

# Iowa Ambient Air Monitoring Annual Report: 2012

Air Quality Bureau  
Iowa Department of Natural Resources



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# Iowa Ambient Air Monitoring Annual Network Report: 2012

Iowa Department of Natural Resources - Air Quality Bureau – Ambient Air Monitoring Group

## Introduction

The purpose of this review is to compare the maximum values of ambient air monitoring data gathered in the state of Iowa during 2012 to the level of the National Ambient Air Quality Standards (NAAQS) established by the Environmental Protection Agency (EPA). The EPA has established NAAQS for seven “criteria” pollutants: particulate matter with a diameter less than 10 microns (PM<sub>10</sub>), particulate matter with a diameter less than 2.5 microns (PM<sub>2.5</sub>), sulfur dioxide, ozone, nitrogen dioxide, carbon monoxide and lead. Continuous monitoring methods have been approved by EPA for all criteria pollutants except lead. Filter samplers and laboratory filter weighing procedures have been approved by EPA for PM<sub>2.5</sub> and PM<sub>10</sub>. All data summarized in this review was obtained using methods that are currently approved by EPA for NAAQS comparisons.

This report is divided into two parts. The first part is an executive summary, indicating where exceedances of the NAAQS were measured in Iowa during 2012. A more comprehensive review, which includes the location and summary data for each monitor in the network, is included in the second part.

Gaseous pollutant monitors (ozone, nitrogen dioxide, sulfur dioxide, and carbon monoxide) provide hourly values and operate 24 hours a day, seven days a week. Most ozone monitors are operated only when ozone levels are highest, from April through October. The ozone monitor located at the multi-pollutant site in Davenport operates year-round to establish ozone trends in cooler temperatures. Particulate filter samplers run for 24 hours at a time and collect one filter per day. Most PM<sub>10</sub> and PM<sub>2.5</sub> filter based monitors are operated at a sampling frequency of one sample every third day. Some particulate monitoring sites are run at frequencies greater than this nominal frequency if they are located in highly populated areas, near pollution sources, or if pollutant levels are close to health standards. On March 18, 2013, EPA’s new annual PM<sub>2.5</sub> standard became effective. PM<sub>2.5</sub> data will be compared to new standard in next year’s report.

Incomplete data may skew the summary statistics for a monitor. In order to alert the reader to incomplete data problems, data completeness statistics have been provided for each monitor. If a monitor collected all of the scheduled samples, then it has an associated data completeness of 100%. If quarterly data capture falls below 75% in any quarter of the year, then the data set may not adequately capture the seasonal variability of the data. In these cases, the bar representing the comparison of the monitor data to the NAAQS is striped, and an explanation is provided in Appendix A.

In 2012 there were 64 NAAQS exceedances in the state of Iowa. Five of the exceedances were associated with the 24 hour PM<sub>2.5</sub> standard, 37 were exceedances of the 1-hour sulfur dioxide standard, 18 consisted of exceedances of the 8-hour ozone standard and four comprised of lead exceeding the limit for average concentrations spanned over three months. All of these exceedances are detailed in this report.

Data used to create this report were gathered by three organizations under contract with the Iowa Department of Natural Resources: the State of Iowa Hygienic Laboratory, the Linn County Public Health Department, and the Polk County Public Works Air Quality Division. Contract funds were provided by US EPA, the Iowa legislature, and regulated industry. Air pollution data for Iowa and all other states are available online at: <http://www.epa.gov/airdata/>. Additional information on the NAAQS is available at: <http://www.epa.gov/air/criteria.html>.

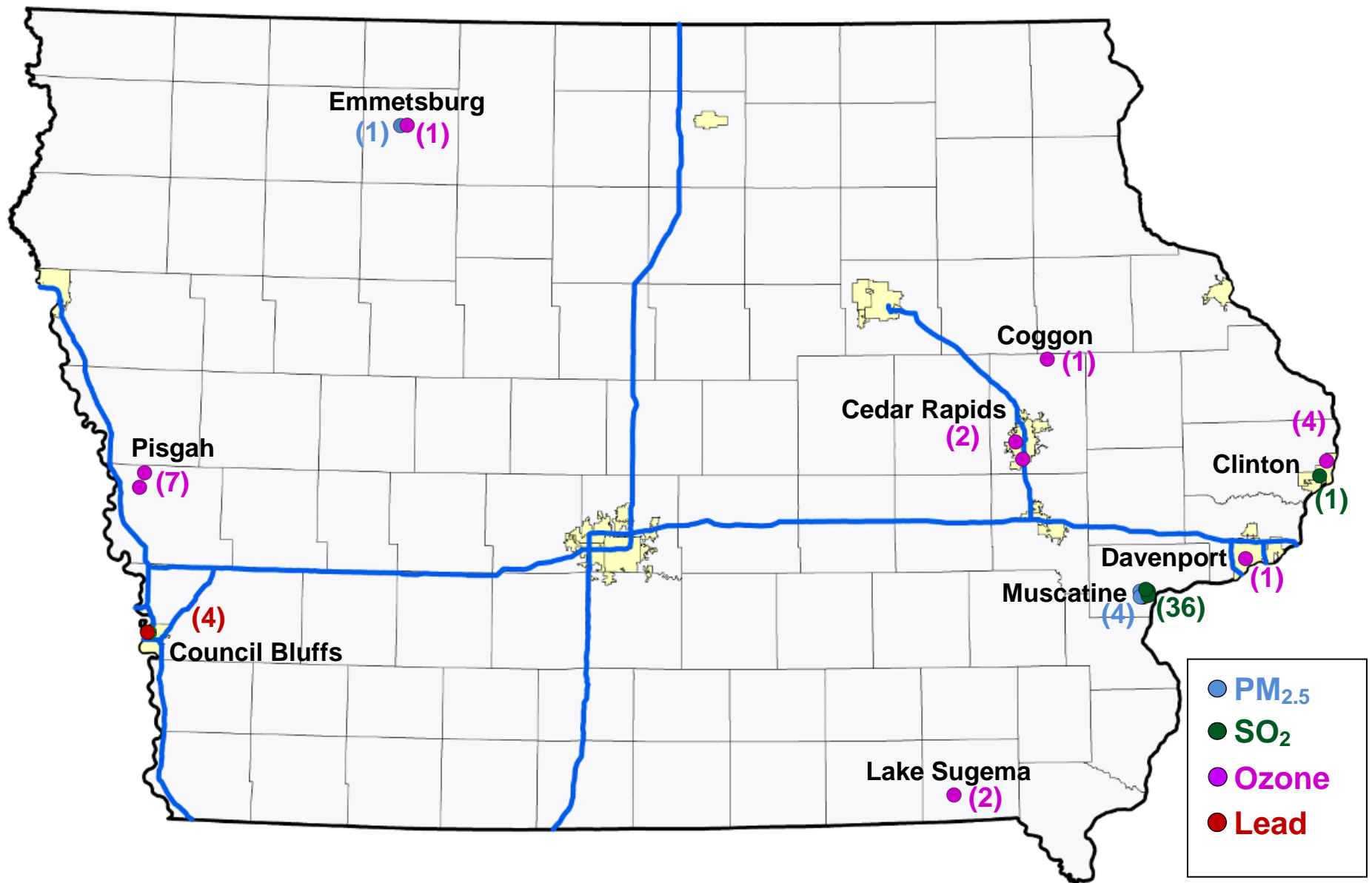
## Exceedances of National Ambient Air Quality Standards (NAAQS) in 2012

Pollutant	Averaging Period	Exceedance Level	Units	Number of Exceedances
Ozone	8hr	76	ppb	18
PM2.5	24hr	35.5	micrograms per cubic meter	5
	annual	15.05*	micrograms per cubic meter	0
PM10	24hr	155	micrograms per cubic meter	0
Sulfur dioxide	1hr	75.5	ppb	37
	3hr	0.55	ppm	0
Carbon monoxide	1hr	35.5	ppm	0
	8hr	9.5	ppm	0
Nitrogen dioxide	annual	0.0535	ppm	0
	1hr	100.5	ppb	0
Lead	Rolling 3-month average	0.155	micrograms per cubic meter	4

\*Note: This level was lowered to 12.05 mg/m<sup>3</sup>, effective 3/18/13.

# NAAQS Exceedance Counts at Iowa Monitoring Sites During 2012

(Values for individual sites indicated in parentheses)



## PM<sub>2.5</sub> NAAQS Exceedances Measured in 2012

(Five PM<sub>2.5</sub> Exceedances Recorded in 2012)

<b>Monitoring Site</b>	<b>Site ID</b>	<b>Exceedance Date</b>	<b>Concentration (µg/m<sup>3</sup>)</b>
Emmetsburg, Iowa Lakes Coll.	191471002	2/15/2012	35.5
Muscatine High E. Campus-Rooftop	191390015	3/26/12	39.7
Muscatine High E. Campus-Rooftop	191390015	4/2/12	60.2
Muscatine High E. Campus-Rooftop	191390015	4/28/12	36.1
Muscatine High E. Campus-Rooftop	191390015	4/29/12	47.3

## SO<sub>2</sub> NAAQS Exceedances Measured in 2012

(37 SO<sub>2</sub> Exceedances Recorded in 2012)

Monitoring Site	Site ID	Exceedance Date	Concentration (ppb)
Muscatine, Musser Park	191390020	1/3/12	80.6
Muscatine, Musser Park	191390020	1/15/12	142.8
Muscatine, Musser Park	191390020	1/16/12	155.7
Muscatine, Musser Park	191390020	1/18/12	127.7
Muscatine, Musser Park	191390020	2/26/12	249.9
Muscatine, Greenwood Cemetery	191390016	2/26/12	138.8
Muscatine, Musser Park	191390020	3/6/12	196.7
Muscatine, Greenwood Cemetery	191390016	3/6/12	94.5
Muscatine, Musser Park	191390020	3/7/12	212.8
Muscatine, Musser Park	191390020	3/12/12	127.5
Muscatine, Musser Park	191390020	3/16/12	139.4
Muscatine, Greenwood Cemetery	191390016	3/16/12	166.5
Muscatine, Musser Park	191390020	3/17/12	103.9
Muscatine, Musser Park	191390020	3/18/12	86.1
Muscatine, Musser Park	191390020	3/19/12	102.2
Muscatine, Greenwood Cemetery	191390016	3/19/12	104.2
Muscatine, Musser Park	191390020	3/20/12	108.3
Muscatine, Greenwood Cemetery	191390016	3/20/12	170.5
Muscatine, Greenwood Cemetery	191390016	3/22/12	75.5
Muscatine, Musser Park	191390020	3/27/12	146.7
Muscatine, Musser Park	191390020	5/11/12	76.5
Muscatine, Musser Park	191390020	5/18/12	85.1
Clinton, Chancy Park	190450019	5/22/12	76.4
Muscatine, Musser Park	191390020	9/11/12	107.8
Muscatine, Muscatine High E. Campus-Trailer	191390019	10/12/12	170.6
Muscatine, Musser Park	191390020	10/24/12	130.5
Muscatine, Musser Park	191390020	10/25/12	177.8
Muscatine, Musser Park	191390020	11/10/12	308.8
Muscatine, Musser Park	191390020	11/11/12	229.7
Muscatine, Greenwood Cemetery	191390016	11/11/12	78.7
Muscatine, Muscatine High E. Campus-Trailer	191390019	11/16/12	79.2
Muscatine, Musser Park	191390020	11/22/12	121.3
Muscatine, Musser Park	191390020	12/3/12	224.0
Muscatine, Muscatine High E. Campus-Trailer	191390019	12/5/12	151.7
Muscatine, Muscatine High E. Campus-Trailer	191390019	12/9/12	125.5
Muscatine, Musser Park	191390020	12/12/12	119.0
Muscatine, Musser Park	191390020	12/15/12	96.2

## Lead NAAQS Exceedances Measured in 2012

(4 Lead Exceedances Recorded in 2012)

<b>Monitoring Site</b>	<b>Site ID</b>	<b>Exceedance Date</b>	<b>Concentration (<math>\mu\text{g}/\text{m}^3</math>)</b>
Council Bluffs, Griffin Pipe	191550011	June-August	0.18
Council Bluffs, Griffin Pipe	191550011	July-September	0.19
Council Bluffs, Griffin Pipe	191550011	August-October	0.20
Council Bluffs, Griffin Pipe	191550011	September-November	0.16



## Ozone NAAQS Exceedances Measured in 2012

(18 Ozone Exceedances Recorded in 2012)

Monitoring Site	Site ID	Exceedance Date	Concentration (ppb)
Clinton, Rainbow Park	190450021	5/18/12	76
Pisgah, Forestry Office	190850007	6/9/12	76
Pisgah, Highway Maintenance	190851101	6/9/12	76
Keosauqua, Lake Sugema	191770006	6/14/12	79
Clinton, Rainbow Park	190450021	6/15/12	77
Keosauqua, Lake Sugema	191770006	6/27/12	76
Pisgah, Forestry Office	190850007	7/12/12	80
Pisgah, Highway Maintenance	190851101	7/12/12	79
Pisgah, Highway Maintenance	190851101	7/17/12	76
Clinton, Rainbow Park	190450021	7/30/12	76
Davenport, Jefferson Sch.	191630015	7/30/12	76
Clinton, Rainbow Park	190450021	8/1/12	78
Cedar Rapids, Public Health	191130040	8/3/12	76
Cedar Rapids, Kirkwood Coll.	191130028	8/3/12	76
Coggon, Coggon Sch.	191130033	8/3/12	77
Pisgah, Forestry Office	190850007	8/30/12	77
Pisgah, Highway Maintenance	190851101	8/30/12	78
Emmetsburg, Iowa Lakes Coll.	191471002	8/30/12	76

## 2012 Ambient Monitoring Network Changes

<b>Sites Removed at the End of 2011</b>						
<b>Site</b>	<b>Name</b>	<b>City</b>	<b>County</b>	<b>Site Label</b>	<b>End Date</b>	<b>Pollutants</b>
190130008	Grout Museum	Waterloo	Blackhawk	Waterloo, Grout Museum	12/31/2011	PM10, PM2.5
191130037	Army Reserve Center	Cedar Rapids	Linn	Cedar Rapids, Army Reserve	12/31/2011	PM10, PM2.5

