

2015 Air Quality Report

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Air Quality Analysis Section
Air Pollution Control Program

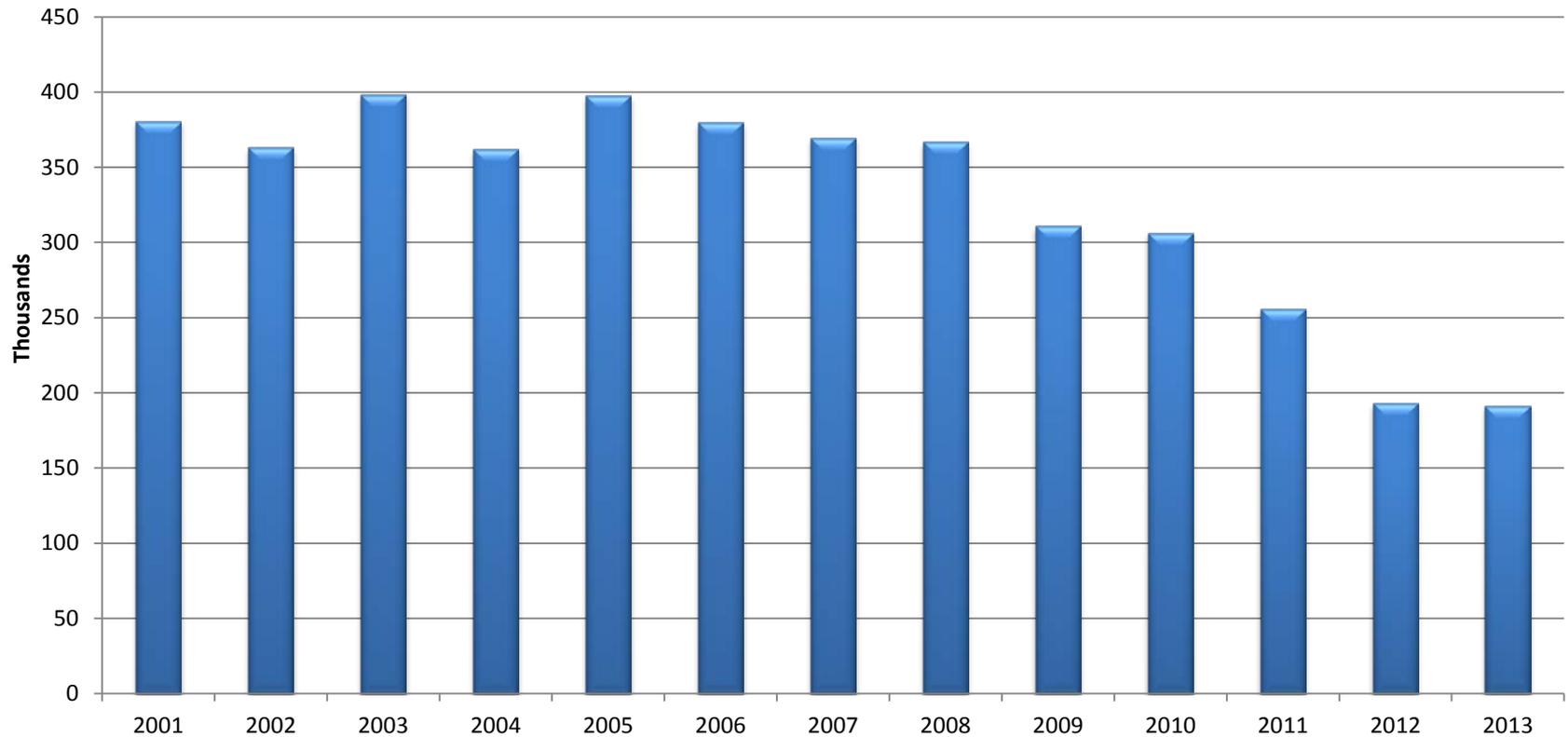
St. Louis Area Monitoring Agencies Meeting, May 05, 2015
Washington University, St. Louis, MO

Presentation Overview

- Statewide Emissions Inventory Trends
- Ambient Air Monitoring Trends
- New Projects
- Website Resources

