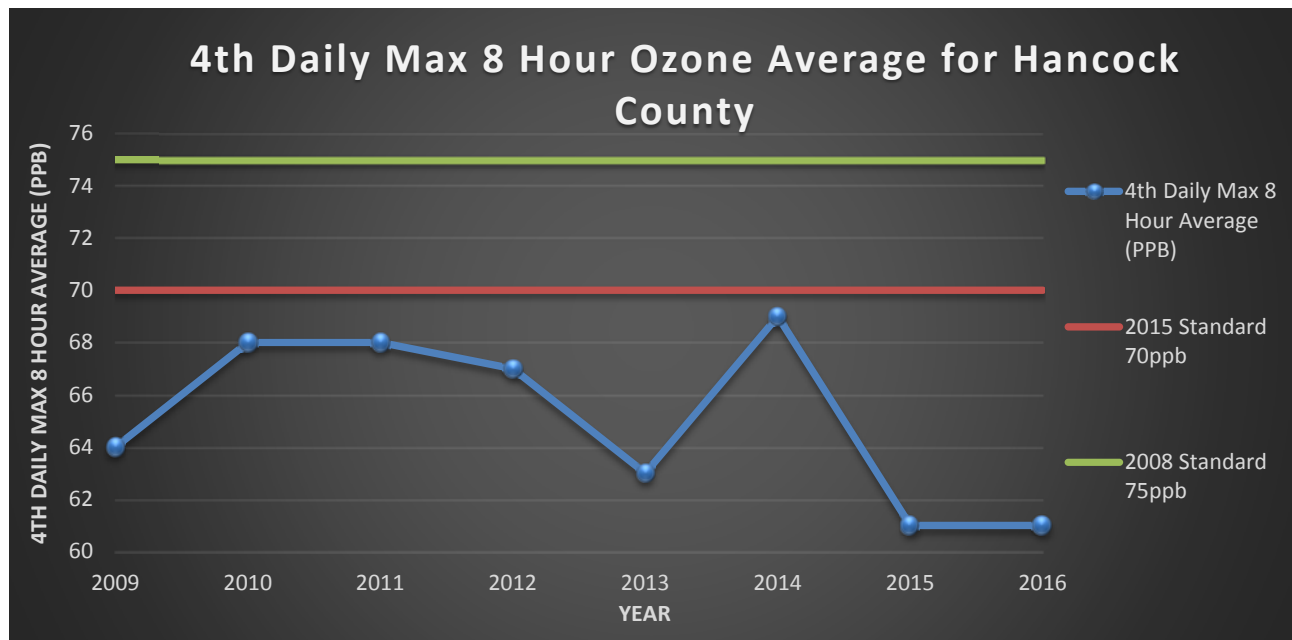


## Hancock County 8-Hour Ozone (ppb)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
Design Value	*	*	*	*	66	67	66	66	64	63



Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 4 <sup>th</sup> Max. 8-Hour Avg.	*	*	64	68	68	67	63	69	61	61

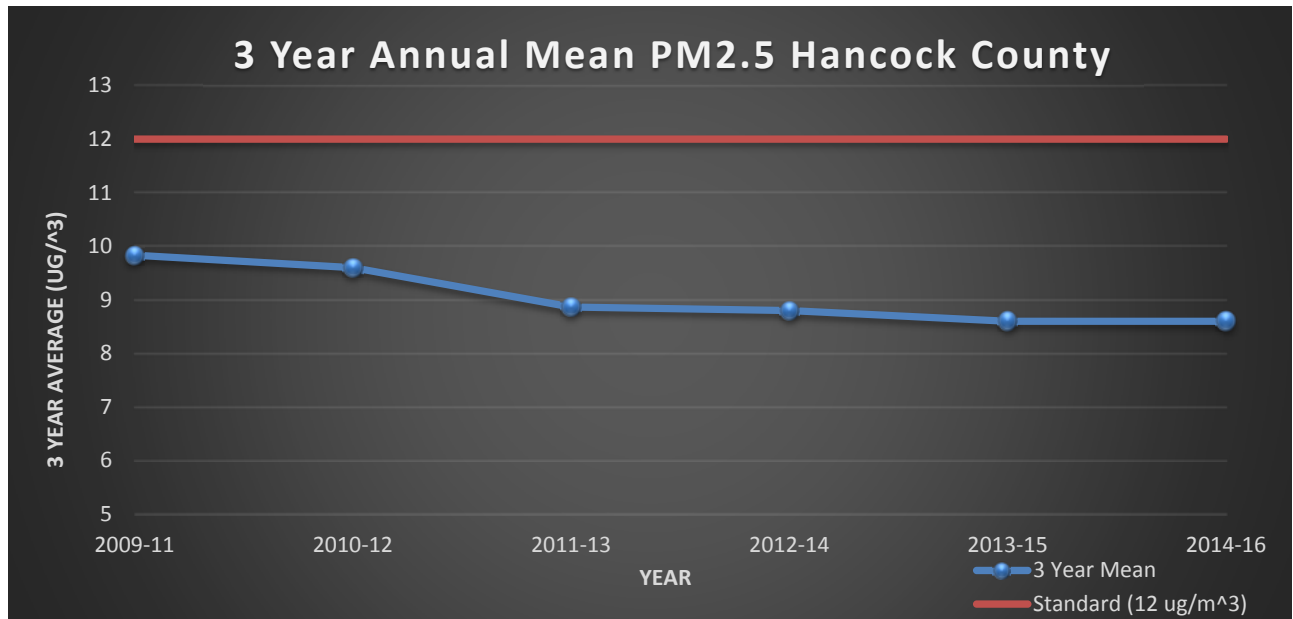


# Hancock County

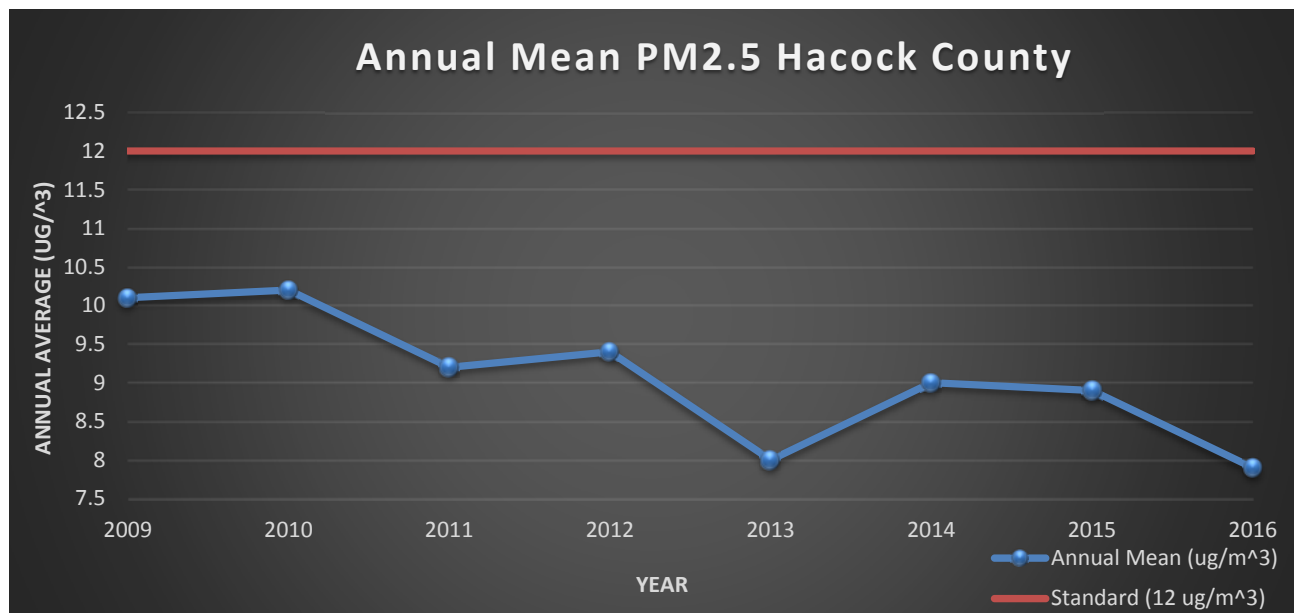
## PM<sub>2.5</sub>

### Annual Mean (µg/m<sup>3</sup>)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual Means	*	*	*	*	9.8	9.6	8.9	8.8	8.6	8.6



Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual Mean	*	*	10.1	10.2	9.2	9.4	8.0	9.0	8.9	7.9

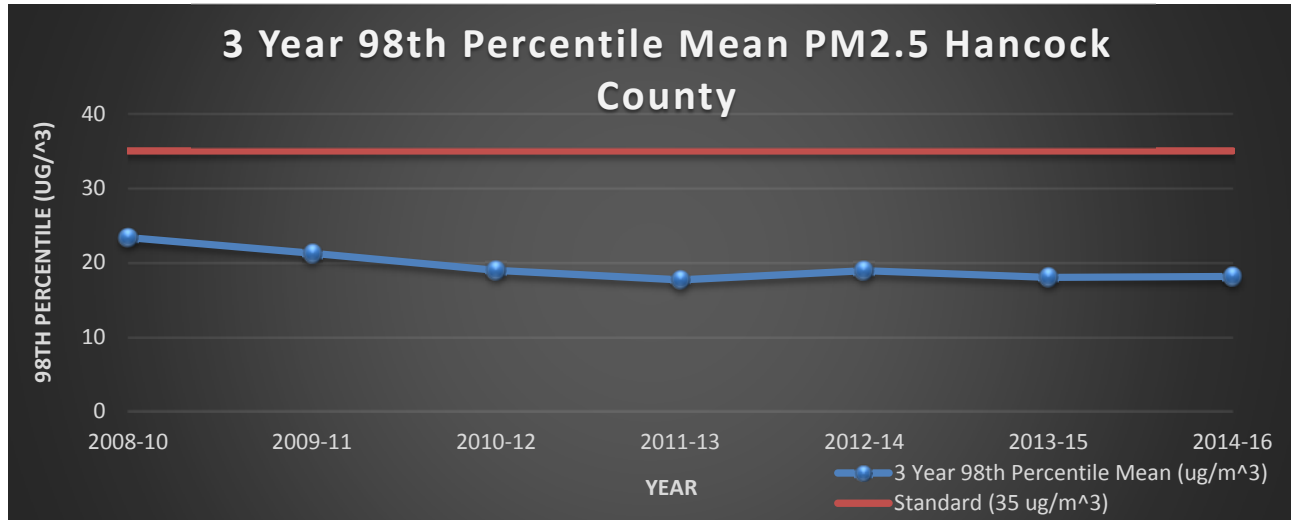


# Hancock County

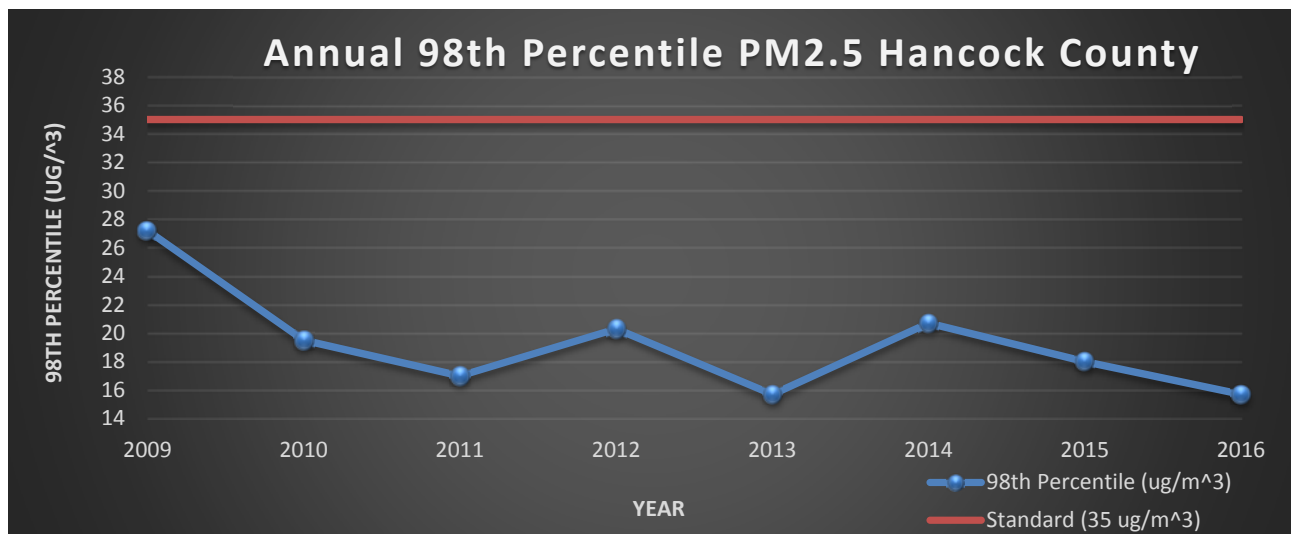
## PM<sub>2.5</sub>

### 24-Hour Average (µg/m<sup>3</sup>)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual 98 <sup>th</sup> Percentiles	*	*	*	23	21	19	18	19	18	18

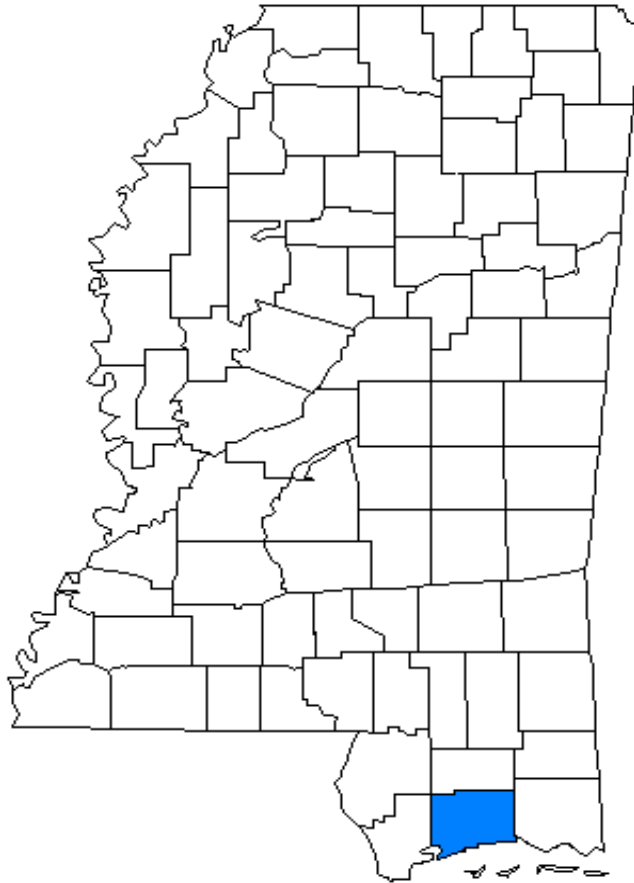


Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 98 <sup>th</sup> Percentile	*	*	27	20	17	20	16	21	18	16