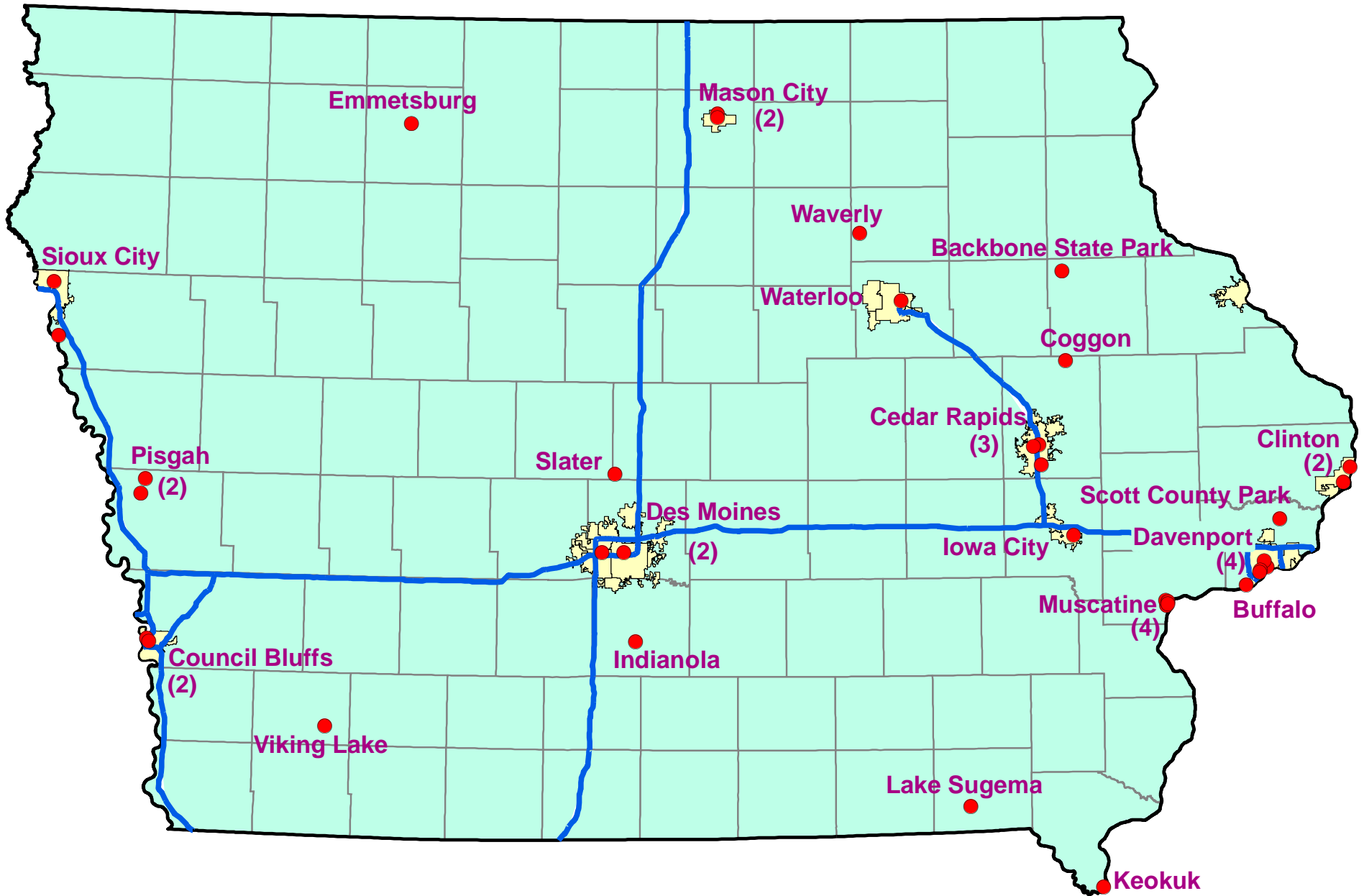
<b>Monitors Added During 2012</b>						
<b>Site</b>	<b>Name</b>	<b>City</b>	<b>County</b>	<b>Site Label</b>	<b>Start Date</b>	<b>Pollutants</b>
191770006	Lake Sugema	Not in a City	Van Buren	Keosauqua, Lake Sugema	1/1/2012	NO2
191390019	Muscatine High E. Campus-Trailer	Muscatine	Muscatine	Muscatine, Muscatine High E. Campus-Trailer	8/1/2012	SO2
191390016	Greenwood Cemetery	Muscatine	Muscatine	Muscatine, Greenwood Cemetery	1/1/2012	SO2
191130040	Public Health	Cedar Rapids	Linn	Cedar Rapids, Public Health	1/1/2012	PM10
190130009	Water Tower	Waterloo	Black Hawk	Waterloo, Water Tower	1/1/2012	PM10
190550001	Backbone State Park	Not in a City	Delaware	Backbone State Park	1/1/2012	PM10

<b>Sites Added During 2012</b>						
<b>Site</b>	<b>Name</b>	<b>City</b>	<b>County</b>	<b>Site Label</b>	<b>Start Date</b>	<b>Pollutants</b>
191930020	George Neal North	Not in a city	Woodbury	Sergeant Bluff, George Neal North	7/1/2012	SO2

# 2012 Ambient Monitoring Network

Site ID	Name	City	Address	County	Site Label	Pollutants
190130009	Water Tower	Waterloo	Vine St. & Steely	Black Hawk	Waterloo, Water Tower	PM10, PM2.5
190170011	Waverly Airport	Waverly	Waverly Airport	Bremer	Waverly, Airport	Ozone
190330018	Holcim Cement	Mason City	17th St. & Washington St.	Cerro Gordo	Mason City, Holcim Cement	PM10
190330020	Washington School	Mason City	700 N. Washington Avenue	Cerro Gordo	Mason City, Washington Sch.	PM10
190450019	Chancy Park	Clinton	23rd & Camanche	Clinton	Clinton, Chancy Park	PM2.5, SO2
190450021	Rainbow Park	Clinton	Roosevelt St.	Clinton	Clinton, Rainbow Park	Ozone, PM2.5
190550001	Backbone State Park	not in a city	Fish Hatchery Backbone State Park	Delaware	Backbone State Park	PM10, PM2.5
190850007	Forestry Office	Pisgah	206 Polk St.	Harrison	Pisgah, Forestry Office	Ozone
190851101	Highway Maintenance Shed	Pisgah	1575 Hwy 183	Harrison	Pisgah, Highway Maintenance	Ozone
191032001	Hoover Elementary	Iowa City	2200 East Court	Johnson	Iowa City, Hoover Sch.	PM10, PM2.5
191110008	Fire Station	Keokuk	111S. 13th St.	Lee	Keokuk, Fire Station	PM2.5
191130028	Kirkwood College	Cedar Rapids	6301 Kirkwood Blvd SW (Iowa Hall)	Linn	Cedar Rapids, Kirkwood Coll.	Ozone
191130031	Scottish Rite Temple	Cedar Rapids	616 A Ave.	Linn	Cedar Rapids, Scottish Rite Temple	SO2
191130033	Coggon Elementary School	Coggon	408 E Linn St.	Linn	Coggon, Coggon Sch.	Ozone
191130040	Public Health	Cedar Rapids	500 11th St. NW	Linn	Cedar Rapids, Public Health	CO, SO2, Ozone, PM10, PM2.5
191370002	Viking Lake State Park	not in a city	2780 Viking Lake Road	Montgomery	Viking Lake State Park	Ozone, PM10, PM2.5
191390015	Muscatine High E. Campus-Rooftop	Muscatine	1409 Wisconsin	Muscatine	Muscatine, Muscatine High E. Campus-Rooftop	PM10, PM2.5
191390019	Muscatine High E. Campus-Trailer	Muscatine	1409 Wisconsin	Muscatine	Muscatine, Muscatine High E. Campus-Trailer	SO2
191390016	Greenwood Cemetery	Muscatine	Fletcher St. & Kimble St.	Muscatine	Muscatine, Greenwood Cemetery	SO2, PM2.5
191390018	Franklin School	Muscatine	210 Taylor St.	Muscatine	Muscatine, Franklin Sch.	PM2.5
191390020	Musser Park	Muscatine	Oregon St. & Earl Ave.	Muscatine	Muscatine, Musser Park	SO2, PM2.5
191471002	Iowa Lakes College	Emmetsburg	Iowa Lakes Community College - S Camp	Palo Alto	Emmetsburg, Iowa Lakes Coll.	Ozone, PM10, PM2.5
191530030	Health Department	Des Moines	1907 Carpenter	Polk	Des Moines, Health Dept.	CO, SO2, NO2, Ozone, PM10, PM2.5
191532510	Indian Hills Jr. High School	Clive	9401 Indian Hills	Polk	Clive, Indian Hills Jr. High Sch.	PM10, PM2.5
191550009	Franklin School	Council Bluffs	3130 C Ave.	Pottawattamie	Council Bluffs, Franklin Sch.	PM10, PM2.5
191550011	Griffin Pipe	Council Bluffs	8th Avenue and 27th St	Pottawattamie	Council Bluffs, Griffin Pipe	Pb
191630014	Scott County Park	Davenport	Scott County Park	Scott	Scott County Park	Ozone
191630015	Jefferson School	Davenport	10th St. & Vine St.	Scott	Davenport, Jefferson Sch.	CO, SO2, NO2, Ozone, PM10, PM2.5
191630017	Linwood Mining	Buffalo	11100 110th Ave.	Scott	Buffalo, LW Mining	PM10
191630018	Adams School	Davenport	3029 N Division St.	Scott	Davenport, Adams Sch.	PM10, PM2.5
191630019	Blackhawk Foundry	Davenport	300 Wellman St.	Scott	Davenport, Blackhawk Foundry	PM10, PM2.5
191630020	Hayes School	Davenport	622 South Concord St	Scott	Davenport, Hayes Elementary	PM2.5
191690011	City Hall	Slater	105 Greene	Story	Slater, City Hall	Ozone
191770006	Lake Sugema	not in a city	24430 Lacey Trl, Keosauqua Lake Sugema	Van Buren	Keosauqua, Lake Sugema	SO2, Ozone, NO2, PM10, PM2.5
191810022	Lake Ahquabi State Park	Indianola	1650 118th Ave.	Warren	Indianola, Lake Ahquabi	Ozone
191930019	Bryant School	Sioux City	821 30th St.	Woodbury	Sioux City, Bryant Sch.	PM10, PM2.5
191930020	George Neal North	Sergeant Bluff	1221 260th St, Sergeant Bluff, IA	Woodbury	Sergeant Bluff, George Neal North	SO2

