

# Tonawanda Community Air Quality Study

Division of Air Resources  
Community Presentation

March 1, 2008

Sheridan Parkside Community  
Center

Tonawanda, NY



# Today's Topics

- Purpose of Study
- Study Plan Overview
- Overview of Study Area & Air Monitoring
- Study Progress Report
- Next Steps
- Community Input



# Purpose of Study

- Evaluate the effectiveness of the 1990 Clean Air Act Air Toxics Program;
- Participate in the National Ambient Air Toxics Monitoring Strategy;
- Characterize the degree and extent of local-scale air toxics problems;
- Provides information for the community and State/Federal government to identify the need for implementing risk reduction strategies.



# Why Was Tonawanda Selected ?

- Community concerns about ambient concentrations of benzene;
- EPA's 1999 National-scale Air Toxics Assessment (NATA) results for Erie County;
- Coke Oven Residual Risk Assessment prepared by EPA



# What is the 1999 National-scale Air Toxics Assessment (NATA)?

- Characterizes ambient air toxics across the nation based on modeling
- Identifies and prioritizes air toxics, emission source types and locations which are of greatest potential concern in terms of contributing to population risk
- Observe trends and the effectiveness of reduction strategies over time

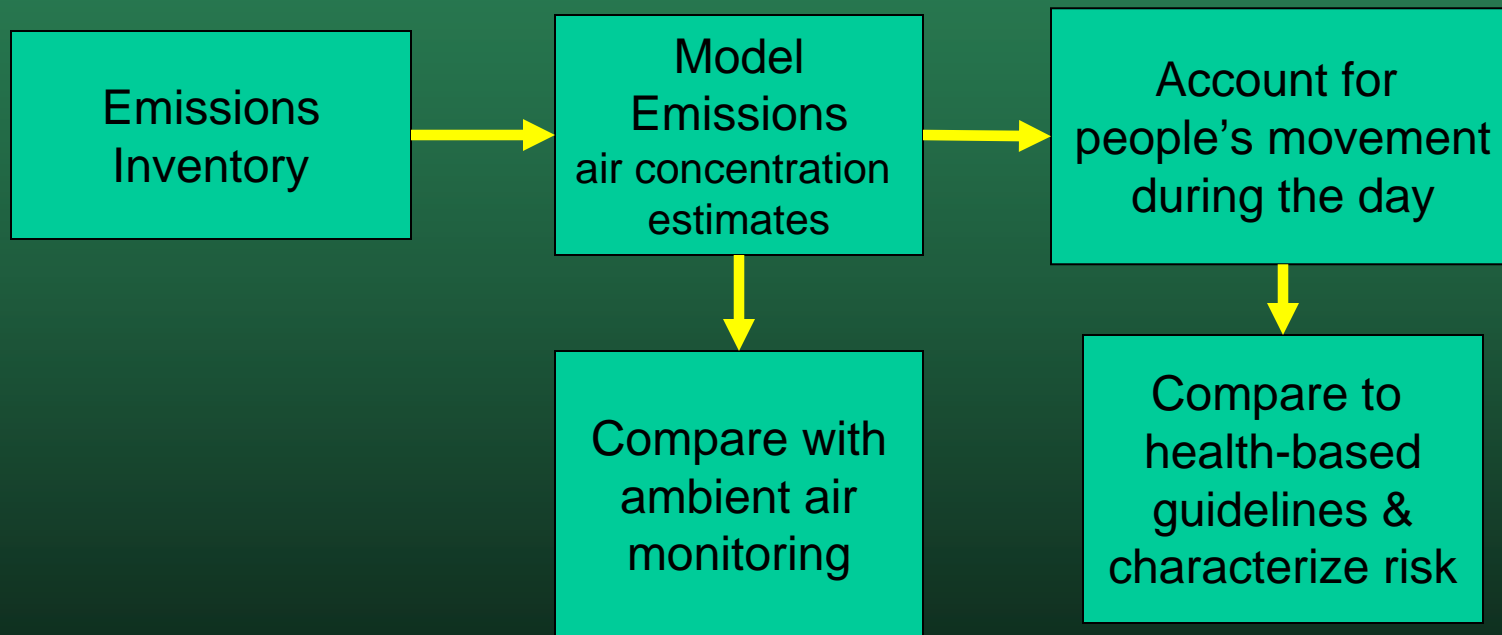


# NATA Sources

- Major Stationary Sources
  - Title V permitted sources
- Area & Other Stationary Sources
  - Area: dry cleaners, gas stations, small manufacturers
  - Other: wildfires, prescribed burning
- Mobile Sources
  - Cars, trucks, buses
  - Trains, boats, lawnmowers, construction vehicles, farm machinery



# Components of the National-Scale Air Toxics Assessment



# Tonawanda Study Plan

- Collect monitoring data from four sites for one year
- Analyze pollutant specific data
  - Evaluate influence of wind direction on monitored concentrations
  - Compare annual average concentration to health-based guidelines and characterize risk
  - Assess emission and potential contribution to monitored concentrations
    - Mobile sources, large (major) and small (area) industrial and manufacturing sources