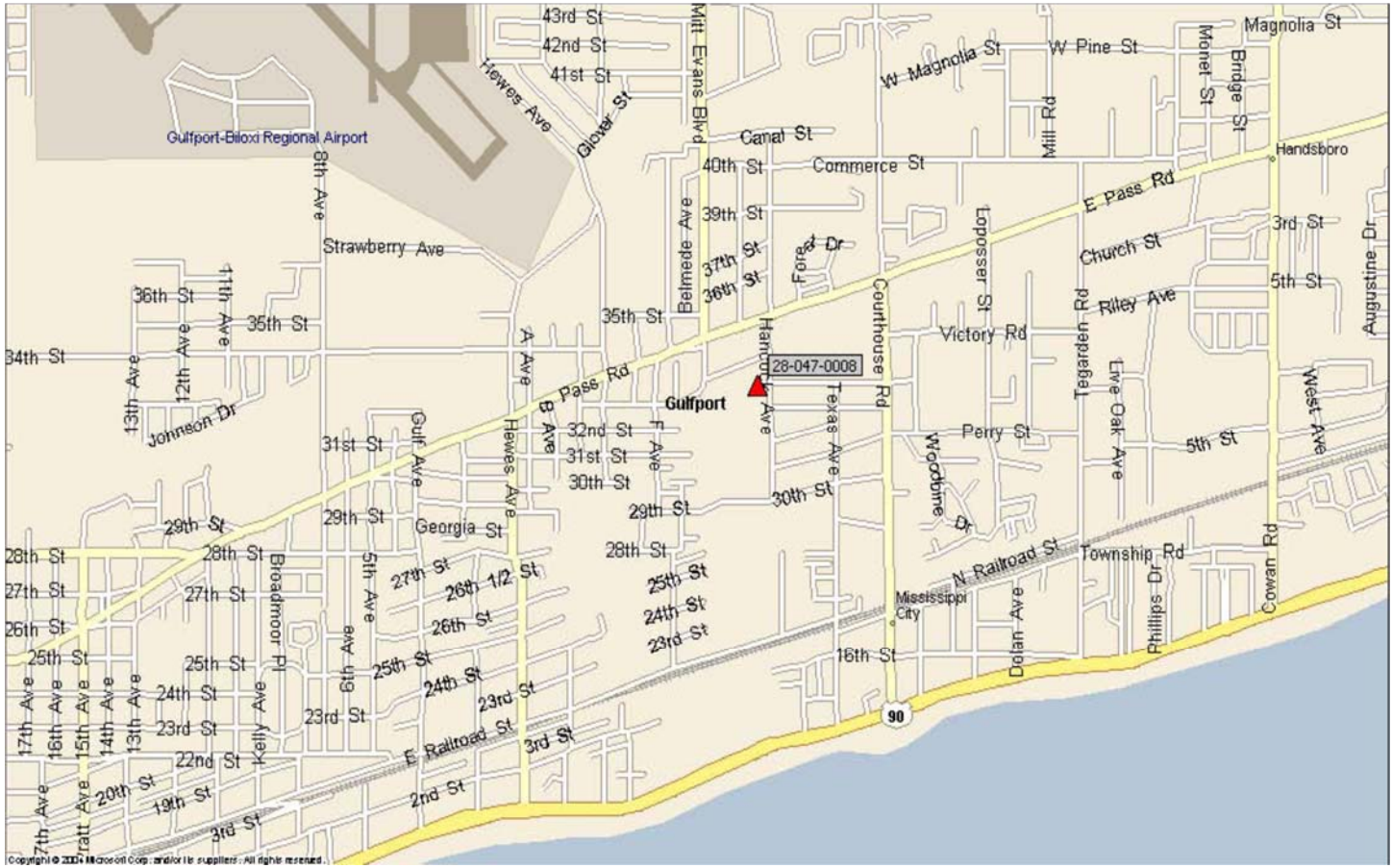




# Harrison County

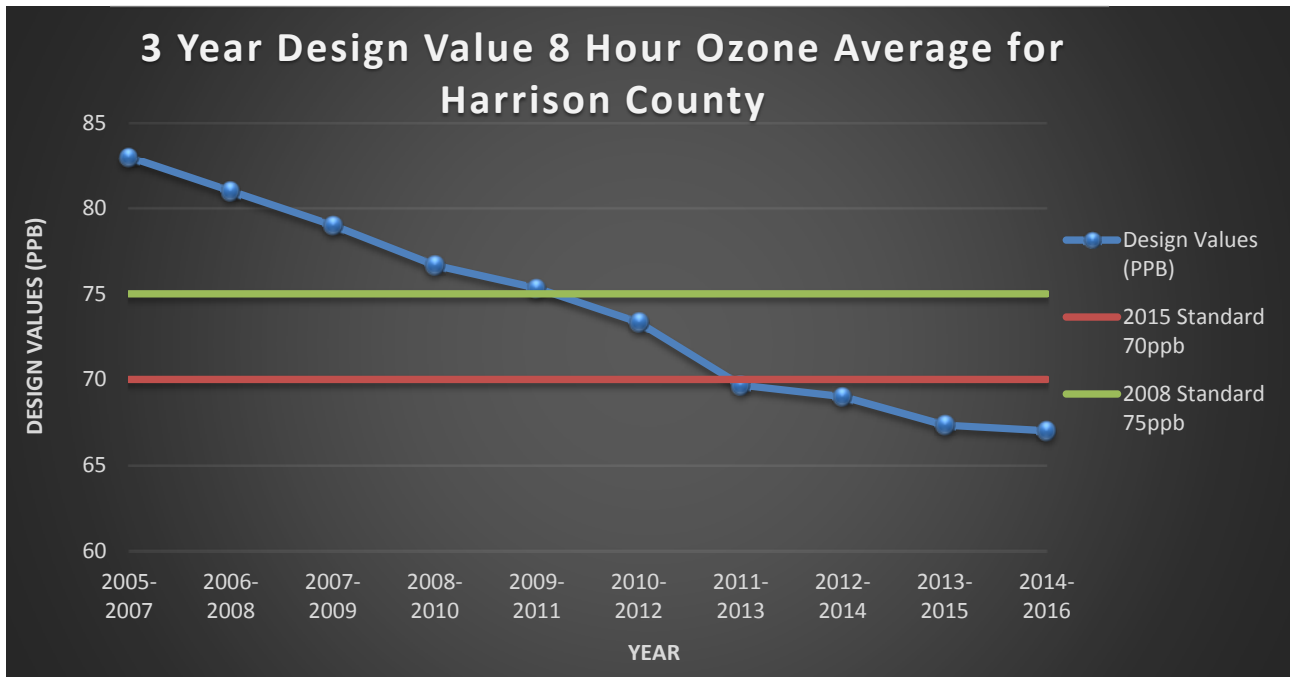


**Harrison County**  
**Monitoring Site No. 28-047-0008**  
**Location**

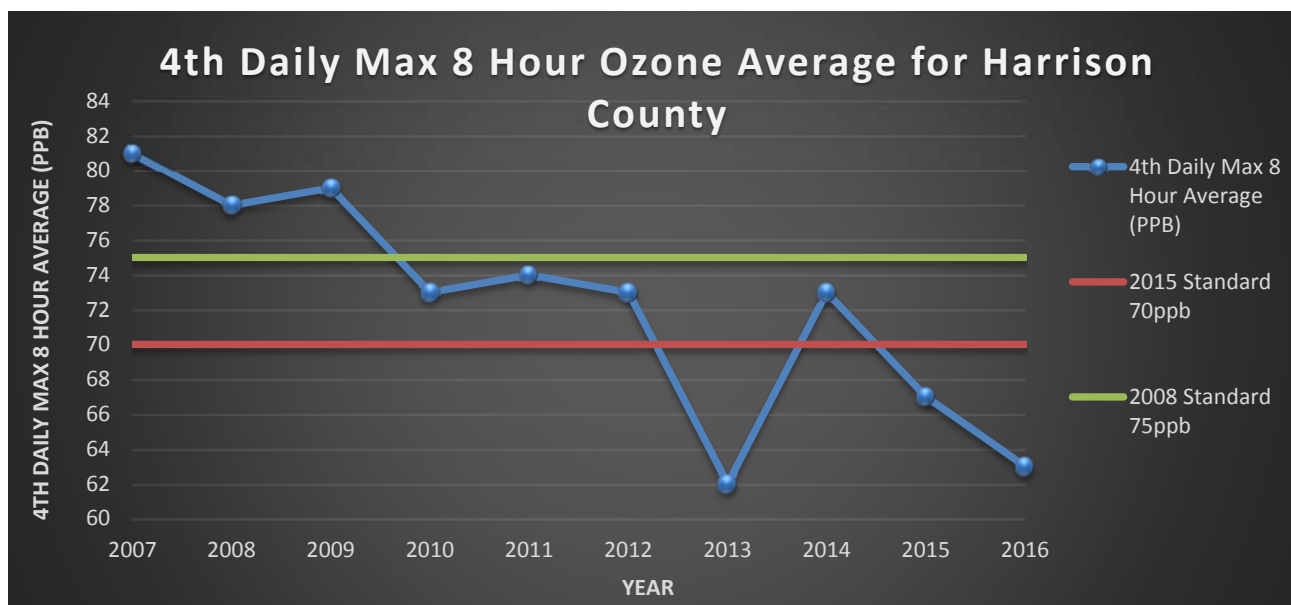


## Harrison County 8-Hour Ozone (ppb)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
Design Value	83	81	79	76	75	73	69	69	67	67



Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 4 <sup>th</sup> Max. 8-Hour Avg.	81	78	79	73	74	73	62	73	67	63

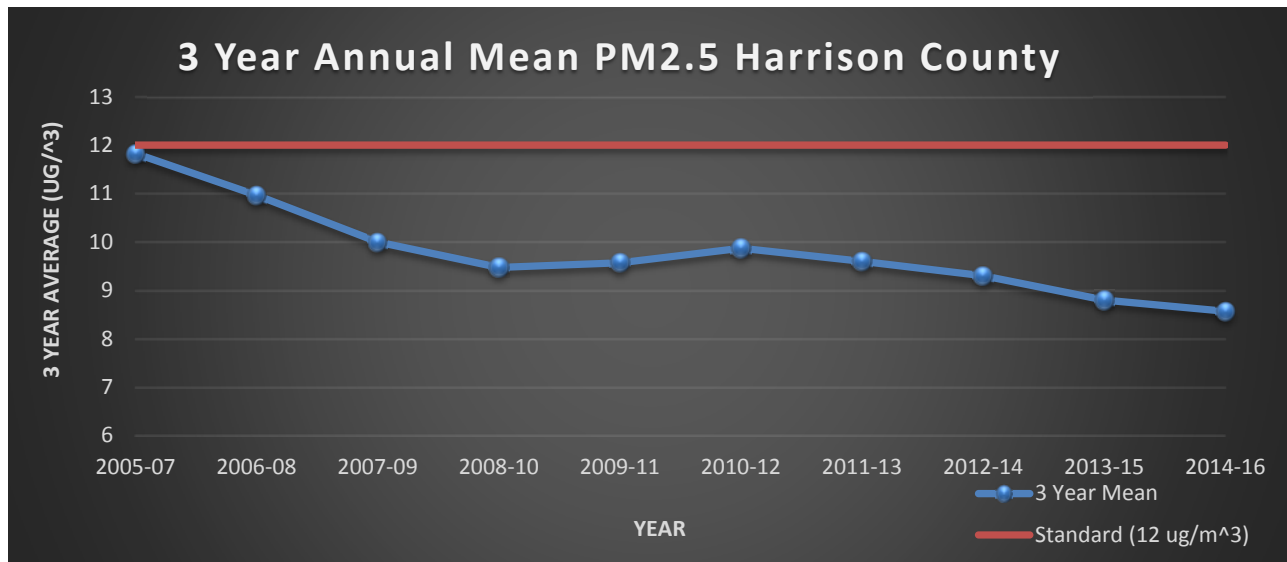


# Harrison County

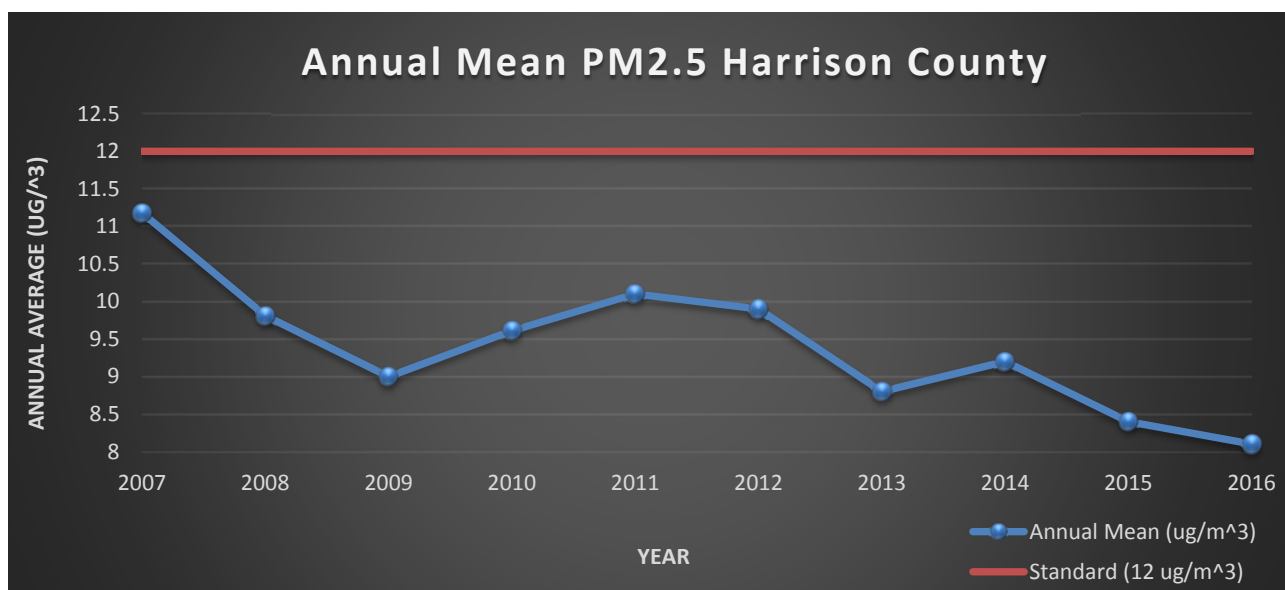
## PM<sub>2.5</sub>

### Annual Mean (µg/m<sup>3</sup>)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual Means	11.8	11.0	10.0	9.5	9.6	9.9	9.6	9.3	8.8	8.6



Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual Mean	11.2	9.8	9.0	9.6	10.1	9.9	8.8	9.2	8.4	8.1

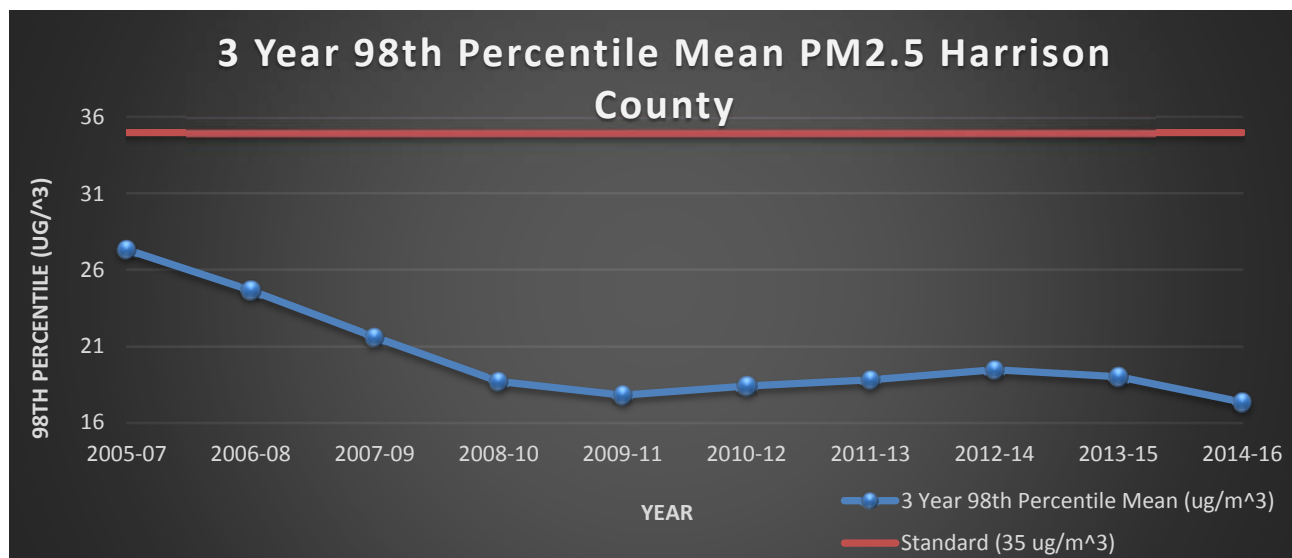


# Harrison County

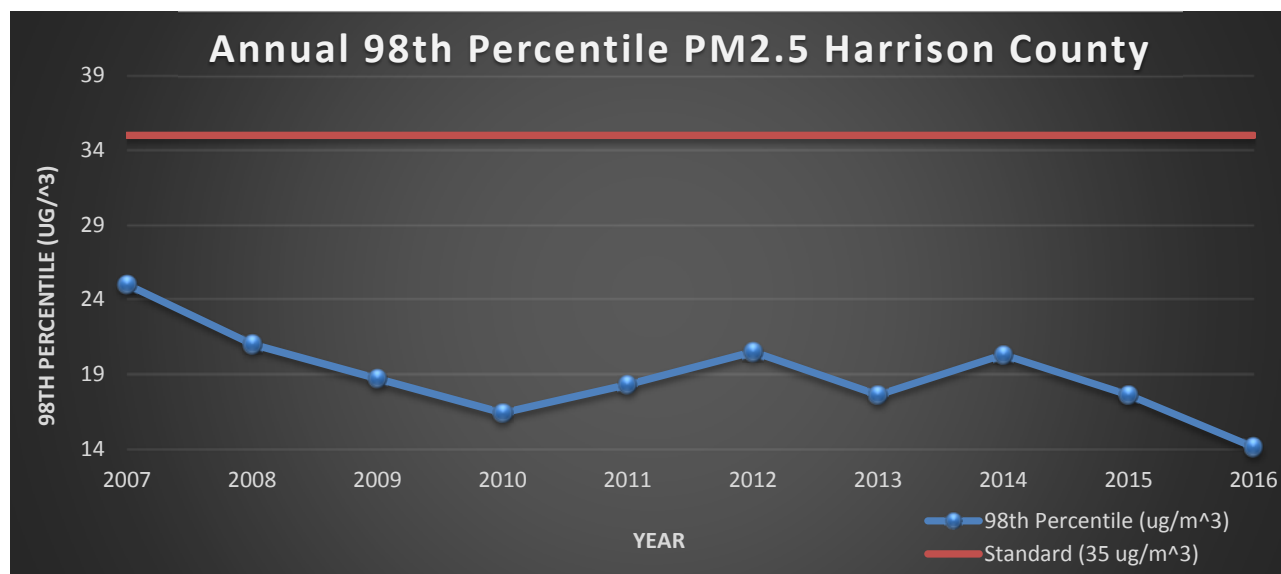
## PM<sub>2.5</sub>

### 24-Hour Average (µg/m<sup>3</sup>)

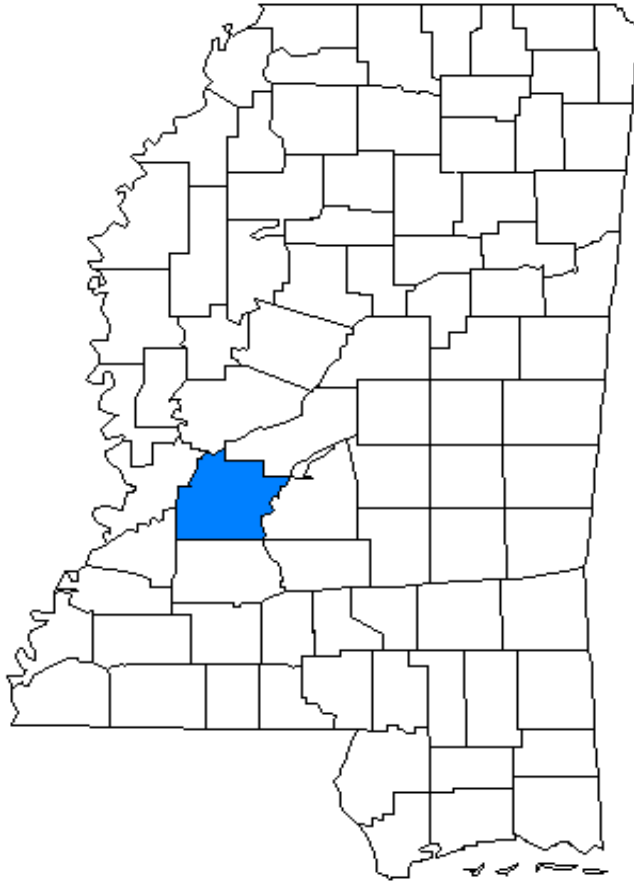
3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual 98 <sup>th</sup> Percentiles	27	25	22	19	18	18	19	19	19	17



Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 98 <sup>th</sup> Percentile	25	21	19	16	18	21	18	20	18	14