Sulfur Dioxide (SO₂) Point Source Emissions

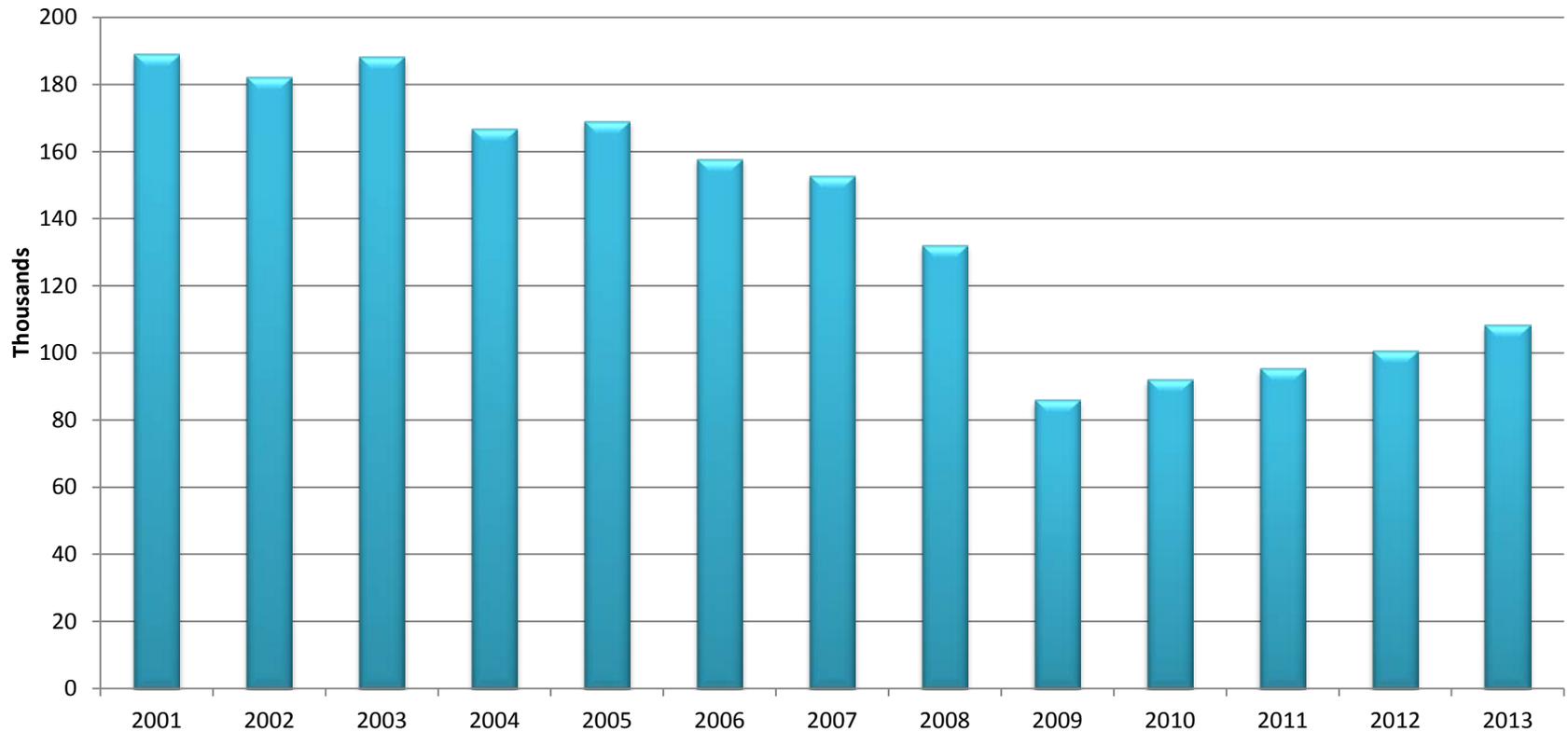
Sulfur Dioxide
Thousand Tons per Year



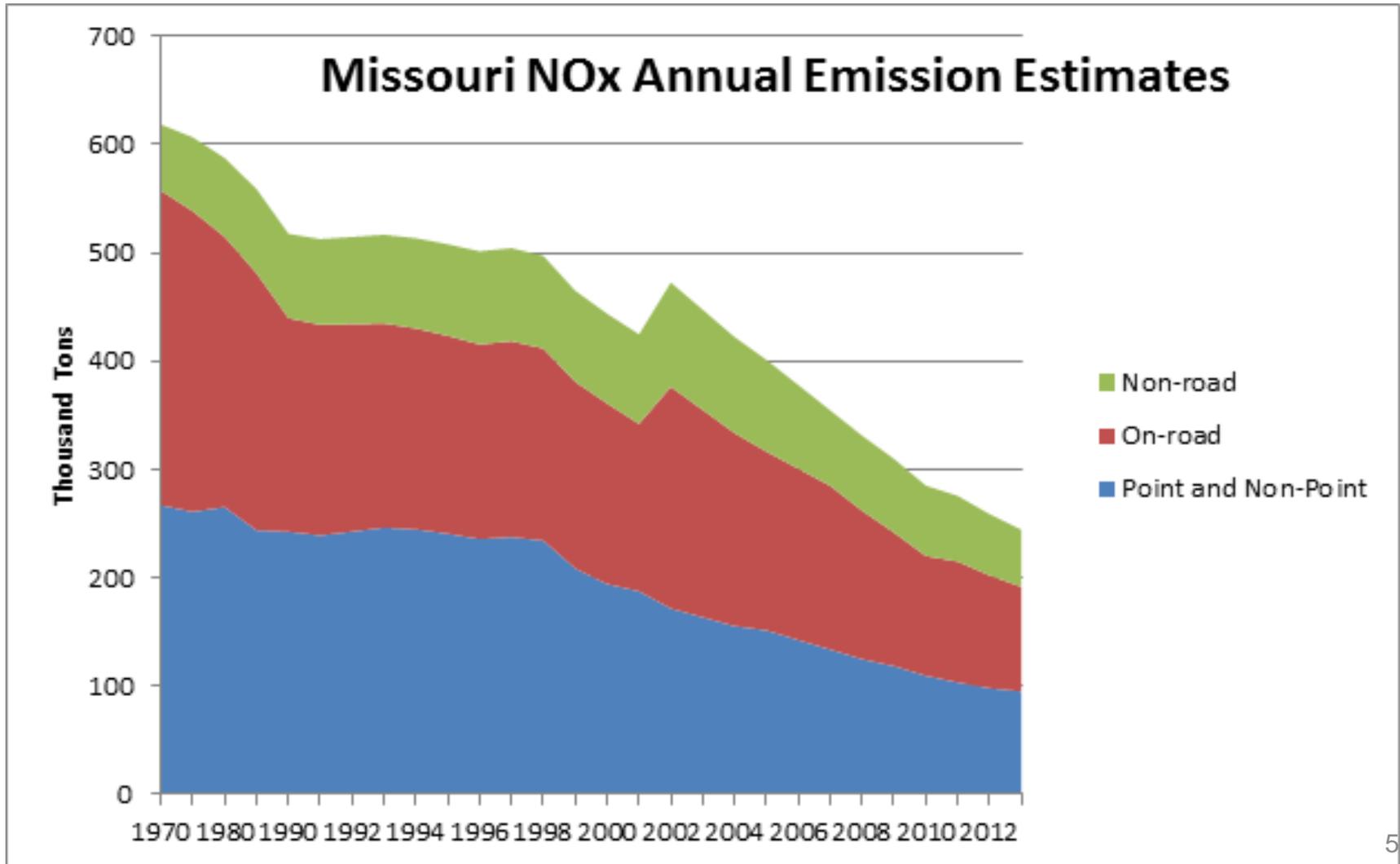


Nitrogen Dioxide (NO₂) Point Source Emissions

Nitrogen Dioxide
Thousand Tons per Year



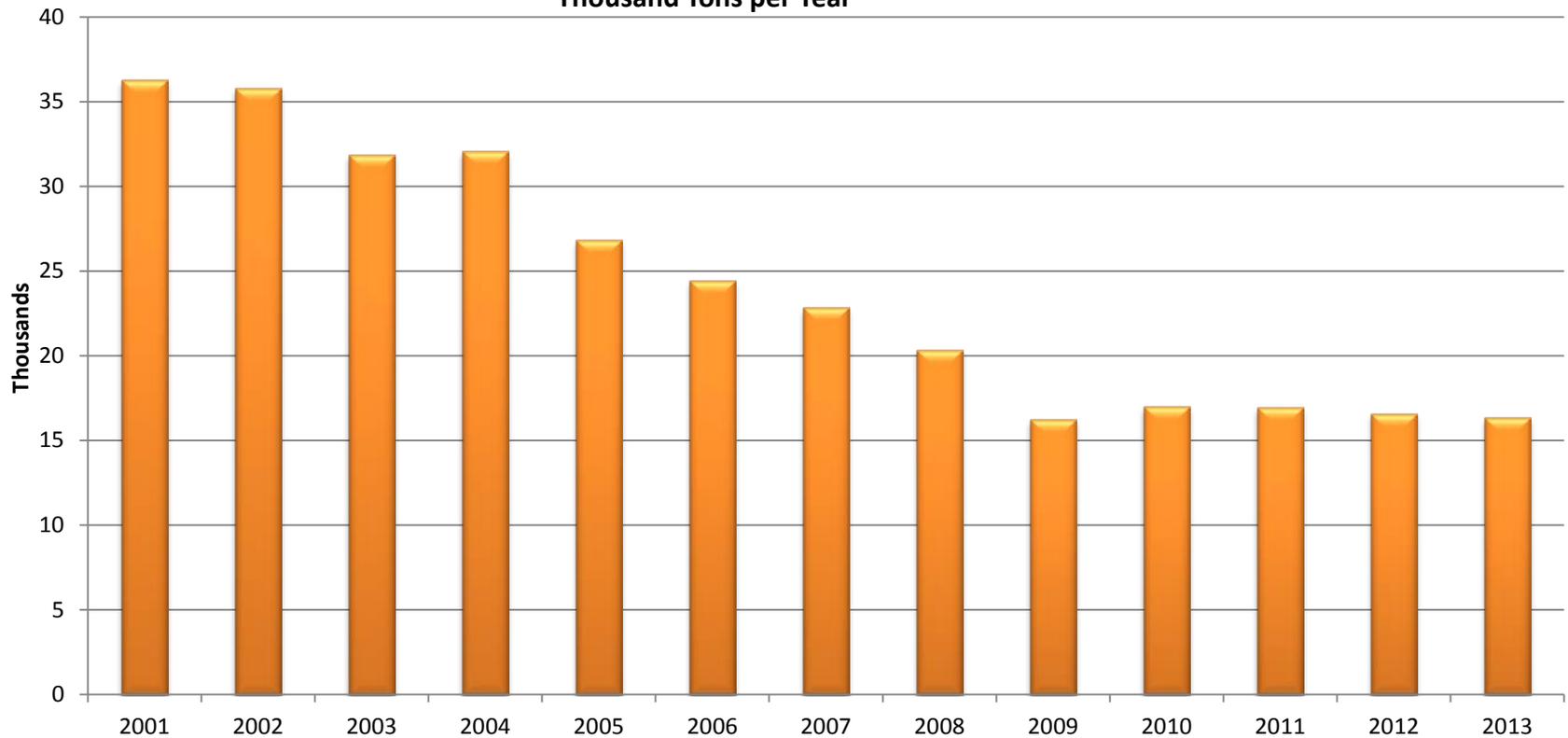
Point/Non-Point vs. Mobile NOx Emissions Estimates