# Tonawanda Study Plan

- Enhance emission inventory for large and small sources
- Model these emissions to:
  - Allow for comparison to monitoring values
  - Allow for analysis of previously modeled air toxics (EPA's National-scale Air Toxics Assessment)
  - Evaluate a new multi-facility modeling tool produced by EPA
  - Evaluate previous Coke Oven modeling results, conducted for Residual Risk Assessment
- (Study Plan)



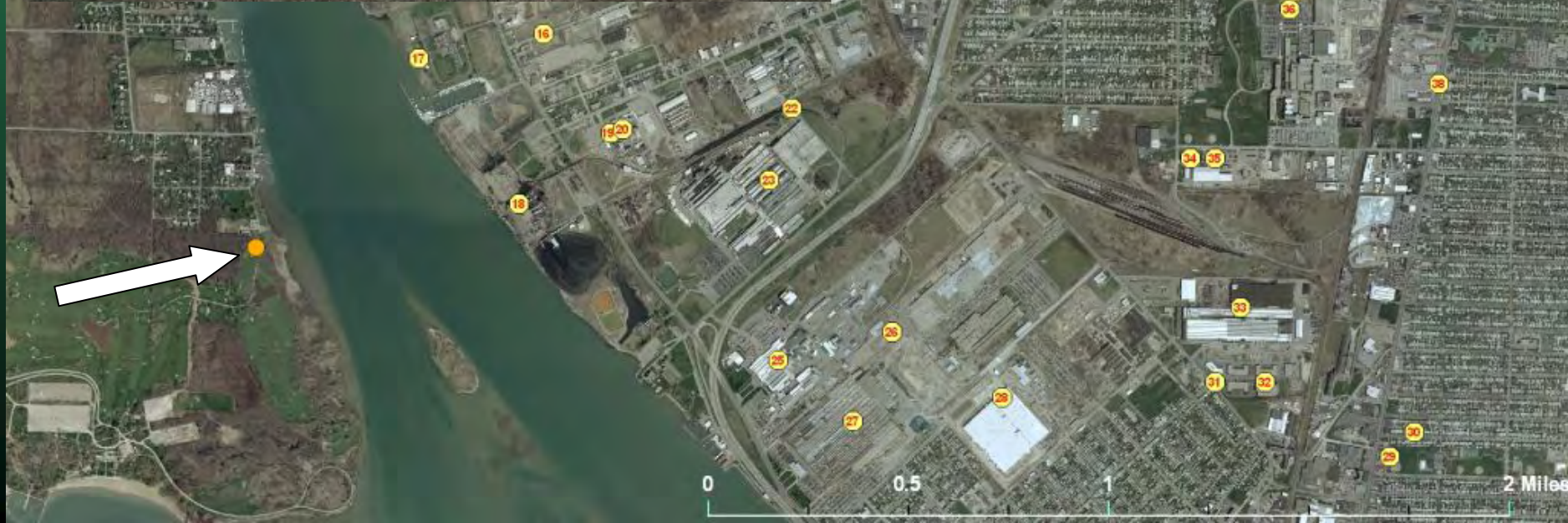




# Study Progress Report

- Air monitors/meteorological station installed and operating;
- Data capture (87 – 100%);
- Model ready inventory for major sources under development.

















# Air Toxics Measured

- 42 Volatile Organic Compounds (VOCs) and 10 Carbonyls;
- 1 in 6 day sampling schedule (24 hour sample);
- 15 of the chemicals are high priority urban air toxics targeted for reductions by the 1990 Clean Air Act.





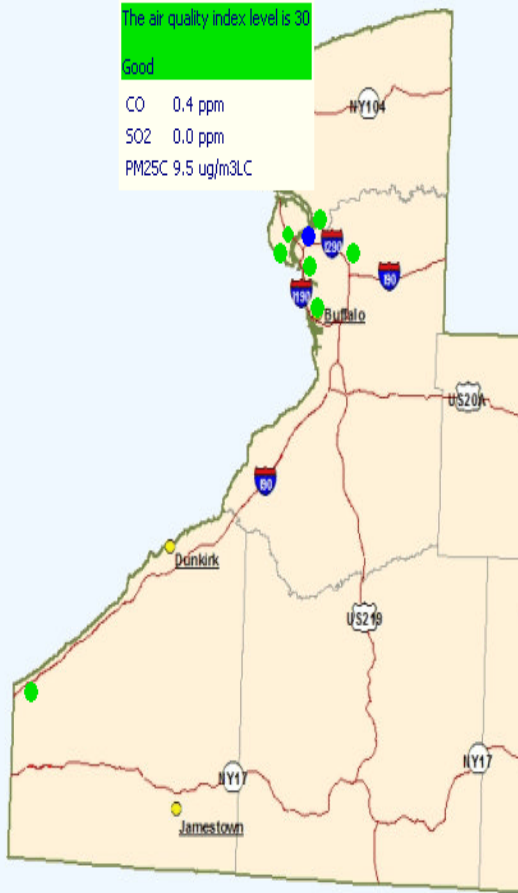
# Criteria Air Pollutants Measured

- Fine Particulate Matter (PM<sub>2.5</sub>)
- Sulfur Dioxide (SO<sub>2</sub>)
- Carbon Monoxide (CO)
- Hourly measurements every day
- Can be viewed on our website:

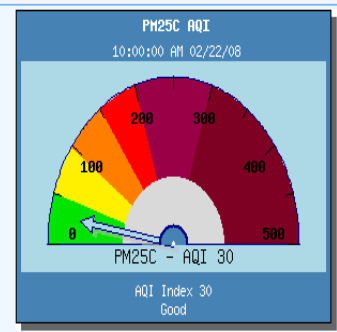
<http://www.dec.ny.gov/airmon/regionMap.php?regionno=9>



Brookside Terrace  
10:00:00 AM 02/22/08  
The air quality index level is 30  
Good  
CO 0.4 ppm  
SO2 0.0 ppm  
PM25C 9.5 ug/m3LC



Click On A Circle Shown On The Map To Select A Site



AQI 30  
Good  
SO<sub>2</sub> 0.0 ppm PM<sub>2.5</sub> 11.3 ug/m<sup>3</sup>LC  
CO 0.4 ppm

[Click Here To Produce Reports](#)

[Hover over the table for instant charts.](#)



Brookside Terrace 06:00:00 AM 02/22/08



AQI 30  
Good  
SO2 0.0 ppm  
CO 0.4 ppm  
[Click Here To Produce Reports](#)  
[Hover over the table for instant charts.](#)

Brookside Terrace 06:00:00 AM 02/22/08



AQI 31  
Good  
SO2 0.0 ppm  
PM25C 11.0 ug/m3LC  
CO 0.3 ppm  
[Click Here To Produce Reports](#)  
[Hover over the table for instant charts.](#)

Brookside Terrace 07:00:00 AM 02/22/08





NEW YORK STATE

DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION

New York State Department Of Environmental Conservation



Friday 02/22/08 12:39

Home Maps Group Reports Air Monitoring Stations Download Links Preferences

## 9 — Brookside Terrace Report Options

### Select Which Channels To Include In The Report

SO2 ☒ CO ☒ PM25C ☐

Select Start Date February 12, 2008



Select End Date February 12, 2008



There is a maximum time span  
of 180 days for report creation

### Timebase

1 hour ☒ 1 day ☐

### Table

HTML ☐ PDF ☐

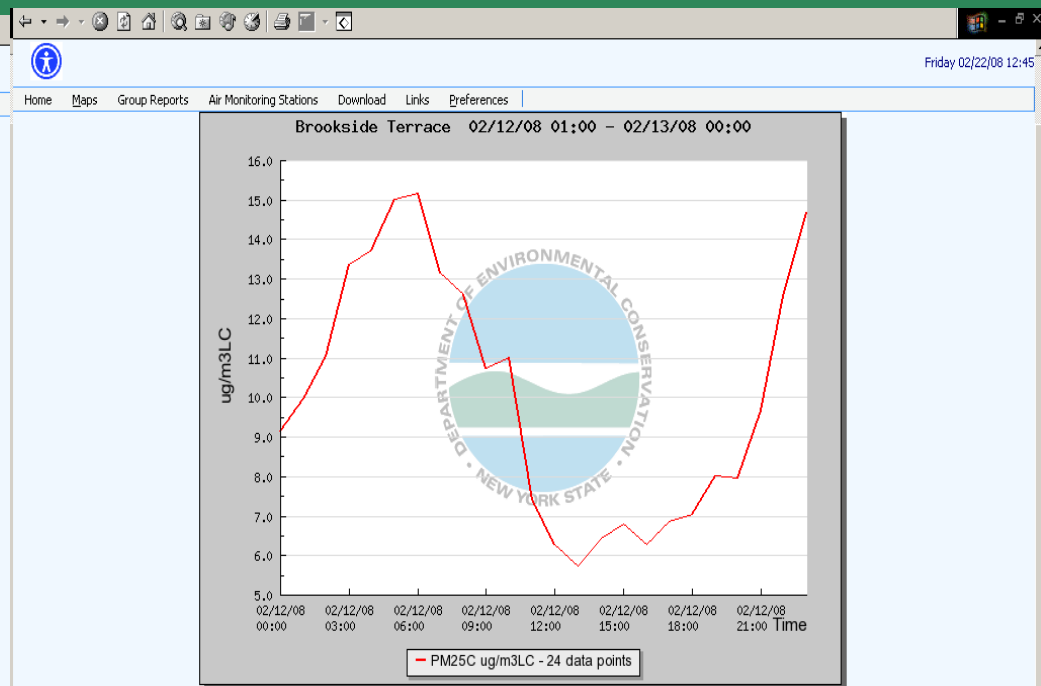
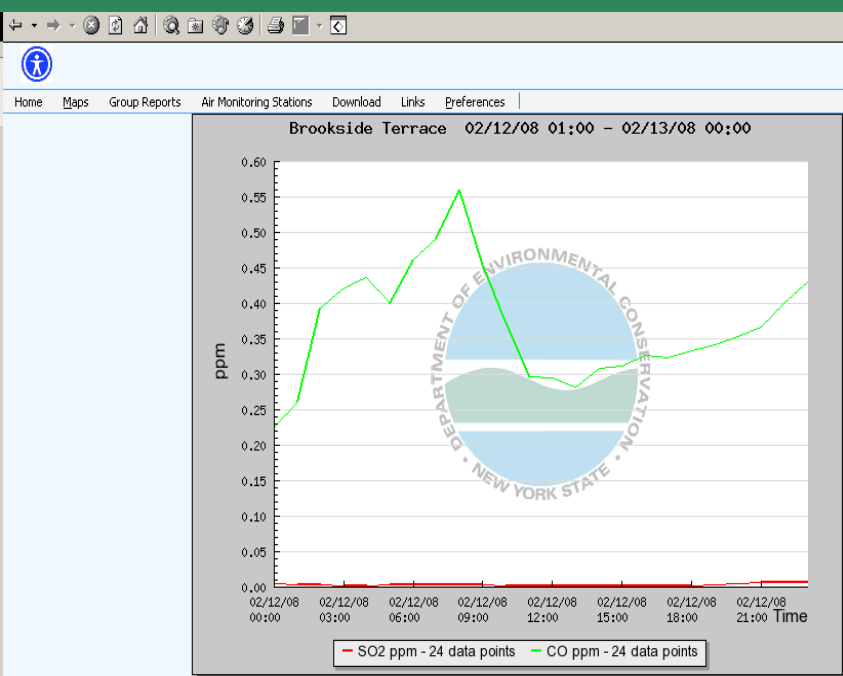
### Spreadsheet