# 2012 Monitoring Site Locations



## Monitoring Locations in Cedar Rapids



# Monitoring Locations in Davenport



## Monitoring Locations in Des Moines/Clive

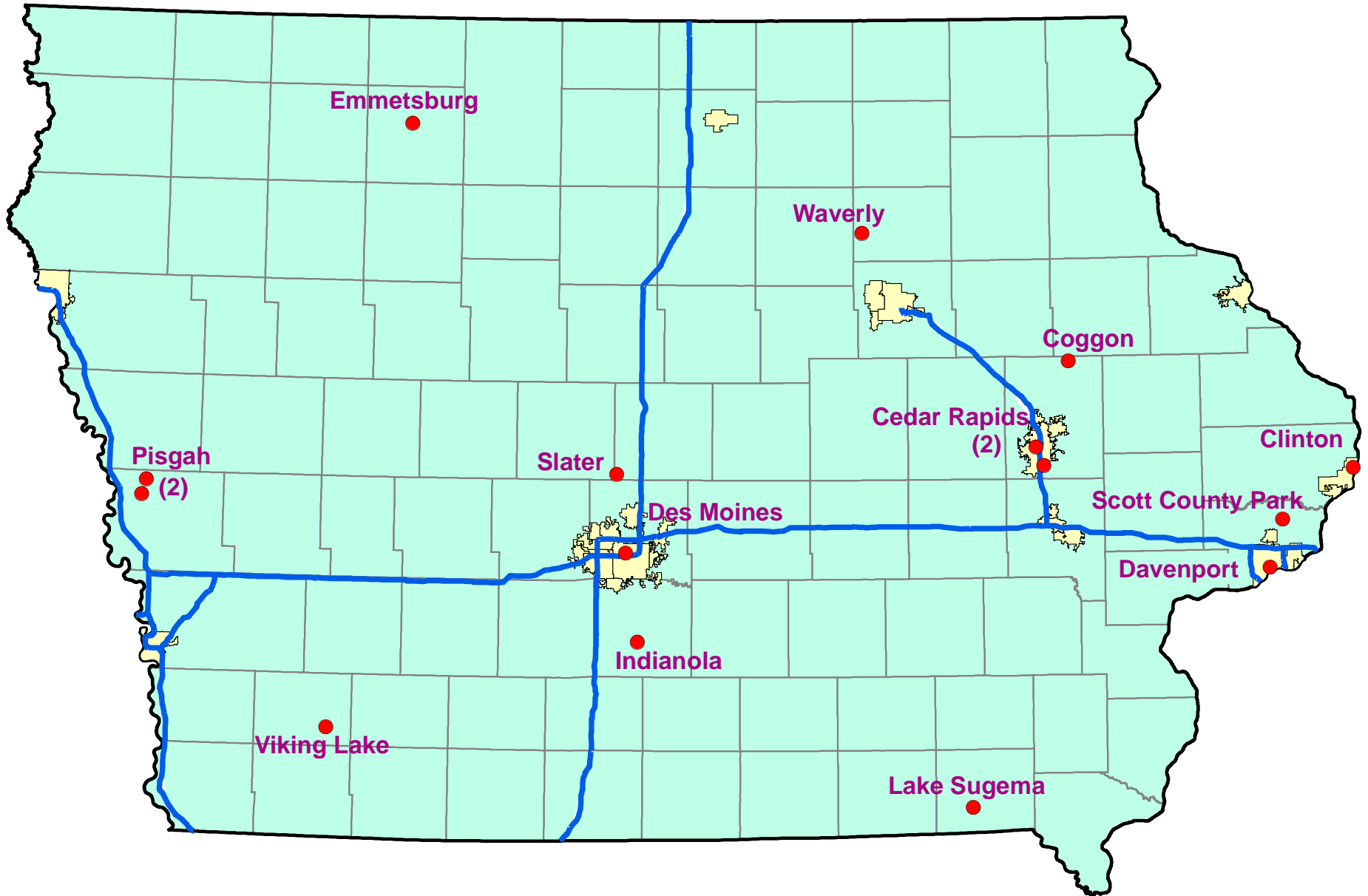


## Ozone Monitoring Sites

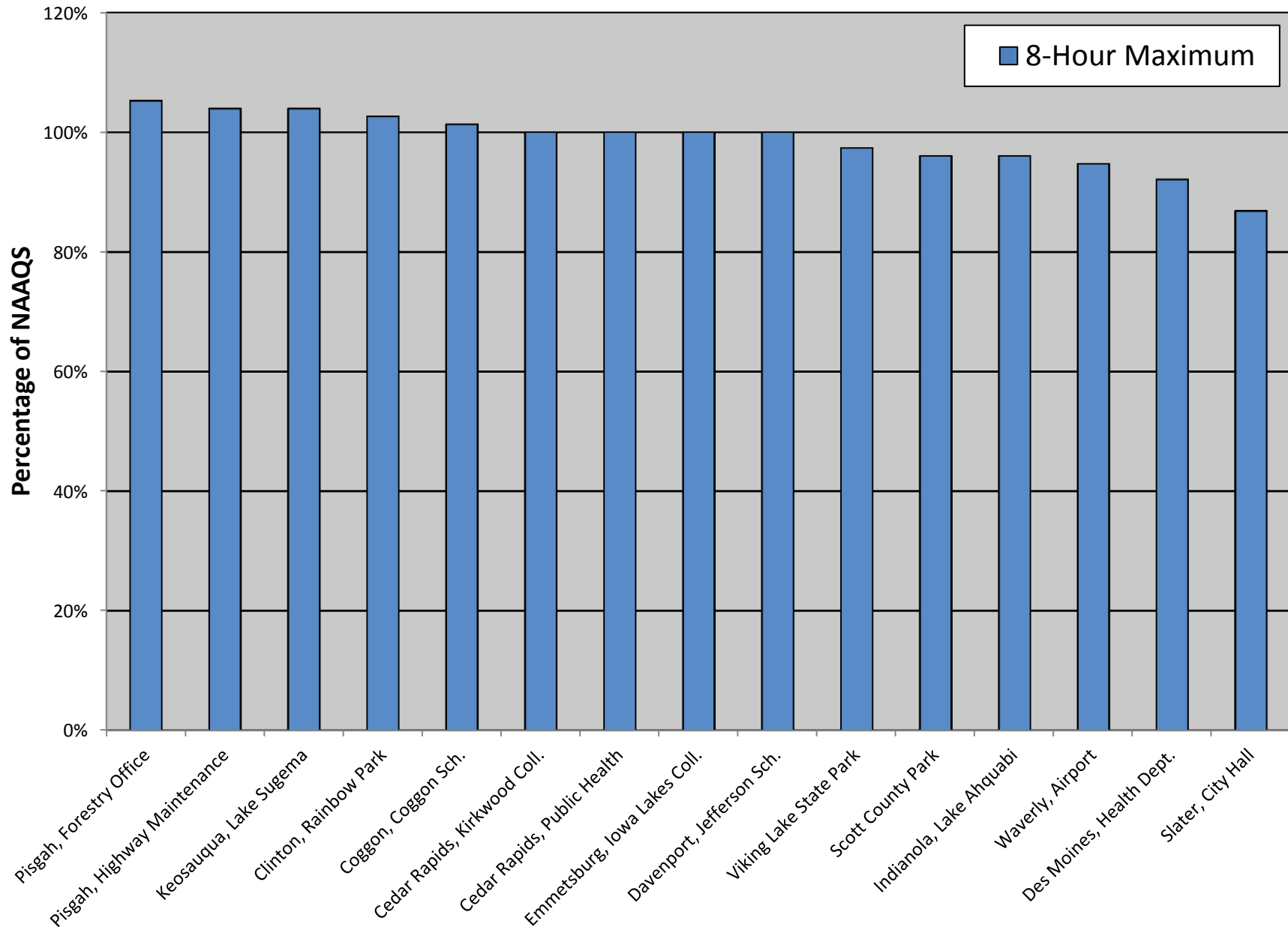
<b>Site</b>	<b>Name</b>	<b>City</b>	<b>County</b>	<b>Site Label</b>
190170011	Waverly Airport	Waverly	Bremer	Waverly, Airport
190450021	Rainbow Park	Clinton	Clinton	Clinton, Rainbow Park
190850007	Forestry Office	Pisgah	Harrison	Pisgah, Forestry Office
190851101	Highway Maintenance Shed	Pisgah	Harrison	Pisgah, Highway Maintenance
191130028	Kirkwood College	Cedar Rapids	Linn	Cedar Rapids, Kirkwood Coll.
191130033	Coggon Elementary School	Coggon	Linn	Coggon, Coggon Sch.
191130040	Public Health	Cedar Rapids	Linn	Cedar Rapids, Public Health
191370002	Viking Lake State Park	not in a city	Montgomery	Viking Lake State Park
191471002	Iowa Lakes College	Emmetsburg	Palo Alto	Emmetsburg, Iowa Lakes Coll.
191530030	Health Department	Des Moines	Polk	Des Moines, Health Dept.
191630014	Scott County Park	Davenport	Scott	Scott County Park
191630015	Jefferson School	Davenport	Scott	Davenport, Jefferson Sch.
191690011	City Hall	Slater	Story	Slater, City Hall
191770006	Lake Sugema	not in a city	Van Buren	Keosauqua, Lake Sugema
191810022	Lake Ahquabi State Park	Indianola	Warren	Indianola, Lake Ahquabi