Volatile Organic Compounds (VOC) Point Source Emissions

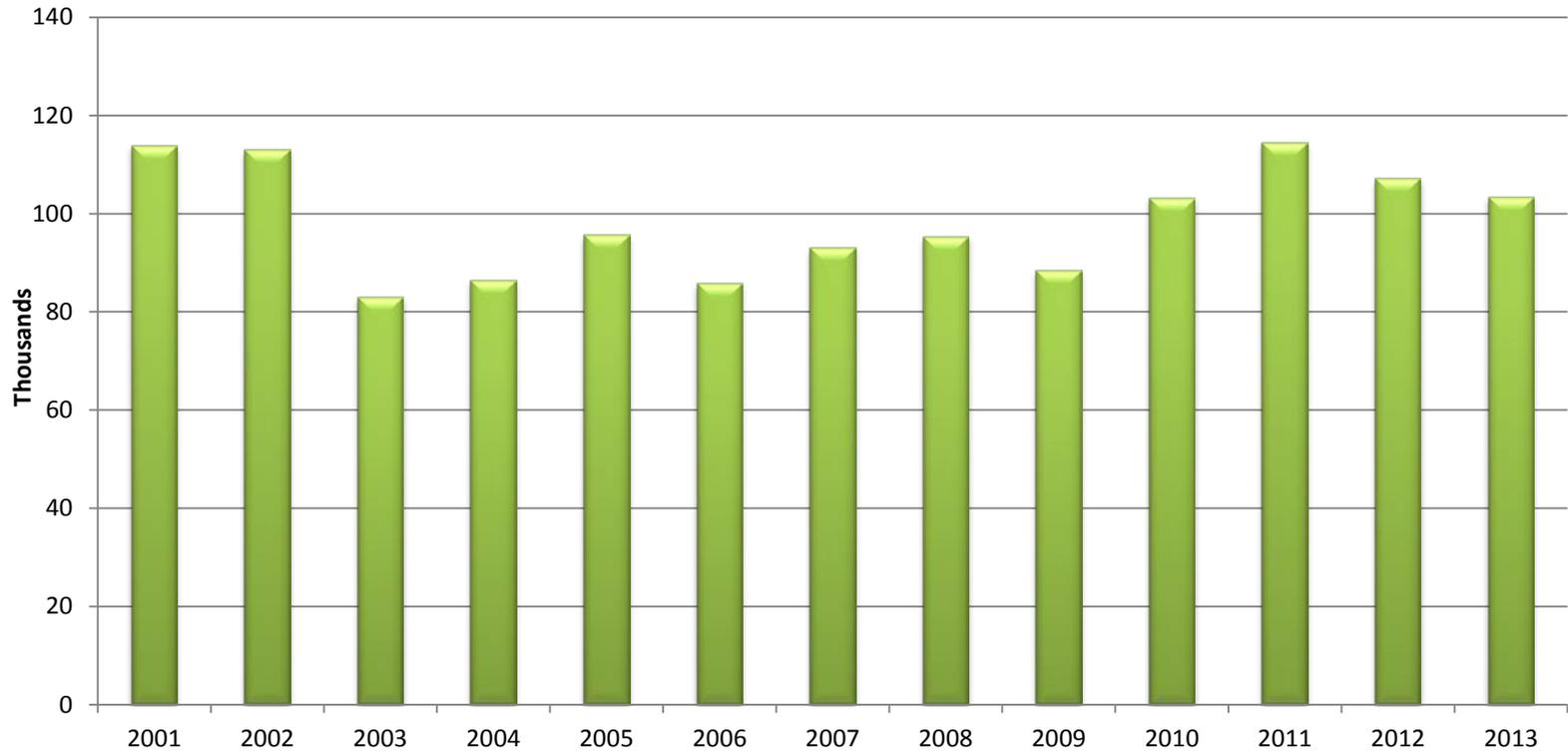
Volatile Organic Compounds

Thousand Tons per Year



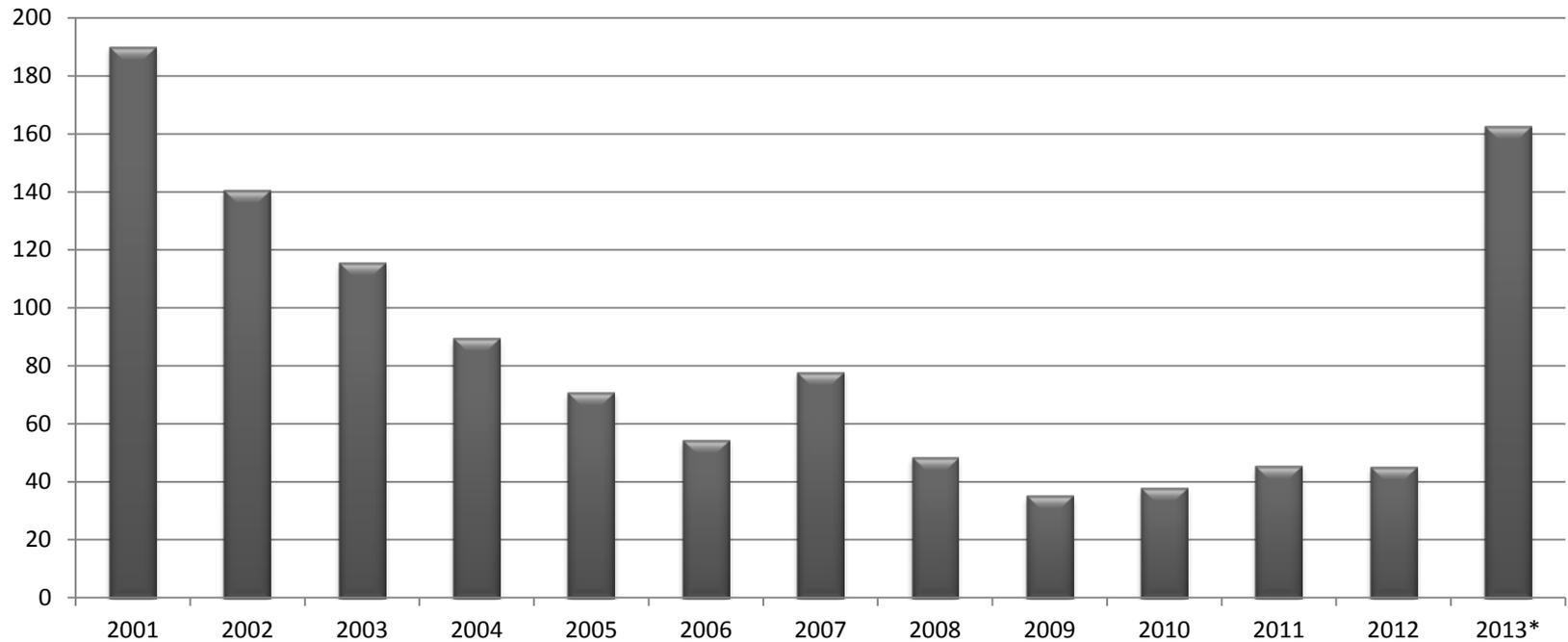
Carbon Monoxide (CO) Point Source Emissions

Carbon Monoxide
Thousand Tons per Year



Airborne Lead (Pb) Point Source Emissions

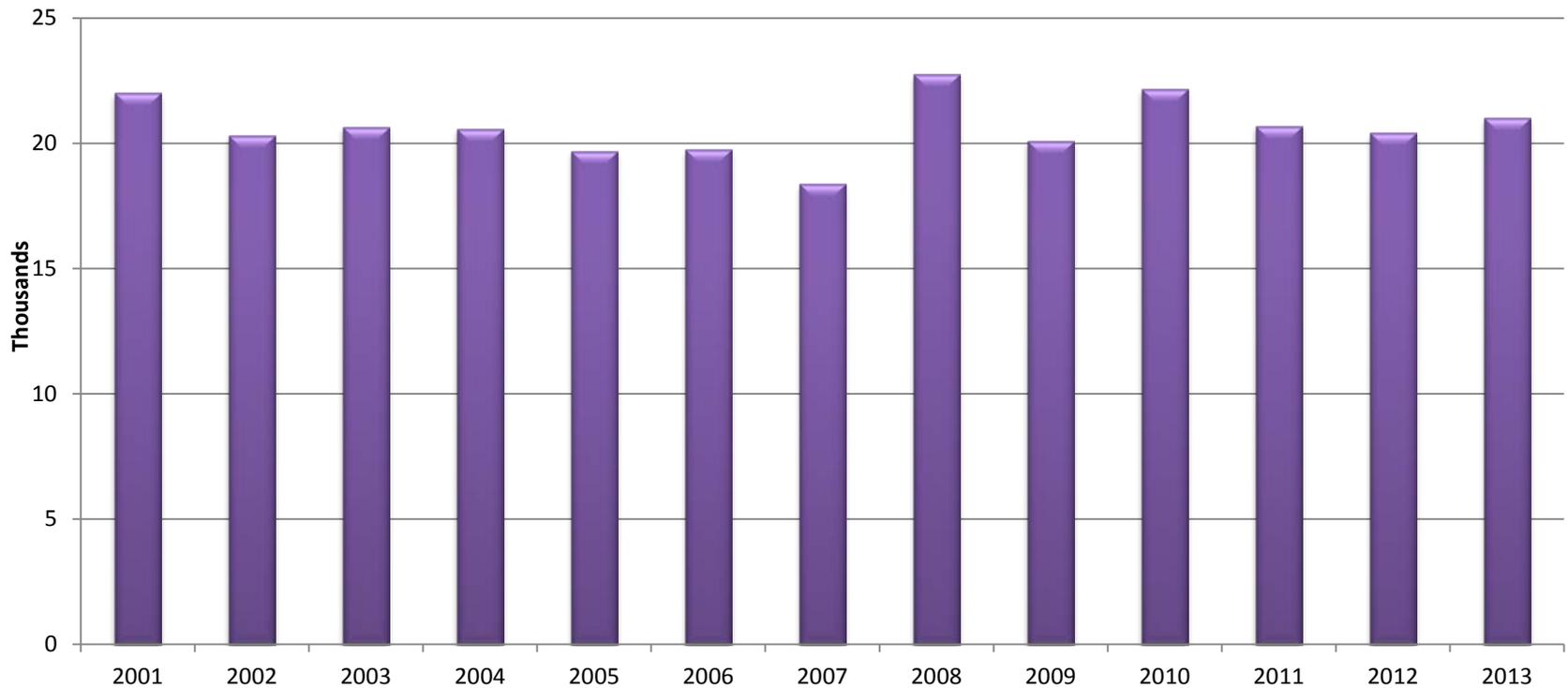
Airborne Lead
Tons per Year



* Increased lead emissions for 2013 are a result of stack testing at a single facility. The facility shut down the processes that release emissions through the tested stacks at the end of the 2013 emission year, and the increased emissions are believed to be a result of the shut down activities. Lead emissions are expected to be below 2012 and 2011 levels for the 2014 emission year.

Particulate Matter (PM₁₀) Point Source Emissions

Particulate Matter (PM₁₀)
Thousand Tons per Year



Ambient Air Monitoring Trends

- Area wide criteria pollutant monitoring indicates decreasing trends over time.
- Revisions to the SO₂, NO₂, Lead, and Ozone NAAQS and revised monitoring network requirements has 'lowered the bar' for some areas.
- Some single source and area specific NAAQS violations are being addressed.

