



# Annual air monitoring network plan for Minnesota

2011



Minnesota Pollution Control Agency

aq-ppt2-03

# Introduction

- Annual report issued by the MPCA
- Federal requirement since 2007
- Objectives:
  - Provide evidence current regulations are met
  - Detail any changes proposed through the next calendar year
  - Provide specific information on each of our proposed and existing air monitoring sites
- Allow public comments on any proposed changes through a 30-day public comment period
- Network Assessment:
  - Provides a more detailed evaluation of our air monitoring network
  - Due every 5 years – first one due July 1, 2010

# Introduction

- EPA Requirement:

- *40 CFR § 58.10(a) (1) Annual monitoring network plan and periodic network assessment*
- *Beginning July 1, 2007, the State, or where applicable local, agency shall adopt and submit to the Regional Administrator an annual monitoring network plan which shall provide for the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations including FRM, FEM, and ARM monitors that are part of SLAMS, NCore stations, STN stations, State speciation stations, SPM stations, and/or, in serious, severe and extreme ozone nonattainment areas, PAMS stations, and SPM monitoring stations. The plan shall include a statement of purposes for each monitor and evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of this part, where applicable. The annual monitoring network plan must be made available for public inspection for at least 30 days prior to submission to EPA.*

# Overview

- Introduction

- Network Overview
- Network Scales
- Types of Networks
- Site Selection
- QA/QC Program

- Parameter Networks

- Summary of Proposed Changes

- Summary of the Public Comment Period

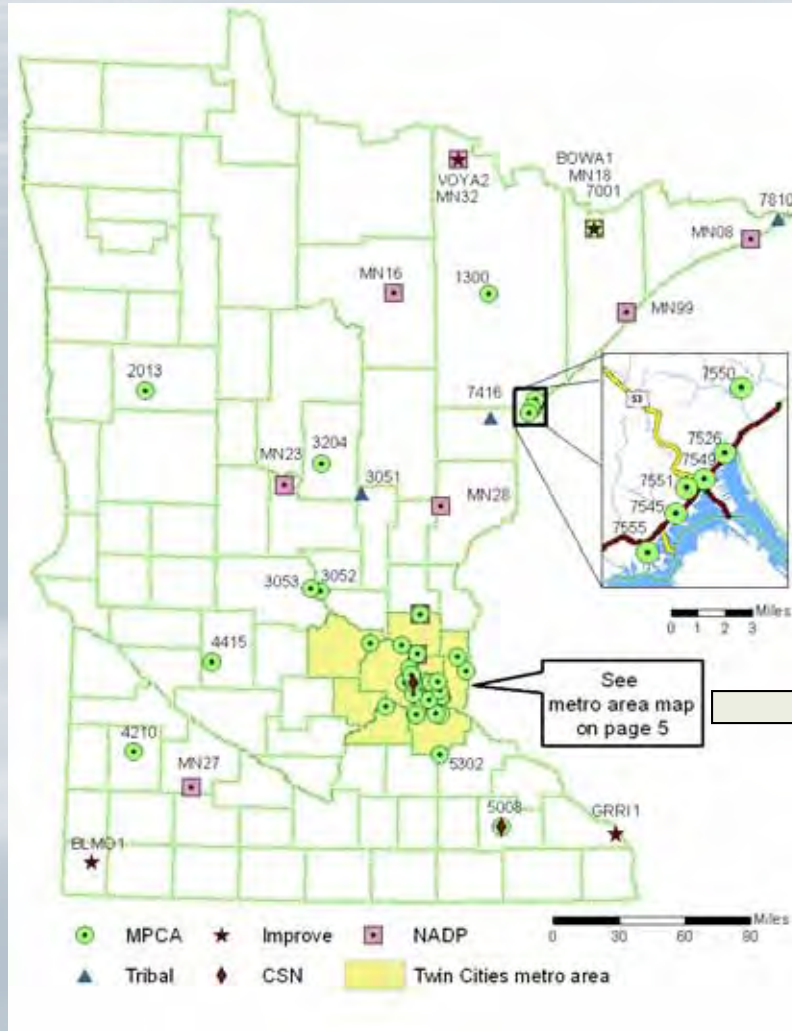
- Appendix: 2010 Air Monitoring Sites in Minnesota

