

# MDEQ Ambient Air Monitoring

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# Overview

- Monitoring requirements: where and why
- Data Reduction
- What does the data show?
  - Recent trends
- What's on the horizon?
  - Ozone
  - Sulfur dioxide

# Clean Air Act

## [Section 110(a)(2)(B)]

- Provide for the establishment and operation of appropriate devices, methods, systems, and procedures necessary to—
  - (i) monitor, compile, and analyze data on ambient air quality, and
  - (ii) upon request, make such data available to the Administrator;

# Criteria Pollutants

Carbon Monoxide (CO)

Nitrogen Dioxide (NO<sub>2</sub>)

Sulfur Dioxide (SO<sub>2</sub>)

Ozone (O<sub>3</sub>)

Lead (Pb)

Particulate Matter: PM<sub>10</sub> and PM<sub>2.5</sub>

# 40 CFR 58, Appendix D

- Population based
  - A metropolitan area [such as Detroit] having a population of 4.3 million requires that MDEQ have at least three ozone and three PM2.5 monitors
    - Seven ozone monitors (New Haven, Warren, East 7 Mile, Allen Park, Oak Park, Ypsilanti, Tecumseh)
    - Twelve PM2.5 FRMs (New Haven, East 7 Mile, Allen Park, Oak Park, Ypsilanti, Tecumseh, Linwood, SWHS, W. Lafayette, Wyandotte, Dearborn, Livonia)

# New U.S. EPA Requirements (non-population based)

- Sulfur Dioxide (SO<sub>2</sub>)
  - Population Weighted Emission Impact (PWEI)
    - Lansing
    - Monroe
    - West Olive
- Lead (Pb)
  - Sources emitting more than ½ ton per year and where modeling shows potential impacts greater than one-half of the NAAQS
    - Belding
    - Port Huron
    - Vassar
    - East Jordan
    - Oakland County Airport

# U.S. EPA Requirements (continued)

- Near Road
  - Nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO) and particulate (PM<sub>2.5</sub>) in 2015
  - Roadways in large metropolitan areas having the highest daily traffic volumes
    - Detroit: Eliza Howell Park at I-96 and Telegraph (2011)
    - Livonia: Schoolcraft College at I-275 and 7 Mile (2015)
    - Grand Rapids (2017?)
- NCORE
  - Allen Park and Grand Rapids

# National Air Toxics Trend Site (Dearborn)

Summa Can for VOCs  
(volatile organic compounds)