NAAQS Being Met

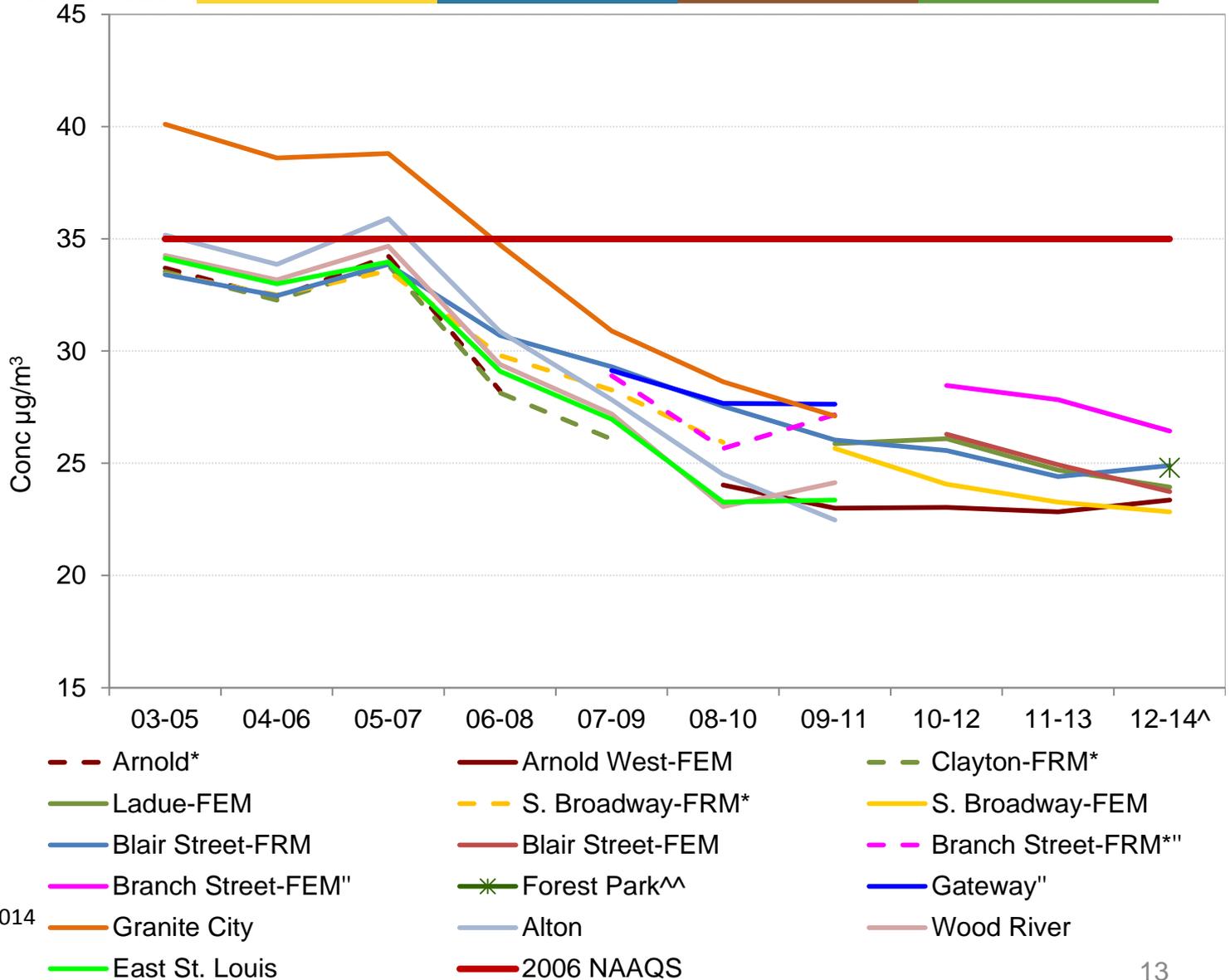
- **NO₂**: No Missouri sites violate the 2010 1-hour (100 ppb) standard or annual standard (53 ppb)
 - *Near roadway NO₂ sites –two sites deployed in 2013.*
 - *Second NO₂ site in St. Louis –deployed in 2015.*
 - *No issues yet...*
- **PM_{2.5}**: No Missouri sites violate the 1997 annual standard, 2006 24-hour PM_{2.5} standard, or the 2012 Annual (12 µg/m³) and 24-hour (35 µg/m³) standard.
 - *Near roadway PM_{2.5} sites- two monitors deployed in 2013. →No issues yet...*
- **CO**: No Missouri sites violate the 1-hour (35 ppm) or 8-hour (9 ppm) standard.
 - *Near roadway CO sites- two monitors deployed in 2013. →No issues yet...*

PM_{2.5}

- All MO Monitors are in compliance of the Annual and 24-hour PM_{2.5} NAAQS.
- The Illinois side of the St. Louis CBSA has valid data as of July 2014.
- PM_{2.5} long term trends are downward.

PM_{2.5} 24-hour Average Ambient Air Monitoring Trends (2003-2014)

➤ MO Sites in Compliance



^Quality assured through Dec 2014

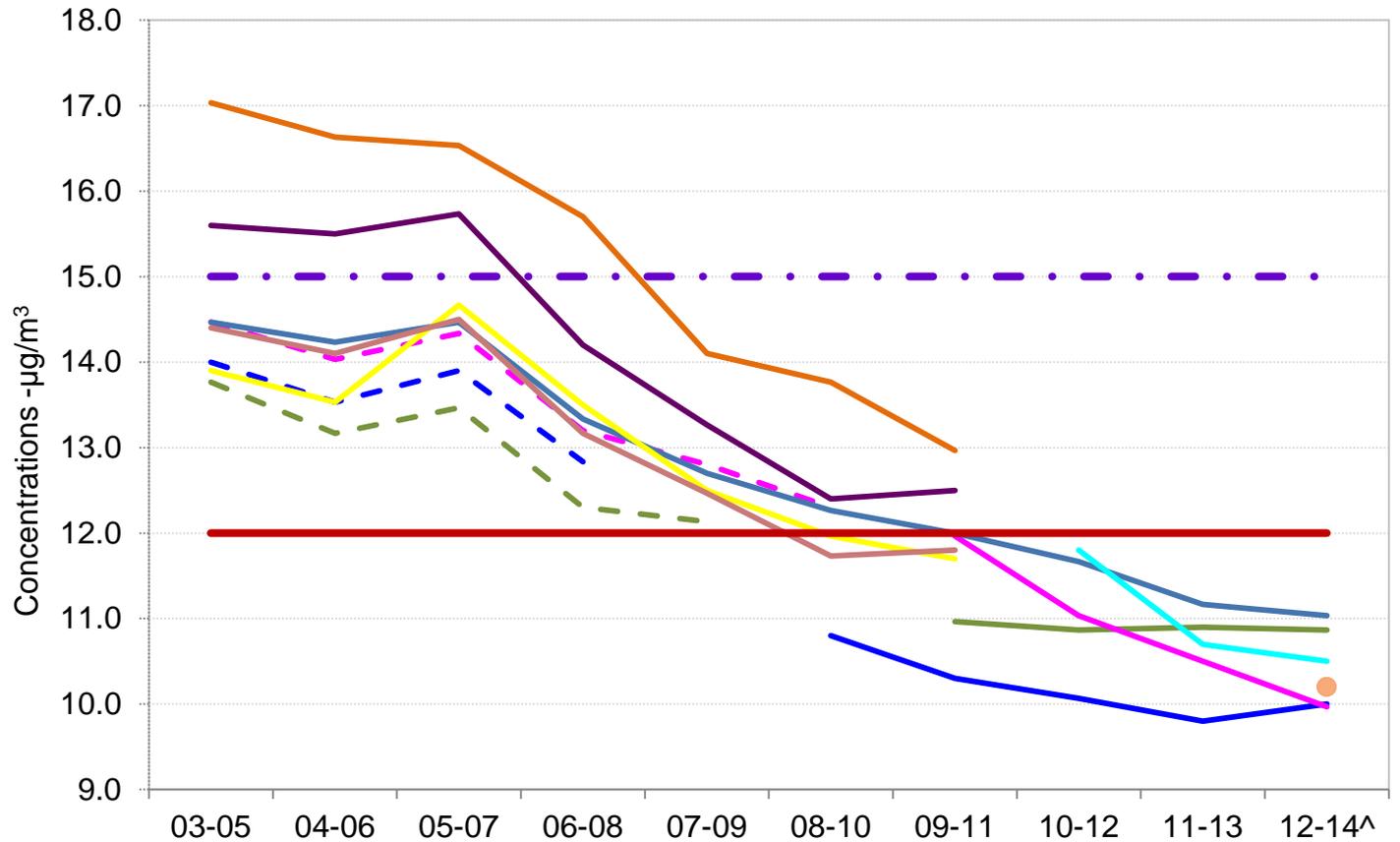
*Discontinued

^^<3years of data

"Middle Scale

PM_{2.5} Annual Average Ambient Air Monitoring Trends (2003-2014)

➤ MO Sites in Compliance



- - Arnold*
- Arnold West-FEM
- - Clayton-FRM*
- Ladue-FEM
- - South Broadway-FRM*
- South Broadway-FEM
- Blair Street-FRM
- Blair Street-FEM
- Forest Park-FEM^^
- Granite City
- Alton
- Wood River
- East St. Louis
- · 2006 NAAQS
- 2012 NAAQS