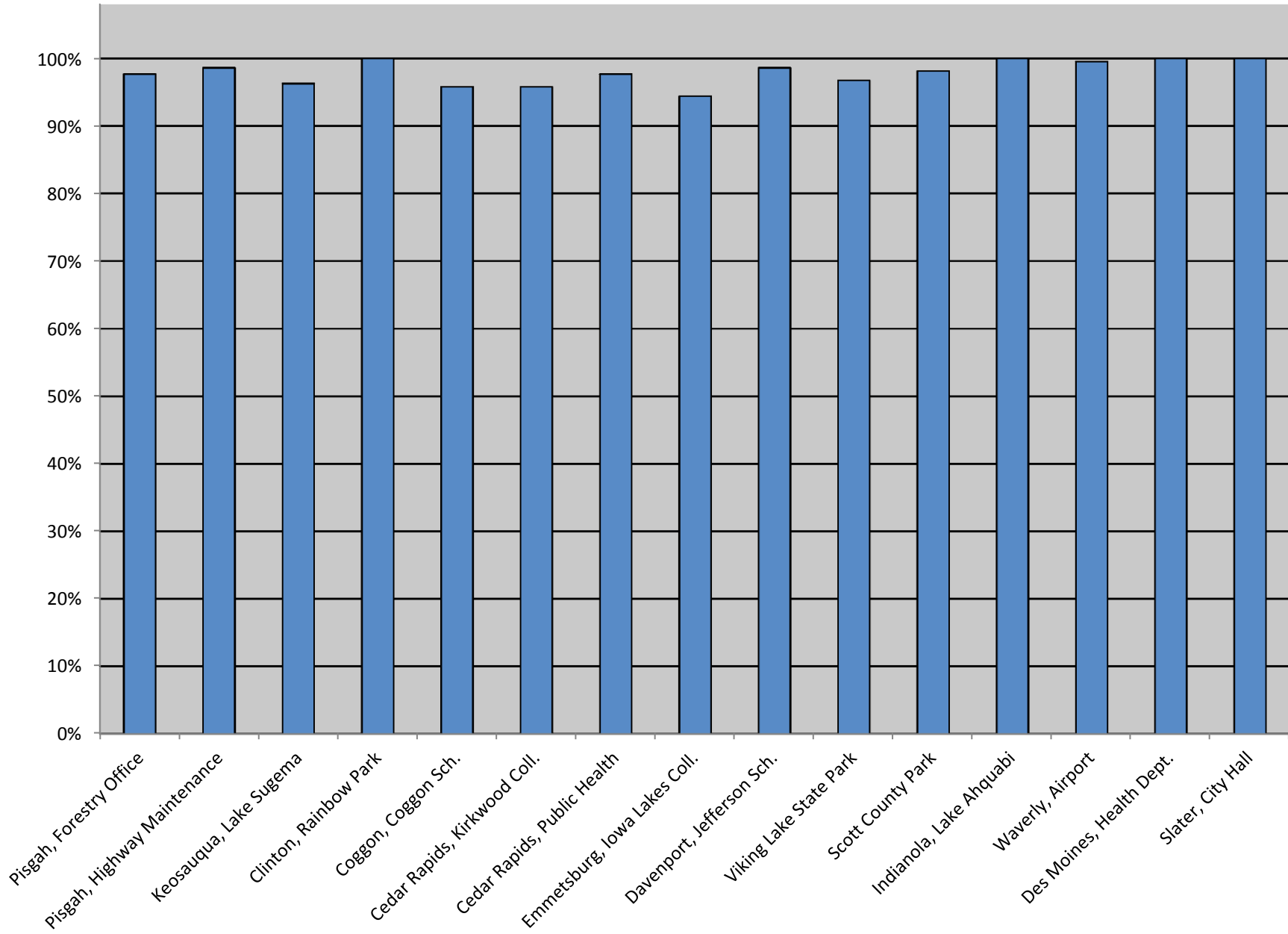
# Ozone Monitoring Locations



## Comparison of 2012 Ozone Data with National Ambient Air Quality Standards



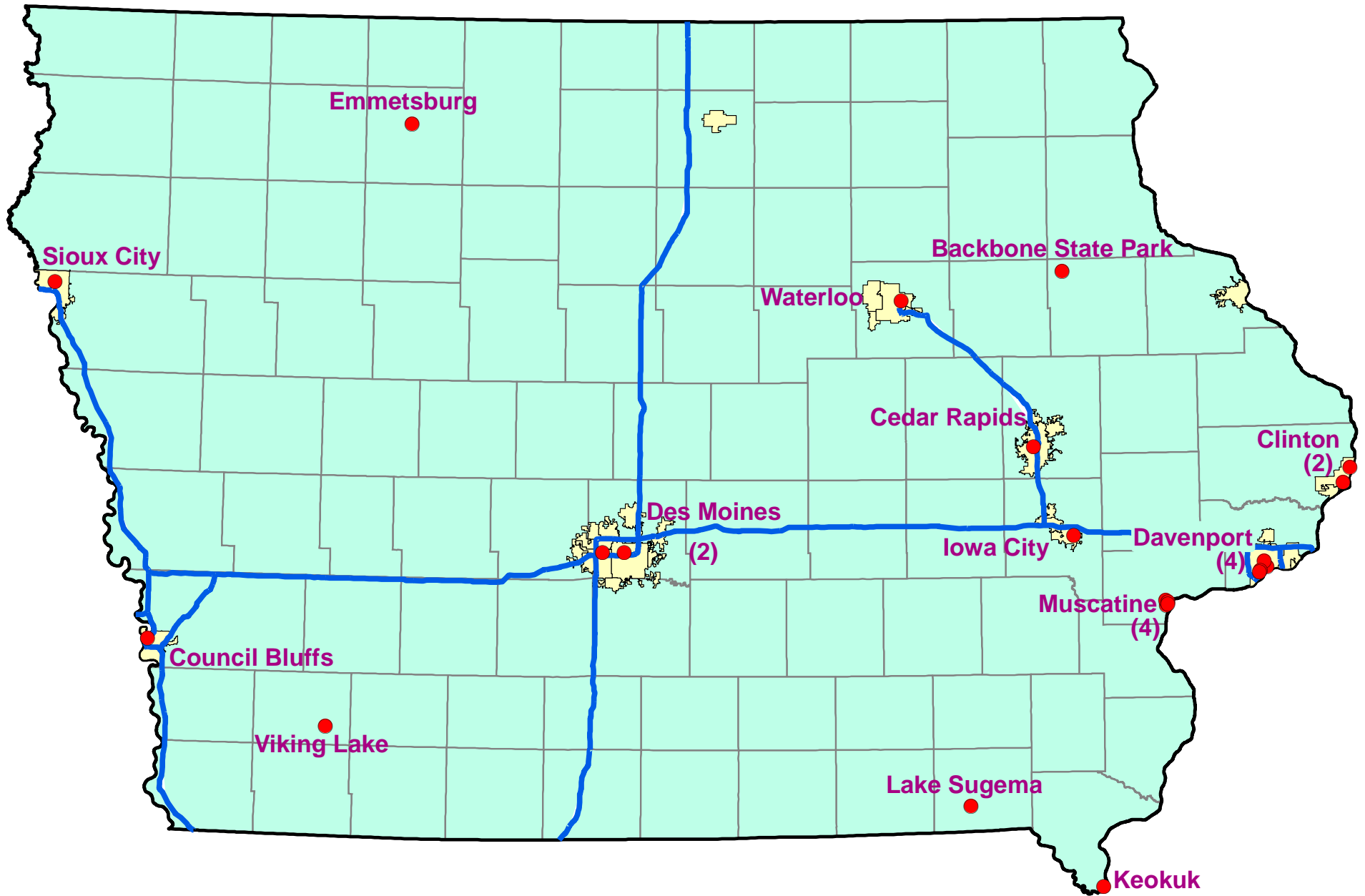
## 2012 Data Completeness – Ozone



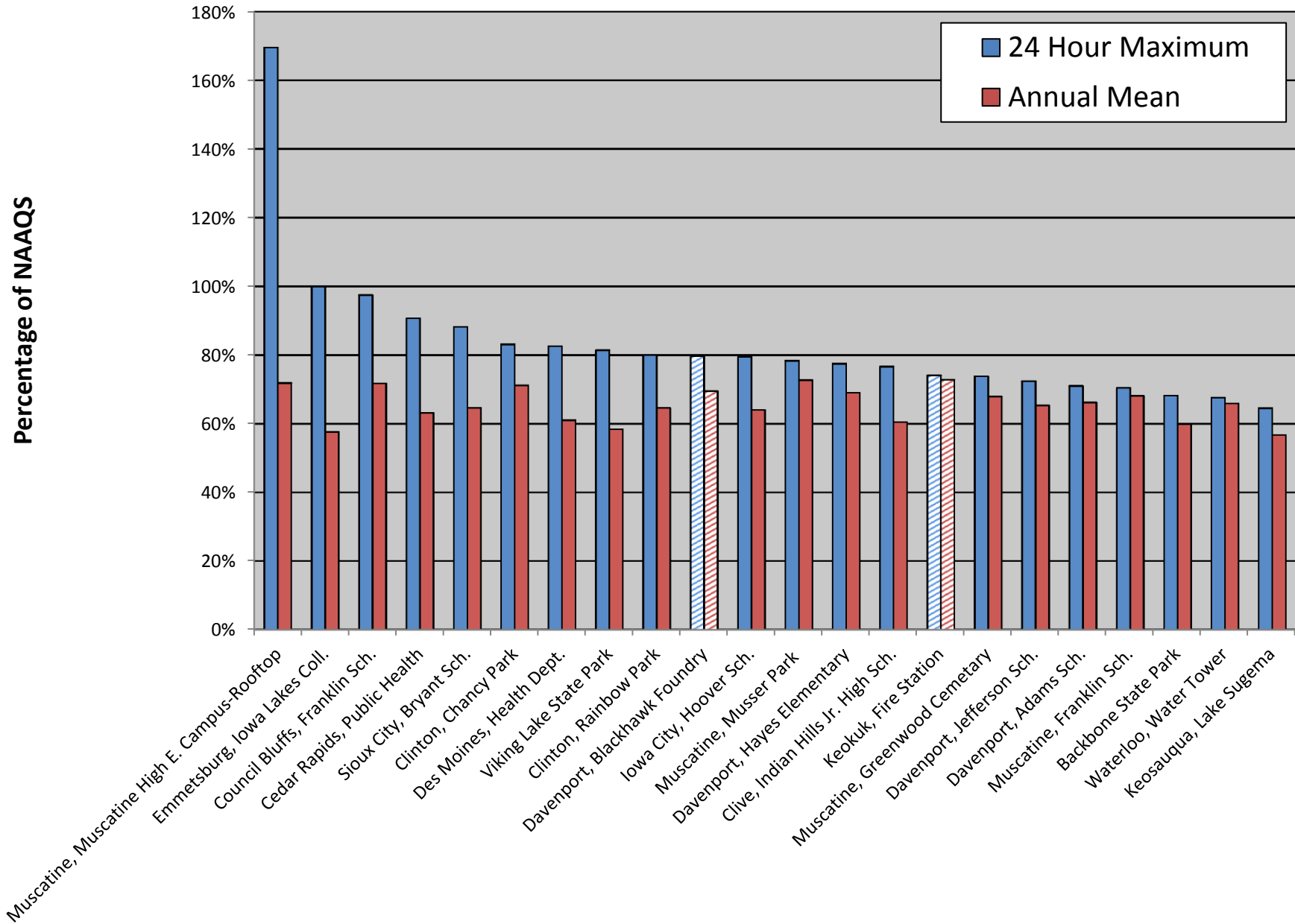
## PM<sub>2.5</sub> Monitoring Sites

Site	Name	City	County	Site Label
190130009	Water Tower	Waterloo	Black Hawk	Waterloo, Water Tower
190450019	Chancy Park	Clinton	Clinton	Clinton, Chancy Park
190450021	Rainbow Park	Clinton	Clinton	Clinton, Rainbow Park
190550001	Backbone State Park	not in a city	Delaware	Backbone State Park
191032001	Hoover Elementary	Iowa City	Johnson	Iowa City, Hoover Sch.
191110008	Fire Station	Keokuk	Lee	Keokuk, Fire Station
191130040	Public Health	Cedar Rapids	Linn	Cedar Rapids, Public Health
191370002	Viking Lake State Park	not in a city	Montgomery	Viking Lake State Park
191390015	Muscatine High E. Campus-Rooftop	Muscatine	Muscatine	Muscatine, Muscatine High E. Campus-Rooftop
191390016	Greenwood Cemetery	Muscatine	Muscatine	Muscatine, Greenwood Cemetery
191390018	Franklin School	Muscatine	Muscatine	Muscatine, Franklin Sch.
191390020	Musser Park	Muscatine	Muscatine	Muscatine, Musser Park
191471002	Iowa Lakes College	Emmetsburg	Palo Alto	Emmetsburg, Iowa Lakes Coll.
191530030	Health Department	Des Moines	Polk	Des Moines, Health Dept.
191532510	Indian Hills Jr. High School	Clive	Polk	Clive, Indian Hills Jr. High Sch.
191550009	Franklin School	Council Bluffs	Pottawattamie	Council Bluffs, Franklin Sch.
191630015	Jefferson School	Davenport	Scott	Davenport, Jefferson Sch.
191630018	Adams School	Davenport	Scott	Davenport, Adams Sch.
191630019	Blackhawk Foundry	Davenport	Scott	Davenport, Blackhawk Foundry
191630020	Hayes School	Davenport	Scott	Davenport, Hayes Elementary
191770006	Lake Sugema	not in a city	Van Buren	Keosauqua, Lake Sugema
191930019	Bryant School	Sioux City	Woodbury	Sioux City, Bryant Sch.