Metals – collected  
on TSP/PM10 filters



Semi-Volatile  
sampling

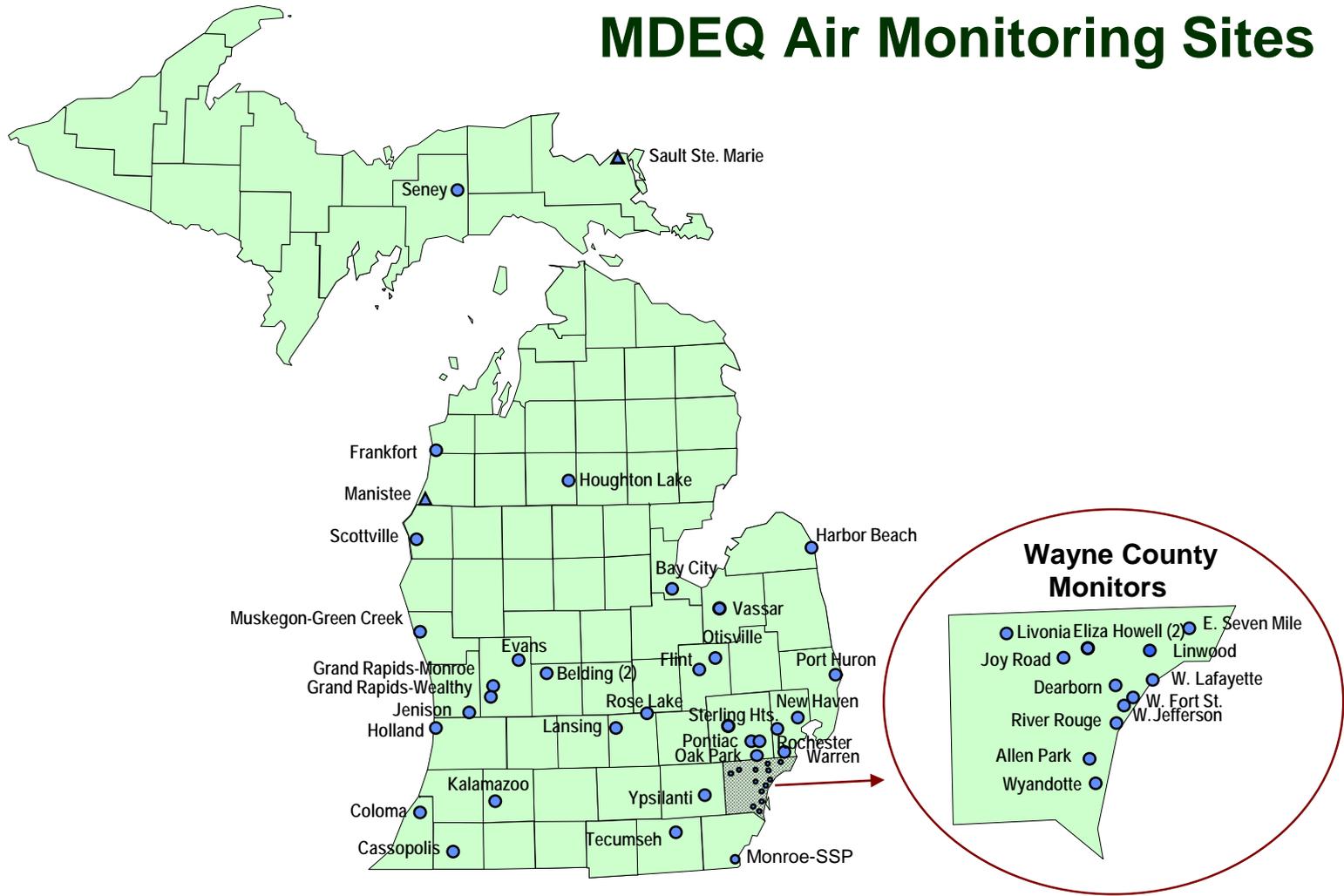


# Site Specific Logistics

- 24/7 Access
  - Schools
  - Municipalities
- No Obstructions
- Electricity
- Security



# MDEQ Air Monitoring Sites



# Annual Network Review

## Describes proposed changes

- Annual requirement due to U.S. EPA every July 1<sup>st</sup>
- 30 day public comment period
  - Starting approximately May 15<sup>th</sup>

# Quality Assurance (40 CFR 58)

- Mandate: 75% data completeness
- FRM and FEM Methods:
  - Nightly zero subtractions
  - Biweekly gas checks
  - Monthly particulate flow checks
  - Certification of measurement devices
  - Annual or semi-annual MDEQ audits
  - Annual U.S. EPA audits
  - Co-located precision measurements (particulate)
  - Lab blanks (particulate)

# *...make such data available to the Administrator*

- AQS: Air Quality Subsystem
  - U.S. EPA's official data repository (for regulatory use)
    - Upload data and QA info by 90 days after the end of the calendar quarter
    - Annual data certification by May 1 each year
      - MDEQ sites
      - Little River Band of Ottawa Indians
      - Inter-Tribal Council of Michigan
      - Select industrial data: long term and permit required
        - Marathon
        - Dow Chemical
        - DTE Monroe

# Other ways to access air monitoring data

## Near Real Time *DEQ Website*

**MIair** Department of Environmental Quality

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**Announcements**  
**Ozone is monitored April thru September.**  
 Previous season maps & data are available. Use the calendar option to...  
**TIP ... Click on an AQI "dot" to view air monitor data.** [\(more\)](#)

**Forecast Discussions**  
 FORECAST SUMMARY: Monday, December 2nd, 2013 through Monday, December 9th, 2013 PM-2.5: 24-hour Fine Particulate concentrations a... [\(more\)](#)

**Latest AQI Information**

Select Map:   [Legend](#)