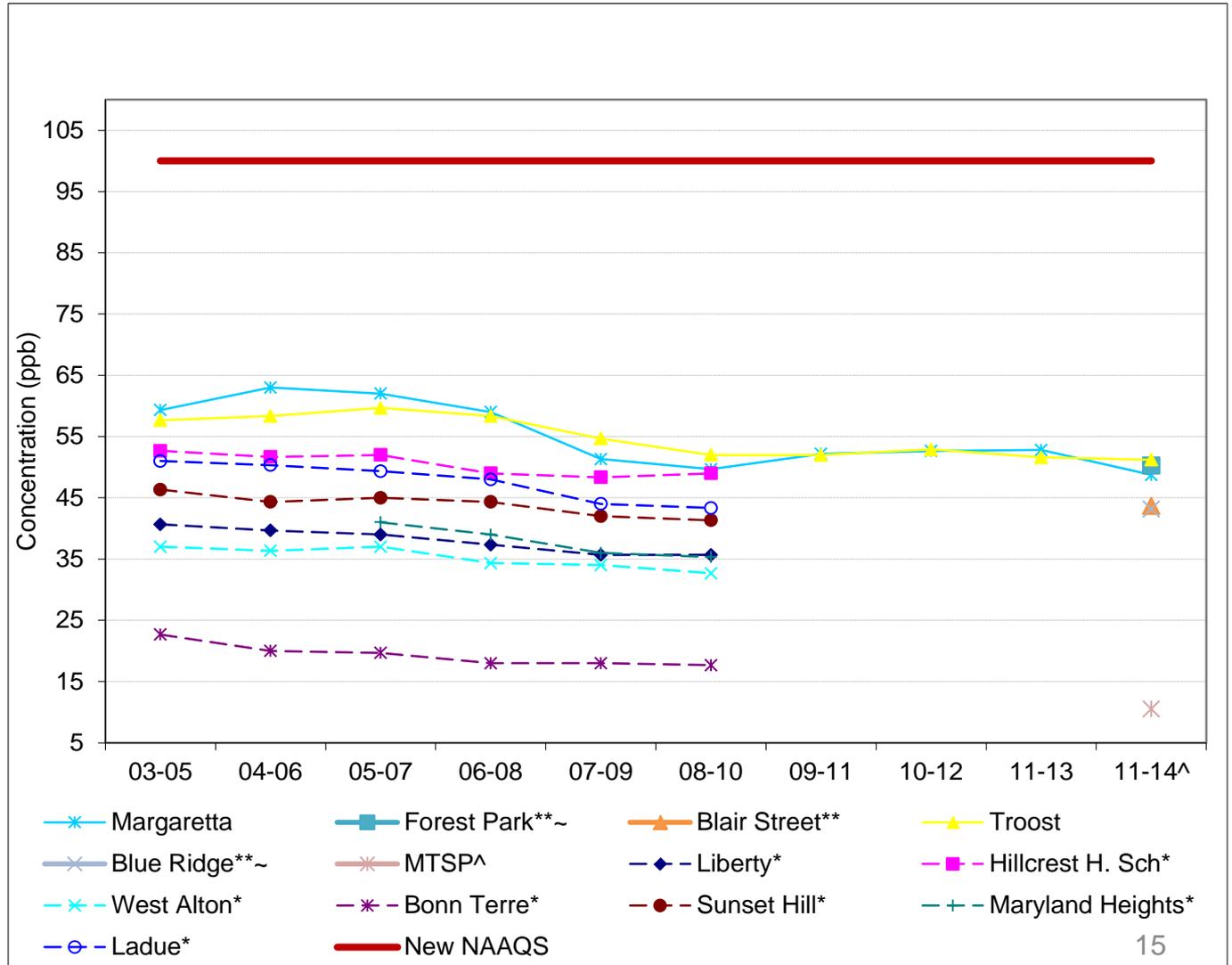
^Quality assured through Dec 2014

*Discontinued

^^<3years of data

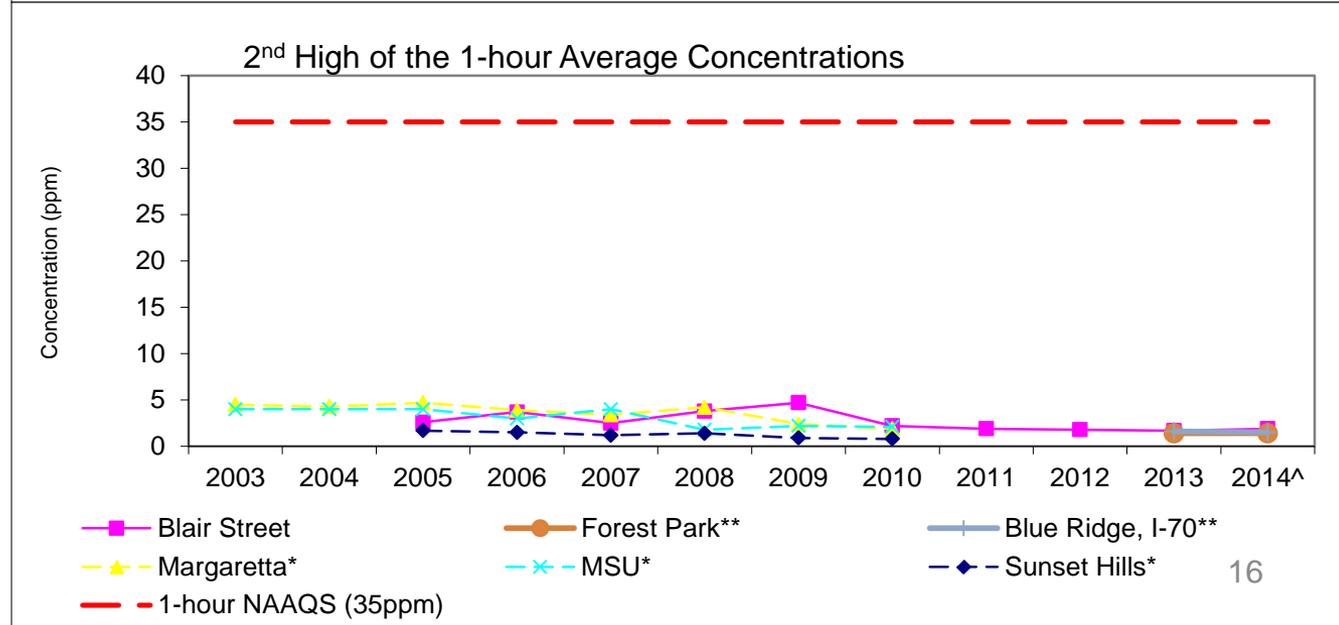
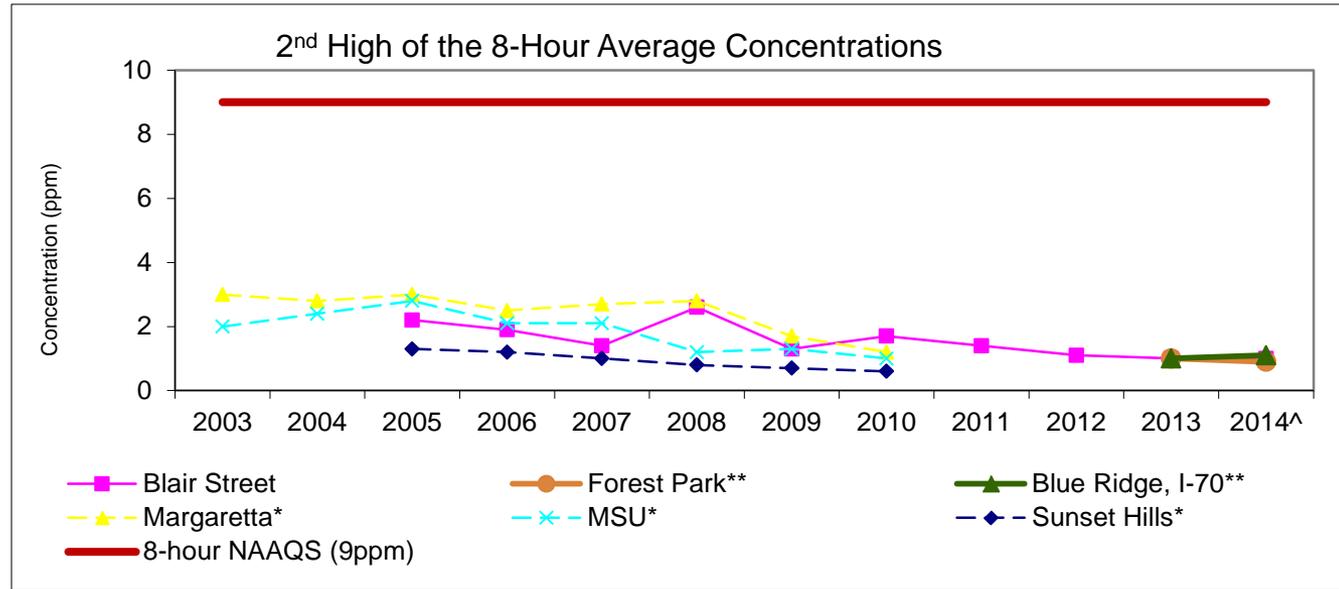
Missouri 3-year Average of the 98th Percentile of the Daily 1-hr Maximum NO₂ Concentrations
(1-hr NAAQS = 100ppb)

NO₂



^Quality assured data through Dec, 2014
*Discontinued
~Near Roadway
**Less than 3 years of data
^2014 98th Percentile

Carbon Monoxide (CO)



[^]Quality assured data through Dec, 2014
^{**}Near Roadway Monitor (<3yrs of data)
^{*}Discontinued

Opportunities for Improvement

- **Ozone:** Three MO sites in the St. Louis area violate the 2008 standard of 75 ppb based on 2012-2014 data. The 2012 ozone season is driving design values.
 - Monitoring period over which EPA may designate areas determines path forward.