# Types of Networks

- State and Local Air Monitoring Stations (SLAMS)
- National Core Monitoring Network (NCore)
- Air Quality Index (AQI)
- National Atmospheric Deposition Program (NADP)
- Interagency Monitoring of Protected Visual Environments (IMPROVE)
- Chemical Speciation Network (CSN)

# Network Overview

- 42 MPCA Sites
- 3 Tribal Sites
- 4 IMPROVE Sites
- 2 CSN Sites
- 10 NADP Sites



# Methods and Equipment

**Table 7: Methods and equipment**

Monitoring parameter	Methods and equipment	Analyzing agency
PM <sub>2.5</sub> FRM	Gravimetric – Thermo Partisol-Plus model 2025 PM <sub>2.5</sub> Sequential Air Sampler and Andersen RAAS-100 Single Channel samplers	MPCA
PM <sub>2.5</sub> Continuous	Beta Attenuation – MetOne Instruments BAM-1020	MPCA
PM <sub>2.5</sub> Speciation - CSN	Gravimetric, GC/MS, Ion Chromatography – MetOne Instruments SAAS Speciation Sampler, URG3000N Carbon Samplers	RTI
PM <sub>2.5</sub> Speciation - IMPROVE	Gravimetric, GC/MS, Ion Chromatography – IMPROVE Speciation Sampler	Cal Davis
PM <sub>10</sub>	Gravimetric – Andersen Plastic samplers	MPCA
PM <sub>10</sub> Continuous	Beta Attenuation – MetOne Instruments BAM-1020	MPCA
TSP	Gravimetric – Andersen Plastic T samplers	MPCA
Ozone	Ultraviolet Absorption – API 400E, TE 49C analyzers	MPCA
NO <sub>x</sub>	Chemiluminescence – API 200A, TE 42, Monitor Labs analyzers	MPCA
NO/NO <sub>y</sub> trace level	Chemiluminescence – American Ecotech model EC9841T	MPCA
SO <sub>2</sub>	Pulsed Fluorescence – Dasibi 4108 analyzers	MPCA
SO <sub>2</sub> trace level	Pulsed Fluorescence – American Ecotech model EC9850T	MPCA

# Site Parameters

Table 9: 2010 Site parameters - Twin Cities metropolitan area

MPCA Site ID	City Name	Site Name	PM <sub>2.5</sub> FRM	PM <sub>2.5</sub> Continuous	PM <sub>2.5</sub> Speciation	PM <sub>10</sub>	TSP and Metals	Ozone	Oxides of Nitrogen	Sulfur Dioxide	Carbon Monoxide	VOCs	Carbonyls	Other Parameters
250	St. Louis Park	St. Louis Park	X									X	X	
420	Rosemount	FHR 420					X		X	X	X	X	X	TRS, Meteorological Data
423	Rosemount	FHR 423							X	X	X	X	X	TRS, Meteorological Data
436	St. Paul Park	MPC 436								X		X	X	TRS
438	Newport	MPC 438					X					X	X	
442	Rosemount	FHR 442								X		X	X	
443	Rosemount	FHR 443								X		X	X	TRS
448	Bayport	Point Road					X					X	X	
465	Eagan	Gopher Resources					X							
470	Apple Valley	Apple Valley	X	X			X					X	X	
505	Shakopee	Shakopee	X					X						
861	St. Paul	Lexington Avenue									X			
866	St. Paul	Red Rock Road				X								
868	St. Paul	Ramsey Health Center	X			X <sup>c</sup>						X	X	<sup>c</sup> PM <sub>10</sub> Continuous, Asbestos
871	St. Paul	Harding High School	X	X			X					X	X	
907	Minneapolis	Humboldt Avenue				X	X					X	X	