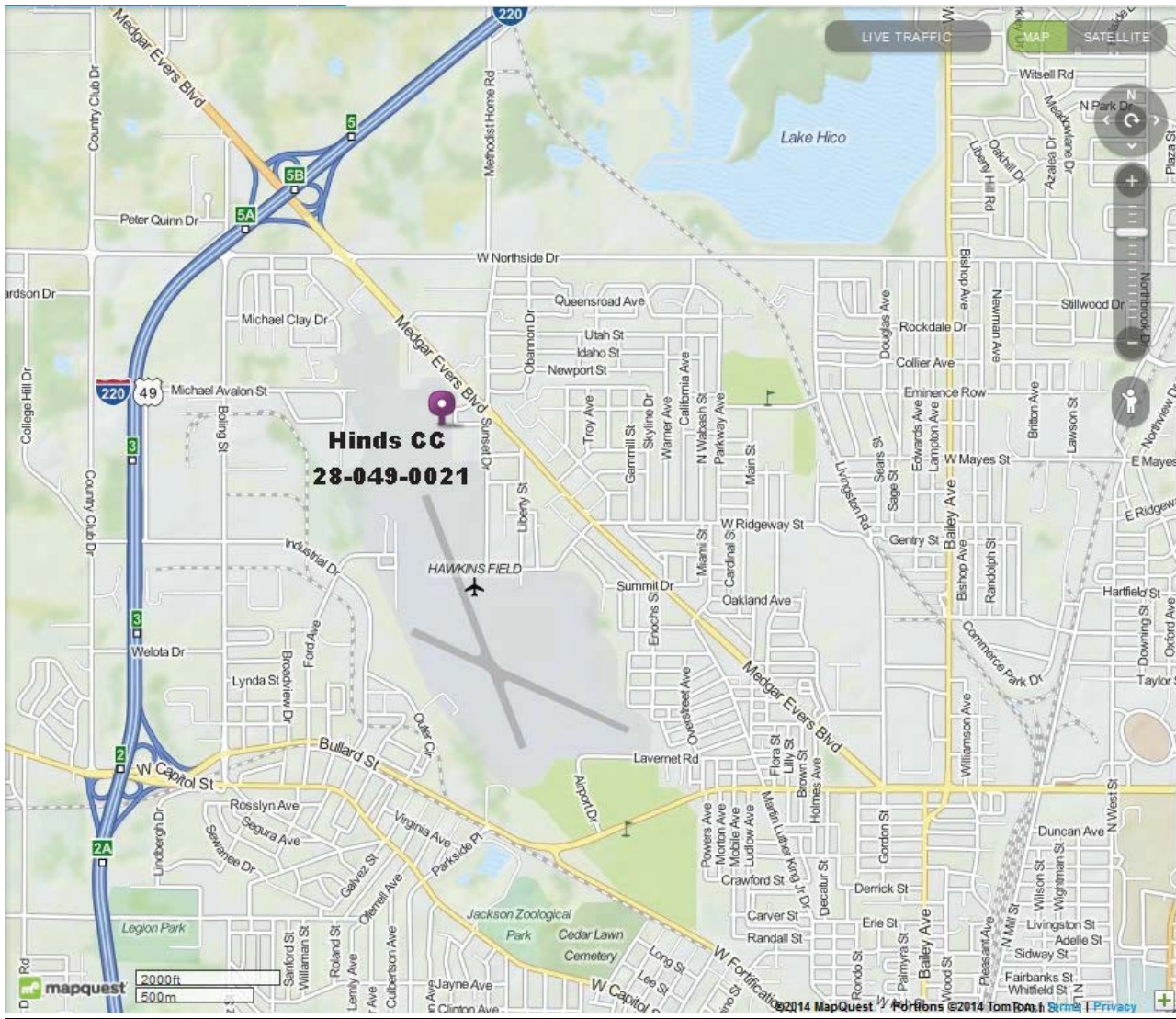


# Hinds County





**Hinds County (CC)**  
**Monitoring Site No. 28-049-0021**

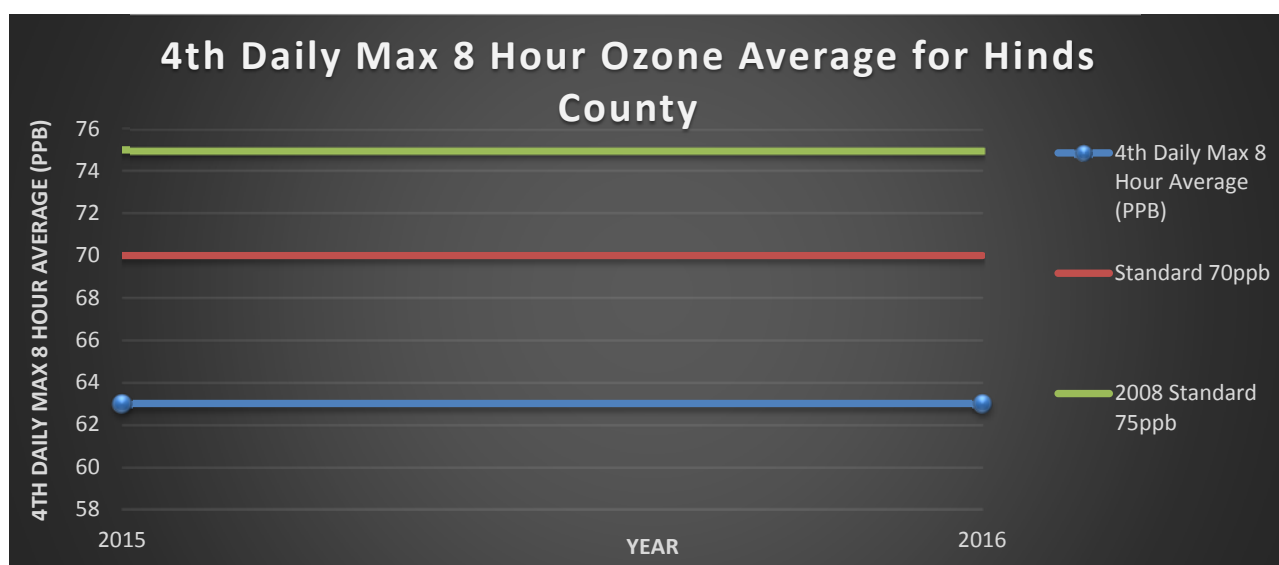


\*Incomplete Data: Hinds CC Site not operational until April 2015.

## Hinds County (CC) 8-Hour Ozone (ppb)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
Design Value	*	*	*	*	*	*	*	*	*	*

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 4 <sup>th</sup> Max. 8-Hour Avg.	*	*	*	*	*	*	*	*	63*	63



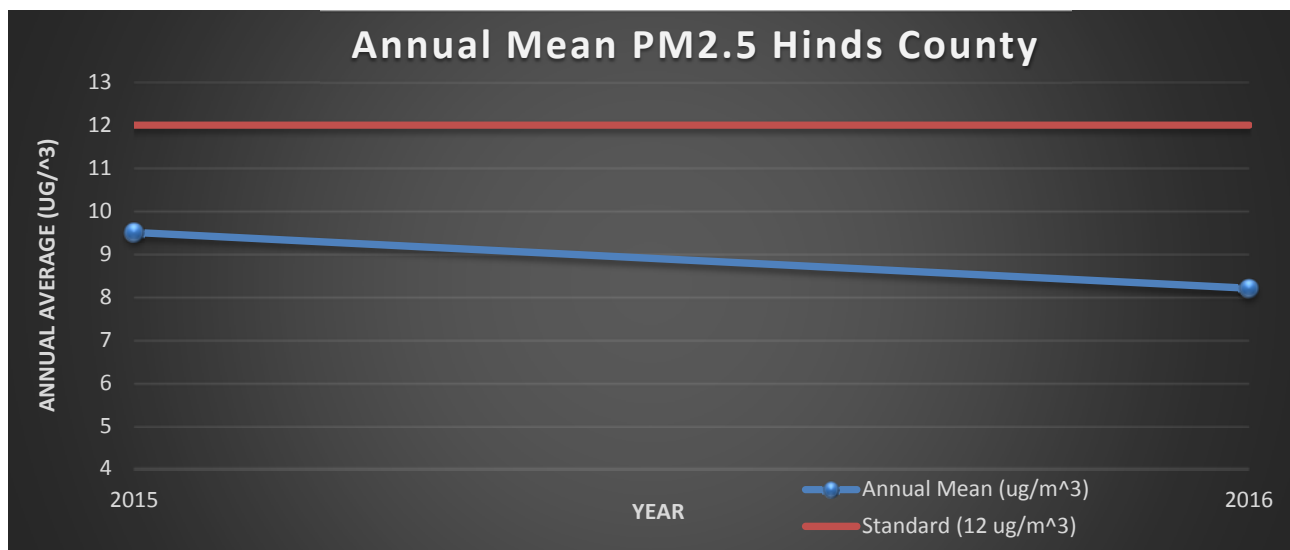
\*Incomplete Data: Hinds CC Site not operational until April 2015.



**Hinds County (CC)**  
**PM<sub>2.5</sub>**  
**Annual Mean (µg/m<sup>3</sup>)**

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual Means	*	*	*	*	*	*	*	*	*	*

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual Mean	*	*	*	*	*	*	*	*	9.5*	8.2

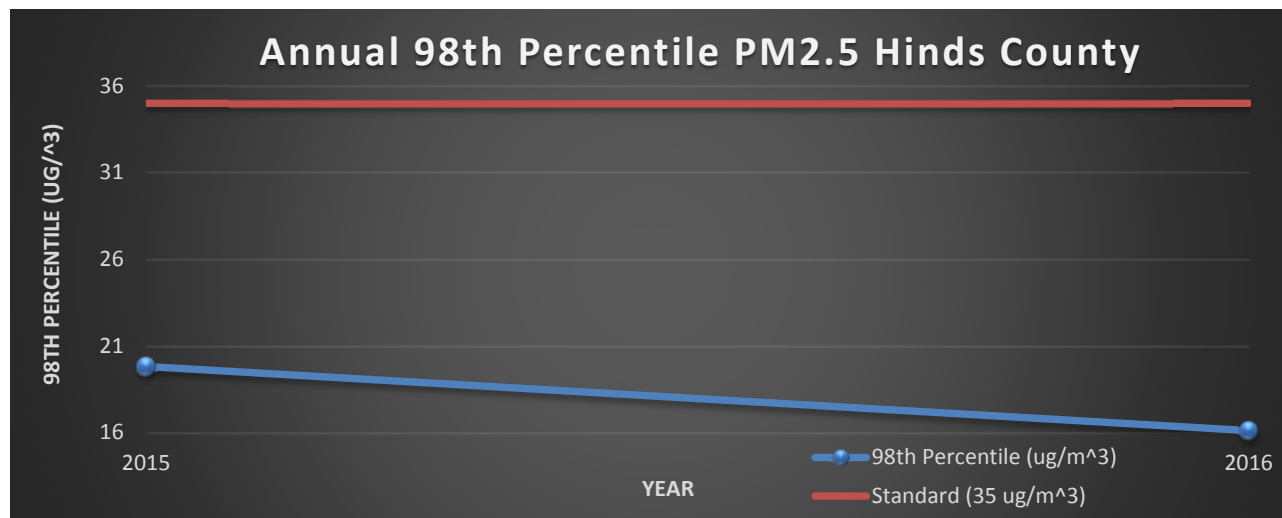


\*Incomplete Data: Hinds CC Site not operational until April 2015.

**Hinds County (CC)**  
**PM<sub>2.5</sub>**  
**24-Hour Average (µg/m<sup>3</sup>)**

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual 98 <sup>th</sup> Percentiles	*	*	*	*	*	*	*	*	*	*

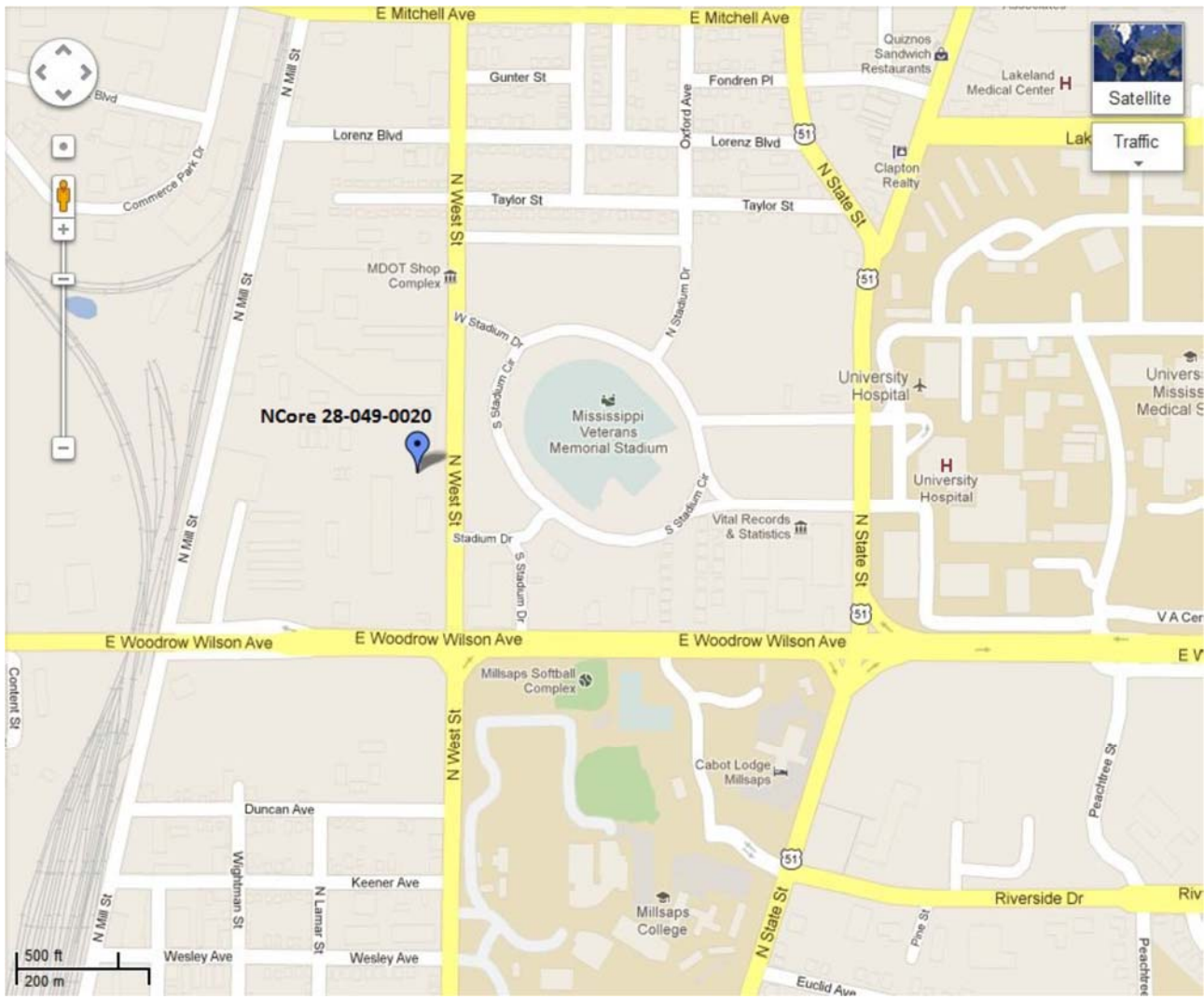
Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 98 <sup>th</sup> Percentile	*	*	*	*	*	*	*	*	19.8*	16.1



\*Incomplete Data: Hinds CC Site not operational until April 2015.

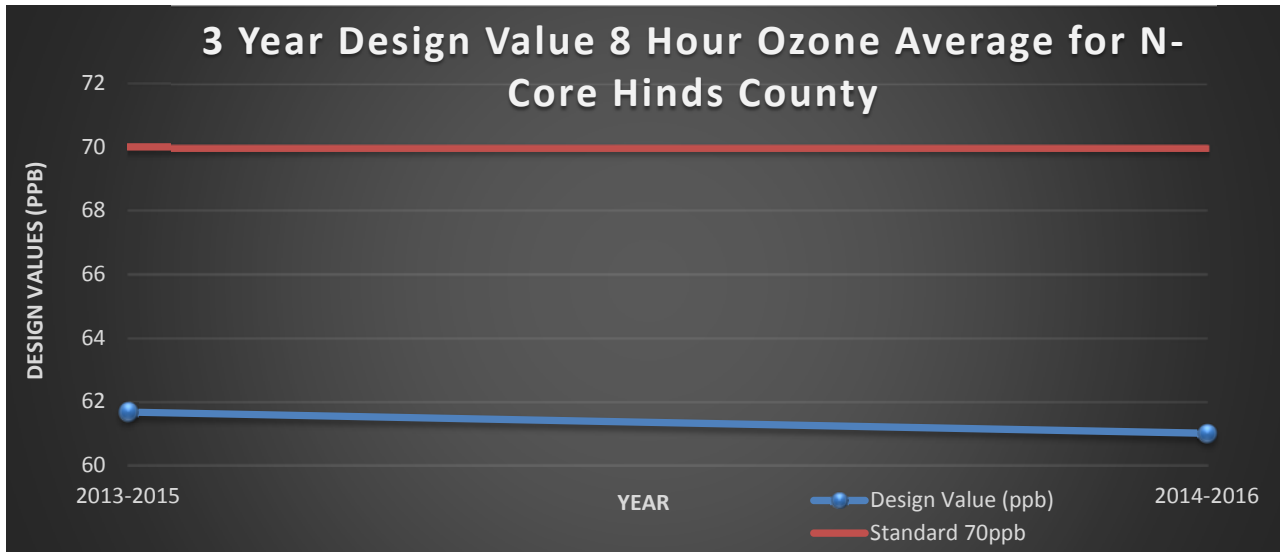
# Hinds County (N-CORE)

## Monitoring Site No. 28-049-0020

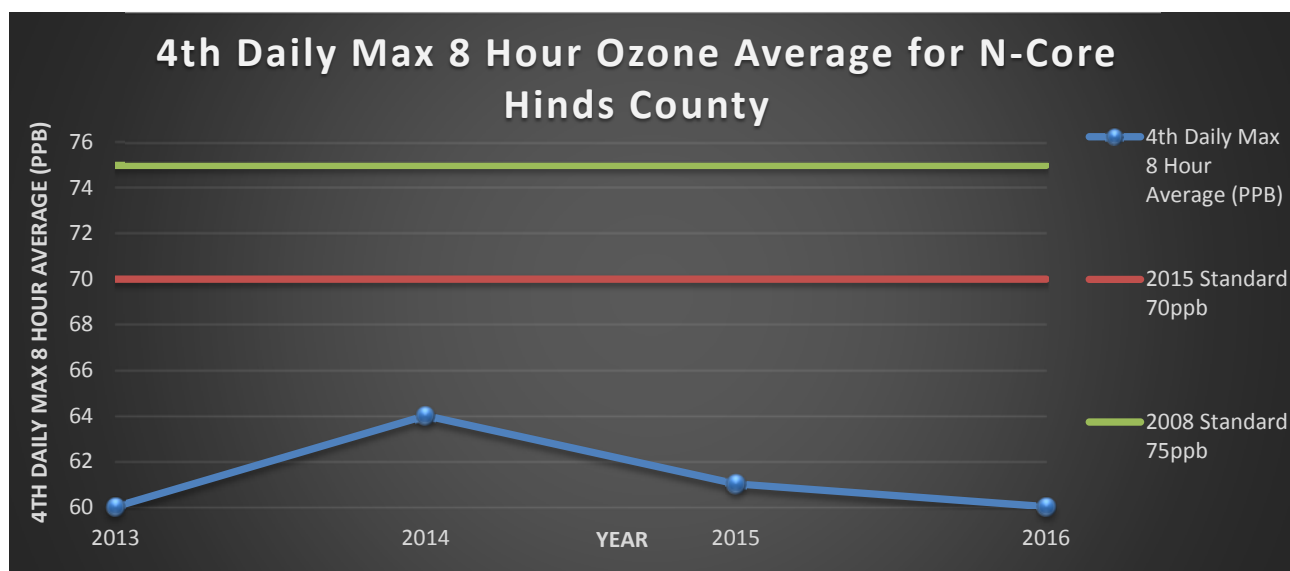


## Hinds County (N-CORE) 8-Hour Ozone (ppb)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
Design Value	*	*	*	*	*	*	*	*	61*	61



Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 4 <sup>th</sup> Max. 8-Hour Avg.	*	*	*	*	*	*	60*	64	61	60



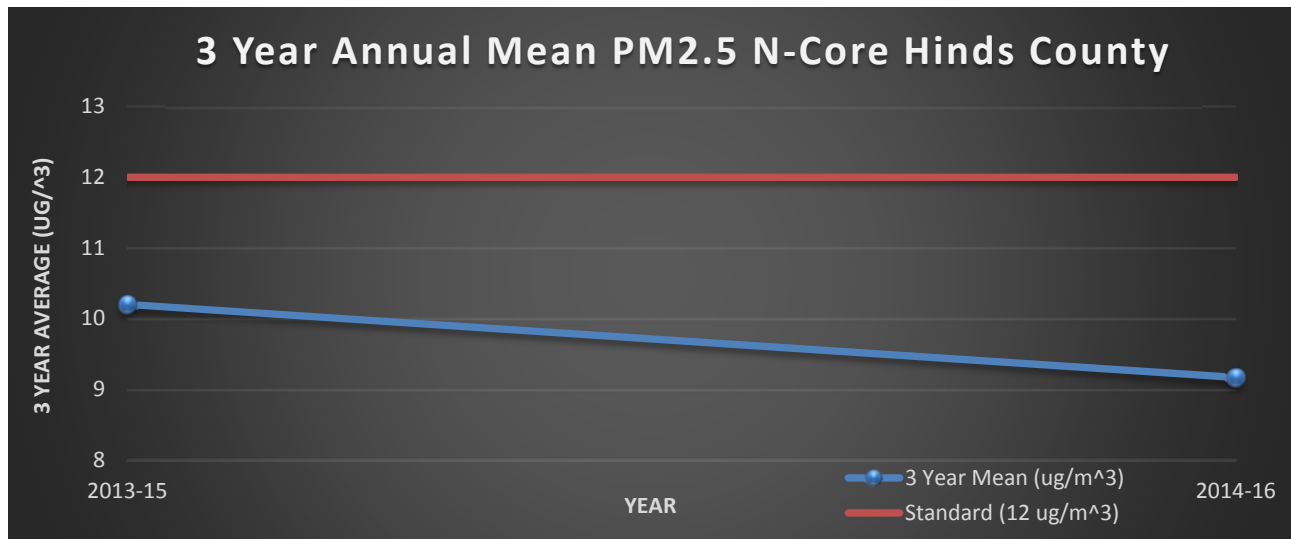
\*Incomplete Data: N-CORE Site started operations July 2013.