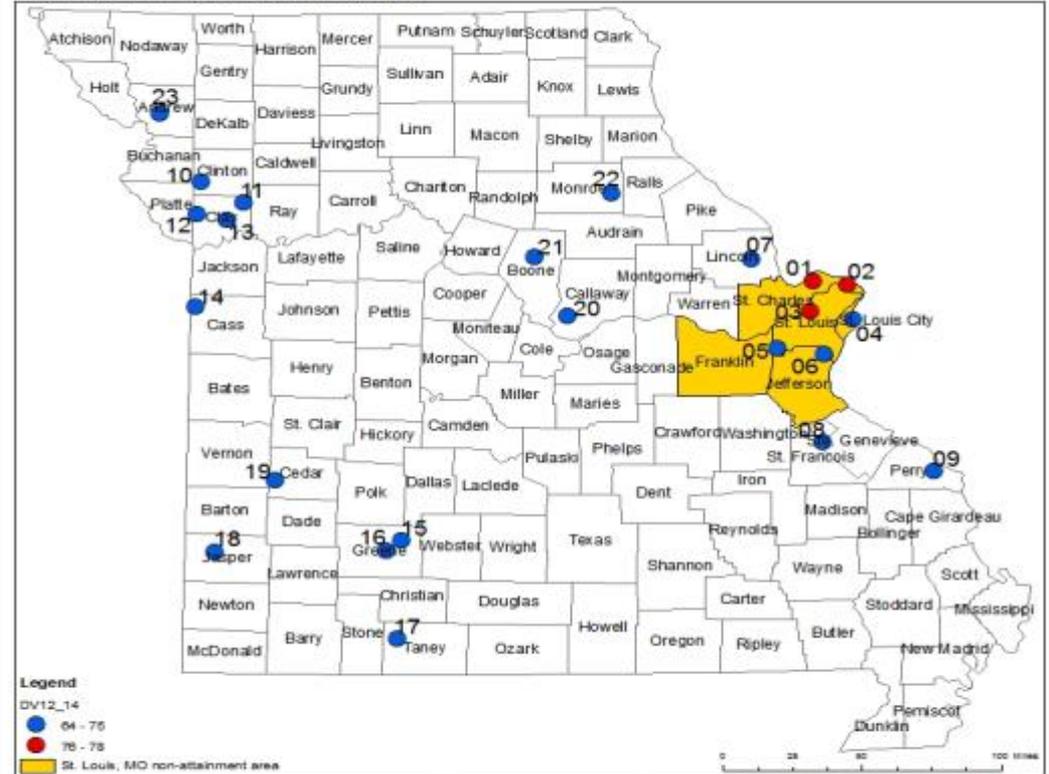
- **SO₂:** Two areas: Jackson (partial), and Jefferson counties (partial), violate the 2010 1-hr standard. – *Attainment Demonstrations are being developed*
 - Note: Jefferson county Mott St. and Buick North East SO₂ monitors anticipated to be in compliance by the end of 2015...

- **Lead:** Three areas: Herculaneum, Iron/Dent/Reynolds (partial counties) (Buick), and Holt Co. (Exide) violate the 2008 3-month standard of 0.15 µg/m³. One intermittent violation in the Glover MO area (not expected to be recurring).
 - *Attainment Demonstrations for each area (sans Glover) have been submitted for SIP revisions.*
 - No monitors are currently contributing to a lead NAAQS violation.***

- **PM₁₀:** One small area in St. Louis City violates the 24-hour of 150 µg/m³ NAAQS
 - Small area of impact, single source or cluster of sources. *Compliance plans/strategy for the area are being developed. Carthage is now in attainment and compliance plan have been submitted for SIP revisions.*

Ozone Monitoring Network

Missouri Statewide Ozone (O₃) Monitoring Network, 2014
8-hour NAAQS = 75 Parts per Billion (ppb)



Site#	SiteName (12-14 DV*)	Site#	SiteName (12-14 DV*)	Site#	SiteName (12-14 DV*)
St. Louis Area		Southeast Area		Springfield Area	
01	Orchard Farm (76)	09	Farrar (71)	15	Fellows Lake (68)
02	West Alton (78)	Kansas City Area		16	Hillcrest High School (65)
03	Maryland Heights (77)	10	Trimble (73)	Outstate Area	
04	Blair Street** (73)	11	Watkins Mill (73)	17	Branson-SPM (64)
05	Pacific (72)	12	Rocky Creek (74)	18	Alba (72)
06	Arnold West (75)	13	Liberty (72)	19	Eldorado Springs (70)
07	Foley (75)	14	Richards Gebaur-South (69)	20	New Bloomfield (66)
St. Genevieve Area				21	Finger Lakes (68)
08	Bonne Terre (72)			22	Mark Twain** (64)
				23	Savannah (68)

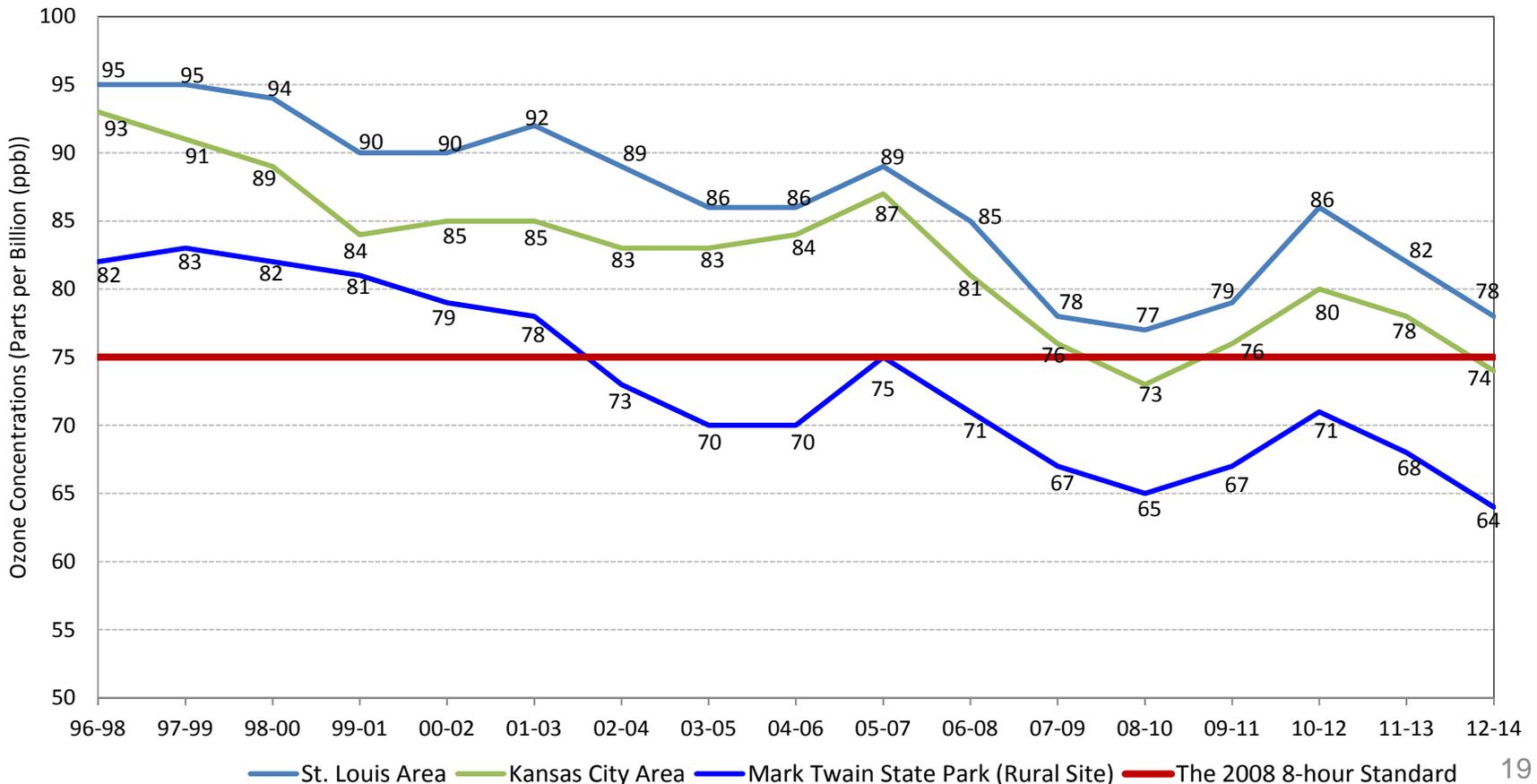
*Quality assured data through December 31st, 2014
 **Year round ozone monitoring
 SPM: Special Purpose Monitor
 Red & Bold: Violation of the standard
 Ozone Season: April 1st to October 31st

Ozone (O₃) Ambient Air Monitoring

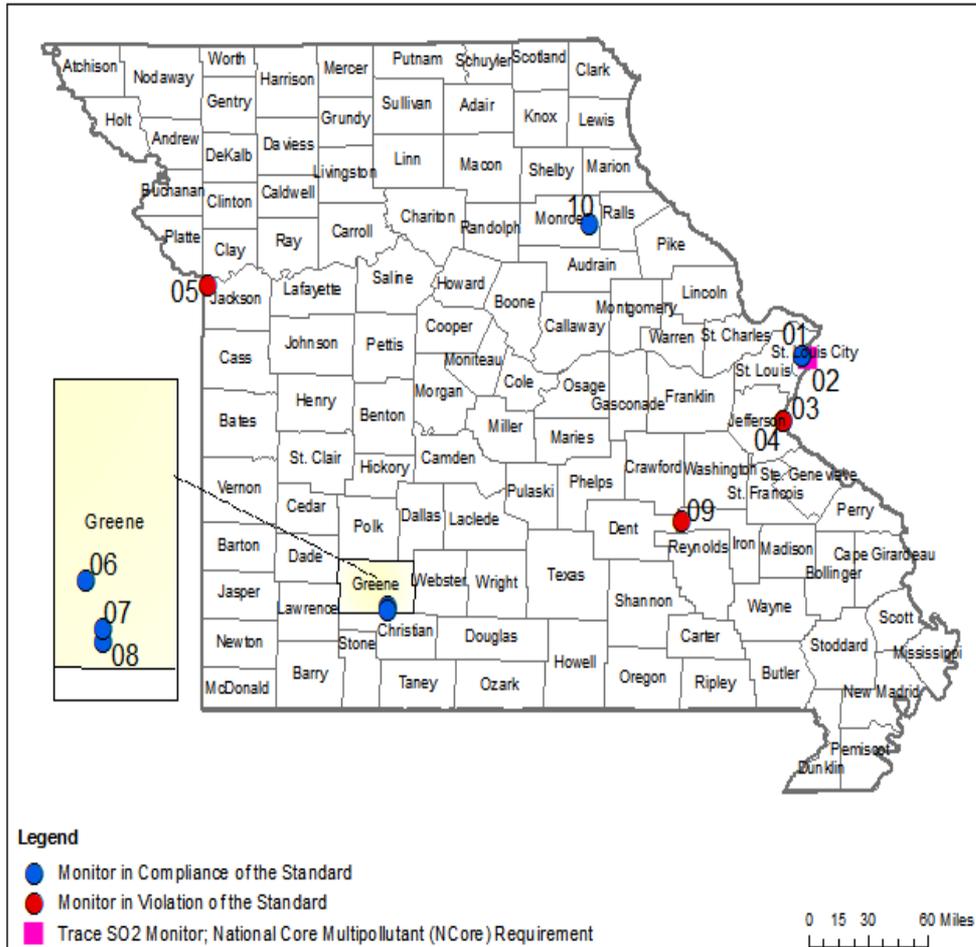
1996-2014 8-hour Ozone Design Value Trends (ppb)