# Parameter Networks

- **Criteria Pollutants:** particulate matter ( $PM_{2.5}$ ,  $PM_{10}$ , and TSP), lead, ozone, nitrogen dioxide, sulfur dioxide, and carbon monoxide
- **Air Toxics:** volatile organic compounds (VOCs), carbonyls, and metals
- **Other Parameters:** atmospheric deposition, hydrogen sulfide, total reduced sulfur, and meteorological data
- **Special Studies:** asbestos, perfluorochemicals (PFCs), and visibility.

# Criteria Pollutants

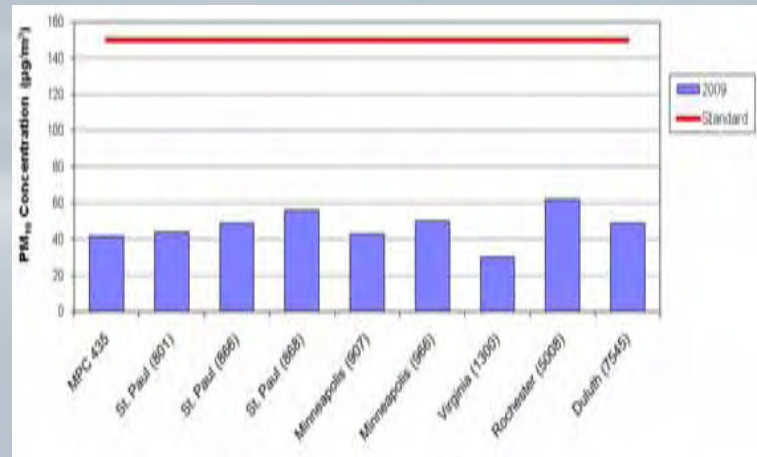
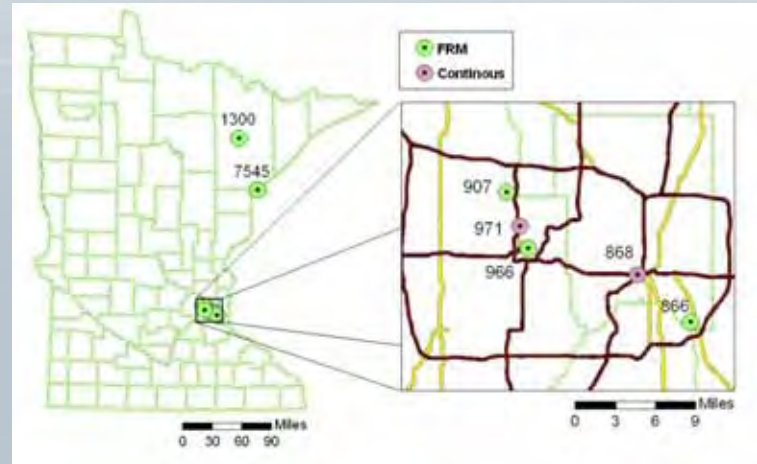
- Regulated by the National Ambient Air Quality Standards (NAAQS)
- EPA reviews the NAAQS every 5 years
- Tables summarizing the current NAAQS and upcoming changes

**Table 11: NAAQS Changes**

Pollutant	Date of Final Rule	Proposed Primary Standards	Proposed Secondary Standards
Particulate Matter (PM <sub>10</sub> )	Expected July 2011	Expected November 2010	
Particulate Matter (PM <sub>2.5</sub> )			
Lead	Finalized in 2008	(see Table 10)	(see Table 10)
Ozone	Reconsideration expected August 2010	Range for 8-hour standard: 0.60 – 0.70 ppm	New standard called W126 Range: 7-15 ppm-hours
Nitrogen Dioxide	Finalized January 22, 2010	(see Table 10)	Expected July 2011
Sulfur Dioxide	Expected June 2010	Eliminate existing annual and 24-hour standards Range for 1-hour standard: 50 – 100 ppb	Expected July 2011
Carbon Monoxide	Expected May 2011	Expected October 2010	