Location	Current AQI Value	Forecast	
		Today	Tomorrow
Ann Arbor	28 - PM <sub>2.5</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub>
Benton Harbor	22 - PM <sub>2.5</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub>
Detroit	21 - PM <sub>2.5</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub>
Eastern U.P.	22 - PM <sub>2.5</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub>
Flint	22 - PM <sub>2.5</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub>
Grand Rapids	27 - PM <sub>2.5</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub>
Houghton Lake	25 - O <sub>3</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub>
Kalamazoo	22 - PM <sub>2.5</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub>
Lansing	26 - PM <sub>2.5</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub>
Ludington	25 - O <sub>3</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub>
Saginaw	23 - PM <sub>2.5</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub>
Traverse City	25 - O <sub>3</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub>

[AQI Breakpoints](#) | [Actions To Protect Health](#)

Click on site to display hourly monitor values

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## Summary Data *Annual Report*

### 2012 Annual Air Quality Report

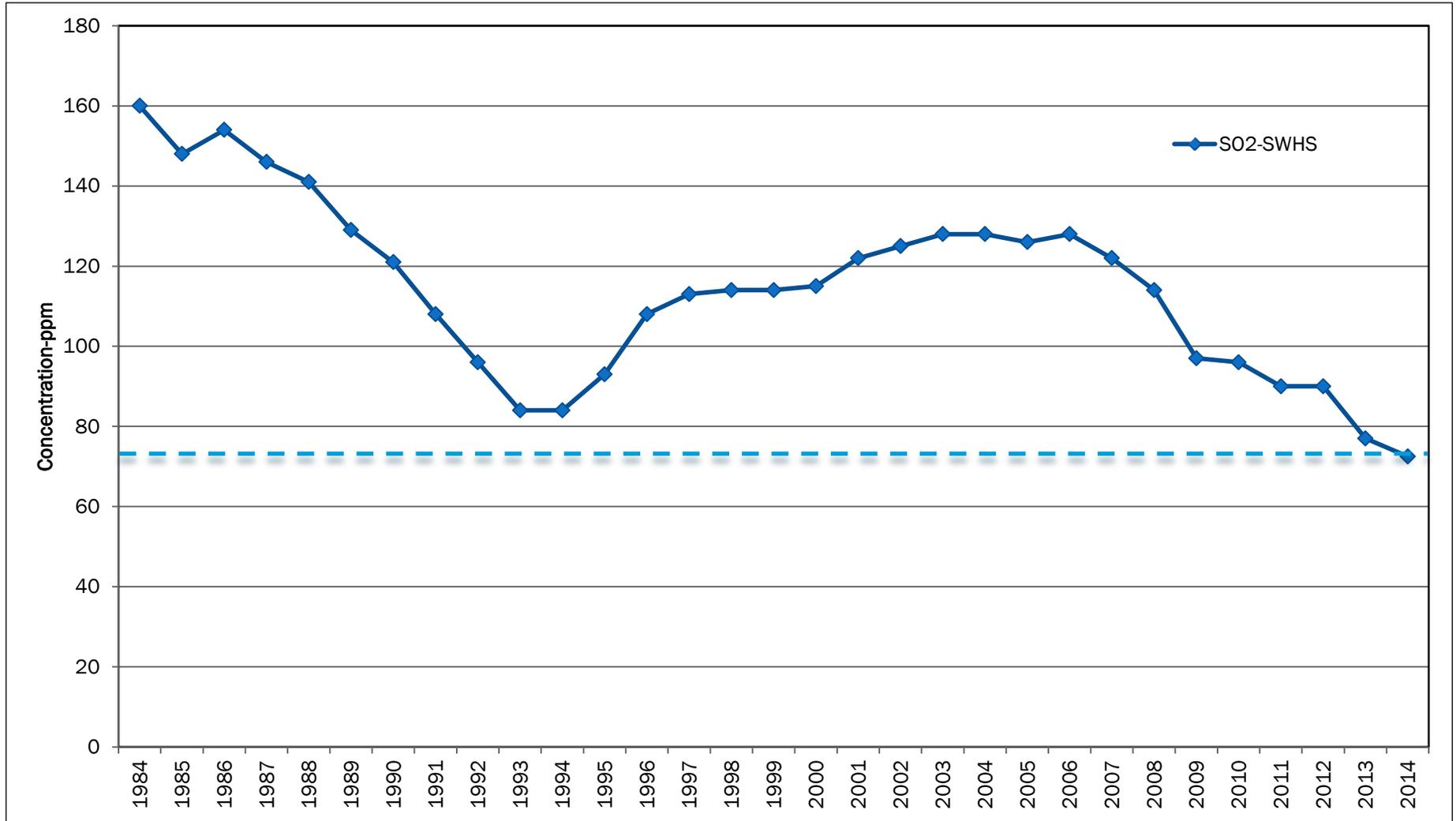
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# Air Monitoring Data