St. Louis and Kansas City Areas and a Rural Site^a

(^aQuality Assured Data Through December 31, 2014)



SO₂ Monitoring Network, 2014



Site# Site Name (12-14 Design Values* (ppb))

St. Louis Area, MO

- 01 Margaretta (26)
- 02 Blair Street (46)
- 03 Herculaneum, Main Street** (172^{^^})
- 04 Herculaneum, Mott Street (143)

Kansas City, MO

- 05 Troost (150)

Springfield Area, MO

- 06 South Charleston (35)
- 07 Wildwood Lane[^]** (40^{^^})
- 08 James River-South[^] (32)

Outstate Area

- 09 Buick NE (76)
- 10 Mark Twain State Park (8^{^^})

*Quality assured data through December 31st, 2013

**Discontinued monitor

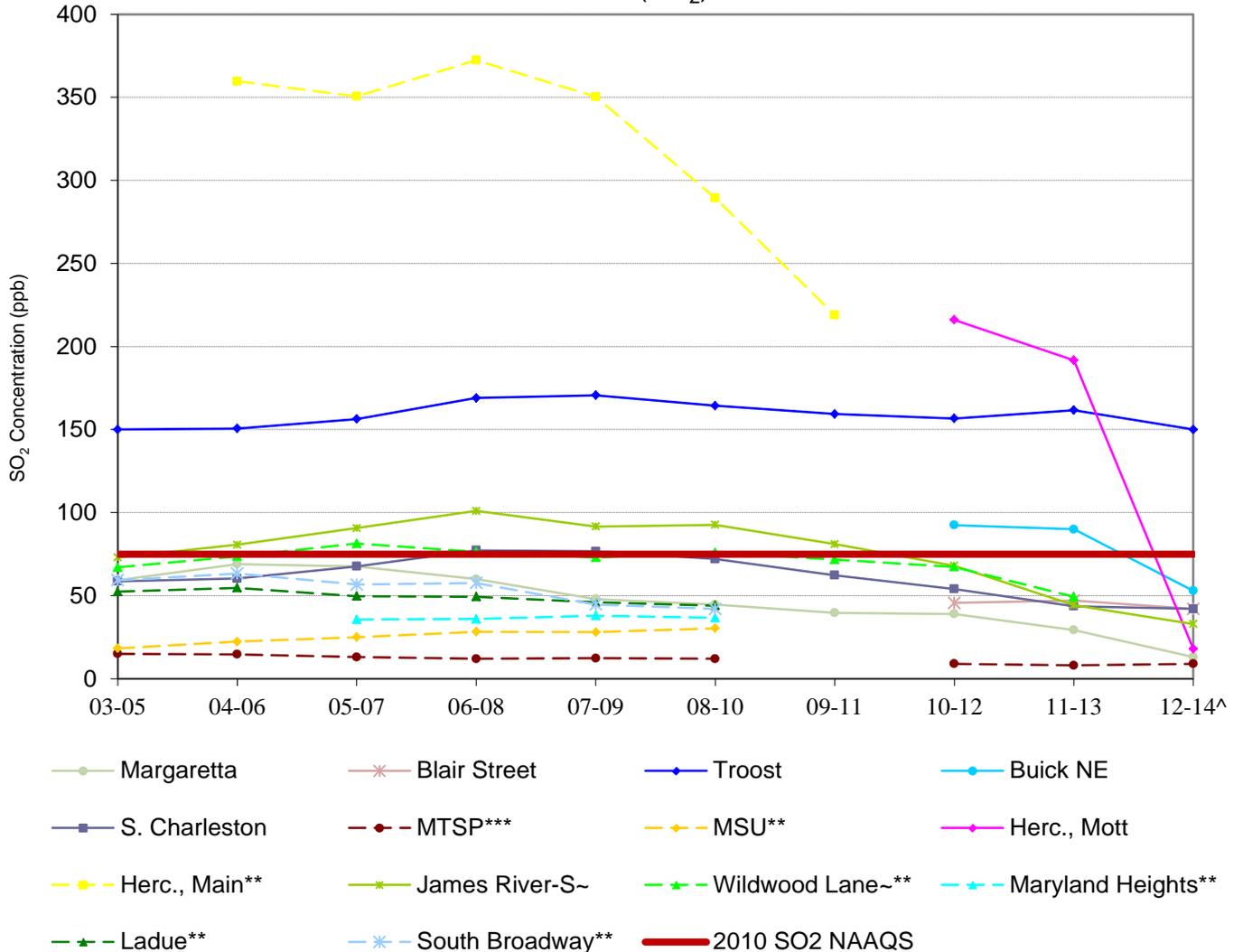
[^]Industry monitor

^{^^}Less than 3 years of data

Data Source: Environmental Protection Agency Air Quality System (EPA AQS), AMP480 Report

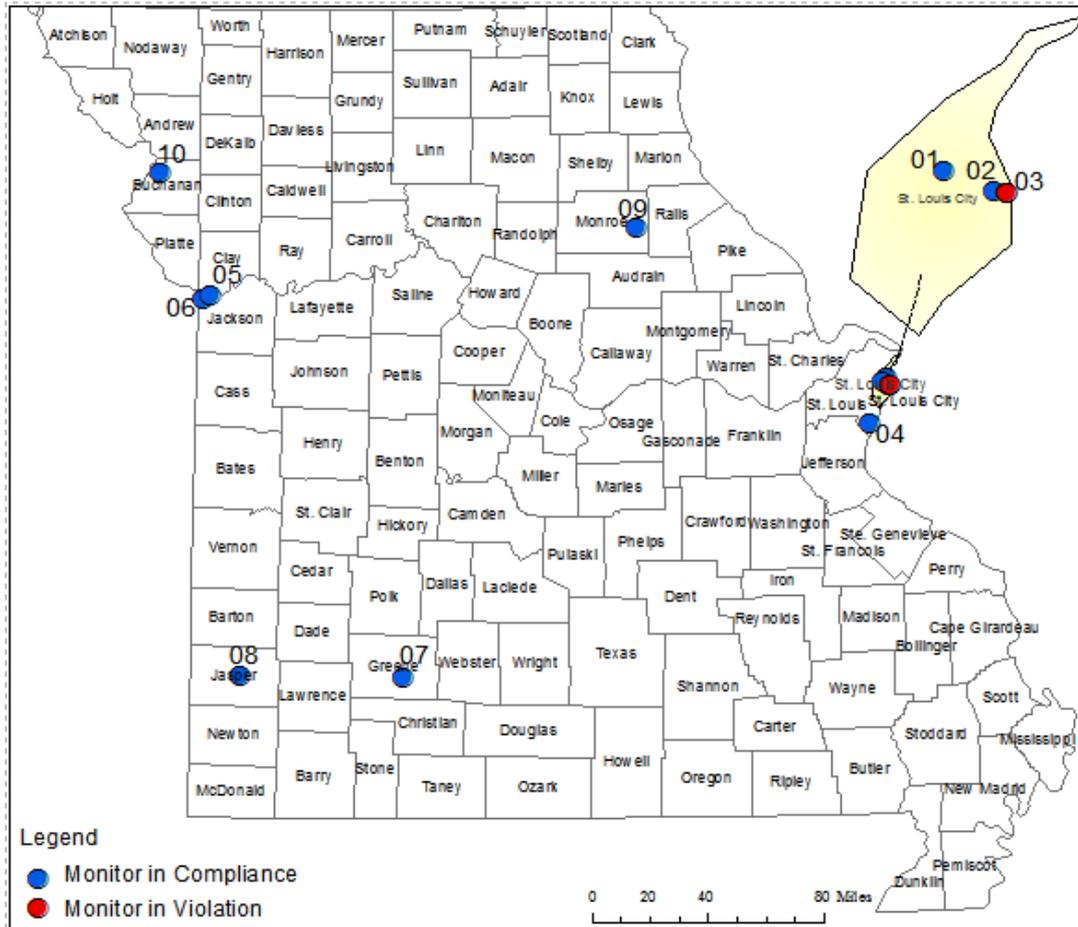
SO₂

3-Year Average of the 99th Percentile Daily 1-Hour Maximum Sulfur Dioxide (SO₂) Concentrations



^Quality assured data through Dec, 2014
 ~Industry
 **Discontinued
 ***<3years of data

PM₁₀ Monitoring Network, 2014



Site# Site Name (12-14 # of Expected Exceedances*)

St. Louis Area, MO

- 01 Hall Street** (0.0)
- 02 Margaretta** (0.0)
- 03 Blair Street (0.0)
- 04 Branch Street** (**2.1**)
- 05 Oakville** (0.0)