CSV File ☐ Microsoft™ Excel ☐ XML ☐

### Graph

640x480 ☒ 800x600 ☐ 1024x768 ☐ 1280x1024 ☐

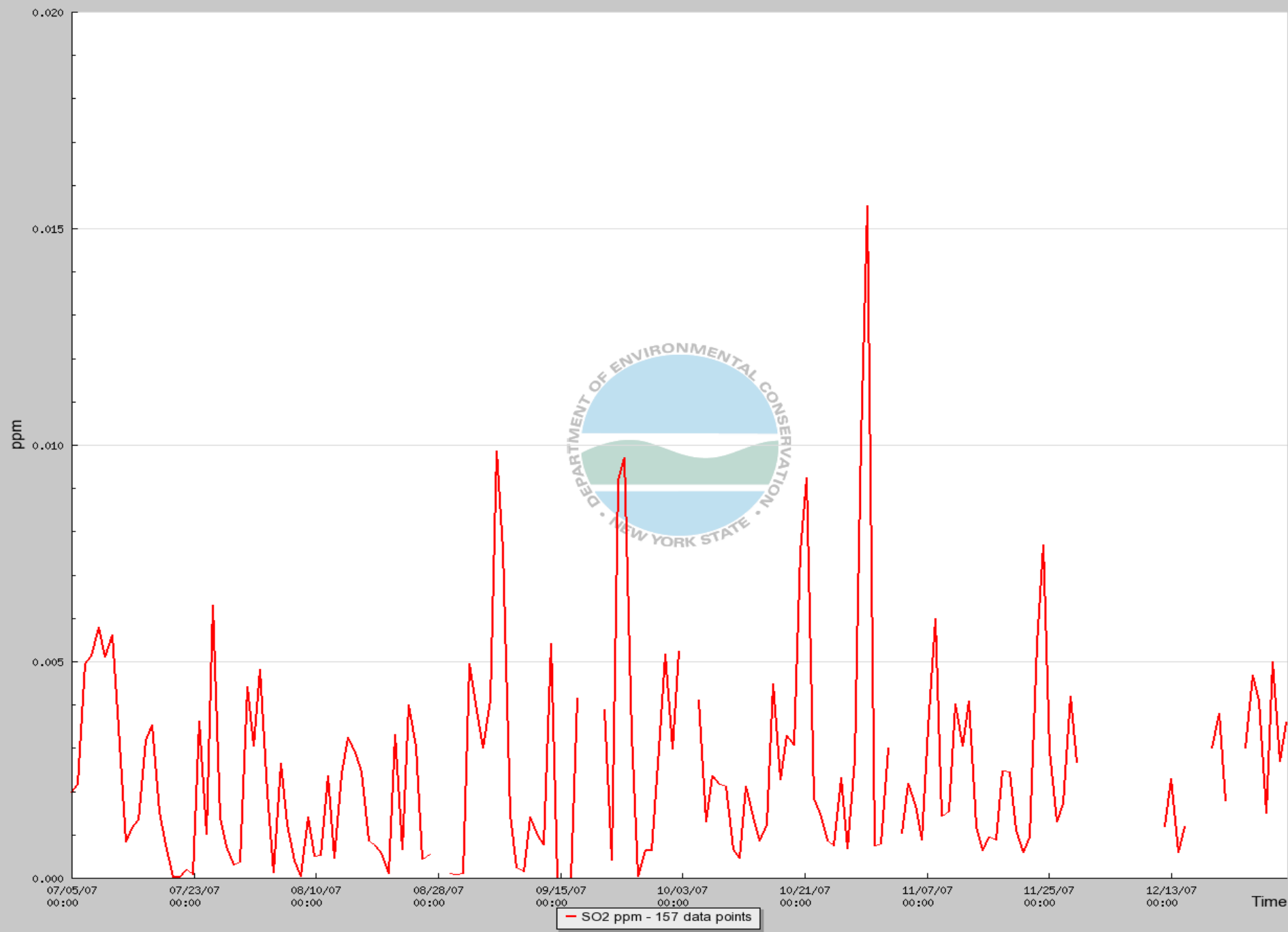
Create Report

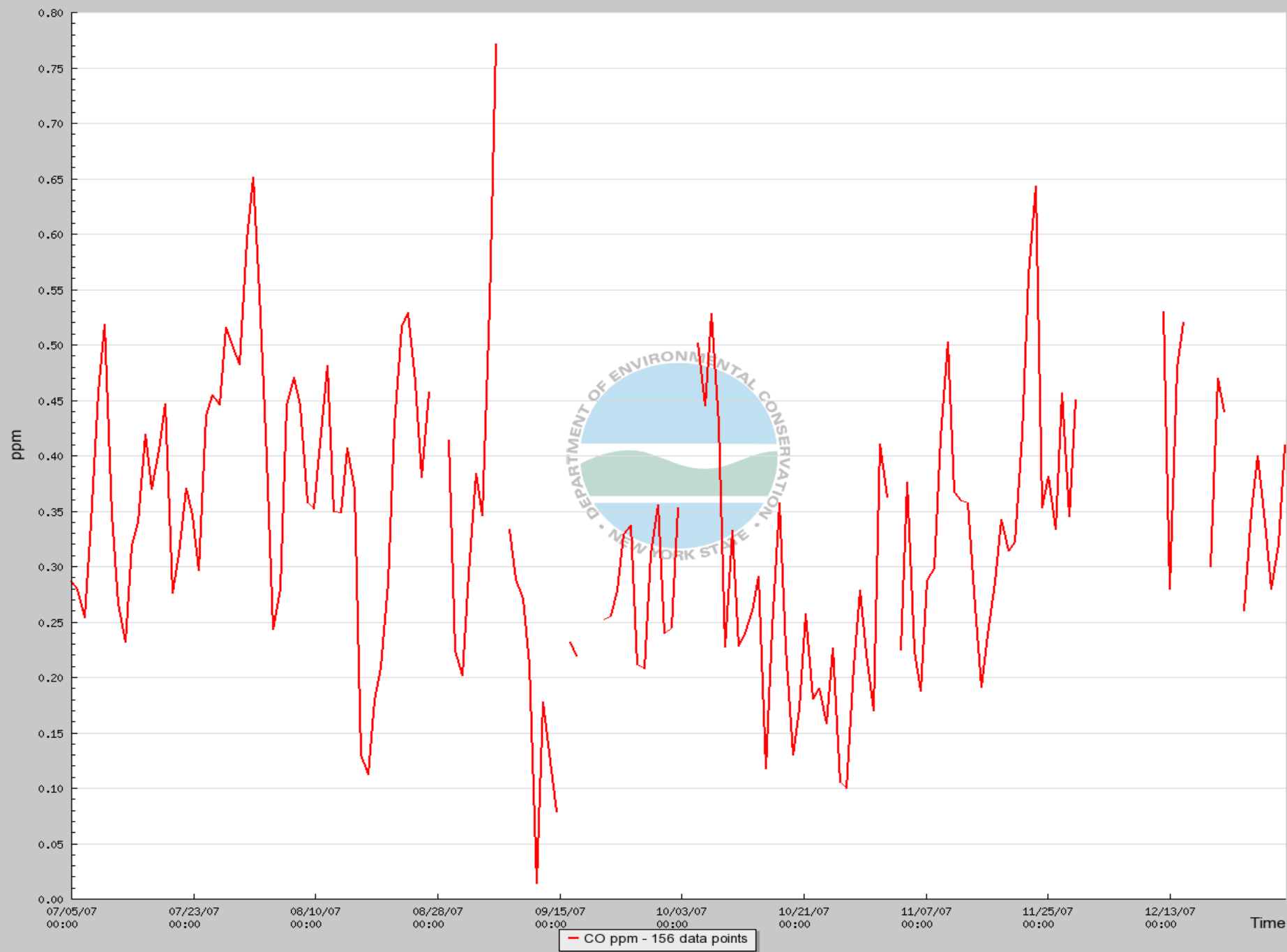


# Six Month Observations

- Criteria Pollutants (PM<sub>2.5</sub>, SO<sub>2</sub> & CO);
- Volatile Organic Compounds  
(benzene, 1,3 –butadiene, acrolein)









# Particulate Matter

less than 2.5 microns

Six month data

Concentration (  $\mu\text{g}/\text{m}^3$  )