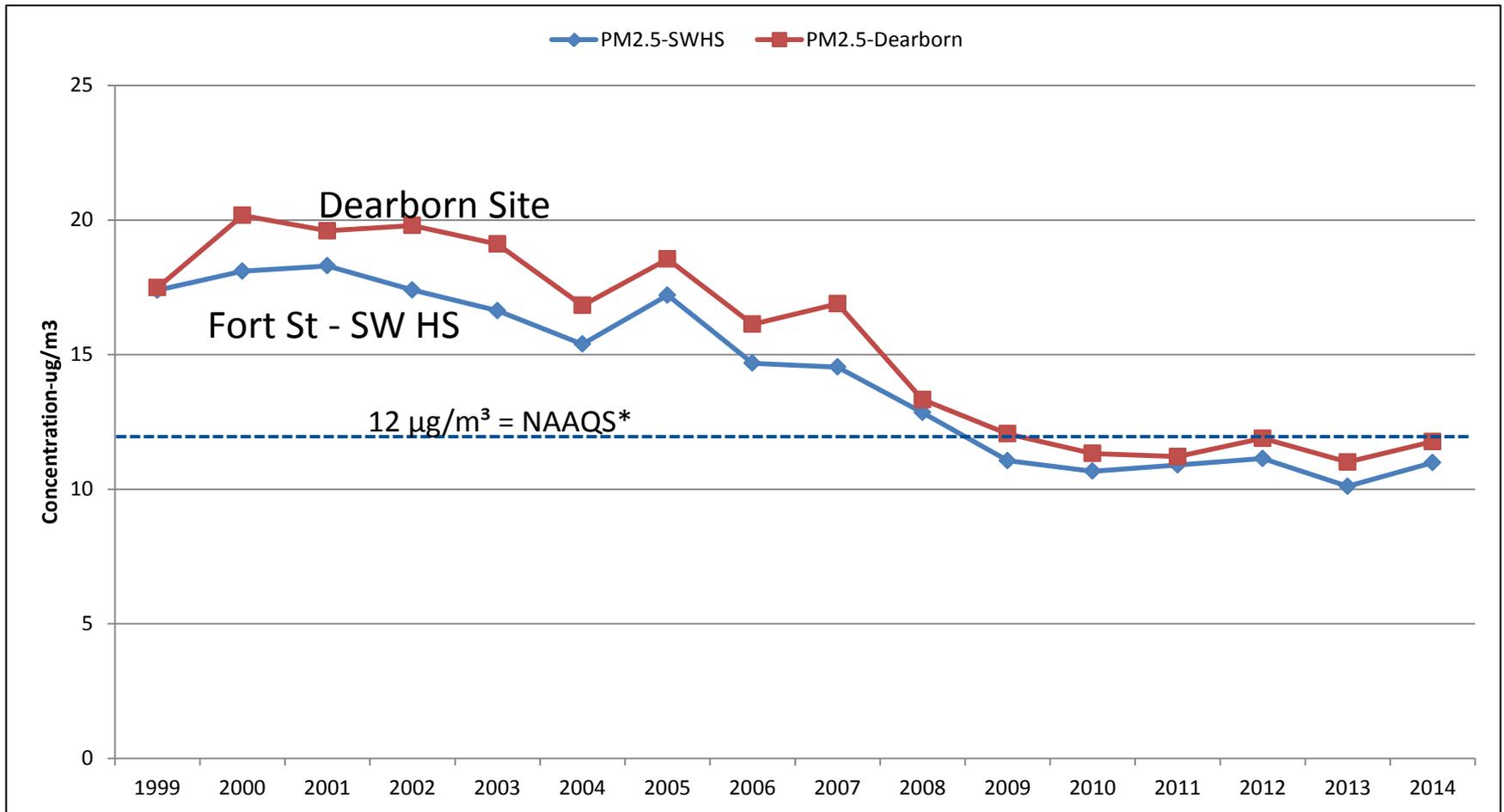
## Sulfur Dioxide SO<sub>2</sub>

3-Year Average of 99<sup>th</sup> Percentile Maximum Daily 1 Hour at Detroit – W. Fort Street (SWHS)