## Hinds County (N-CORE)

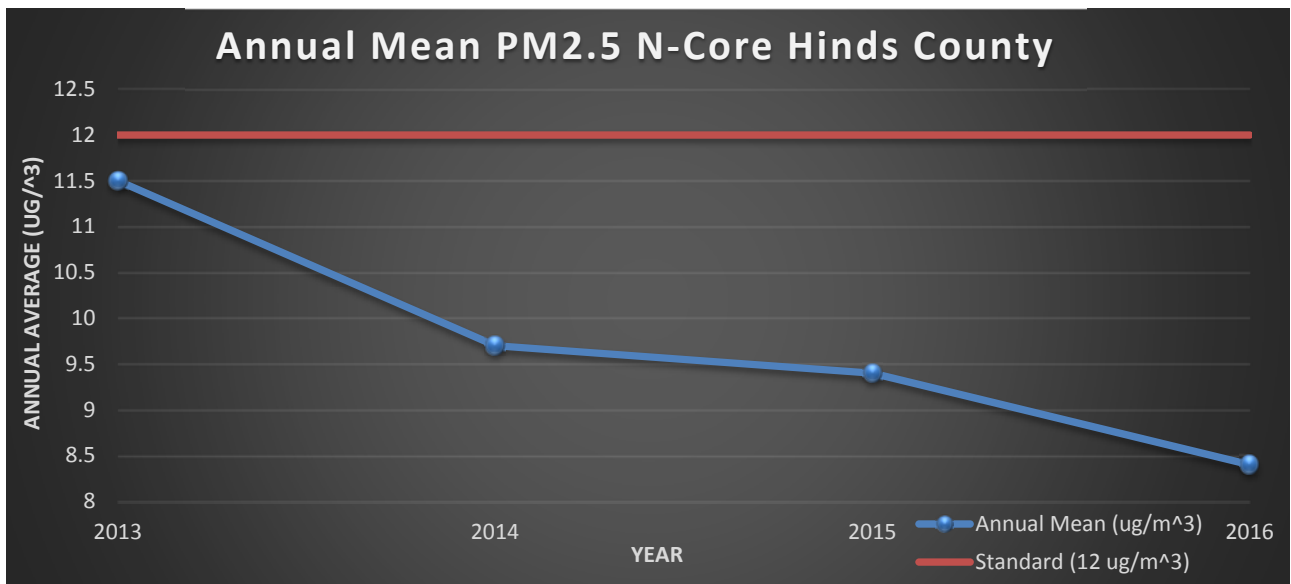
### PM<sub>2.5</sub>

### Annual Mean (µg/m<sup>3</sup>)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual Means	*	*	*	*	*	*	*	*	10.2*	9.2



Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual Mean	*	*	*	*	*	*	11.5*	9.7	9.4	8.4



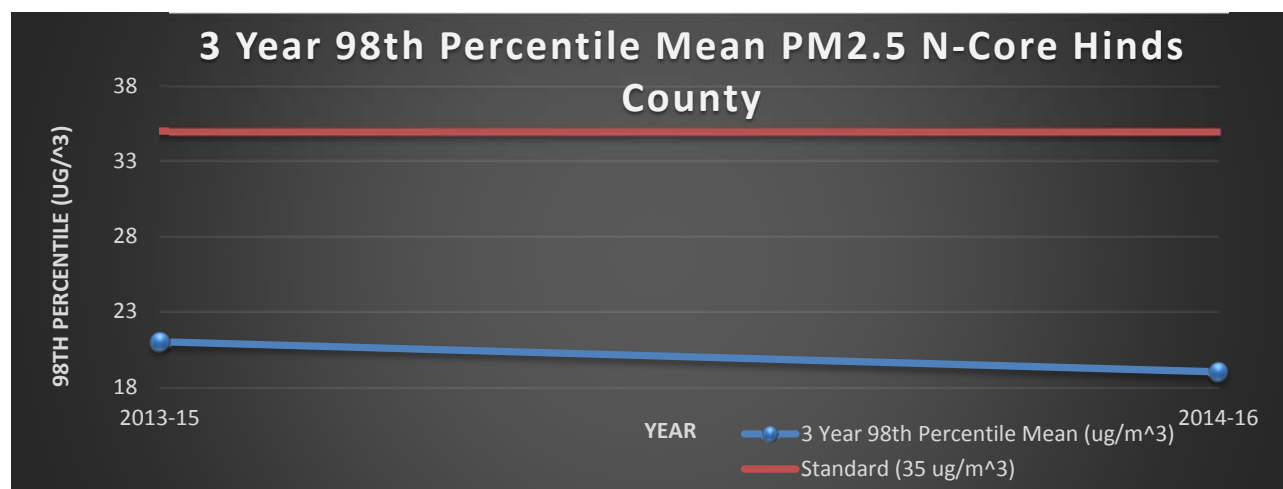
\*Incomplete Data: N-CORE Site started operations July 2013.

## Hinds County (N-CORE)

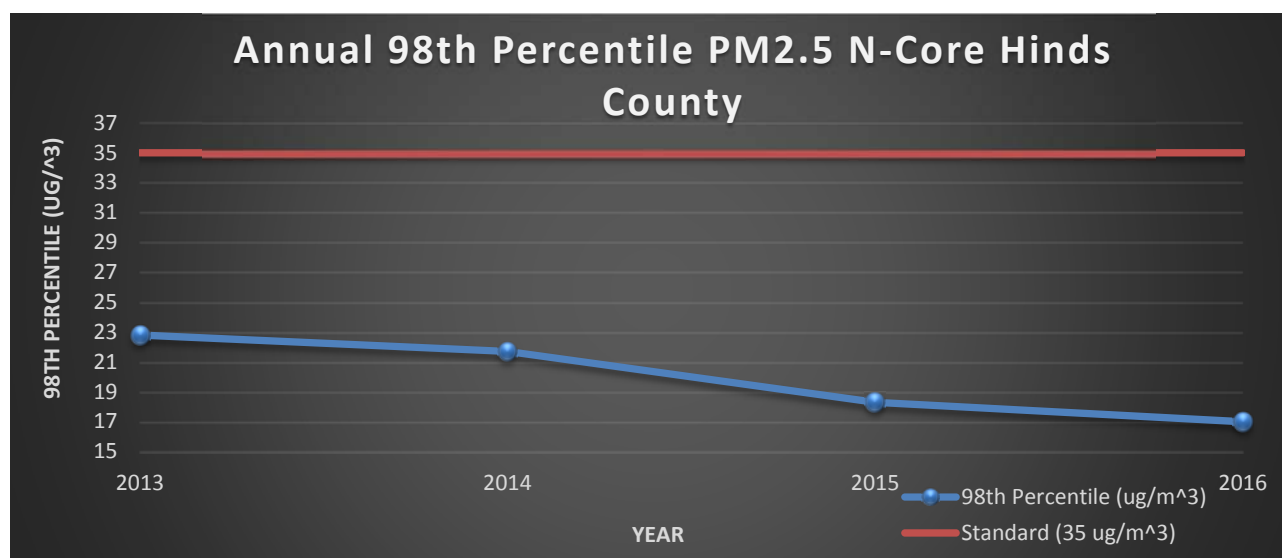
### PM<sub>2.5</sub>

### 24-Hour Average (µg/m<sup>3</sup>)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual 98 <sup>th</sup> Percentiles	*	*	*	*	*	*	*	*	21*	19



Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 98 <sup>th</sup> Percentile	*	*	*	*	*	*	23*	22	18	17



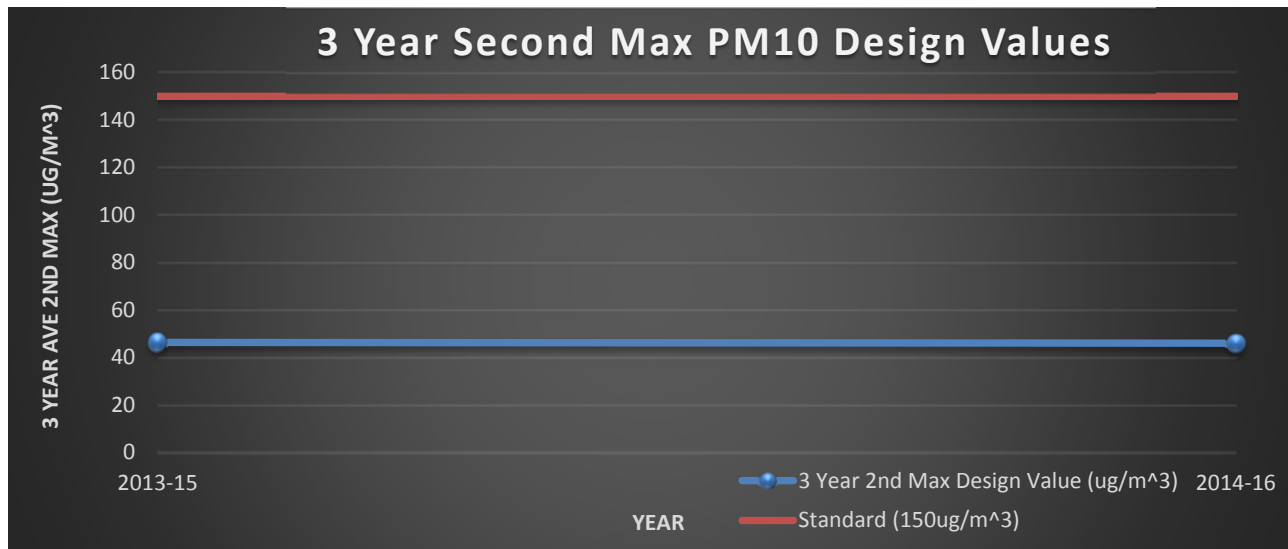
\*Incomplete Data: N-CORE Site started operations July 2013.

## Hinds County (N-CORE)

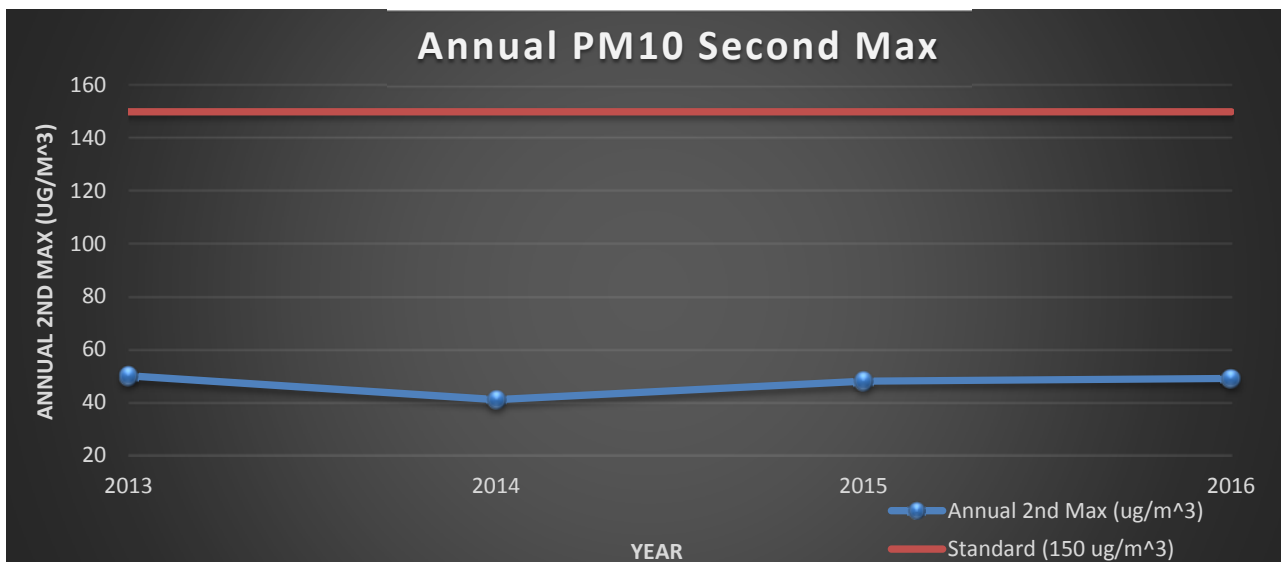
### PM<sub>10</sub>

### 3-Year Average of the Annual 2<sup>nd</sup> Max (µg/m<sup>3</sup>)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Ave of the Annual 2 <sup>nd</sup> Max	*	*	*	*	*	*	*	*	46.3*	46*



Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 2 <sup>nd</sup> Max	*	*	*	*	*	*	50*	41	48*	49*



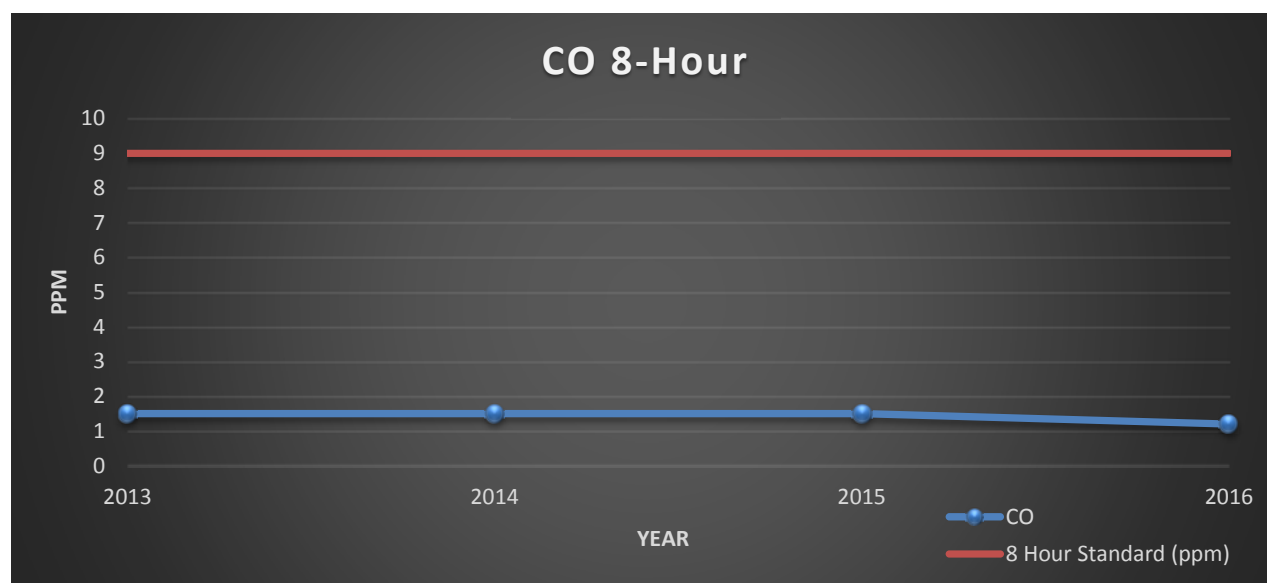
\*Incomplete Data: N-CORE Site started operations July 2013.

# Hinds County (N-CORE)

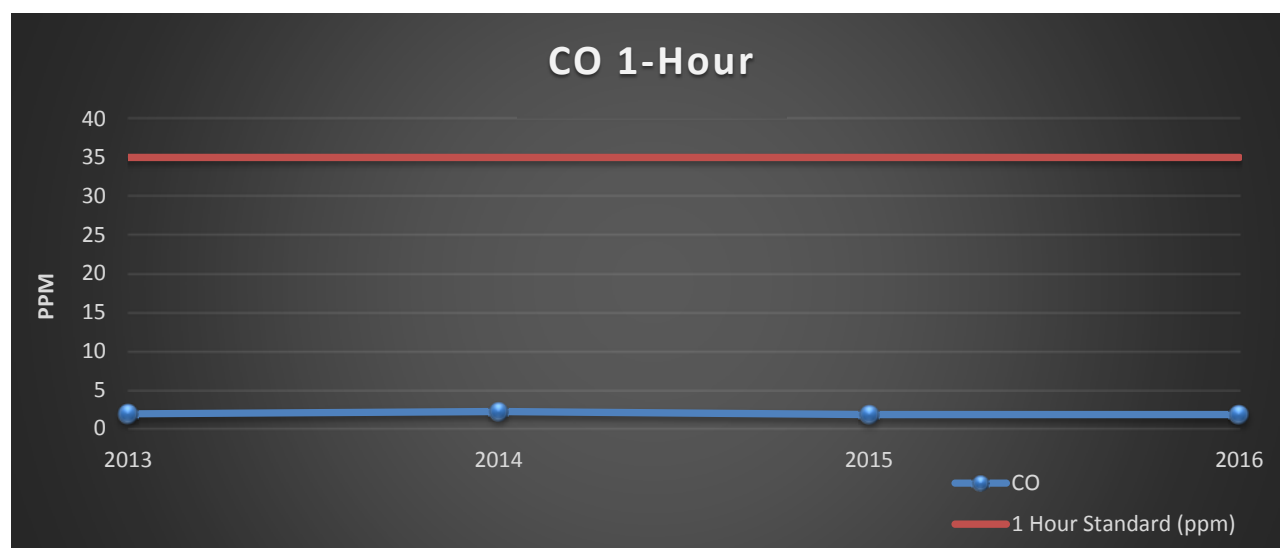
## CO

### 8-Hour and 1- Hour Average (ppm)

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 2 <sup>nd</sup> Max	*	*	*	*	*	*	1.5*	1.5	1.5	1.2



Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 2 <sup>nd</sup> Max	*	*	*	*	*	*	1.9*	2.2	1.8	1.8



\*Incomplete Data: N-CORE Site started operations July 2013.