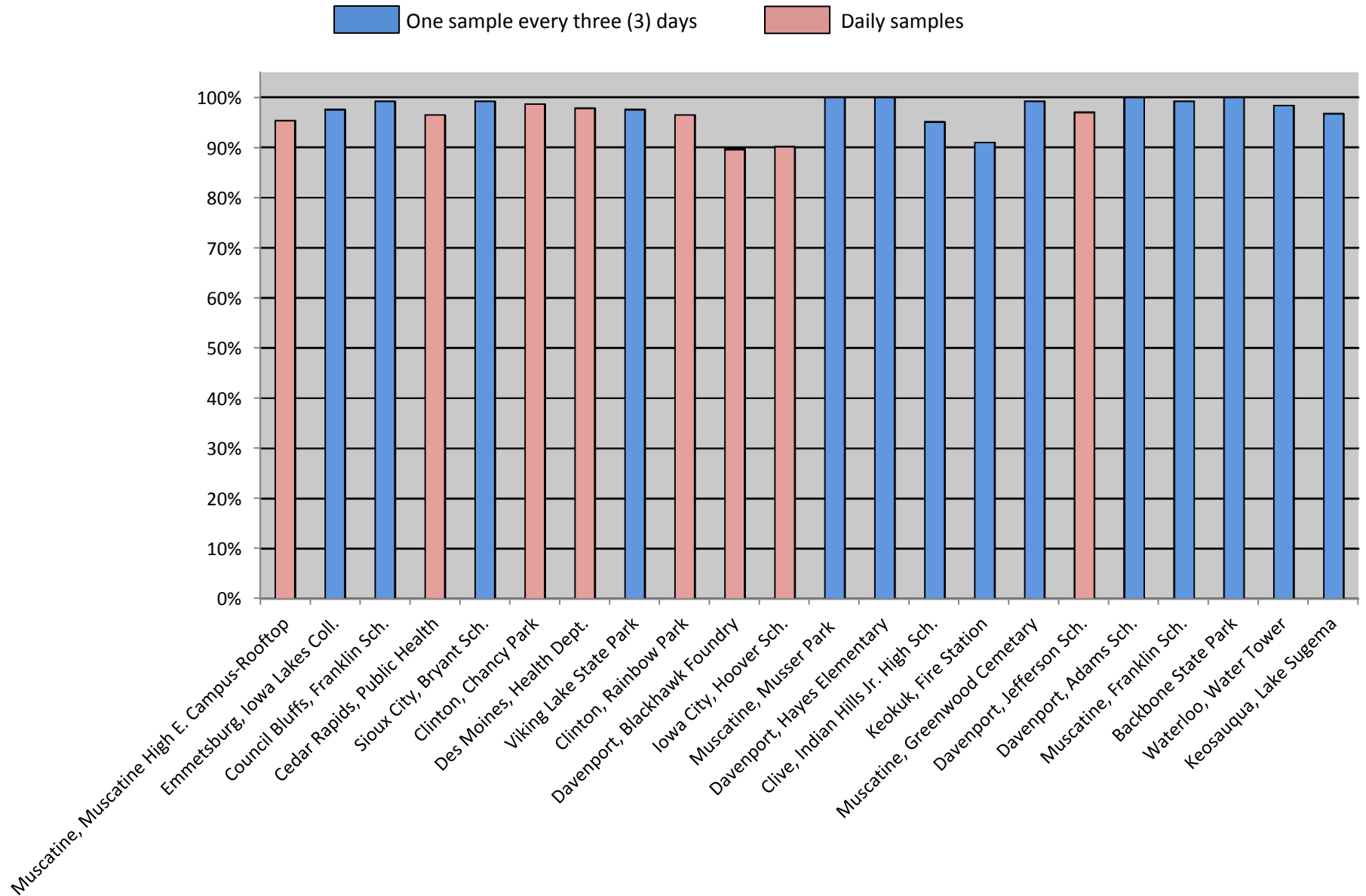
# PM<sub>2.5</sub> Monitoring Locations



# Comparison of 2012 PM<sub>2.5</sub> Data with National Ambient Air Quality Standards



## 2012 Data Completeness – PM<sub>2.5</sub>

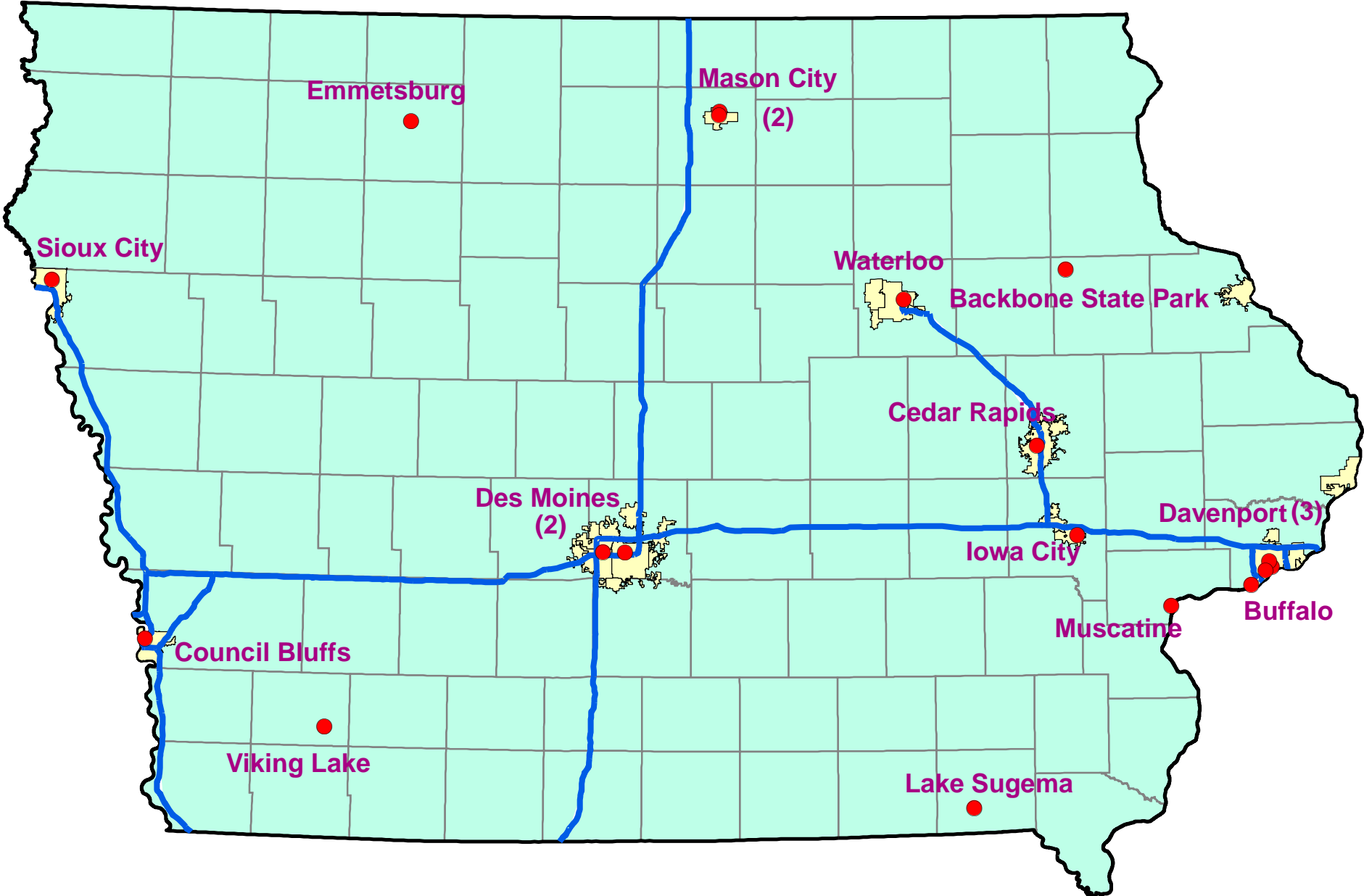


# PM<sub>10</sub> Monitoring Sites

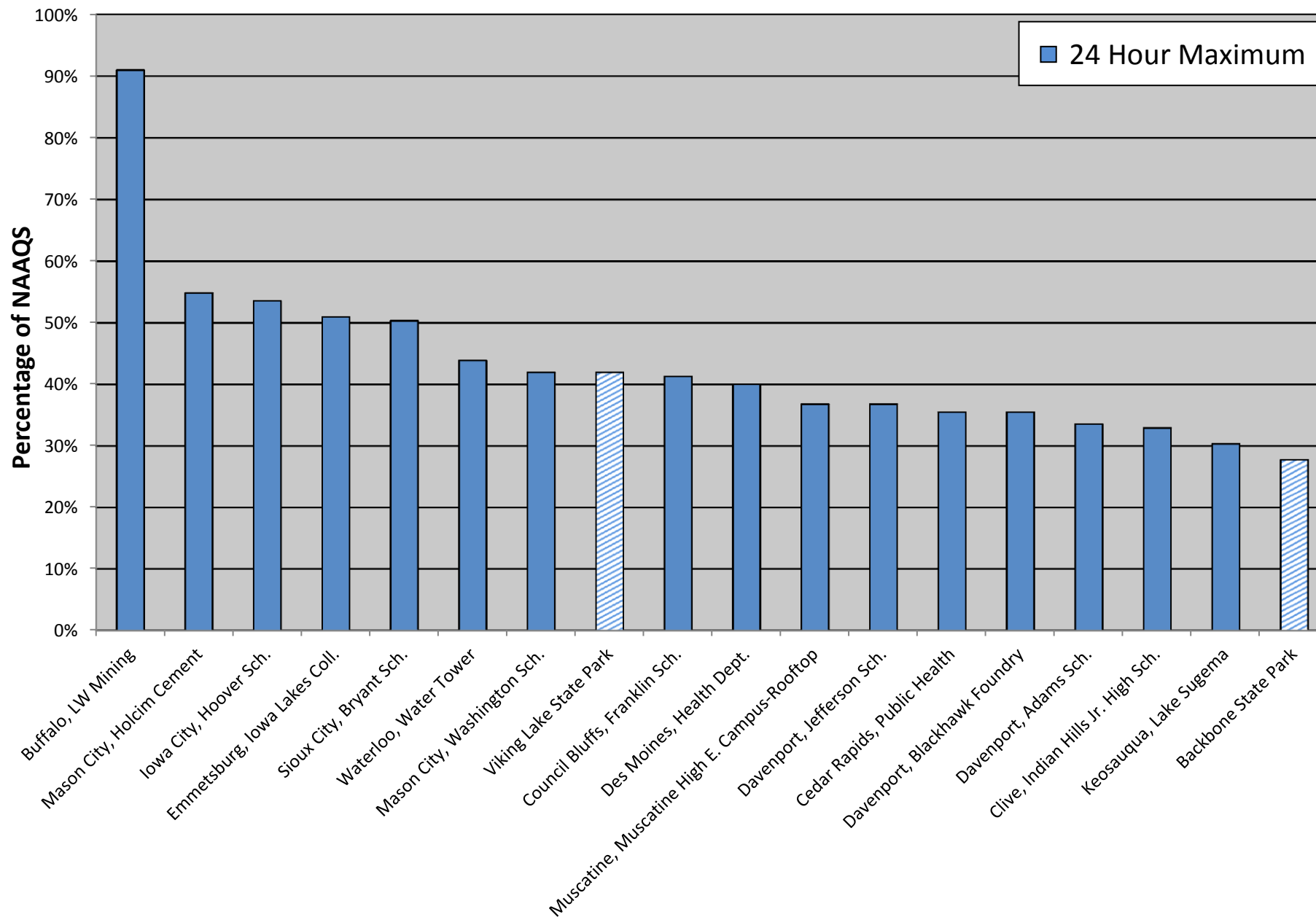
Site	Name	City	County	Site Label
190130009	Water Tower	Waterloo	Black Hawk	Waterloo, Water Tower
190330018	Holcim Cement	Mason City	Cerro Gordo	Mason City, Holcim Cement
190330020	Washington School	Mason City	Cerro Gordo	Mason City, Washington Sch.
190550001	Backbone State Park	not in a city	Delaware	Backbone State Park
191032001	Hoover Elementary	Iowa City	Johnson	Iowa City, Hoover Sch.
191130040	Public Health	Cedar Rapids	Linn	Cedar Rapids, Public Health
191370002	Viking Lake State Park	not in a city	Montgomery	Viking Lake State Park
191390015	Muscatine High E. Campus-Rooftop	Muscatine	Muscatine	Muscatine, Muscatine High E. Campus-Rooftop
191471002	Iowa Lakes College	Emmetsburg	Palo Alto	Emmetsburg, Iowa Lakes Coll.
191530030	Health Department	Des Moines	Polk	Des Moines, Health Dept.
191532510	Indian Hills Jr. High School	Clive	Polk	Clive, Indian Hills Jr. High Sch.
191550009	Franklin School	Council Bluffs	Pottawattamie	Council Bluffs, Franklin Sch.
191630015	Jefferson School	Davenport	Scott	Davenport, Jefferson Sch.
191630017	Linwood Mining	Buffalo	Scott	Buffalo, LW Mining
191630018	Adams School	Davenport	Scott	Davenport, Adams Sch.
191630019	Blackhawk Foundry	Davenport	Scott	Davenport, Blackhawk Foundry
191770006	Lake Sugema	not in a city	Van Buren	Keosauqua, Lake Sugema
191930019	Bryant School	Sioux City	Woodbury	Sioux City, Bryant Sch.



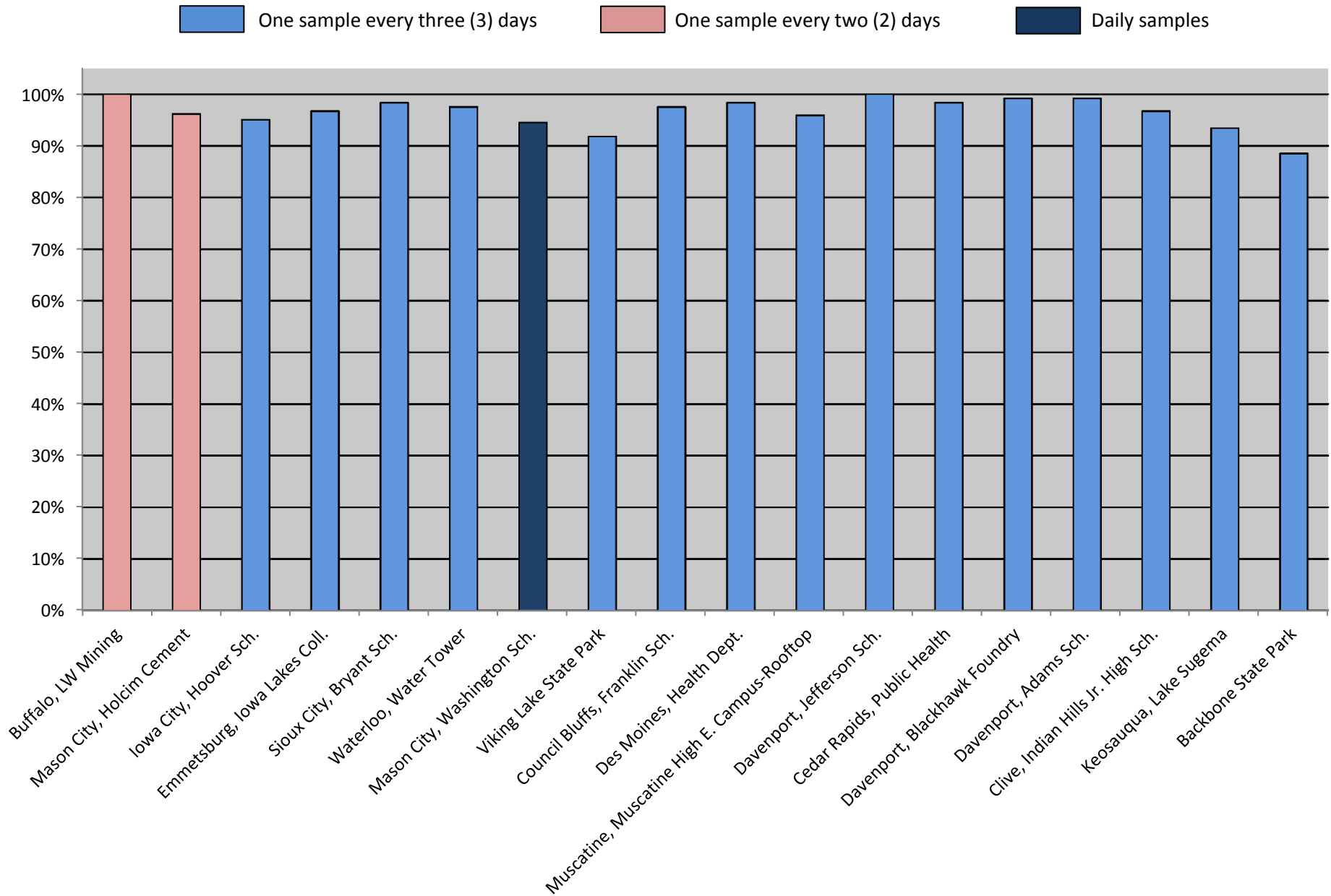
# PM<sub>10</sub> Monitoring Locations



# Comparison of 2012 PM<sub>10</sub> Data with the National Ambient Air Quality Standard



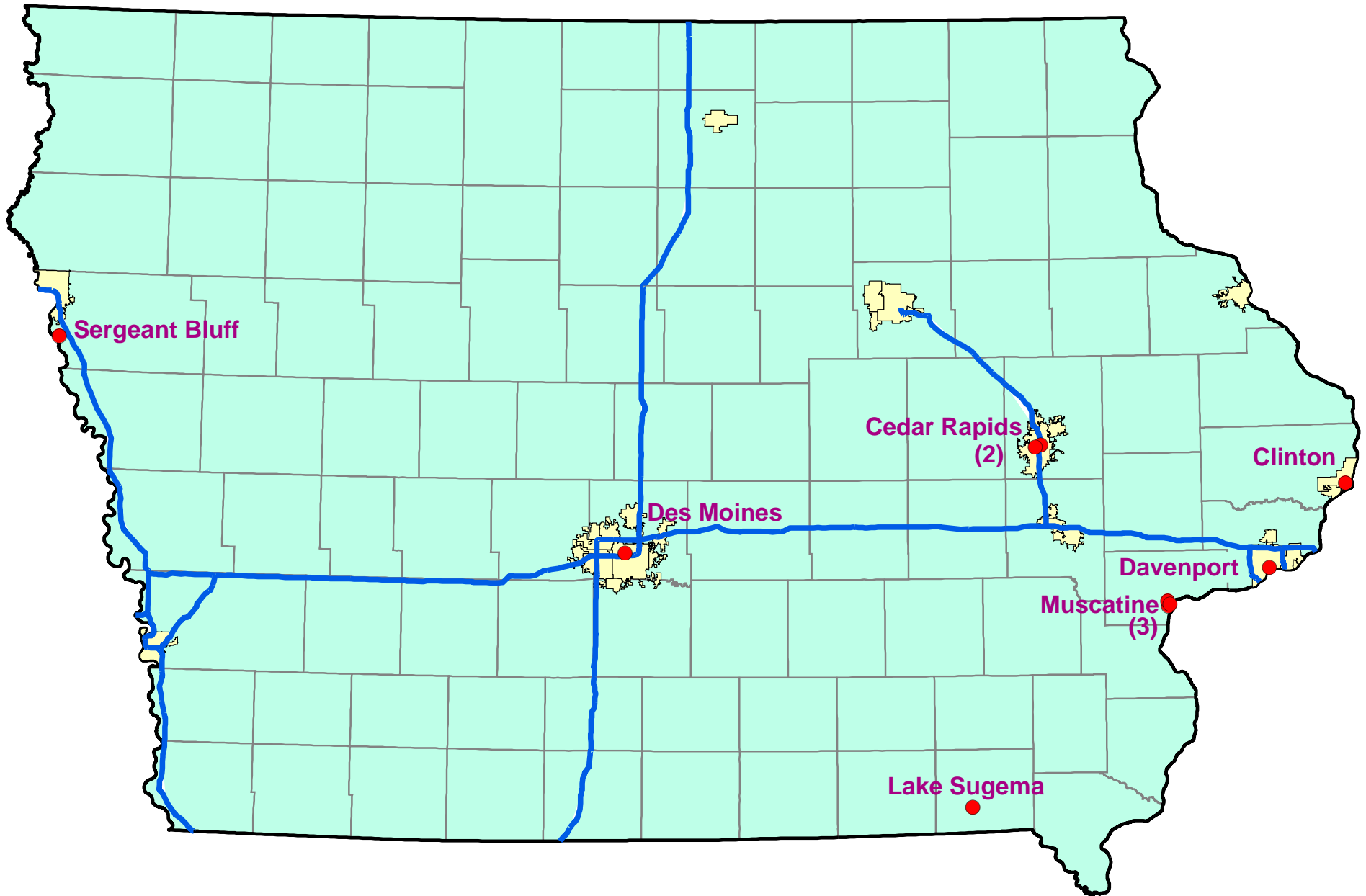
## 2012 Data Completeness – PM<sub>10</sub>



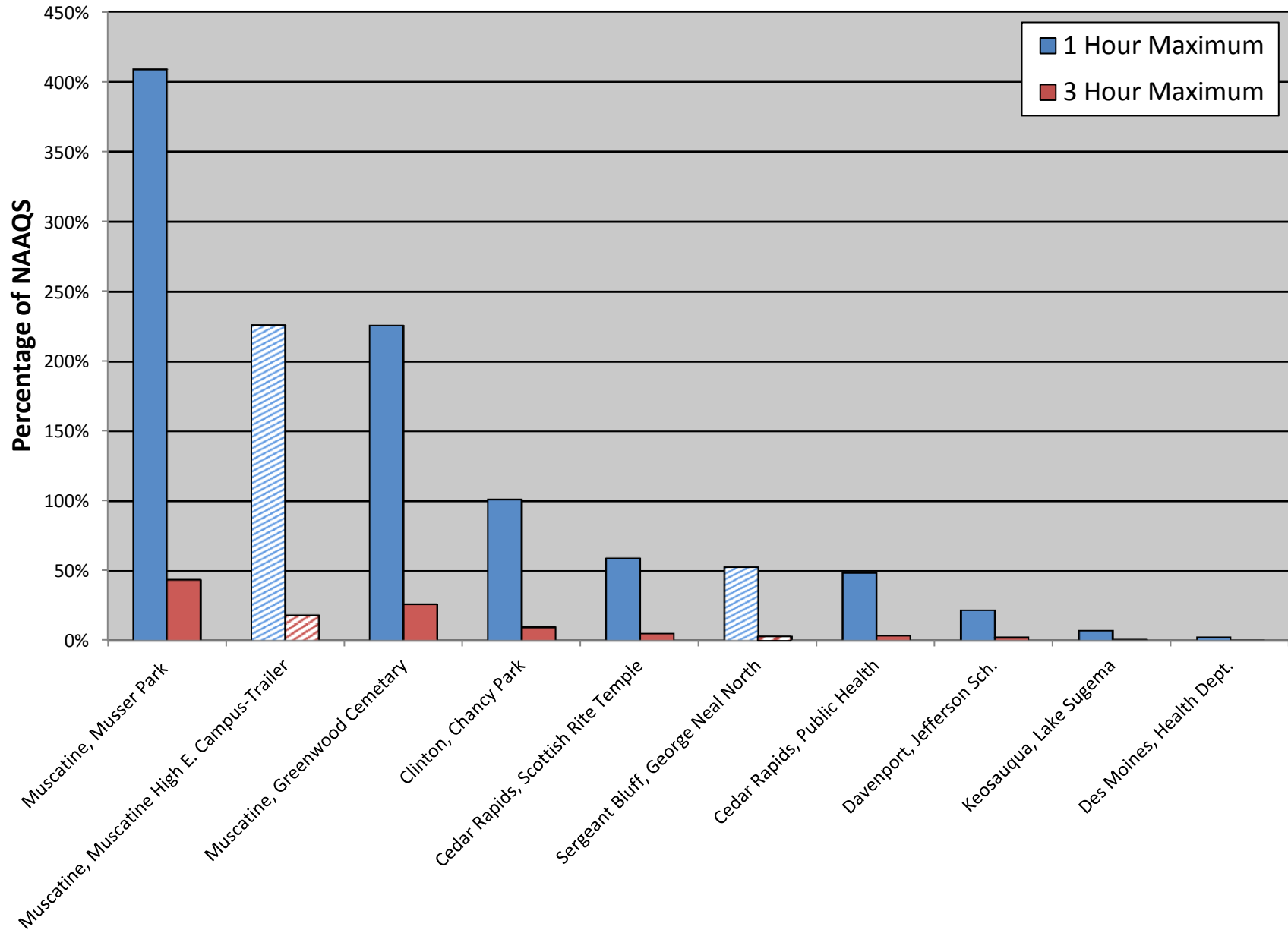
# Sulfur Dioxide Monitoring Sites

<b>Site</b>	<b>Name</b>	<b>City</b>	<b>County</b>	<b>Site Label</b>
190450019	Chancy Park	Clinton	Clinton	Clinton, Chancy Park
191130031	Scottish Rite Temple	Cedar Rapids	Linn	Cedar Rapids, Scottish Rite Temple
191130040	Public Health	Cedar Rapids	Linn	Cedar Rapids, Public Health
191390019	Muscatine High E. Campus-Trailer	Muscatine	Muscatine	Muscatine, Muscatine High E. Campus-Trailer
191390016	Greenwood Cemetery	Muscatine	Muscatine	Muscatine, Greenwood Cemetery
191390020	Musser Park	Muscatine	Muscatine	Muscatine, Musser Park
191530030	Health Department	Des Moines	Polk	Des Moines, Health Dept.
191630015	Jefferson School	Davenport	Scott	Davenport, Jefferson Sch.
191770006	Lake Sugema	not in a city	Van Buren	Keosauqua, Lake Sugema
191930020	George Neal North	Sergeant Bluff	Woodbury	Sergeant Bluff, George Neal North