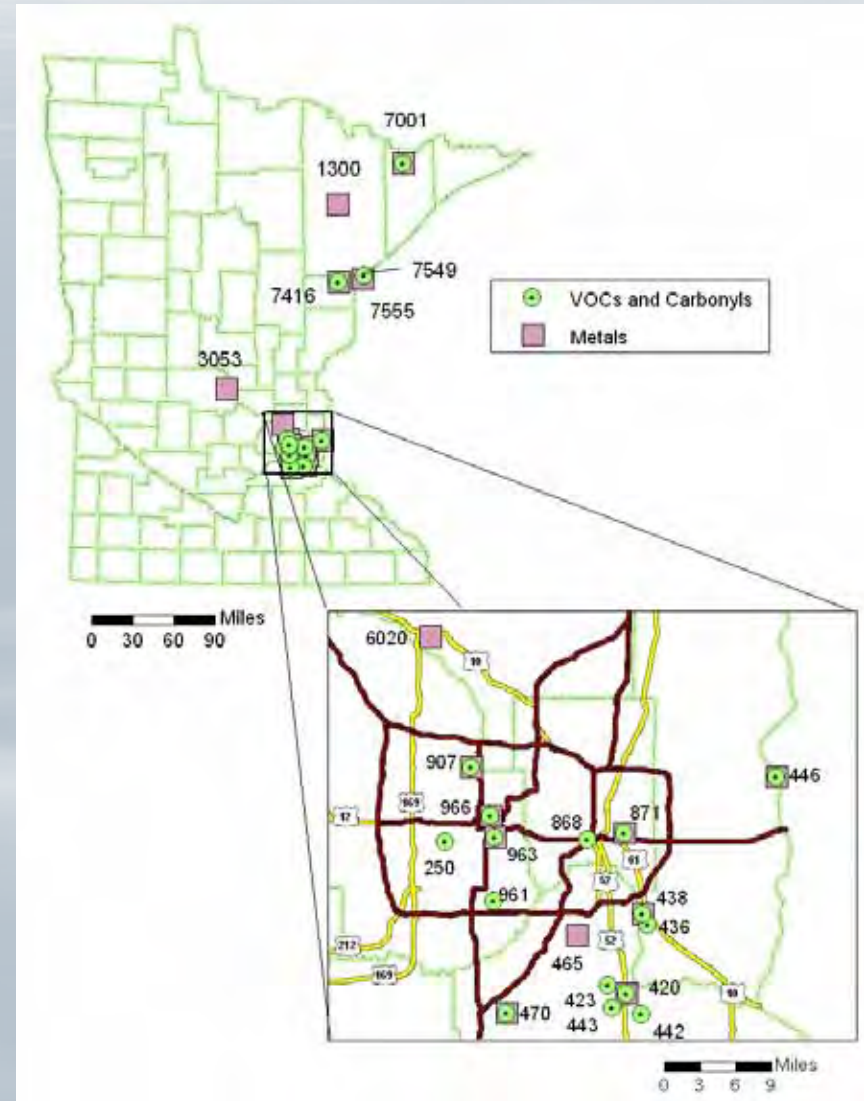
# Parameter Networks: Criteria Pollutants

- Description of pollutant and network
- Map of sites
- Graph of Minnesota's monitoring data compared to the NAAQS or MAAQS



# Parameter Networks: Air Toxics

- Description of pollutant and network
- Map of sites
- List of compounds or elements monitored for each type – 56 VOCs, 7 carbonyls, and 15 metals



# Proposed Changes

- Described within each parameter network
- Detailed on a site by site basis in the appendix
- Summarized in a section on page 41