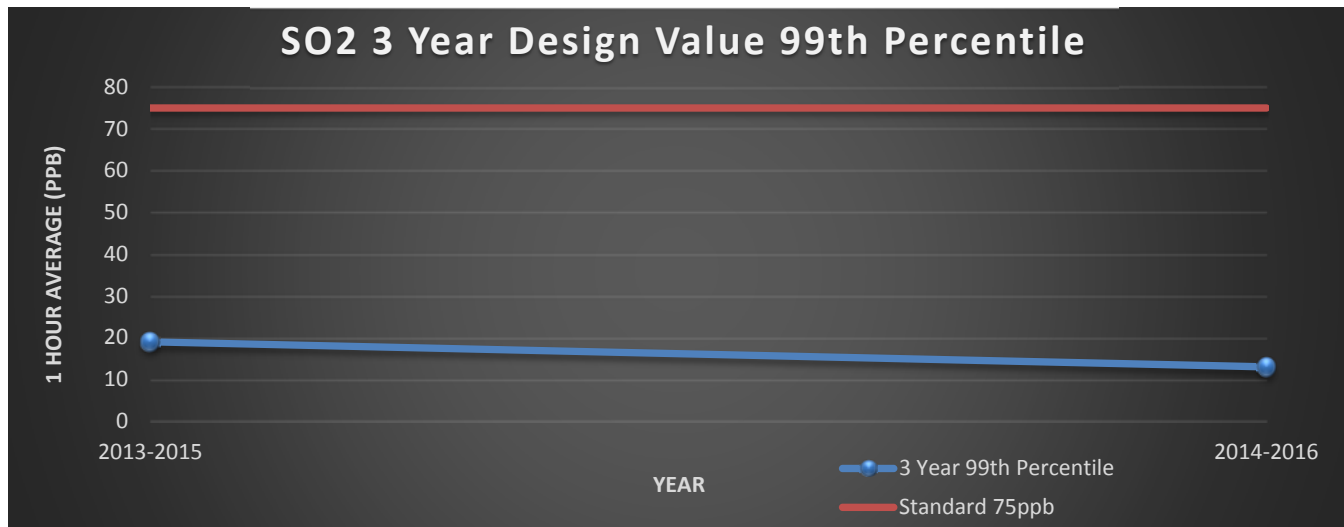


# Hinds County (N-CORE)

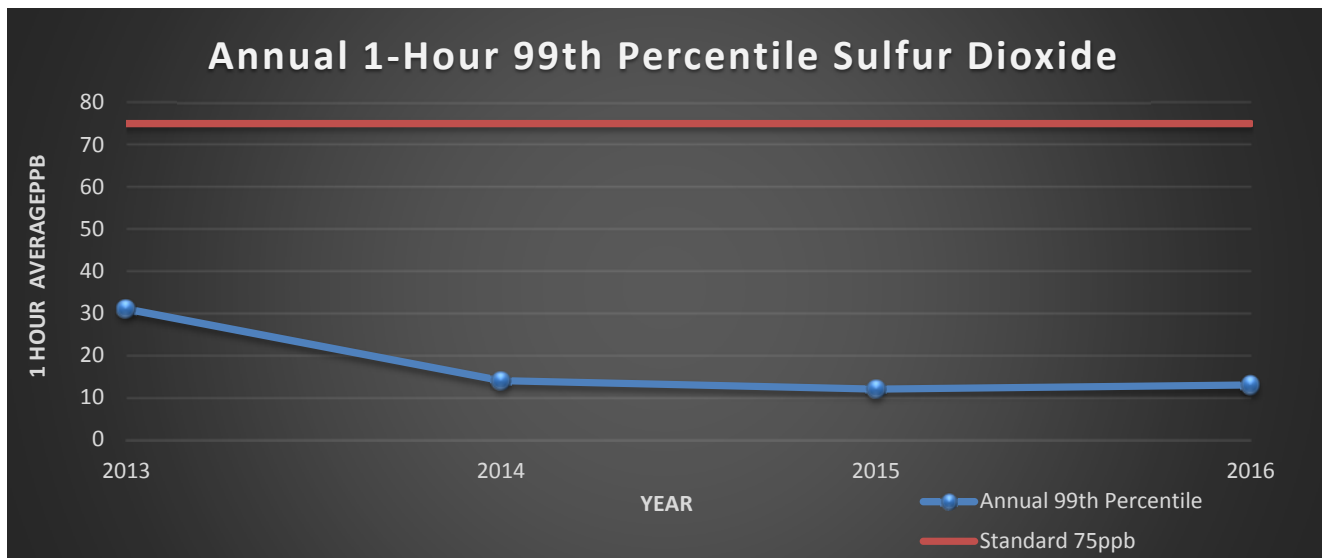
## Sulfur Dioxide

### 1-Hour Average (ppb)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual 99 <sup>th</sup> Percentiles									19*	13



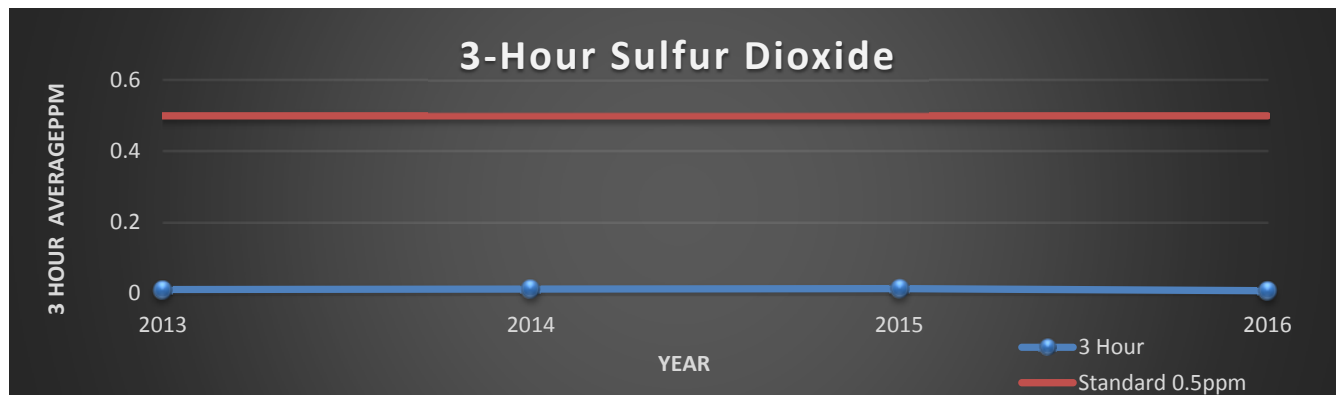
Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 99 <sup>th</sup> Percentiles							31*	14	12	13



\*Incomplete Data: N-CORE Site started operations July 2013.

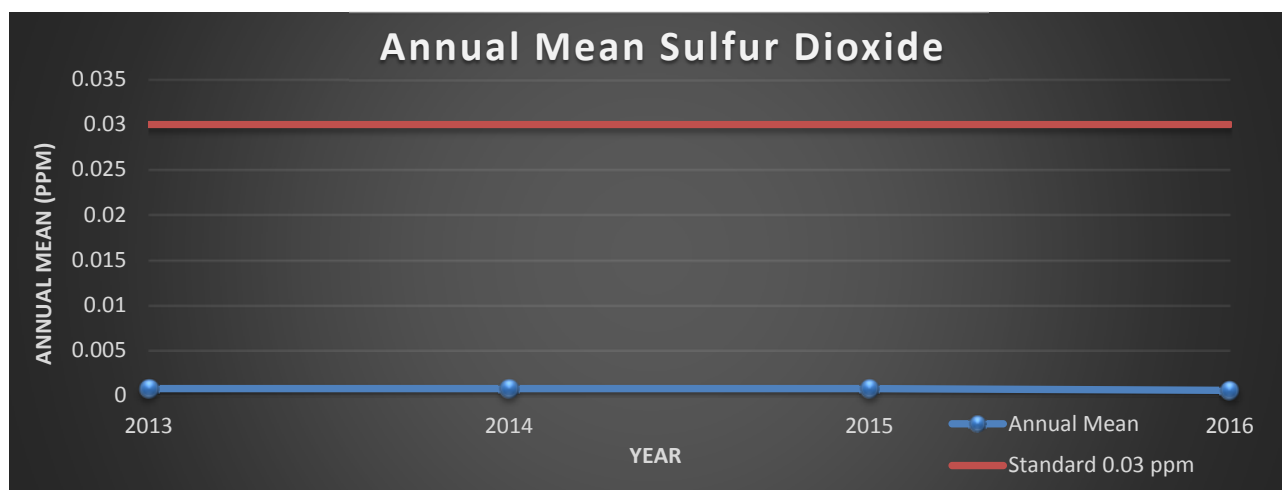
**Hinds County (N-CORE)**  
**Sulfur Dioxide**  
**3-Hour Annual 2<sup>nd</sup> Max (ppm)**

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 2 <sup>nd</sup> Max	*	*	*	*	*	*	0.0*	0.0	0.0	0.0



**Hinds County (N-CORE)**  
**Sulfur Dioxide**  
**Annual Mean (ppm)**

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual Mean	*	*	*	*	*	*	0.00*	0.00	0.00	0.00



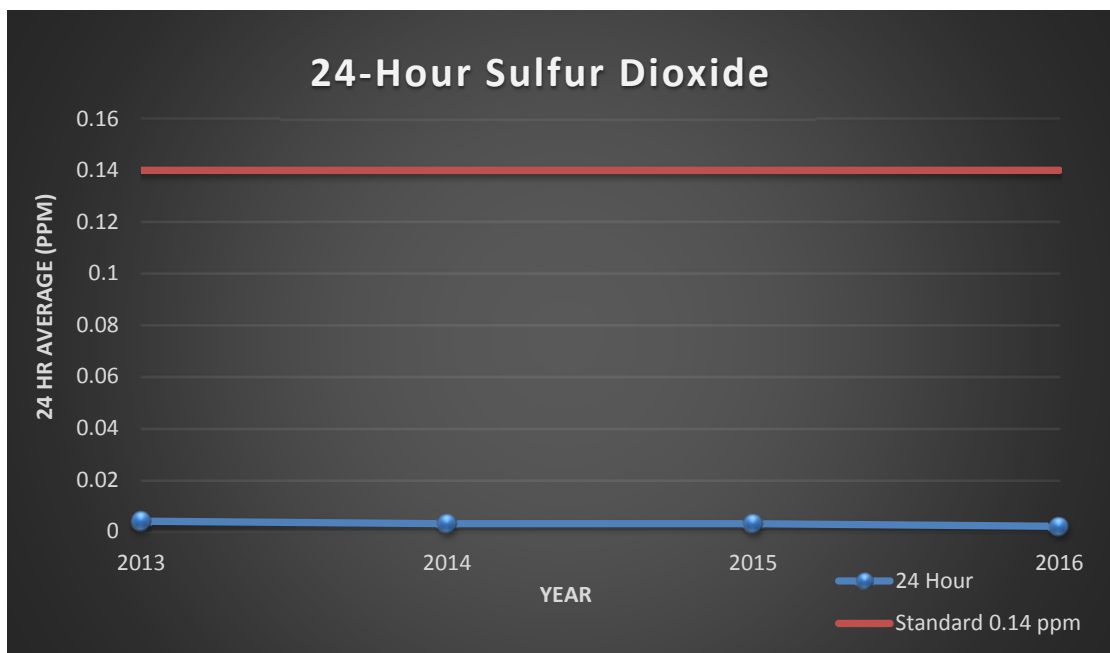
\*Incomplete Data: N-CORE Site started operations July 2013.

# Hinds County (N-CORE)

## Sulfur Dioxide

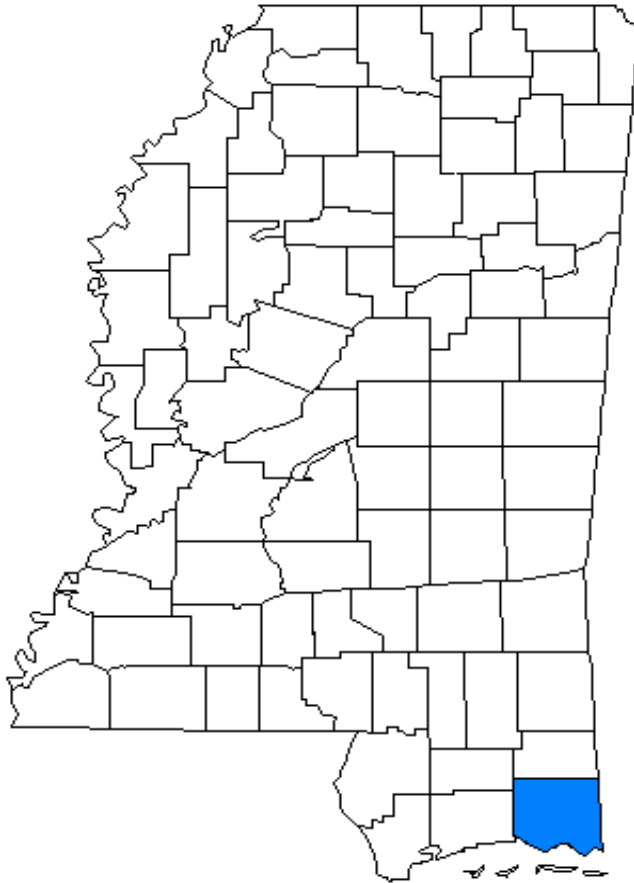
### 24-Hour 2<sup>nd</sup> Max (ppm)

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 2 <sup>nd</sup> Max							0.00*	0.00	0.00	0.00

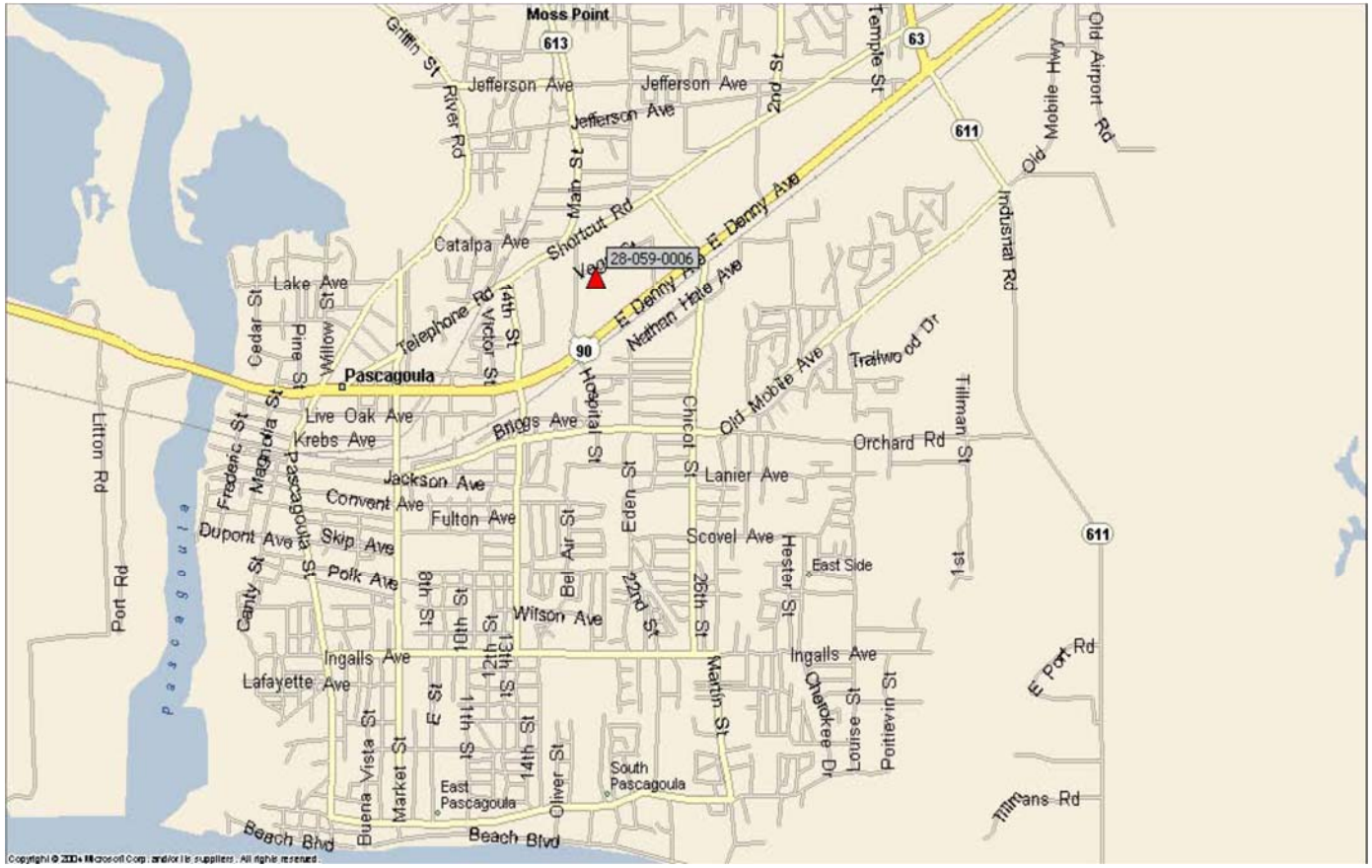


\*Incomplete Data: N-CORE Site started operations July 2013.

# Jackson County

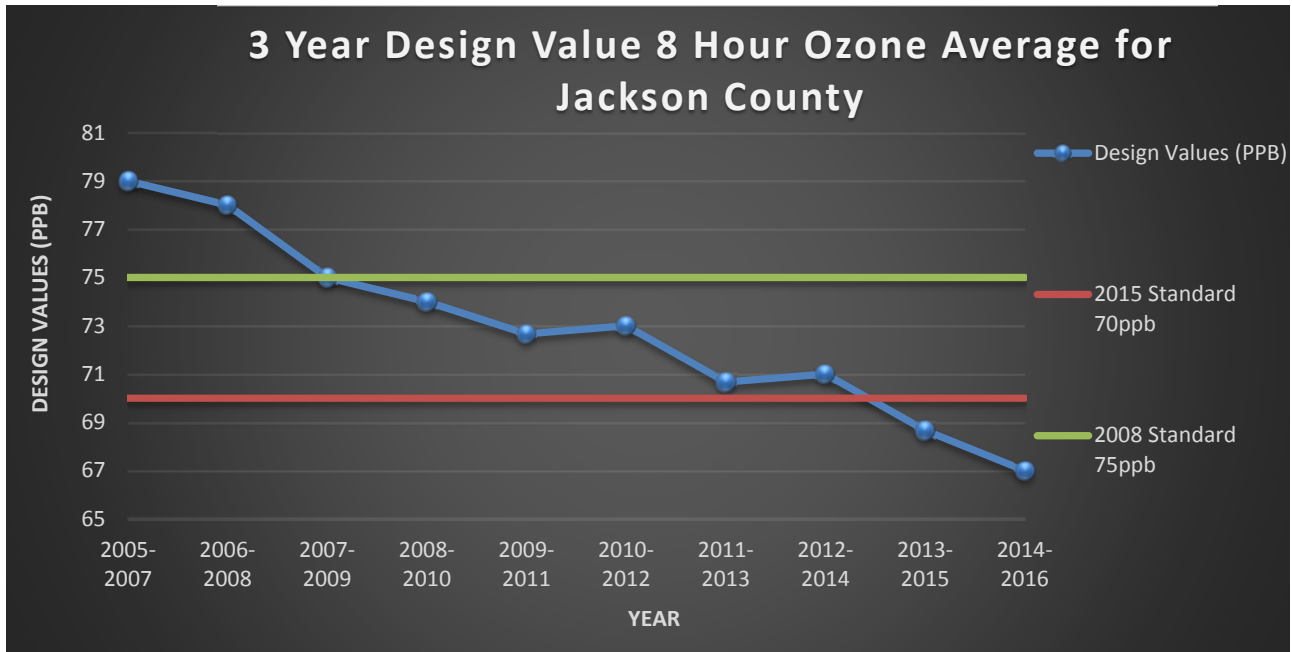


**Jackson County**  
**Monitoring Site No. 28-059-0006**  
**Location**

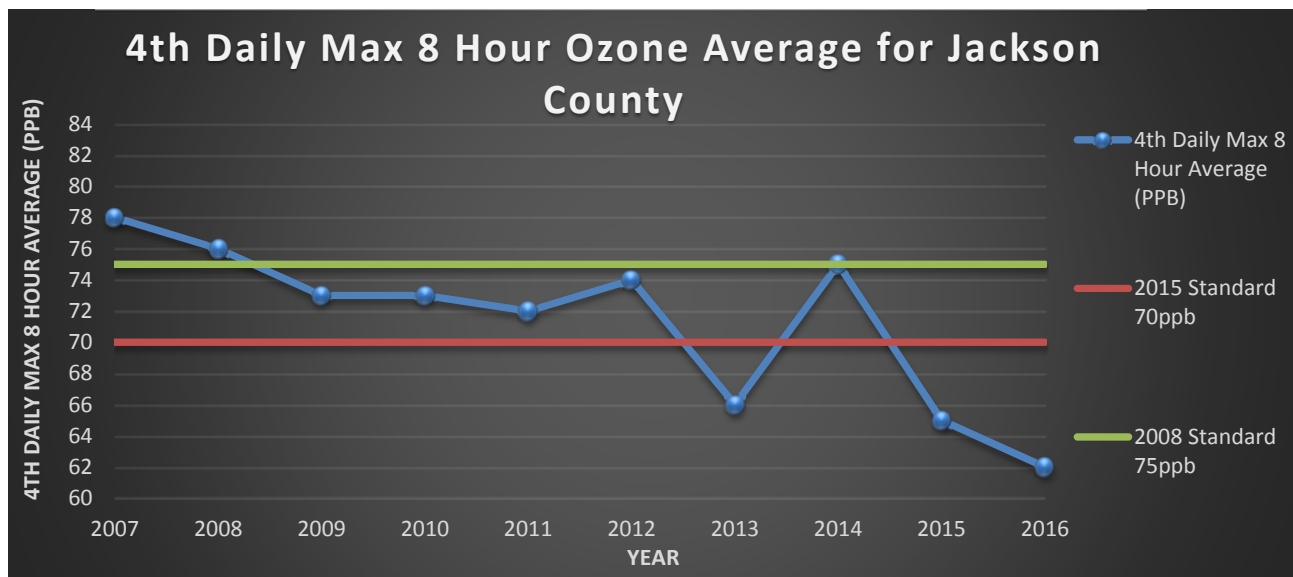


## Jackson County 8-Hour Ozone (ppb)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
Design Value	79	78	75	74	72	73	70	71	68	67