Kansas City, MO

- 06 Troost (0.0)
- 07 Front Street** (0.0)

Springfield Area, MO

- 08 Hillcrest High School**^ (0.0)

Outstate Area

- 09 Carthage** (0.9)
- 10 Mark Twain State Park** (0.0)
- 11 St. Joseph Pump Station (0.0)

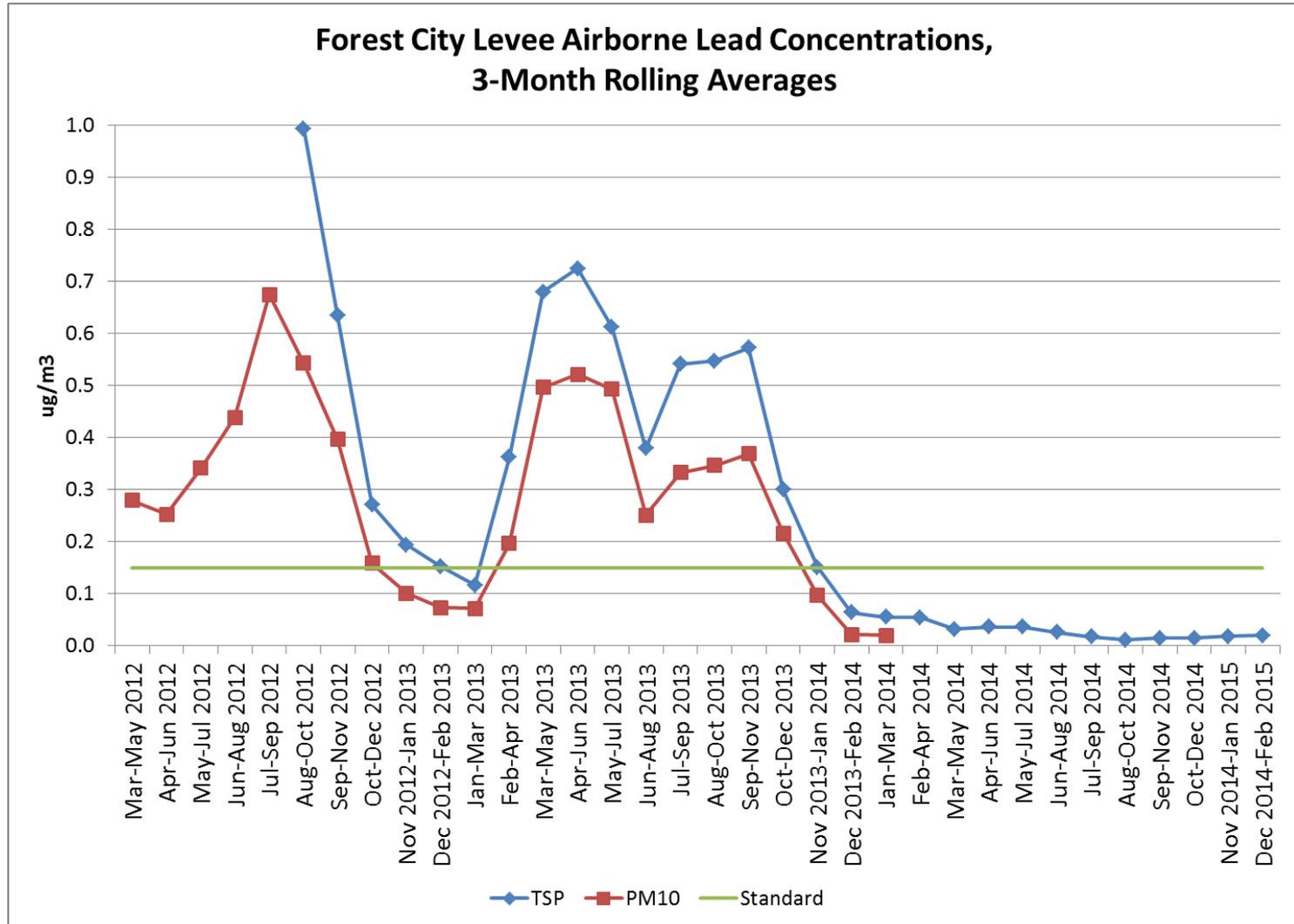
*Quality assured data through December 31st, 2013

^Relocated from MSU, April 2015 (-)

**Continuous monitor.

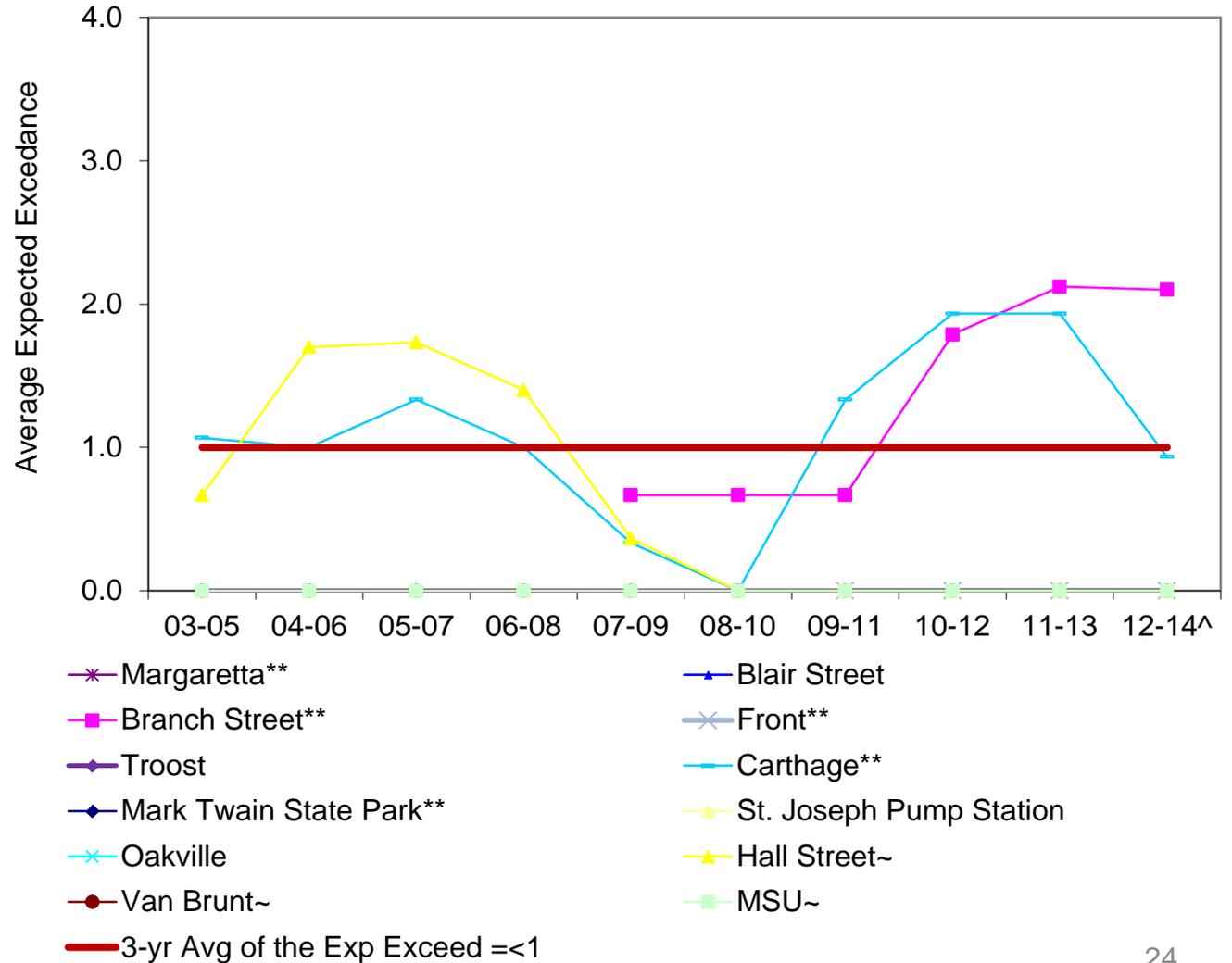
The 24-hour standard is attained when the expected number of exceedances is less than or equal to one (1) when averaged over three (3) calendar years.

Lead Monitoring -Exide Trends



PM₁₀

3-year Averages of the Expected Exceedance of the PM10 24-hour Standard



^Quality Assured data through Dec 31, 2014

**Continuous Monitor

~Discontinued

Other Projects -Blair St., St. Louis City

- Xact
 - continuous metals monitoring (1-hour averages)
 - supplement the NATTS PM₁₀ metals sampling
- The Sunset OC/EC Monitoring
 - Organic and Elemental Carbon Monitor Evaluation Project
 - Began 2011
 - Possible collocated sampling project

View and Download Site Data at: <http://www.epa.gov/airdata/>

New Projects-Near-Roadway

The second Near Roadway Monitoring in St. Louis at Rider Trail I-70 was installed in January 2015





2014 Missouri Network & Data Generated

		Parameters			
		Number of Site	Criteria*	Others**	Non-Ambient
State	50	77	320	-	397
Industry	11	6	38	5	49
Total	61	83	358	5	446

*All met 40 CFR Part 58 Appendix A and certified with no issues

**Meteorology, collocated, non-NAAQS compliance monitors

Division of Environmental Quality

Director: Leanne Tippett Mosby

May 5, 2015

Nothing in this document may be used to implement any enforcement action or levy any penalty unless promulgated by rule under chapter 536 or authorized by statute.