Table 15: Proposed Changes

MPCA Site ID	City Name	Site Name	Site Closing	PM <sub>2.5</sub> FRM	FEM PM <sub>2.5</sub> Continuous	PM <sub>2.5</sub> Continuous (non-FEM)	PM <sub>2.5</sub> Speciation	PM <sub>10-2.5</sub>	PM <sub>10</sub>	TSP and Metals	Sulfur Dioxide	Carbon Monoxide	VOCs	Carbonyls
871	St. Paul	Harding High School			A	T								
971	Minneapolis	North Second Street							T	T				
3052	Saint Cloud	Talahi School		T	A									
5008	Rochester	Ben Franklin School		T	A	T								
6010	Blaine	Anoka Airport					A	A		A				
7416	Cloquet	Cloquet								T			T	T
7526	Duluth	Torrey Building	X								T	T		
TBD	TBD	Tribal								A			A	A

A = proposed to add  
T = proposed to terminate  
X = site closing

# Appendix: 2010 Monitoring Sites

**Minneapolis - H.C. Andersen School**

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**Site Information:**  
 AQS Site ID: 27-053-0963  
 MPCA Site ID: 963  
 Address: 2727 10th Ave S  
 City: Minneapolis  
 County: Hennepin

**Location Setting:** Urban Center City  
 Latitude: 44.9535  
 Longitude: -93.2583  
 Elevation: 270 m  
 Year Established: 2001

**Monitoring Parameters:**

Parameter	Frequency	Notes
PM <sub>10</sub> FPM	1/3	
PM <sub>2.5</sub> Continuous	1/3	
PM <sub>2.5</sub> Speciation**	1/3	
PM <sub>10</sub>	1/3	
TSP/ Metals	1/6	
VOCs	1/6	
Carbonyls	1/6	
Carbon Monoxide	1/6	
Ozone	1/6	
SO <sub>2</sub>	1/6	
NO <sub>x</sub>	1/6	
Meteorological Data	1/6	
Other	1/6	

R = Existing, A = Proposed to Add, T = Proposed to Terminate  
 Sampling Frequency: 1/1 = Every day, 1/3 = 1-in-3 day, 1/6 = 1-in-6 day  
 \*\*CSS

**Site Description:**  
 This monitoring site is located on the roof of the Hans Christian Andersen School in the Phillips Neighborhood of Minneapolis. It is approximately two miles south of downtown Minneapolis and is bordered by major roadways. This location provides air quality data representative of urban neighborhoods which are dominated by residential and commercial land use.

**Monitoring Objectives:**

- Demonstrate compliance with PM<sub>2.5</sub> and lead NAAQS.
- Demonstrate compliance with TSP MAAQS.
- Support AQI reporting and forecasting for PM<sub>2.5</sub>.
- Characterize air toxics (VOCs, carbonyls, and metals) and identify emission sources.
- Characterize PM<sub>2.5</sub> chemical composition.

**Planned Changes:**  
 None

Draft 2011 Annual Air Monitoring Network Plan • May 2010  
 aq10-05a Minnesota Pollution Control Agency

- Site city and name
- Site information
- Monitoring parameters
- State map
- Street map
- Picture of monitors
- Site description
- Monitoring objectives
- Planned changes

# Public Comment Period

- May 19<sup>th</sup>, 2010 – June 18<sup>th</sup>, 2010
- Available for review online or by phone
- Email sent to the Air-Related Technical Information Listserv
- Email sent to @ Air Issues list

# Public Comments

- Comments are currently being reviewed
- Two public comments:
  - City of Cottage Grove requested monitoring of TSP, metals, and VOCs near the 3M facility in Cottage Grove
  - Fond du Lac Band would like us to add an elevation above ground level; however, we do not currently keep that information for all of our sites
- One internal comment:
  - Duluth staff would like site 7526 to remain open
  - Duluth staff would also like more fine particle monitoring along the north shore and iron range
- Comments are being considered and will be summarized in a section on page 45



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