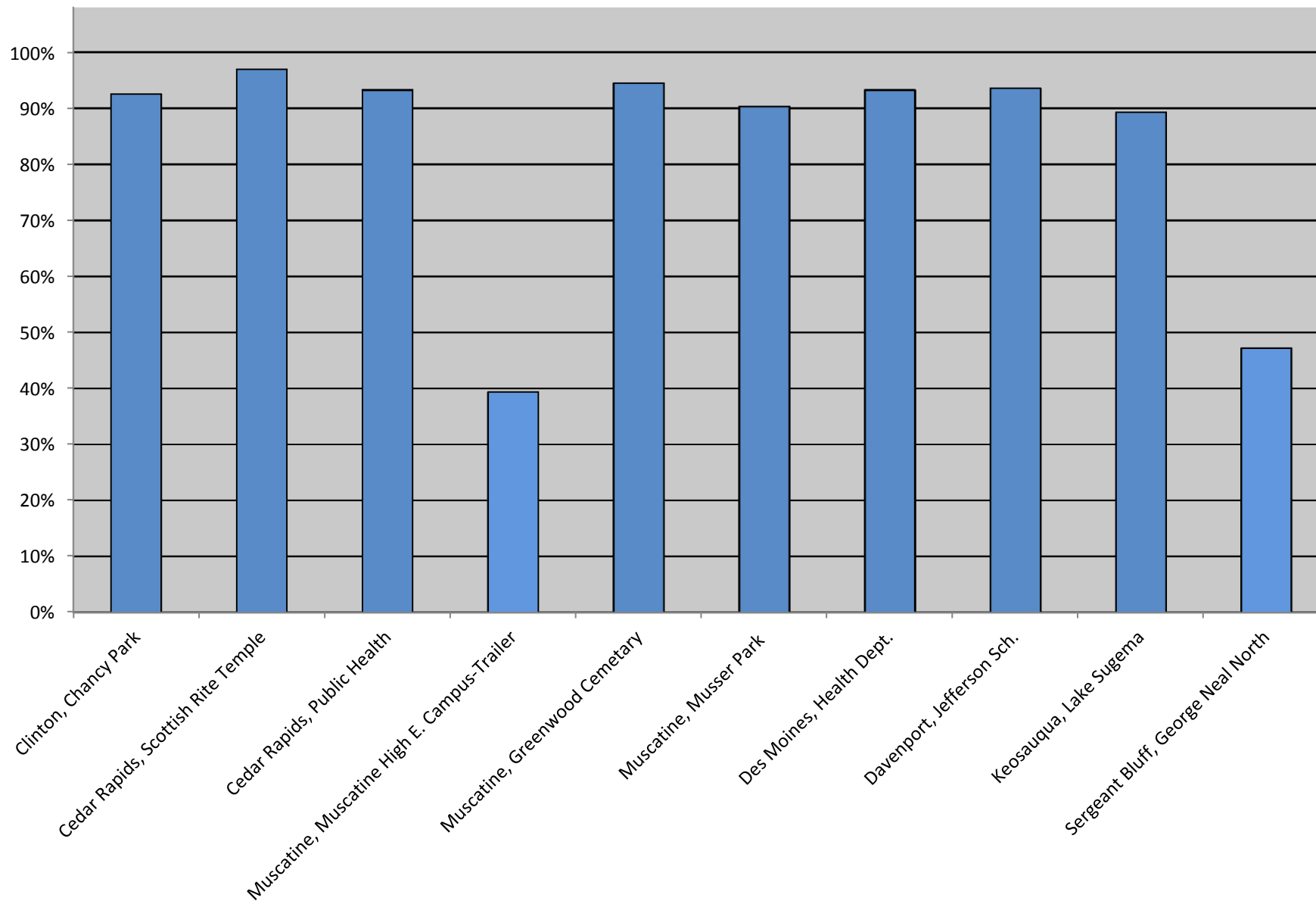
# Sulfur Dioxide Monitoring Locations



# Comparison of 2012 Sulfur Dioxide Data with National Ambient Air Quality Standards



## 2012 Data Completeness – Sulfur Dioxide

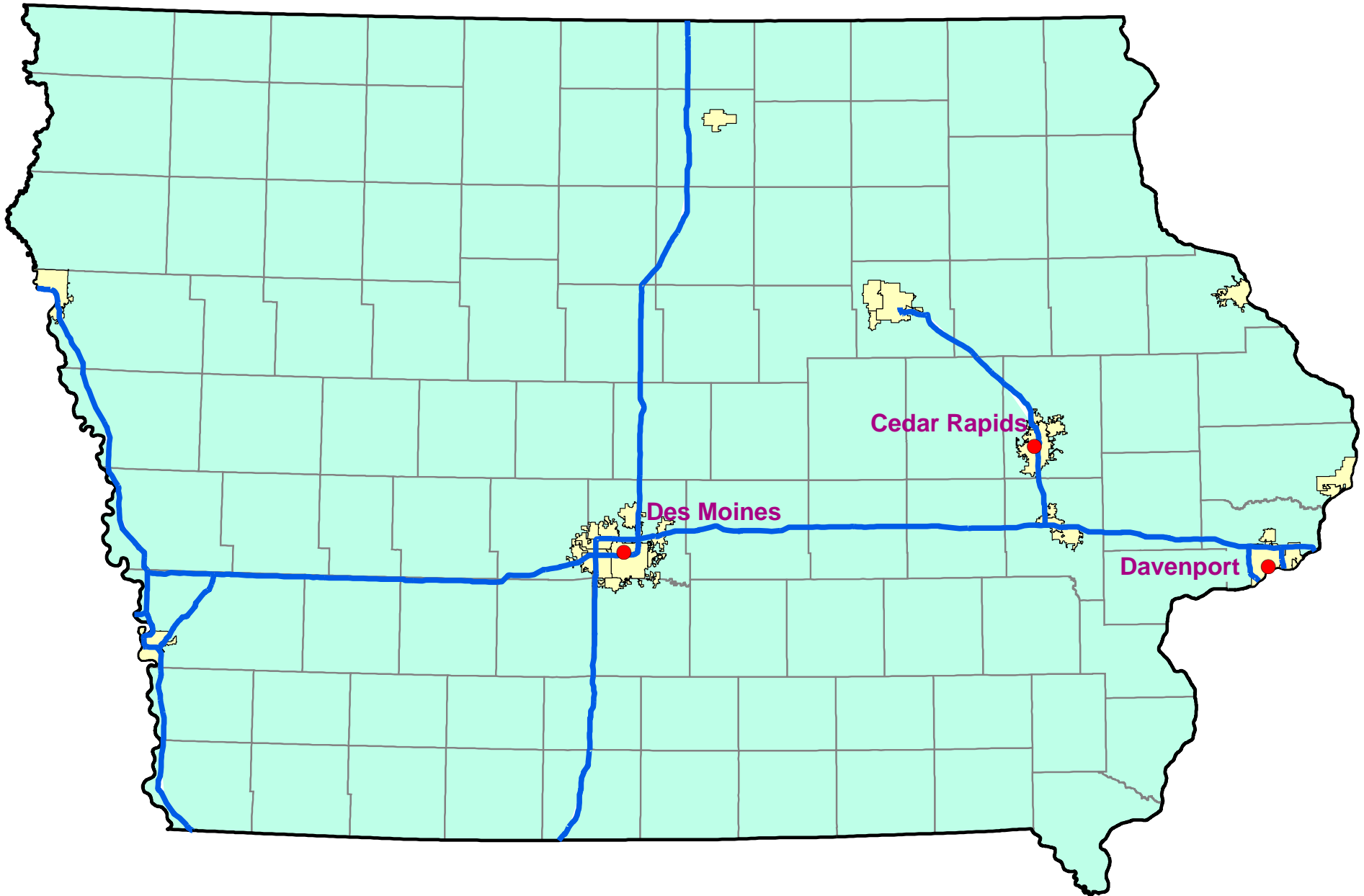


# Carbon Monoxide Monitoring Sites

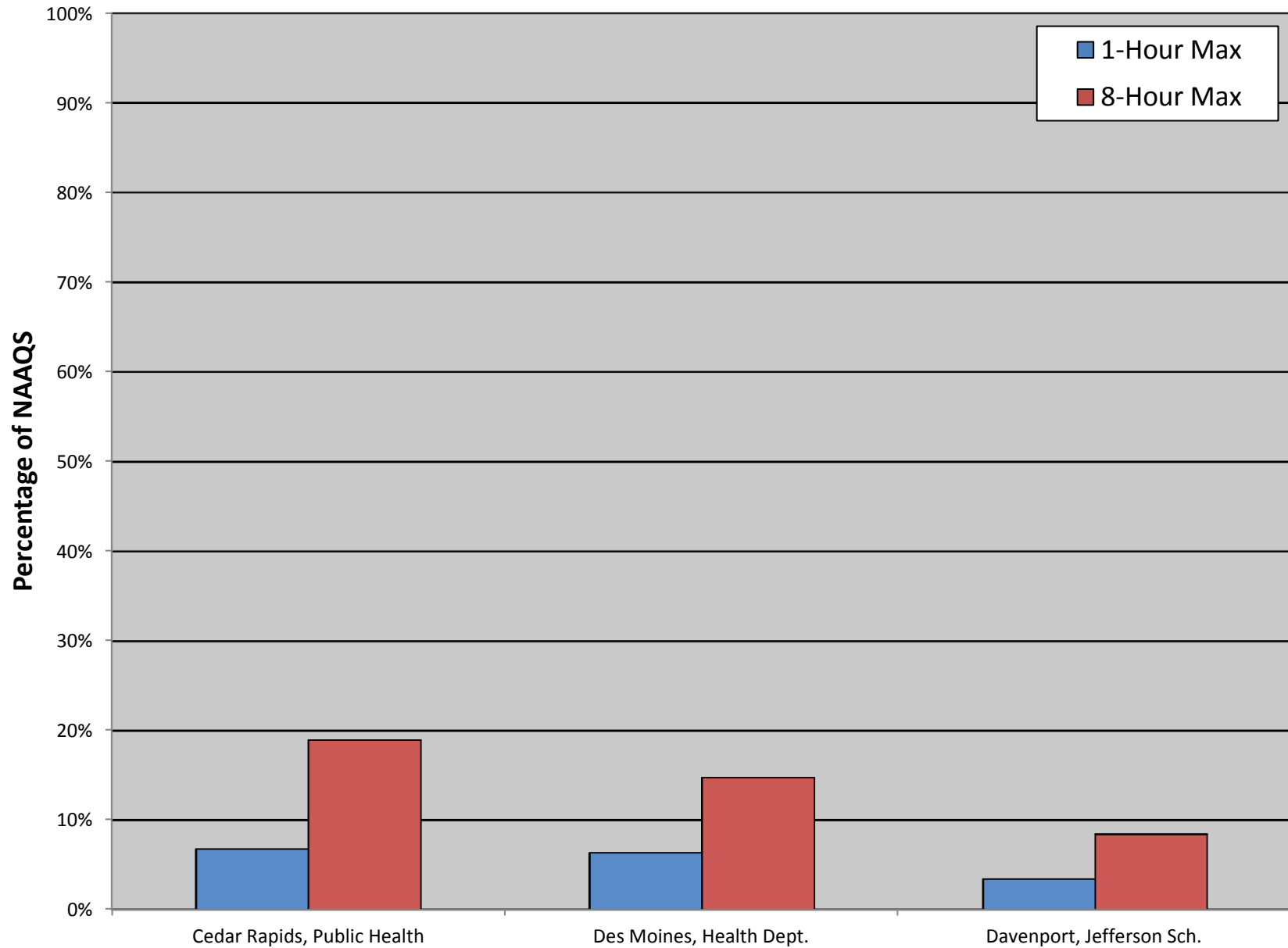
<b>Site</b>	<b>Name</b>	<b>City</b>	<b>County</b>	<b>Site Label</b>
191130040	Public Health	Cedar Rapids	Linn	Cedar Rapids, Public Health
191530030	Health Department	Des Moines	Polk	Des Moines, Health Dept.
191630015	Jefferson School	Davenport	Scott	Davenport, Jefferson Sch.