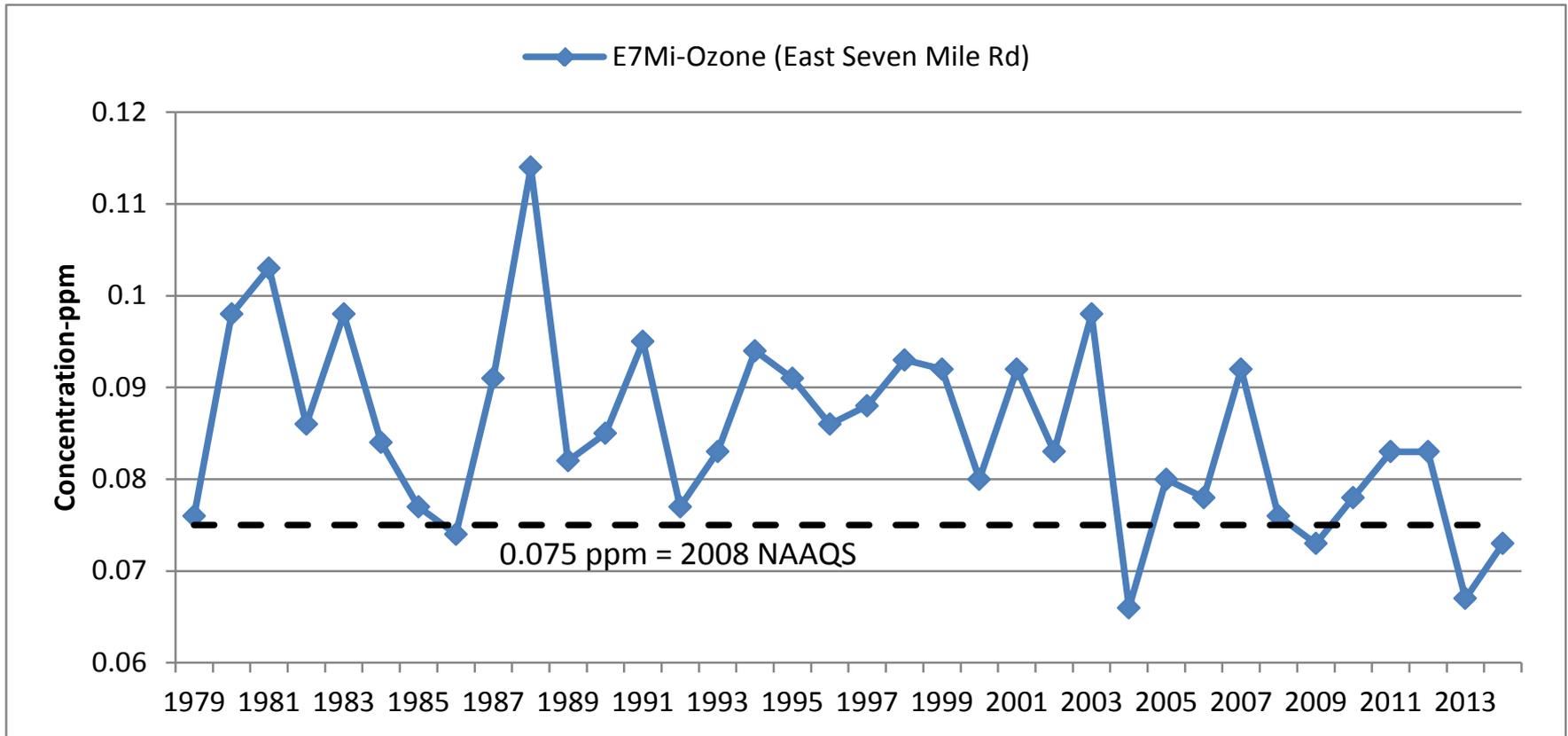
NAAQS = National Ambient Air Quality Standard