- Maximum 24-hr value
- Average across all 24-hr values
- Minimum 24-hr value

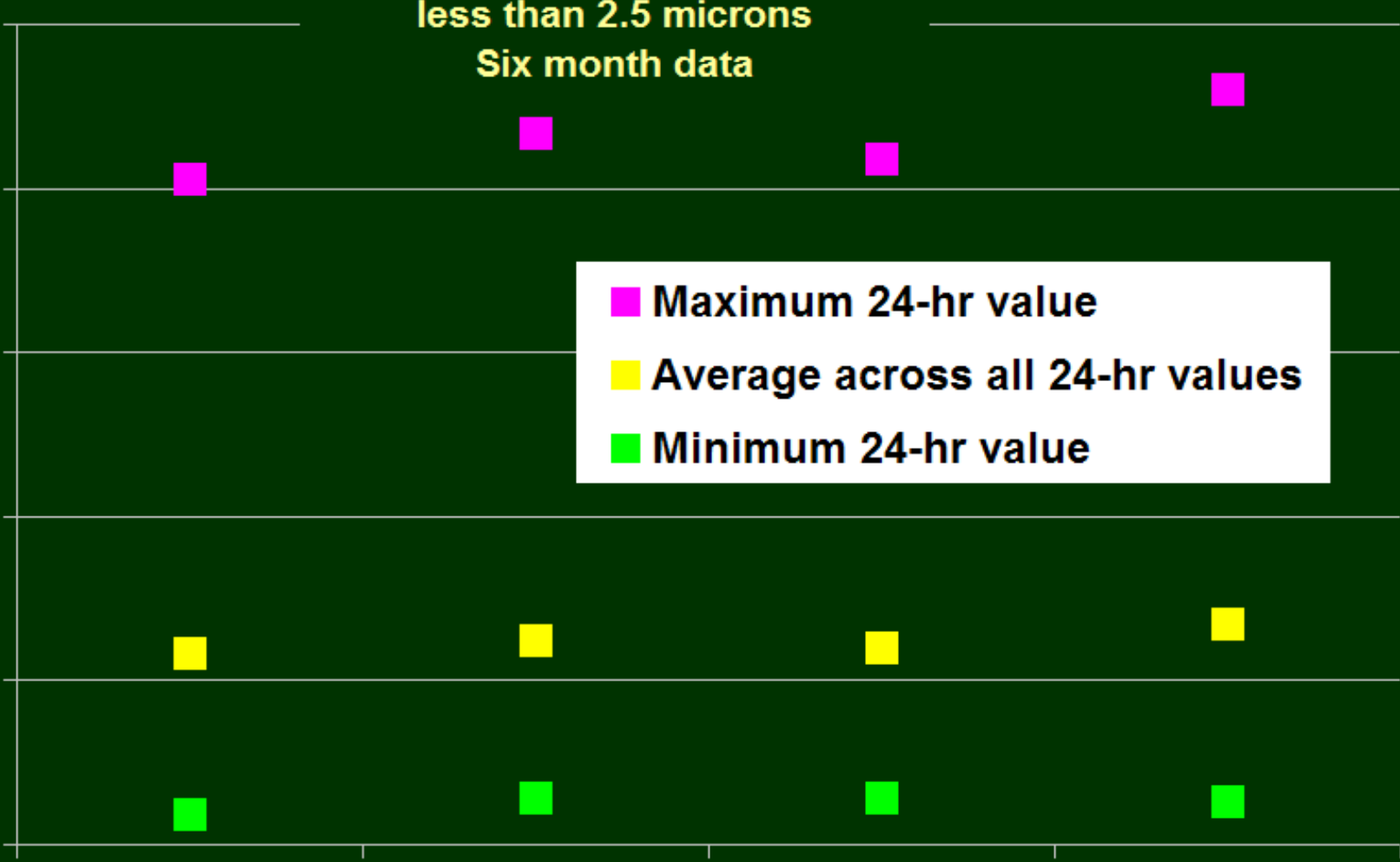
Beaver Island  
State Park

Brookside  
Terrace Drive

Sheridan Park  
Water Tower

Grand Island Blvd

50.00  
40.00  
30.00  
20.00  
10.00  
0.00



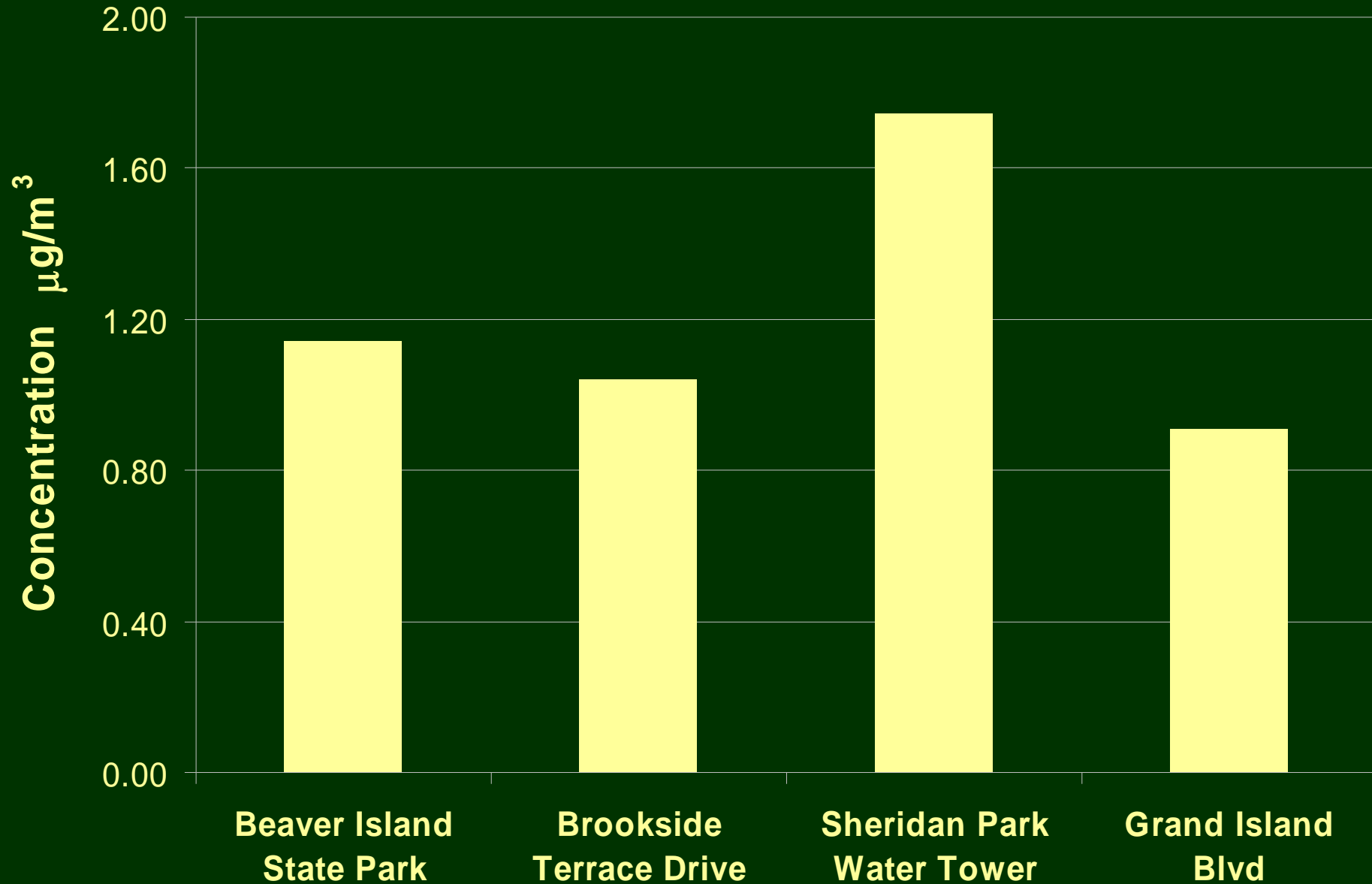
# Carbon Disulfide Sources

- Manmade sources include:
  - industrial sources manufacturing rayon, cellulose, and carbon tetrachloride
  - industrial sources producing rubber chemicals and pesticides
  - biological degradation and incineration of wastes
- Natural sources include emissions from marshes and wetlands; specific crop plants and trees



# Carbon Disulfide

Six month average