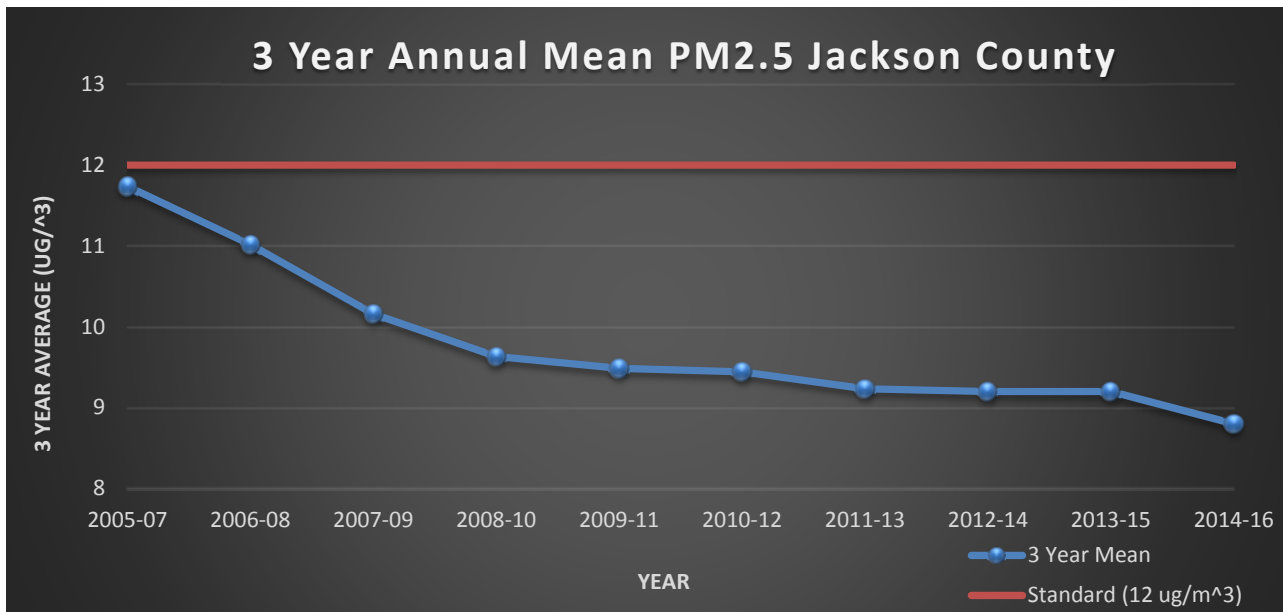


Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 4 <sup>th</sup> Max. 8-Hour Avg.	78	76	73	73	72	74	66	75	65	62

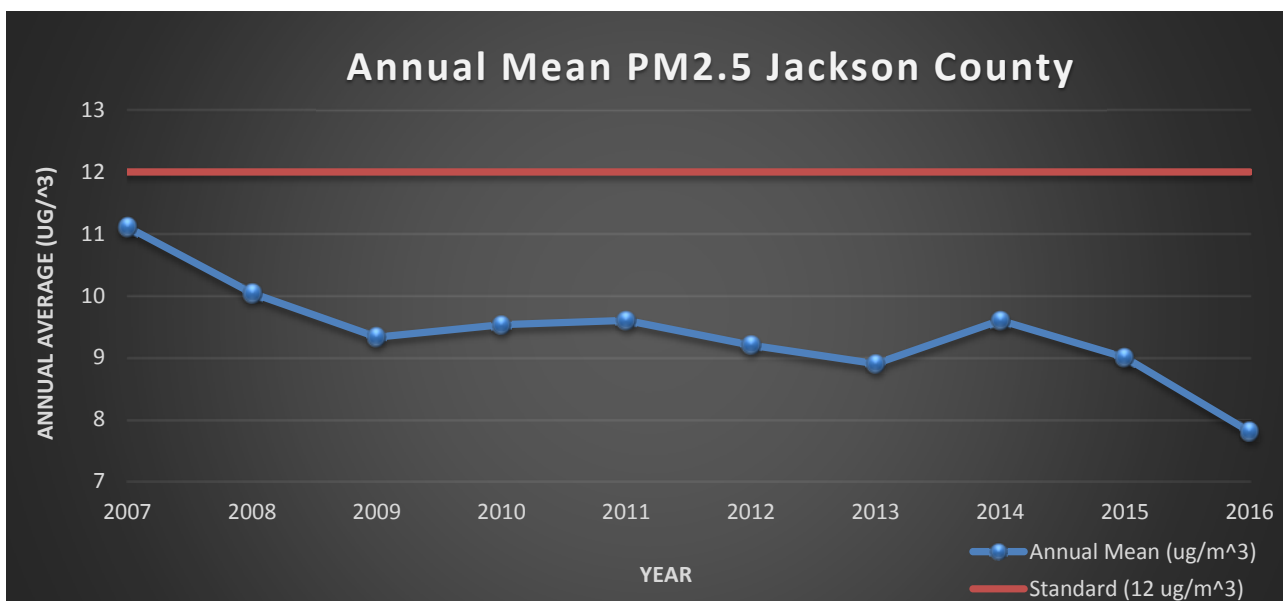


**Jackson County**  
**PM<sub>2.5</sub>**  
**Annual Mean (µg/m<sup>3</sup>)**

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual Means	11.7	11.0	10.2	9.6	9.5	9.4	9.2	9.2	9.2	8.8

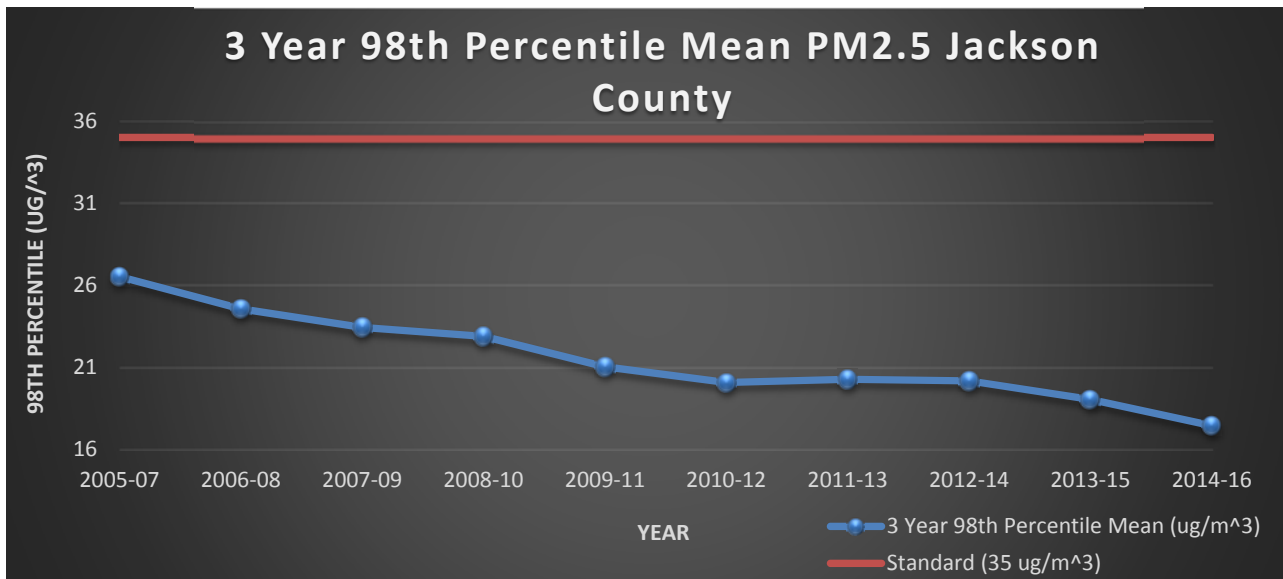


Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual Mean	11.1	10.0	9.3	9.5	9.6	9.2	8.9	9.6	9.0	7.8

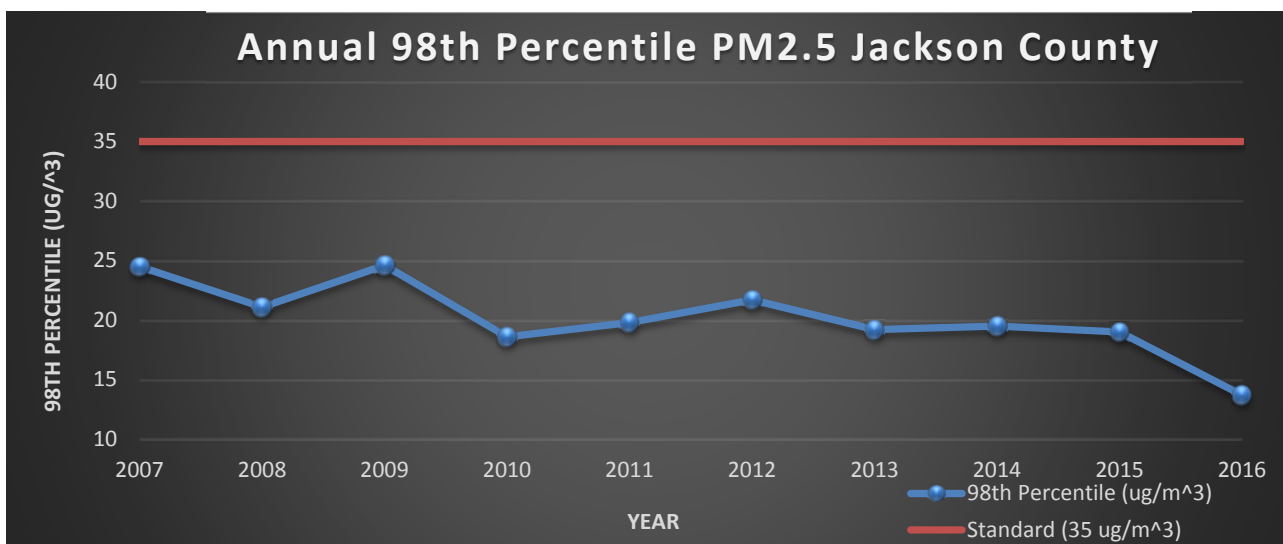


**Jackson County**  
**PM<sub>2.5</sub>**  
**24-Hour Average (µg/m<sup>3</sup>)**

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual 98 <sup>th</sup> Percentiles	27	25	23	23	21	20	20	20	19	17



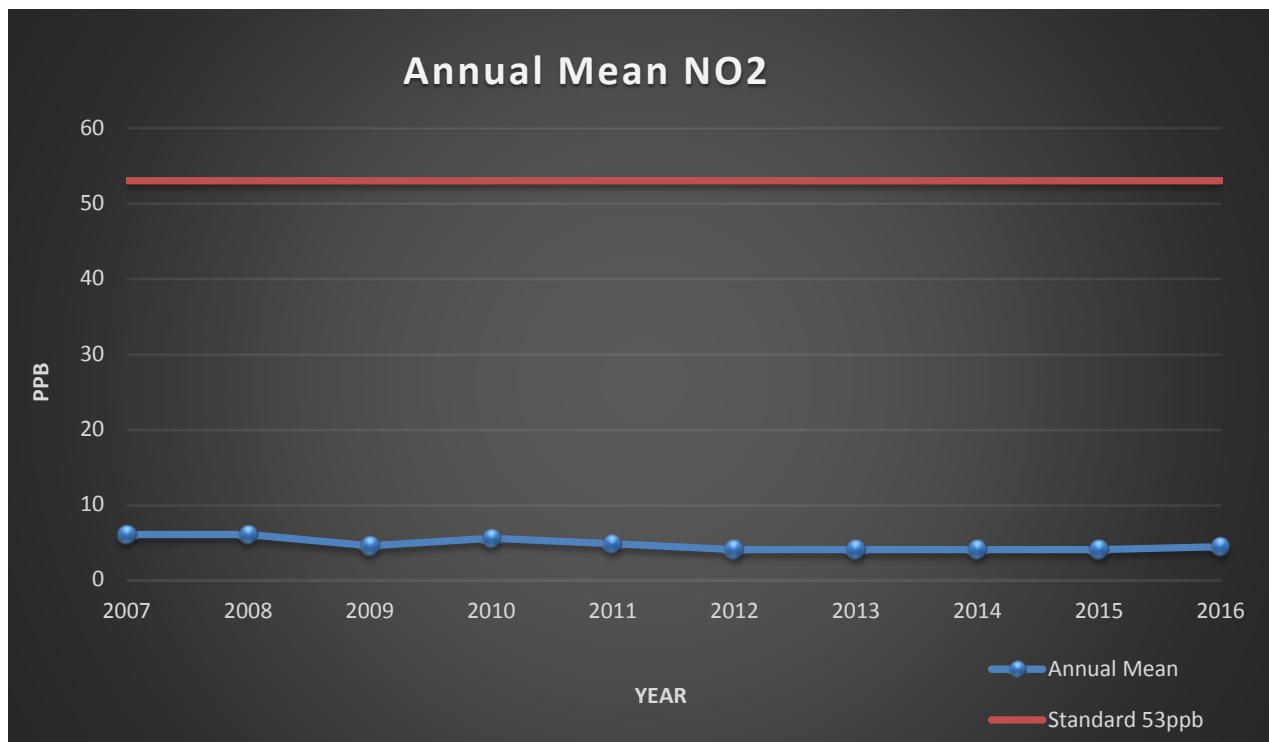
Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 98 <sup>th</sup> Percentile	25	21	25	19	20	22	19	20	19	14





**Jackson County**  
**Nitrogen Dioxide**  
**Annual Average (ppb)**

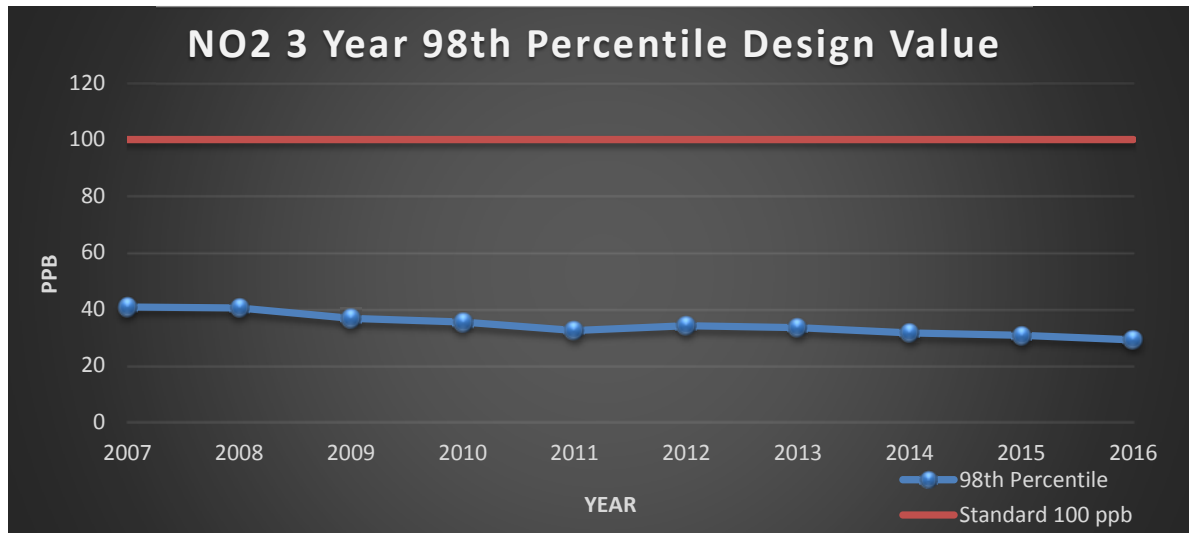
Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual Average	6	6	5	5	5	4	4	4	4	4*



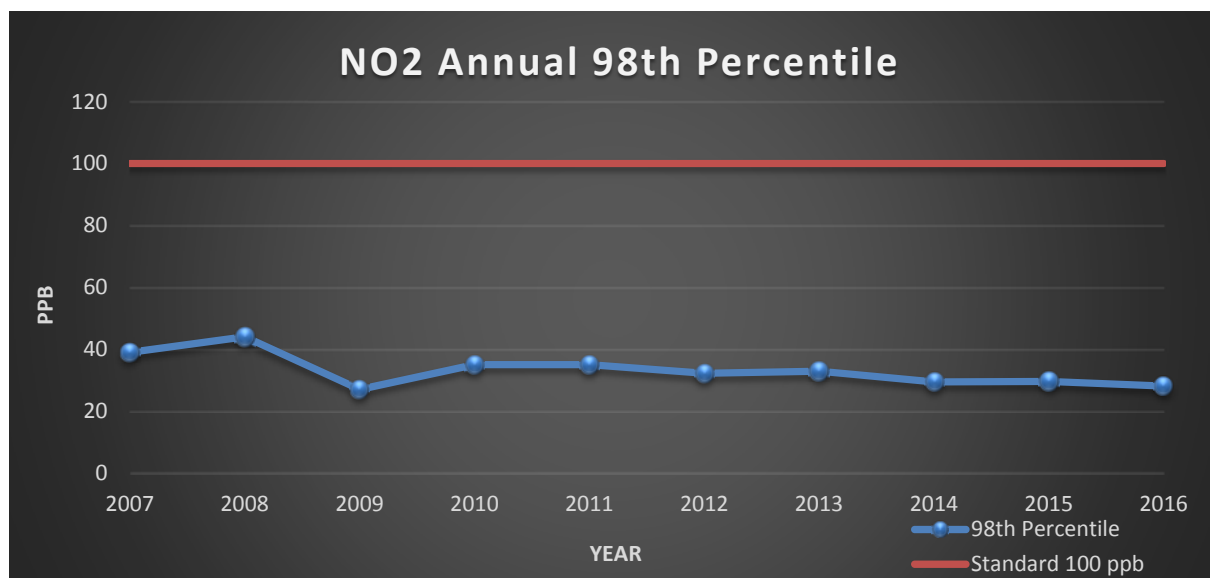
\*Incomplete Data

# Jackson County Nitrogen Dioxide 1-Hour Average (ppb)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual 98 <sup>th</sup> Percentiles	41	40	37	35	32	34	33	32	31	29*



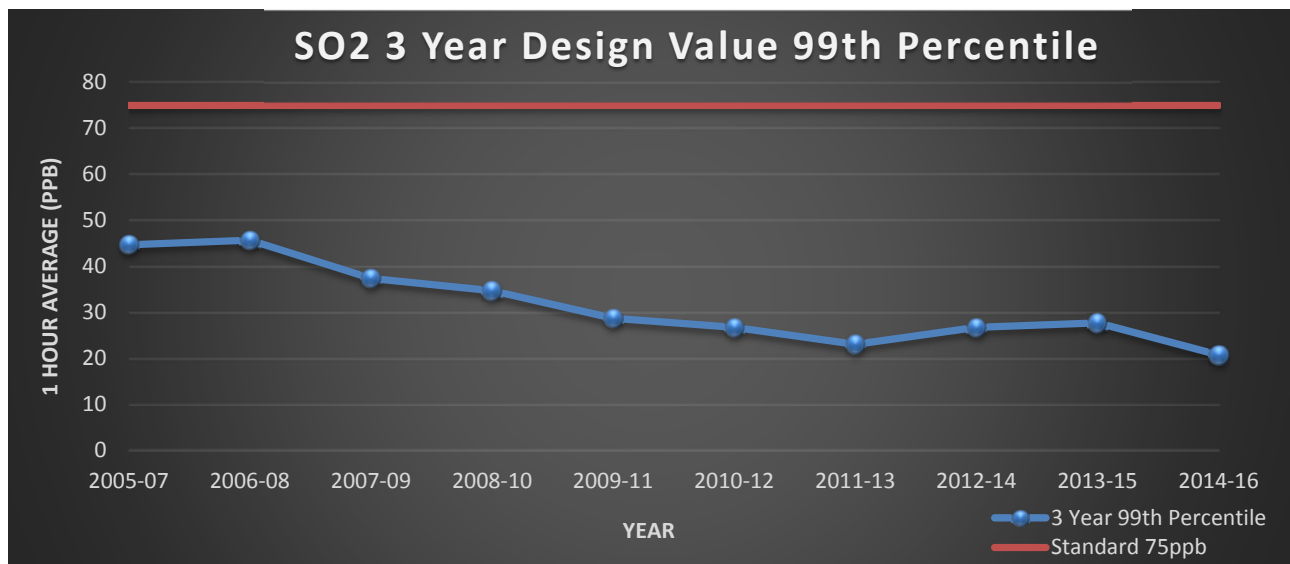
Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 98 <sup>th</sup> Percentiles	39	44	27	35	35	32	33	29	30	28*