# Particulate Matter <2.5 μm diameter (PM2.5) Annual Average Concentrations



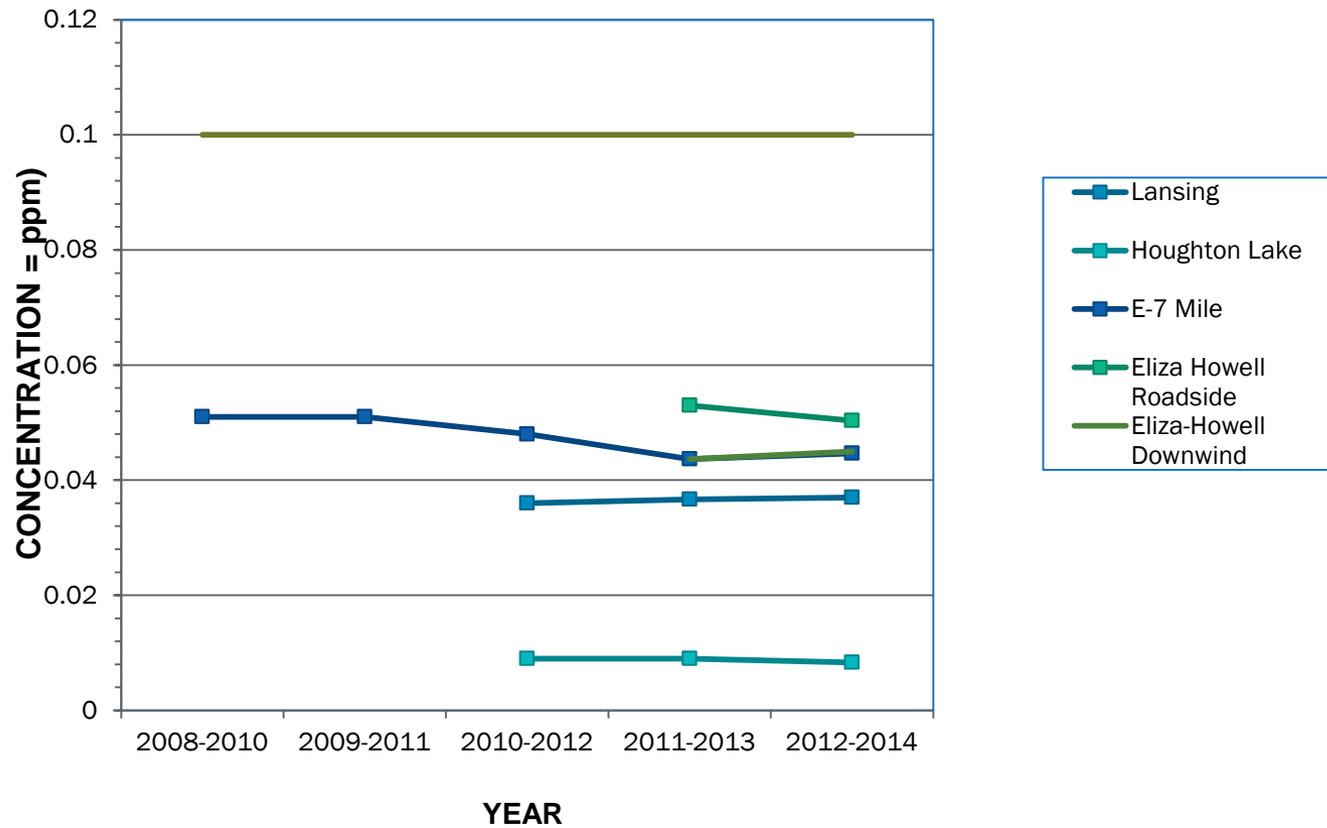
# Ozone (O<sub>3</sub>)