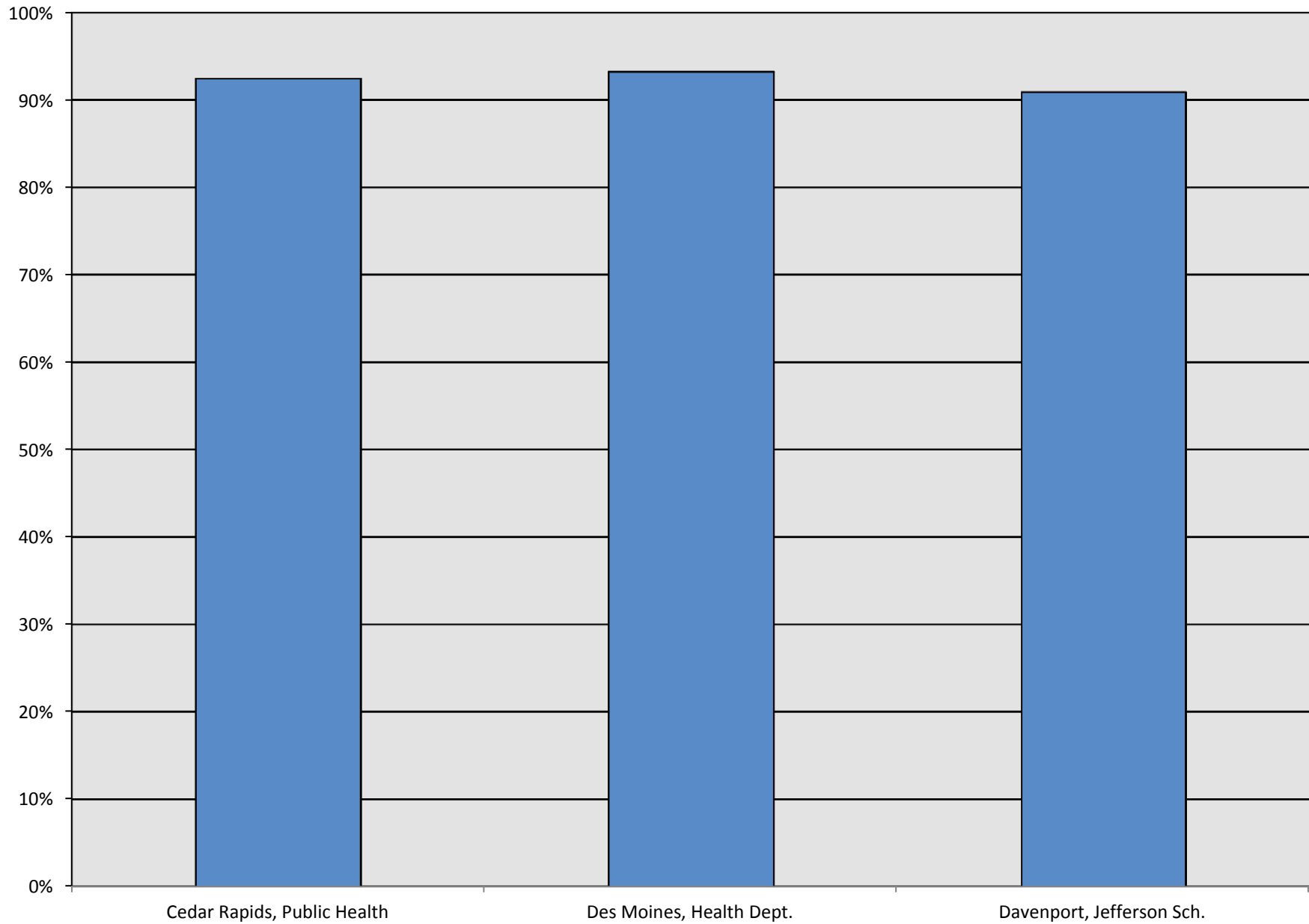
# Carbon Monoxide Monitoring Locations



# Comparison of 2012 Carbon Monoxide Data with National Ambient Air Quality Standards



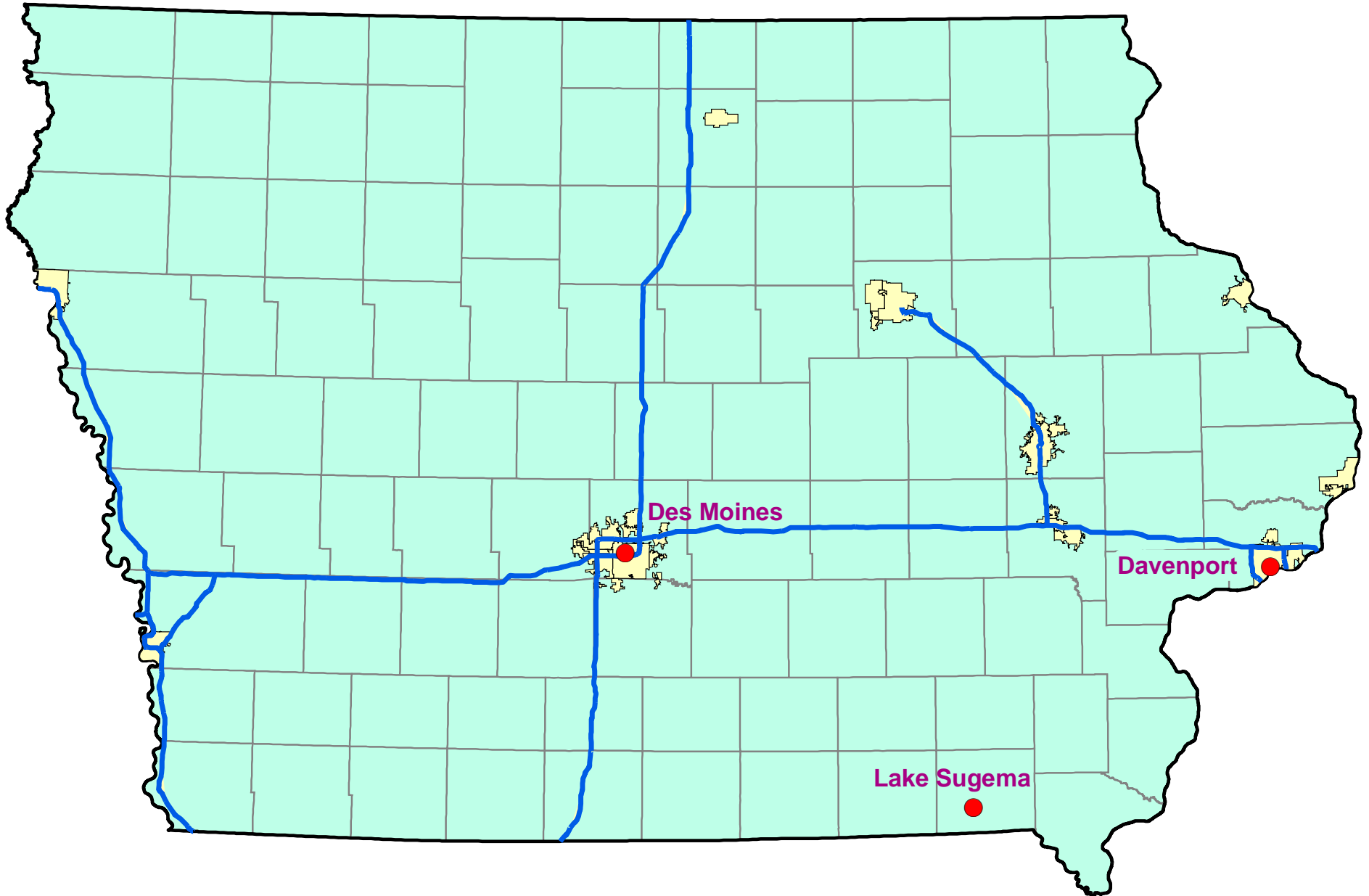
## 2012 Data Completeness – Carbon Monoxide



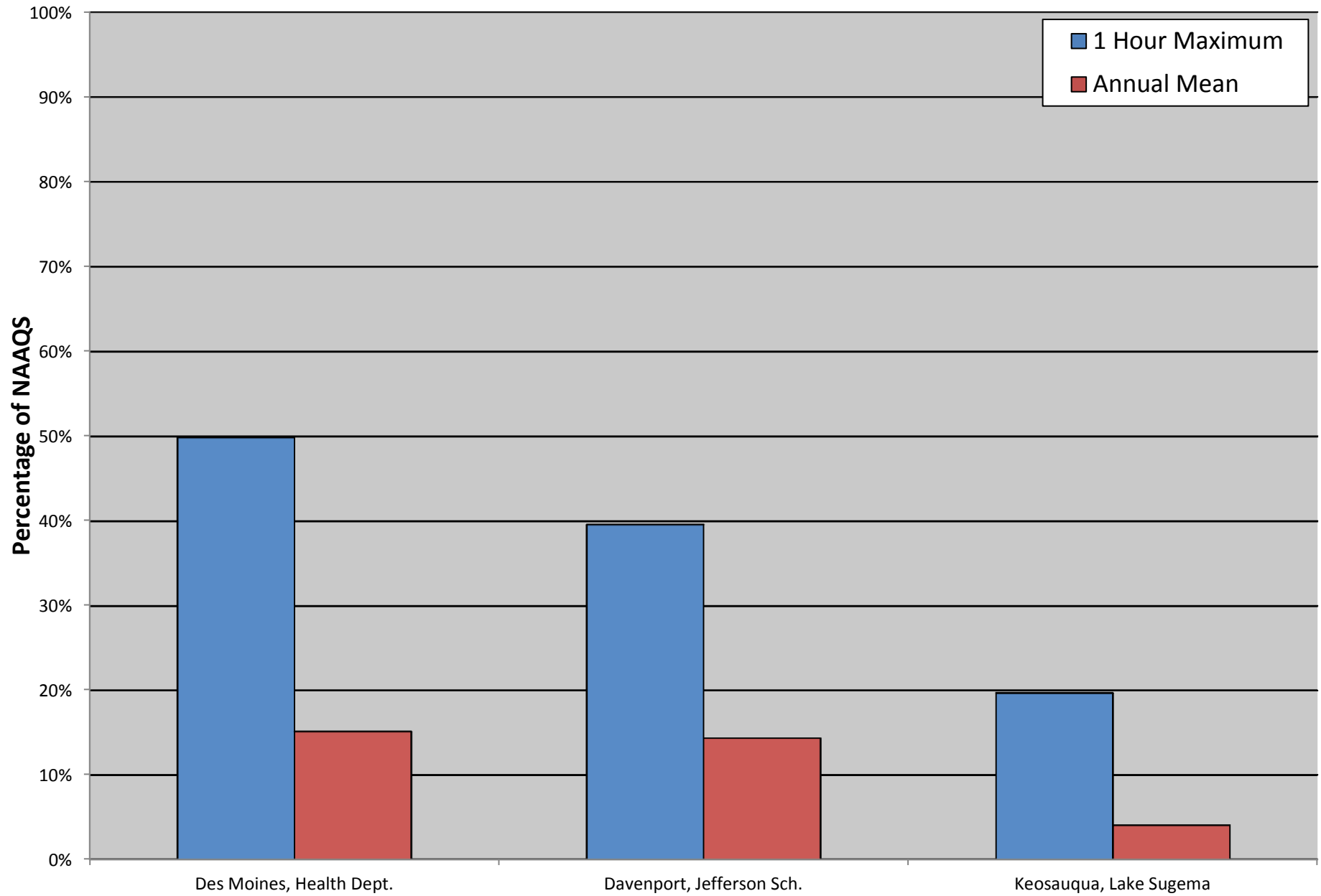
# Nitrogen Dioxide Monitoring Sites

<b>Site</b>	<b>Name</b>	<b>City</b>	<b>County</b>	<b>Site Label</b>
191530030	Health Department	Des Moines	Polk	Des Moines, Health Dept.
191630015	Jefferson School	Davenport	Scott	Davenport, Jefferson Sch.
191770006	Lake Sugema	not in a city	Van Buren	Keosauqua, Lake Sugema