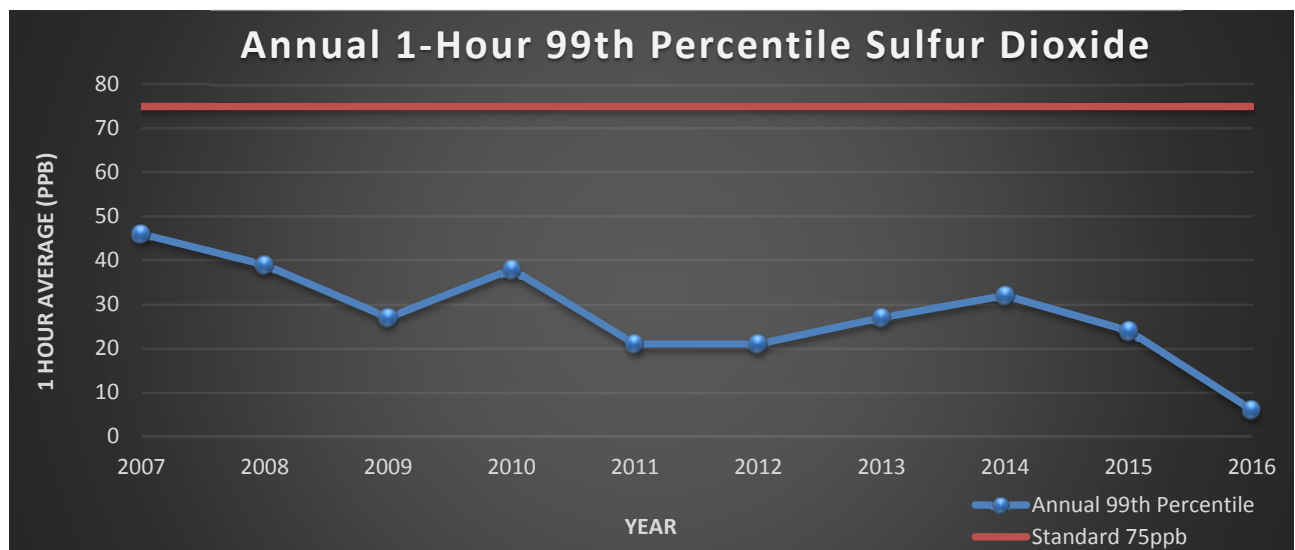
\*Incomplete Data

# Jackson County Sulfur Dioxide 1-Hour Average (ppb)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
3-Year Average of the Annual 99 <sup>th</sup> Percentiles	45	46	37	35	29	27	23	27	28	21

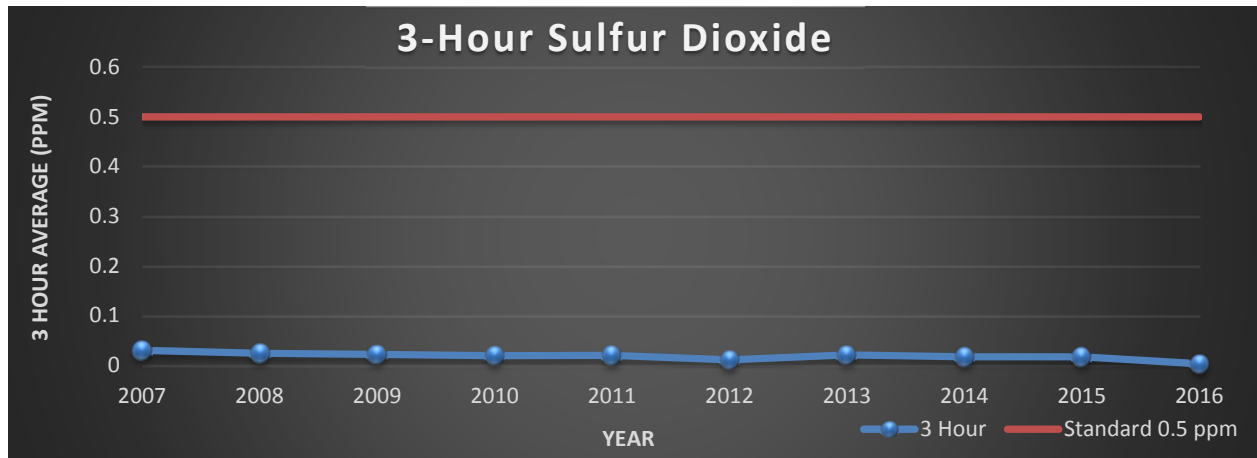


Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 99 <sup>th</sup> Percentiles	46	39	27	38	21	21	27	32	24	6



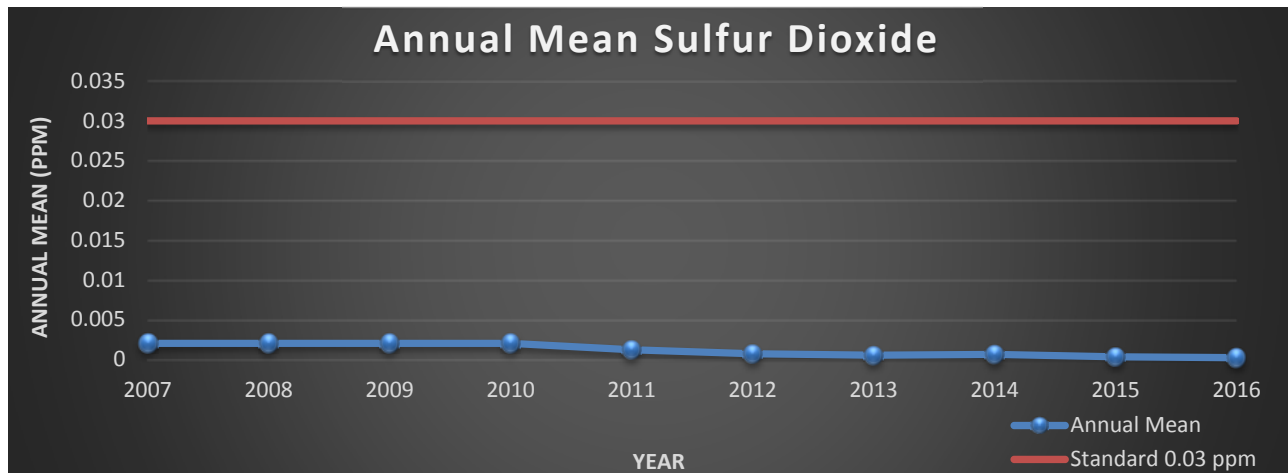
**Jackson County**  
**Sulfur Dioxide**  
**3-Hour Annual 2<sup>nd</sup> Max (ppm)**

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 2 <sup>nd</sup> Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



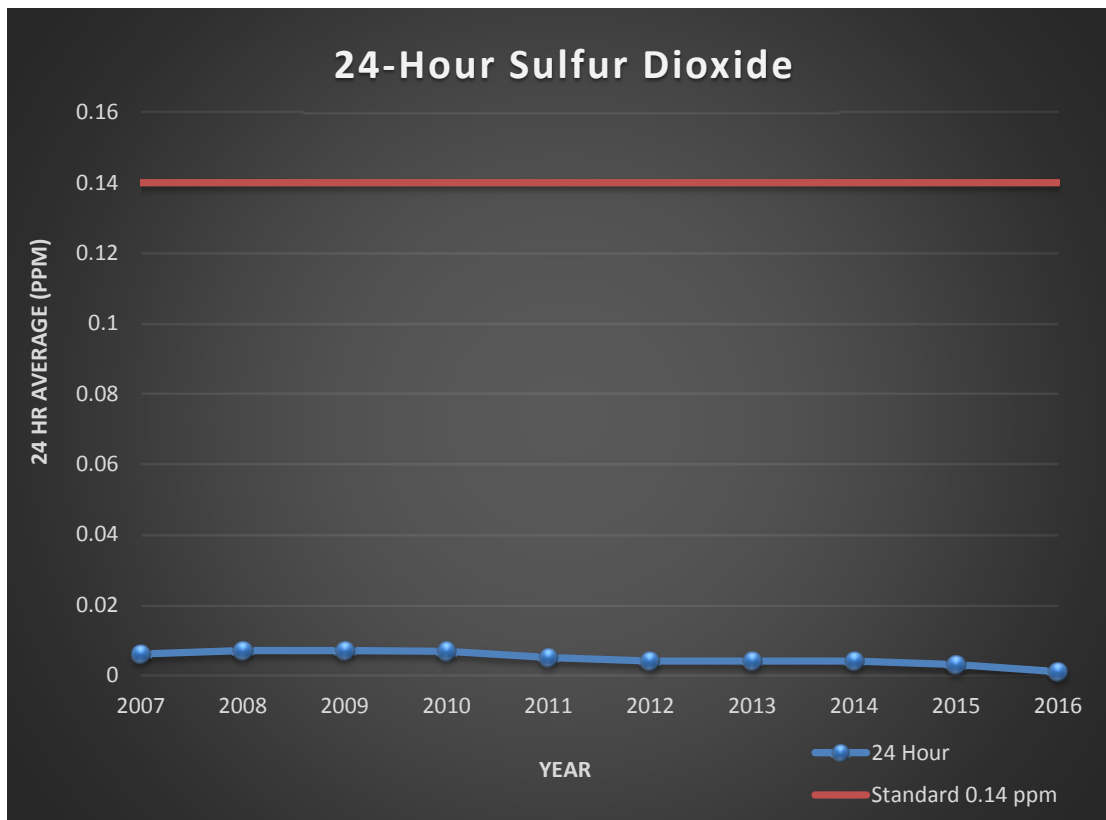
**Jackson County**  
**Sulfur Dioxide**  
**Annual Mean (ppm)**

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

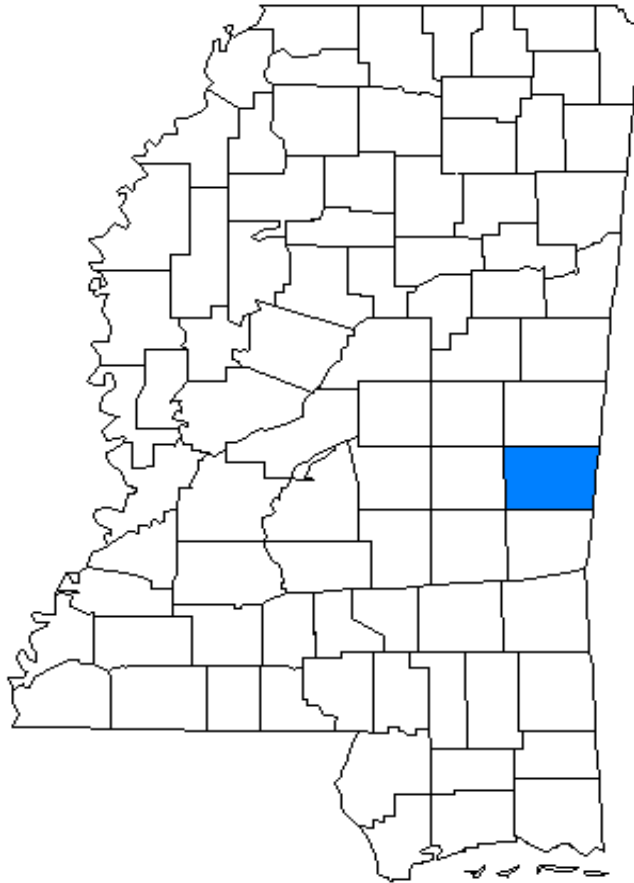


**Jackson County**  
**Sulfur Dioxide**  
**24-Hour 2<sup>nd</sup> Max (ppm)**

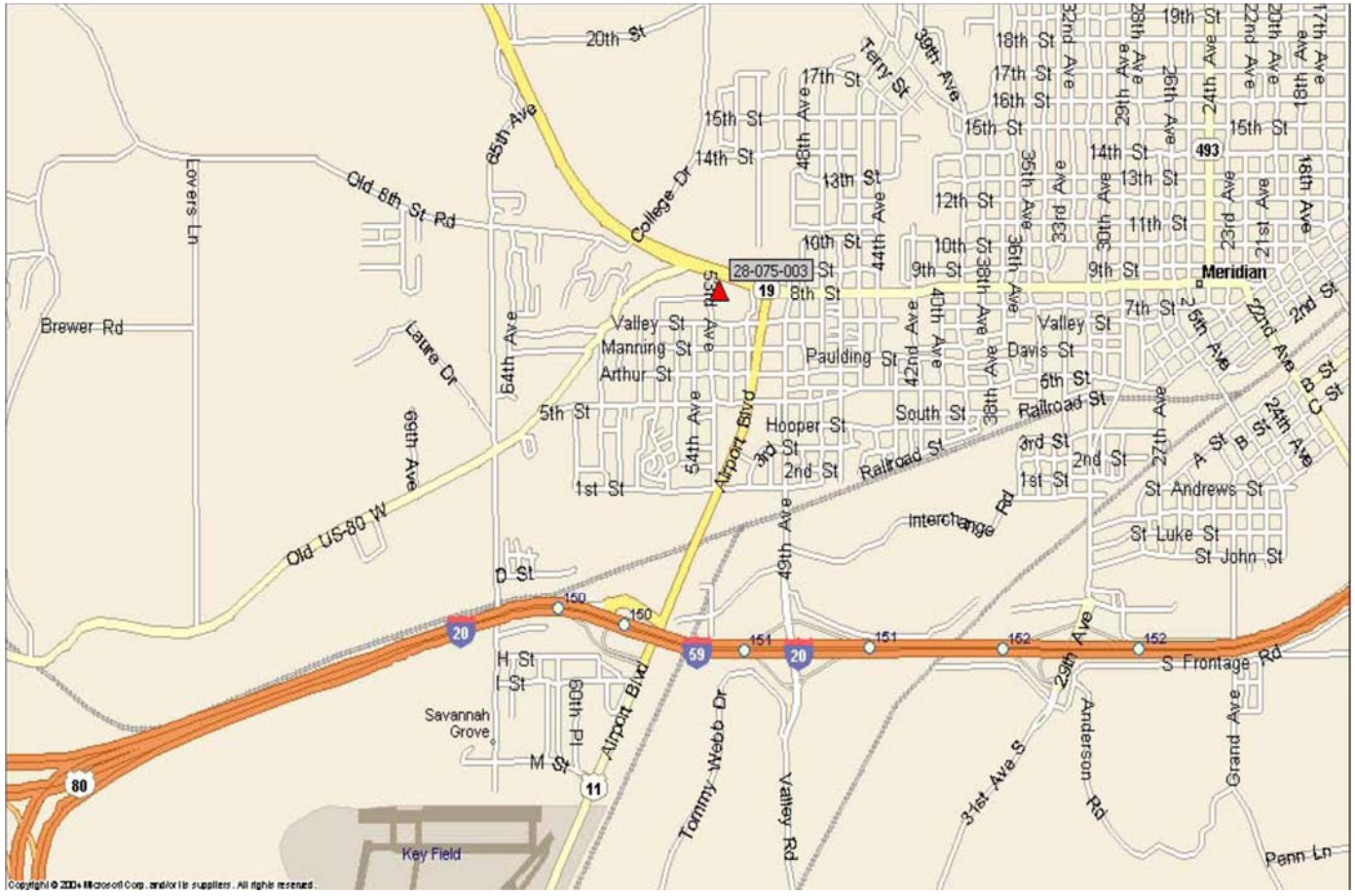
Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 2 <sup>nd</sup> Max	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00



# Lauderdale County

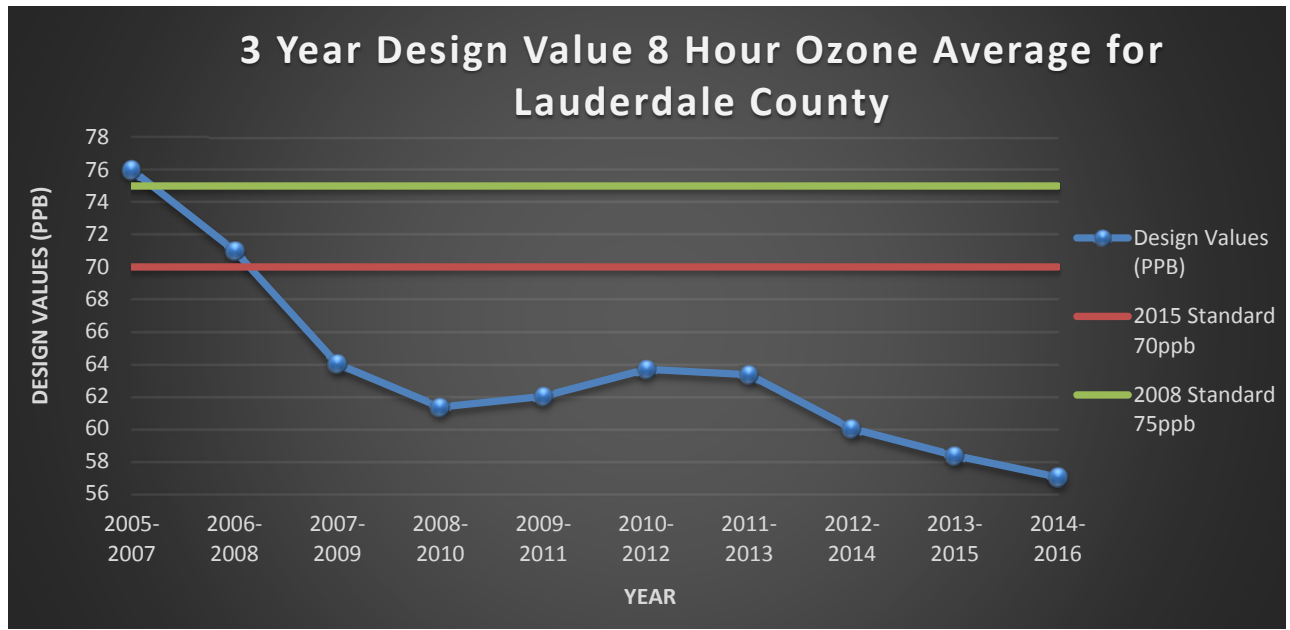


**Lauderdale County**  
**Monitoring Site No. 28-075-0003**  
**Location**

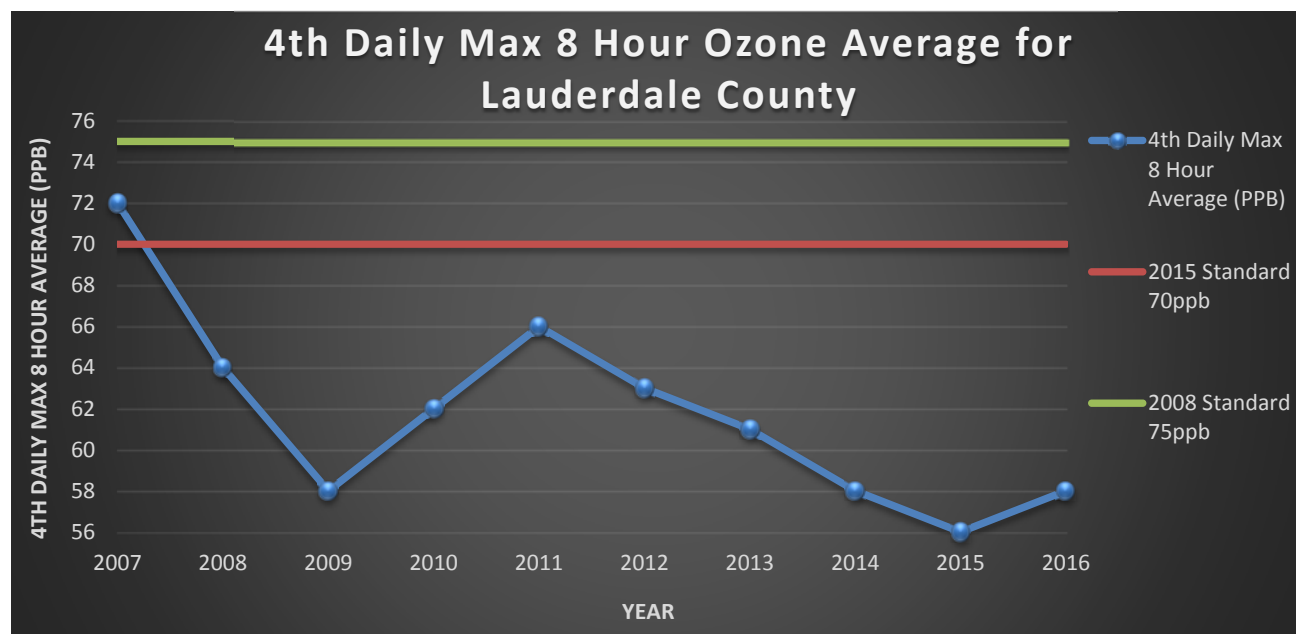


## Lauderdale County 8-Hour Ozone (ppb)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
Design Value	76	71	64	61	62	63	63	60	58	57