# Benzene Sources

- Manmade sources include:
  - tobacco smoke
  - motor vehicle
  - oil and natural gas production
  - petroleum refining & distribution
  - burning coal, oil and gas
  - gasoline service stations
  - coke ovens and coal chemical manufacturing
  - rubber tire manufacturing
  - storage or transport of benzene
- Natural sources include emissions from forest fires



# Benzene

six month average



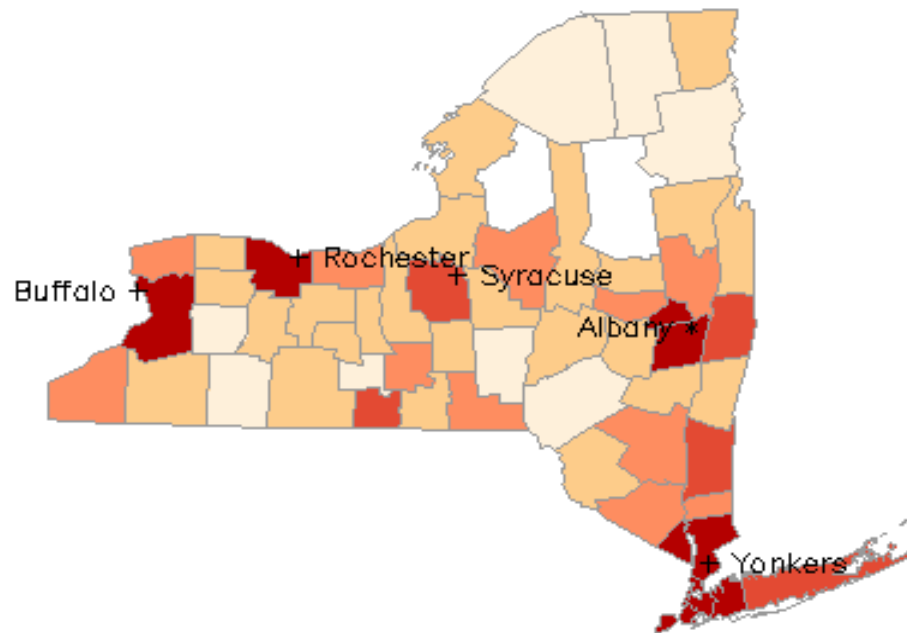
# Benzene

six month average



# 1999 NATA Results

## 1999 Estimated County Median Ambient Concentrations Benzene — NEW YORK Counties



### Distribution of U.S. Ambient Concentrations

Highest In U.S.	4.93
95	1.38
90	1.10
Percentile 75	0.71
50	0.45
25	0.33
Lowest In U.S.	0.063