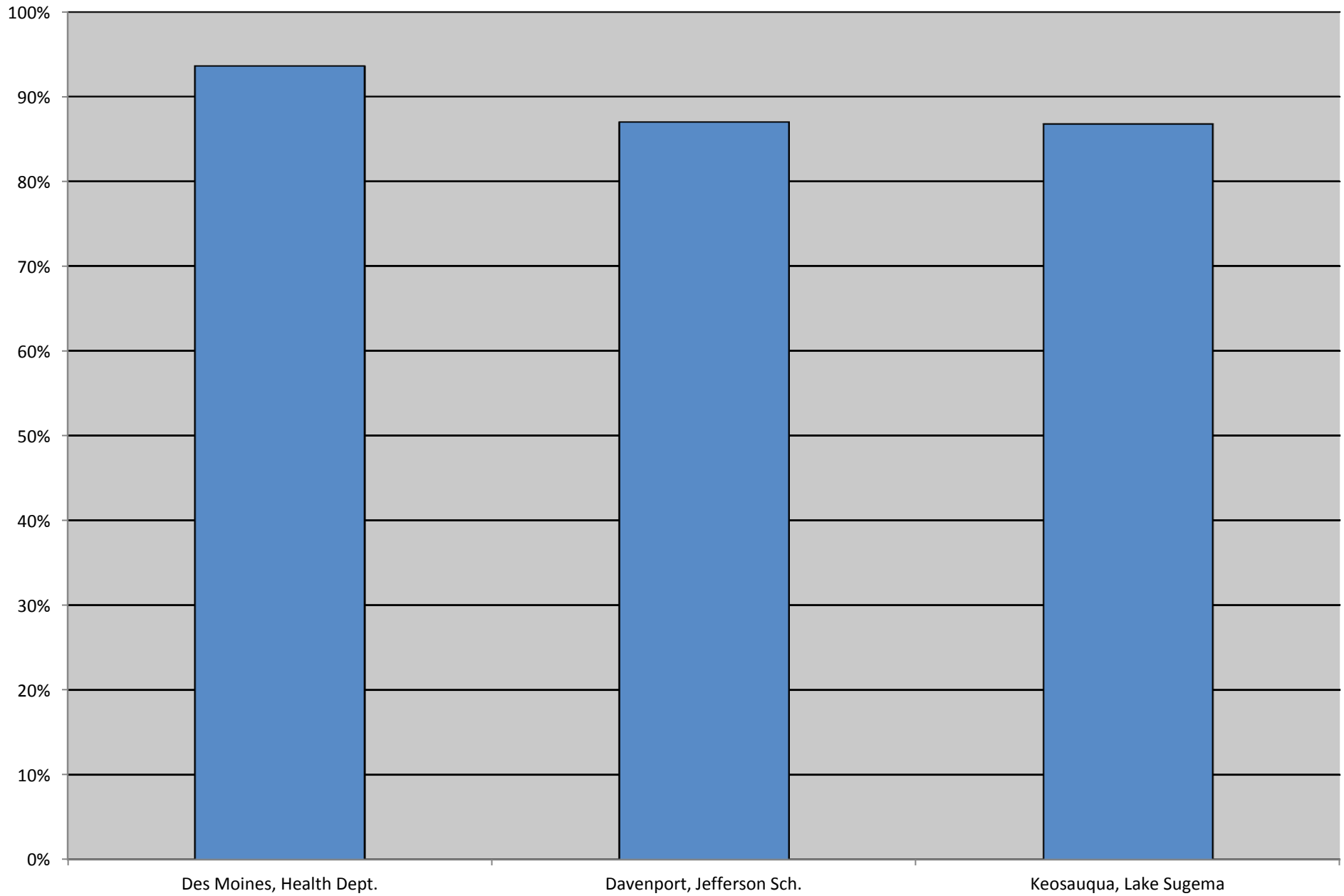
# Nitrogen Dioxide Monitoring Locations



# Comparison of 2012 Nitrogen Dioxide Data with the National Ambient Air Quality Standard



## 2012 Data Completeness – Nitrogen Dioxide



# Lead Monitoring Sites

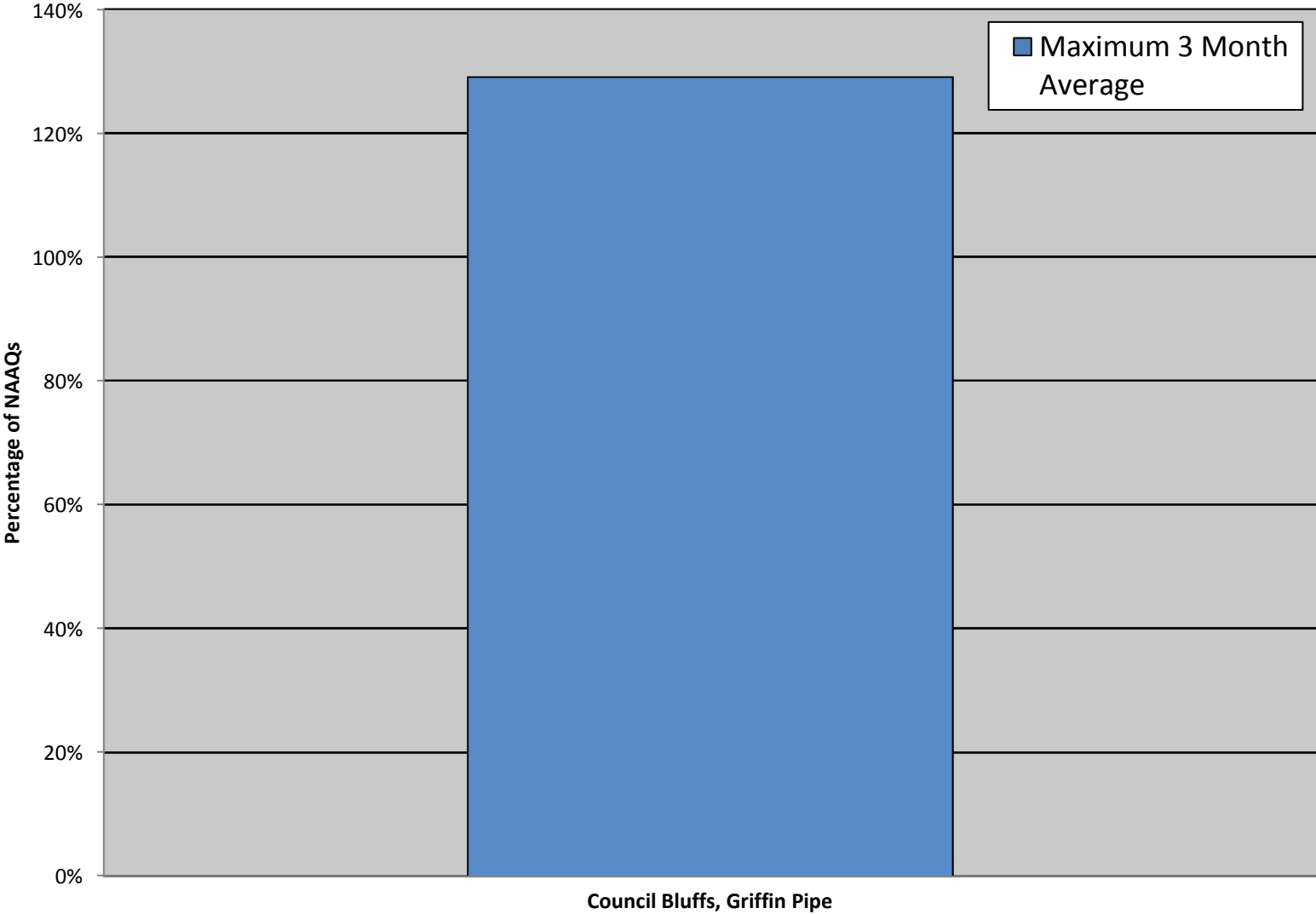
Name	City	Address	County	Site Label
Griffin Pipe	Council Bluffs	8th Avenue and 27th St	Pottawattamie	Council Bluffs, Griffin Pipe



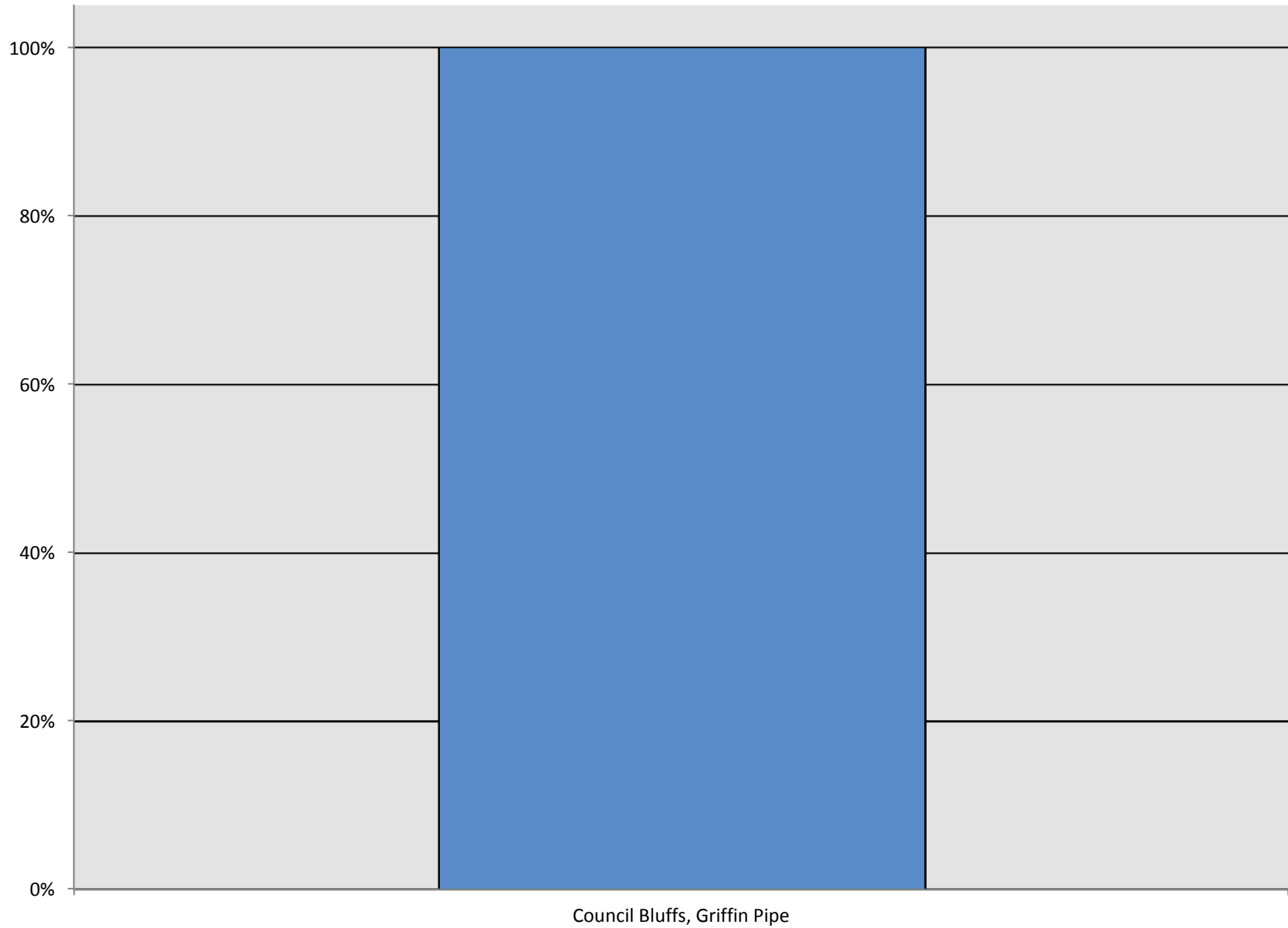


# Comparison of 2012 Lead Data with the National Ambient Air Quality Standard

## Maximum 3 Month Average



## 2012 Data Completeness – Lead



# Appendix A

## *Additional Chart Information*

Listed below is additional information that may be useful in interpreting the charts contained in this review

### Ozone

#### **Comparison of 2012 Ozone Data with National Ambient Air Quality Standards**

This chart shows the highest eight hour ozone average (expressed as a percentage of the 76 ppb eight-hour NAAQS) for each ozone monitor operated in 2012.

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#### **Data Completeness – Ozone**

This chart shows the total number of valid ozone monitoring days (expressed as a percentage of the total number of days in the ozone season) for each ozone monitor operated in 2012. According to EPA guidelines, an ozone monitoring day is considered valid if at least 75% of the 24 8-hour averages for the day are valid. An 8-hour average is valid if at least 75% of the hourly average values for the 8-hour period are available. In the event that less than 75% of the 8-hour averages are available, a day is also counted as valid if the daily maximum 8-hour average for that day exceeds the NAAQS ( $\geq 76$  ppb). Ozone season runs from April through October; this amounts to 214 possible sampling days. An ozone monitor that recorded data for all 214 days of the season would have a data capture rate of 100%.

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

#### **Comparison of 2012 PM<sub>2.5</sub> Data with National Ambient Air Quality Standards**

This chart shows the highest 24 hour value (expressed as a percentage of the 35.5  $\mu\text{g}/\text{m}^3$  24-hour NAAQS), and the annual average (expressed as a percentage of the 15.05  $\mu\text{g}/\text{m}^3$  annual NAAQS) for each PM<sub>2.5</sub> monitor operated in 2012. Striped bars on the graph denote monitors with one or more calendar quarters with completeness of less than 75%. Keokuk Fire Station had 73% completeness for quarter 4. Blackhawk Foundry had 65% completeness for quarter 3.

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

This chart shows the fraction of scheduled sampling days for each PM<sub>2.5</sub> monitor operated in 2012, where a valid PM<sub>2.5</sub> sample was collected. During 2012, PM<sub>2.5</sub> samplers in Iowa were scheduled to operate at a sampling frequency of either one sample every third day (122 scheduled samples) or one sample every day (365 scheduled samples). The sampling frequency of each monitor is indicated by the color of the bar.

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## PM<sub>10</sub>

### Comparison of 2012 PM<sub>10</sub> Data with National Ambient Air Quality Standards

This chart shows the highest 24 hour value (expressed as a percentage of the 155 µg/m<sup>3</sup> 24-hour NAAQS) for each PM<sub>10</sub> monitor operated in 2012. Striped bars on the graph denote monitors with one or more calendar quarters with completeness of less than 75%. Viking Lake State Park had 74% completeness for quarter 1. Backbone State Park had 61% completeness for quarter 3.

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

This chart shows the fraction of scheduled sampling days in 2012, for each PM<sub>10</sub> monitor operated in 2012, where a valid PM<sub>10</sub> sample was collected. During 2012, PM<sub>10</sub> samplers in Iowa were scheduled to operate at a frequency of one sample every third day (122 scheduled samples), one sample every other day (183 scheduled samples), or one sample every day (366 scheduled samples). The sampling frequency of each monitor is indicated by the color of the bar in the chart.

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## Sulfur Dioxide

### Comparison of 2012 Sulfur Dioxide Data with National Ambient Air Quality Standards

This chart shows the highest 1 hour value (expressed as a percentage of the 75.5 ppb 1 hour NAAQS), and highest 3 hour value (expressed as a percentage of the 0.55 ppm 3 hour NAAQS) for each sulfur dioxide monitor operated in 2012. Striped bars on the graph indicate monitors that did not operate for the entire year. George Neal North started monitoring on July 1, 2012, and Muscatine High School East Campus began monitoring on August 1, 2012.

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### Data Completeness – Sulfur Dioxide

This chart shows the total number of hourly sulfur dioxide values (expressed as a percentage of the total number of hours in 2012) for each sulfur dioxide monitor that operated in 2012. A sulfur dioxide monitor that recorded data for all 8784 hours during 2012 would have a data capture rate of 100%.

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## Carbon Monoxide

### Comparison of 2012 Carbon Monoxide Data with National Ambient Air Quality Standards

This chart shows the highest 1 hour value (expressed as a percentage of the 35.5 ppm 1 hour NAAQS) and the highest 8 hour value (expressed as a percentage of the 9.5 ppm 8 hour NAAQS) for each carbon monoxide monitor operated in 2012.

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## **Data Completeness – Carbon Monoxide**

This chart shows the total number of hourly carbon monoxide values (expressed as a percentage of the total number of hours in 2012). A carbon monoxide monitor that recorded data for all 8784 hours during 2012 would have a data capture rate of 100%.

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## **Nitrogen Dioxide**

### **Comparison of 2012 Nitrogen Dioxide Data with National Ambient Air Quality Standards**

This chart shows the maximum 1 hour value (expressed as a percentage of the 100.5 ppb 1 hour NAAQS), and the annual average (expressed as a percentage of the 0.0535 ppm annual NAAQS) for each nitrogen dioxide monitoring site that operated in 2012.

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### **Data Completeness – Nitrogen Dioxide**

This chart shows the total number of hourly nitrogen dioxide values (expressed as a percentage of the total number of hours in 2012). A nitrogen dioxide monitor that recorded data for all 8784 hours during 2012 would have a data capture rate of 100%.

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## **Lead**

### **Comparison of 2012 Lead Data with National Ambient Air Quality Standards**

This chart shows the maximum three month average (expressed as a percentage of the 0.155  $\mu\text{g}/\text{m}^3$  annual NAAQS) for each lead monitoring site that operated in 2012.

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### **Data Completeness – Lead**

This chart shows the fraction of scheduled sampling days for each lead monitor operated in 2012, where a valid lead sample was actually collected. During 2012, lead samplers in Iowa were scheduled to operate at a one in three day sampling frequency (122 scheduled samples).

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