## 4<sup>th</sup> Maximum 8-Hour Concentration



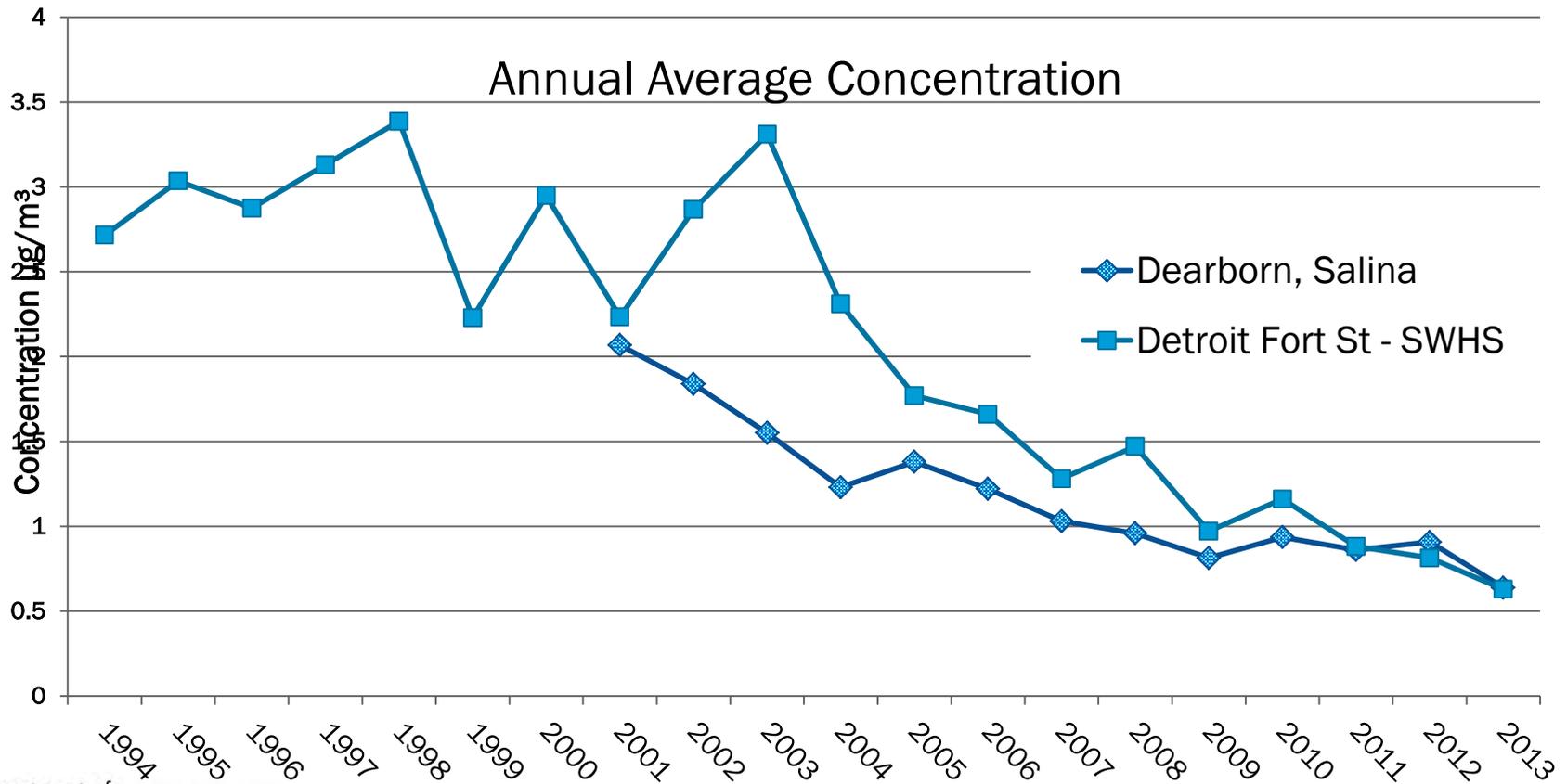
\*

## NO2 levels in Michigan from 2008-2014 (3-year average of the 98th percentile of 1-hr values)

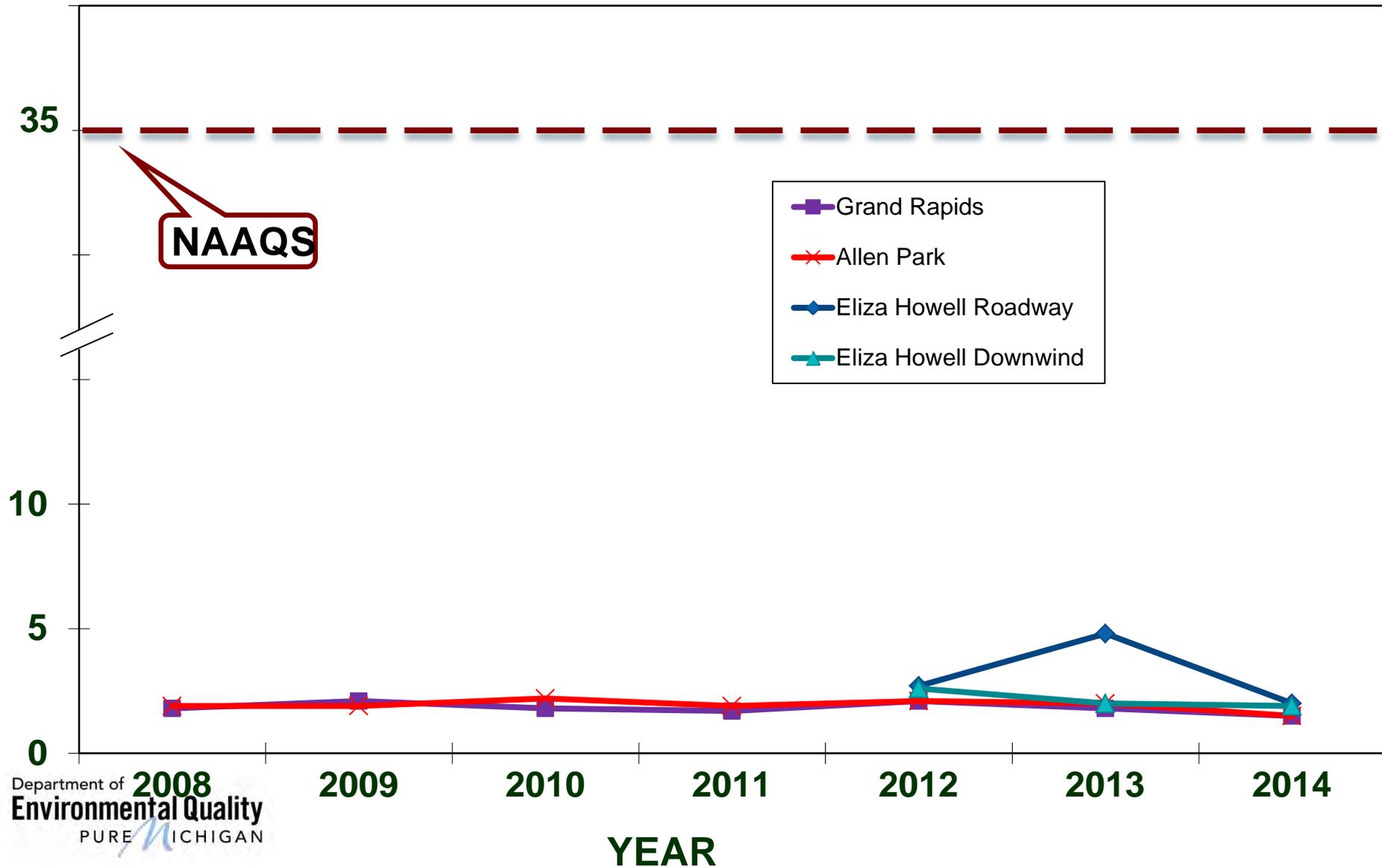




# Benzene Monitoring Data



# CO Levels in MI from 2008-2014 (2<sup>nd</sup> Highest 1-Hr Maximum Values)



# What's Coming Up

## Ozone

- Proposed change to the NAAQS (0.065 to 0.070 ppm)
- Proposed changes to monitoring requirements
  - Lengthen Michigan's ozone monitoring season (from APR 1-SEP 30 to MAR 1 - OCT 31)
  - Require new Photochemical Assessment Monitoring Station (PAMS) monitoring at NCORE sites; most notably
    - Auto (continuous) gas chromatographs
    - Ceilometers
    - Rain gauges

• Comments were due to the U.S. EPA by 3/17/2015

# What's Coming Up (Part II)

## Sulfur Dioxide

- Data Requirement Rule, proposed April 17, 2014, affecting urban (pop > 1 M) sources (1000 to 3000 tons/year) and outstate sources (2000 to 10,000 tons/year)
  - Use modeling to establish permanent and enforceable emission limitations that show attainment with the SO<sub>2</sub> NAAQS before 2017 designations
  - Or...characterize air quality for certain SO<sub>2</sub> sources through ambient monitoring
    - Proposed by July 1, 2016 and operational by January 1, 2017 (number and location of sites required?)
    - Data must be collected for three years, meeting the quality assurance requirements of 40 CFR 58
    - the designation of these areas would be completed in 2020



# Questions? Comments?