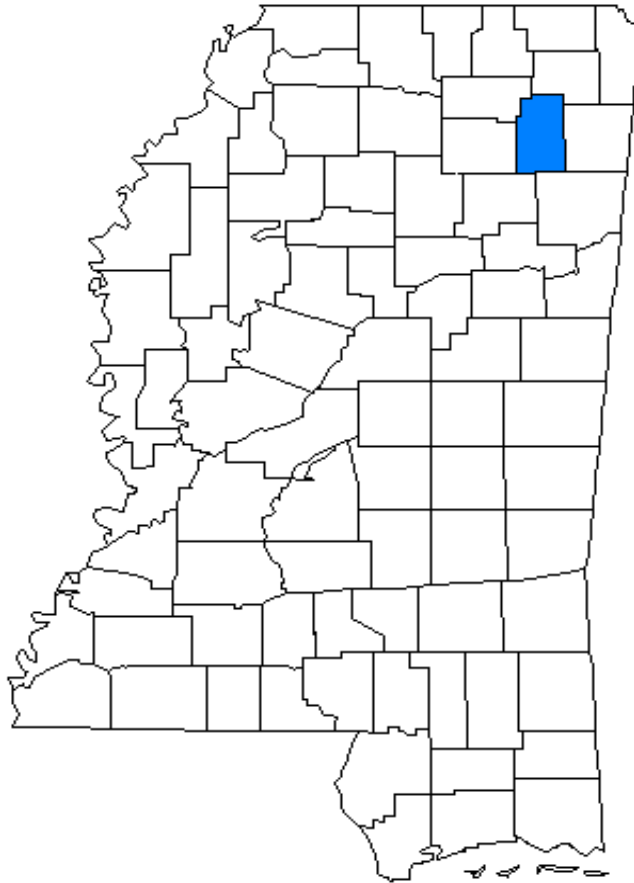


Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 4 <sup>th</sup> Max. 8-Hour Avg.	72	64	58	62	66	63	61	58	56	58

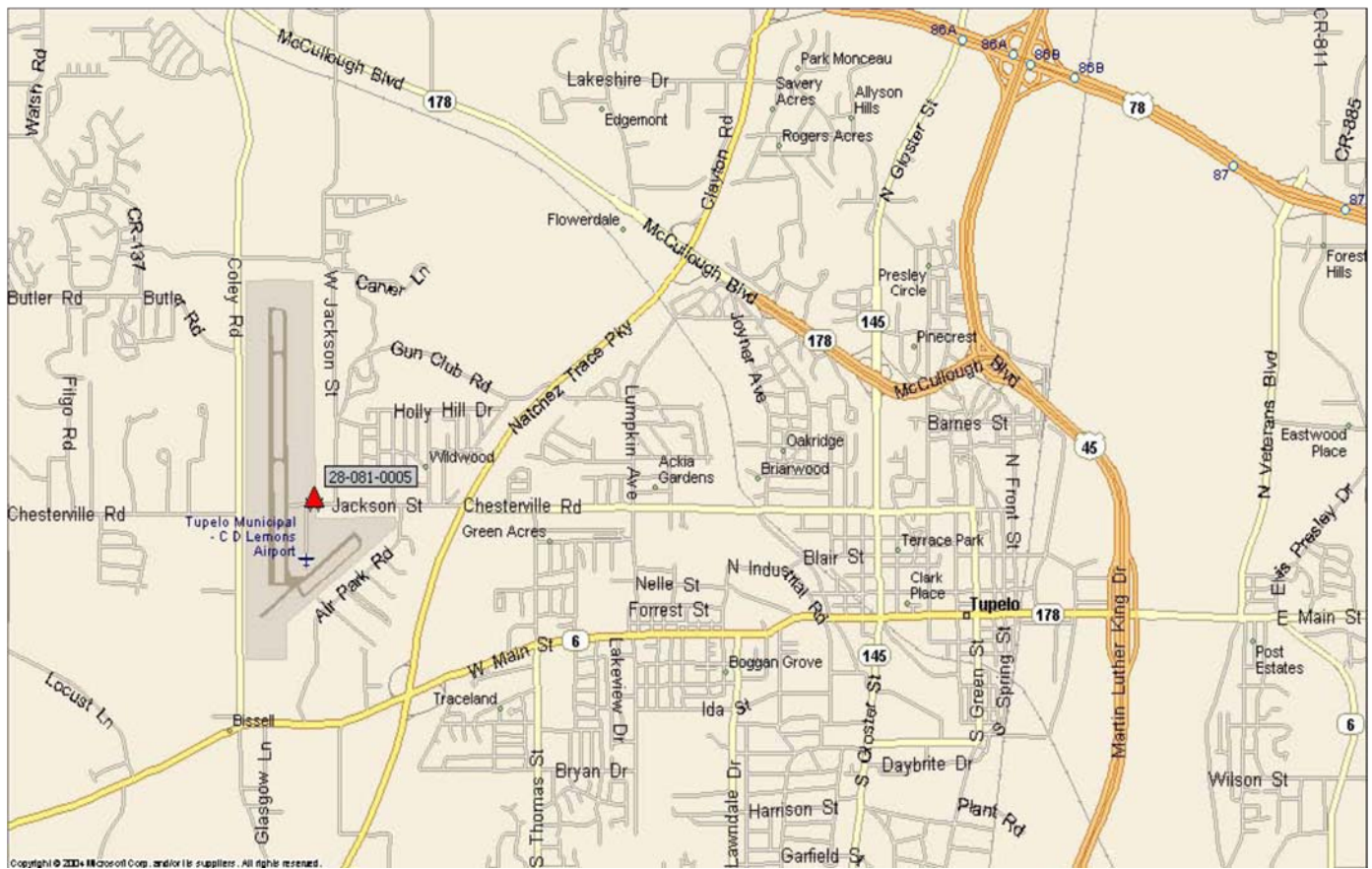




# Lee County

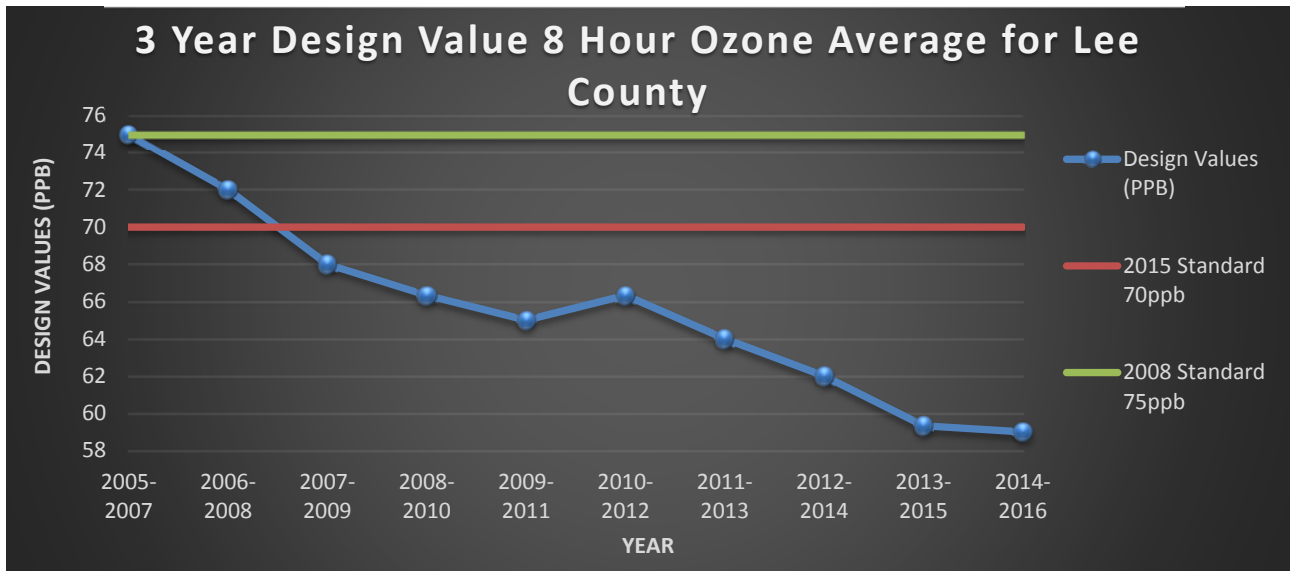


**Lee County**  
**Monitoring Site No. 28-081-0005**  
**Location**

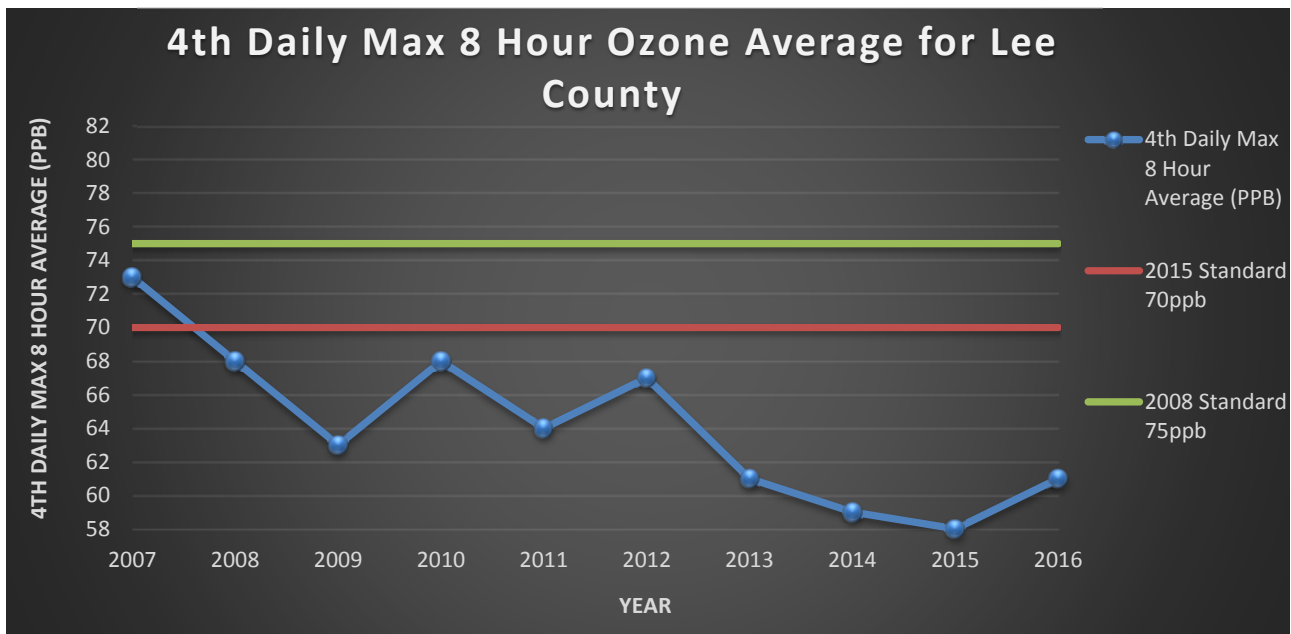


## Lee County 8-Hour Ozone (ppb)

3-Year Period	2005-2007	2006-2008	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
Design Value	75	72	68	66	65	66	64	62	59	59



Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual 4 <sup>th</sup> Max. 8-Hour Avg.	73	68	63	68	64	67	61	59	58	61



## Appendix 2

# Data Completeness By Pollutant

## **8-Hour Ozone Data Completeness**

### **Standard**

The standards for 8-hour ozone data completeness are:

- The daily maximum 8-hour average concentrations are available for at least 75%, on average, of the designated sampling days for any one year.
- The daily maximum 8-hour average concentrations are available for at least 90%, on average, of the designated sampling days for a three year period.

### **Annual Data Completeness**

### **3-Year Data Completeness**

County	Standard	2014	2015	2016
<b>Bolivar</b>	<b>75%</b>	85%	99%	98%
<b>DeSoto</b>	<b>75%</b>	100%	99%	88%
<b>Hancock</b>	<b>75%</b>	99%	96%	94%
<b>Harrison</b>	<b>75%</b>	90%	90%	98%
<b>Hinds CC*</b>	<b>75%</b>	*	83%	98%
<b>N-CORE</b>	<b>75%</b>	97%	93%	94%
<b>Jackson</b>	<b>75%</b>	97%	98%	98%
<b>Lauderdale</b>	<b>75%</b>	98%	98%	86%
<b>Lee</b>	<b>75%</b>	99%	96%	97%

Standard	2014-2016
<b>90%</b>	94%
<b>90%</b>	96%
<b>90%</b>	96%
<b>90%</b>	92%
<b>90%</b>	60%*
<b>90%</b>	95%
<b>90%</b>	98%
<b>90%</b>	94%
<b>90%</b>	97%

\*Incomplete Data: Hinds CC Site not operational until April 2015.

## PM<sub>2.5</sub> Data Completeness

### Standard

The standard for PM<sub>2.5</sub> data completeness is:

- A year meets the requirements when at least 75% of the scheduled sampling days for each quarter have valid data.

### 2014 Quarterly PM<sub>2.5</sub> Data Completeness

County	Standard	January - March	April - June	July - September	October - December
DeSoto	75%	90%	96%	84%	100%
Forrest	75%	93%	97%	94%	100%
Grenada	75%	73%	93%	87%	100%
Hancock	75%	97%	97%	84%	100%
Harrison	75%	90%	100%	97%	97%
Hinds-NC	75%	93%	97%	90%	97%
Jackson	75%	97%	100%	87%	97%

### 2015 Quarterly PM<sub>2.5</sub> Data Completeness

County	Standard	January - March	April - June	July - September	October - December
DeSoto	75%	87%	93%	97%	100%
Forrest	75%	100%	100%	97%	93%
Grenada	75%	97%	97%	97%	93%
Hancock	75%	100%	100%	97%	93%
Harrison	75%	90%	100%	100%	100%
Hinds CC*	75%	*	83%	90%	100%
Hinds-NC	75%	97%	87%	94%	100%
Jackson	75%	93%	97%	100%	100%

### 2016 Quarterly PM<sub>2.5</sub> Data Completeness

County	Standard	January - March	April - June	July - September	October - December
DeSoto	75%	94%	87%	71%	87%
Forrest	75%	100%	90%	97%	97%
Grenada	75%	97%	87%	74%	100%
Hancock	75%	100%	93%	97%	100%
Harrison	75%	94%	93%	100%	93%
Hinds CC	75%	94%	93%	84%	97%
Hinds-NC	75	94%	100%	100%	93%
Jackson	75%	93%	97%	100%	100%

\*Incomplete Data: Hinds CC Site not operational until April 2015.

# PM<sub>10</sub> Data Completeness

## Standard

The standard for PM<sub>10</sub> data completeness is:

- A year meets the requirements when at least 75% of the scheduled sampling days for each quarter have valid data.

### 2014 Quarterly PM<sub>10</sub> Data Completeness

County	Standard	January - March	April - June	July - September	October - December
Hinds-NC	75%	87%	87%	87%	88%

### 2015 Quarterly PM<sub>10</sub> Data Completeness

County	Standard	January - March	April - June	July - September	October - December
Hinds-NC	75%	73%	67%	87%	100%

### 2016 Quarterly PM<sub>10</sub> Data Completeness

County	Standard	January - March	April - June	July - September	October - December
Hinds-NC	75%	88%	93%	100%	73%



# **Carbon Monoxide Data Completeness**

## **Standard**

The standard for CO data completeness is:

- An 8-hour average shall be considered valid if at least 75% of the hourly averages for the 8-hour period are available.

## **2016 Quarterly CO Data Completeness**

County	Standard	January - March	April - June	July - September	October - December
Hinds-NC	75%	95%	94%	95%	95%

# **Nitrogen Dioxide Data Completeness**

## **Standards**

The standards for nitrogen dioxide data completeness are:

- An annual mean must be based upon hourly data that are at least 75% complete for the scheduled sampling days in each year.
- A 1-hour design value is valid if it encompasses three consecutive calendar years of complete data. A year meets data completeness requirements when all 4 quarters are complete. A quarter is complete when at least 75% of the sampling days for each quarter have complete data. A sampling day has complete data if 75% of the hourly concentration values are reported.

### **2016 Annual Mean Nitrogen Dioxide Data Completeness**

County	Standard	2016
Jackson	75%	79%

### **2014 Quarterly 1-Hour Nitrogen Dioxide Data Completeness**

County	Standard	January - March	April - June	July - September	October - December
Jackson	75%	95%	95%	94%	93%

### **2015 Quarterly 1-Hour Nitrogen Dioxide Data Completeness**

County	Standard	January - March	April - June	July - September	October - December
Jackson	75%	94%	92%	94%	93%

### **2016 Quarterly 1-Hour Nitrogen Dioxide Data Completeness**

County	Standard	January - March	April - June	July - September	October - December
Jackson	75%	93%	93%	91%	38%

# **Sulfur Dioxide** **Data Completeness**

## **Standard**

The standards for sulfur dioxide data completeness are:

- A 1-hour design value is valid if it encompasses three consecutive calendar years of complete data.
- A year meets data completeness requirements when all 4 quarters are complete. A quarter is complete when at least 75% of the sampling days for each quarter have complete data. A sampling day has complete data if 75% of the hourly concentration values are reported.

### **2014 Quarterly 1-Hour Sulfur Dioxide Data Completeness**

County	Standard	January - March	April - June	July - September	October - December
Hinds-NC	75%	95%	89%	94%	95%
Jackson	75%	95%	95%	95%	94%

### **2015 Quarterly 1-Hour Sulfur Dioxide Data Completeness**

County	Standard	January - March	April - June	July - September	October - December
Hinds-NC	75%	95%	94%	93%	94%
Jackson	75%	95%	95%	95%	95%

### **2016 Quarterly 1-Hour Sulfur Dioxide Data Completeness**

County	Standard	January - March	April - June	July - September	October - December
Hinds-NC	75%	94%	95%	95%	95%
Jackson	75%	95%	95%	95%	95%