County Median Ambient Pollutant Concentration  
( micrograms / cubic meter )

Source: U.S. EPA / QAQPS  
1999 NATA National-Scale Air Toxics Assessment



# 1,3-Butadiene

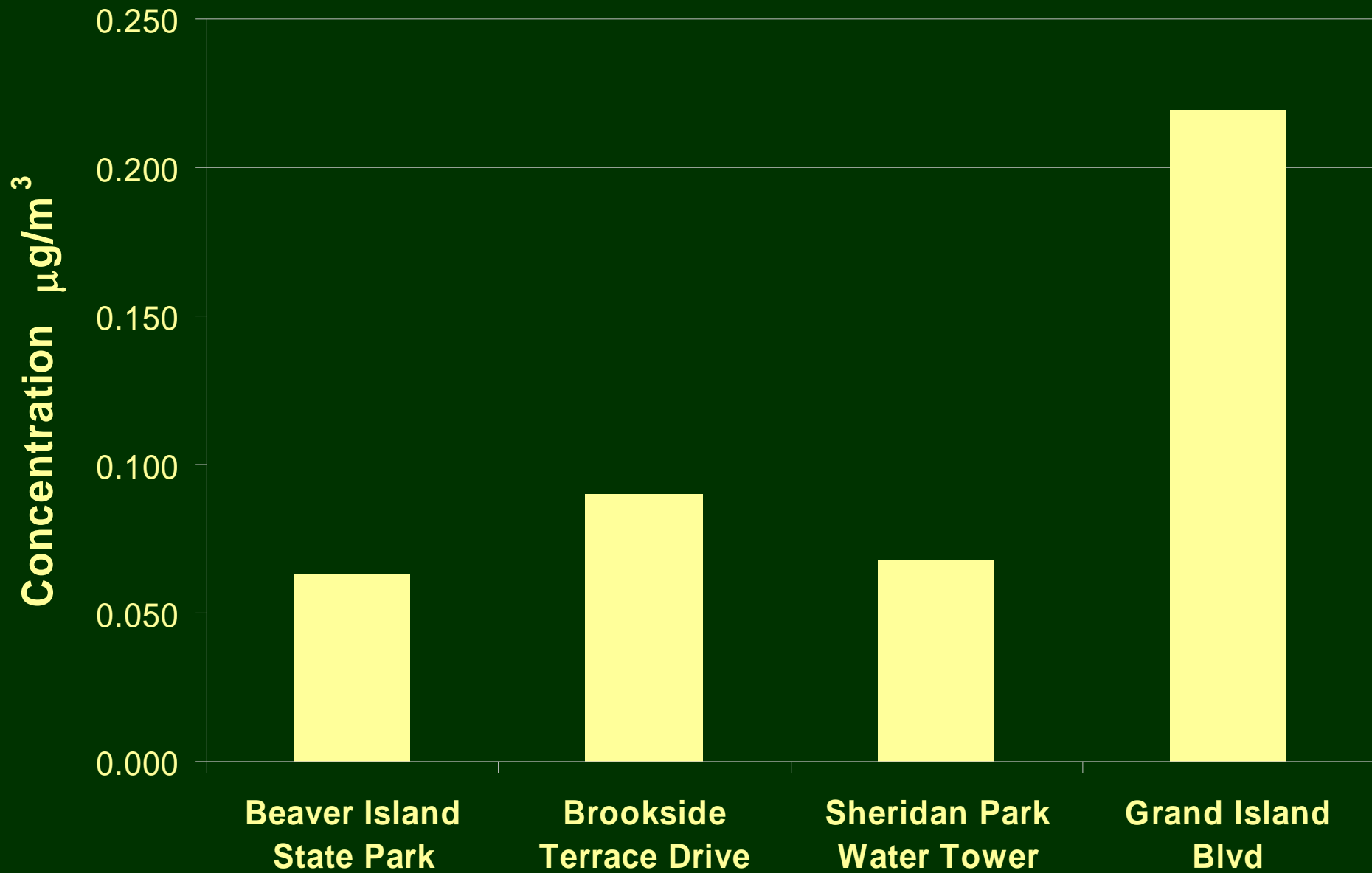
- Manmade sources
  - tobacco smoke
  - oil refineries
  - chemical manufacturing
  - commercial plastic and rubber factories
  - gasoline service stations
  - motor vehicle
- Natural sources include emissions from forest fires and biomass burning





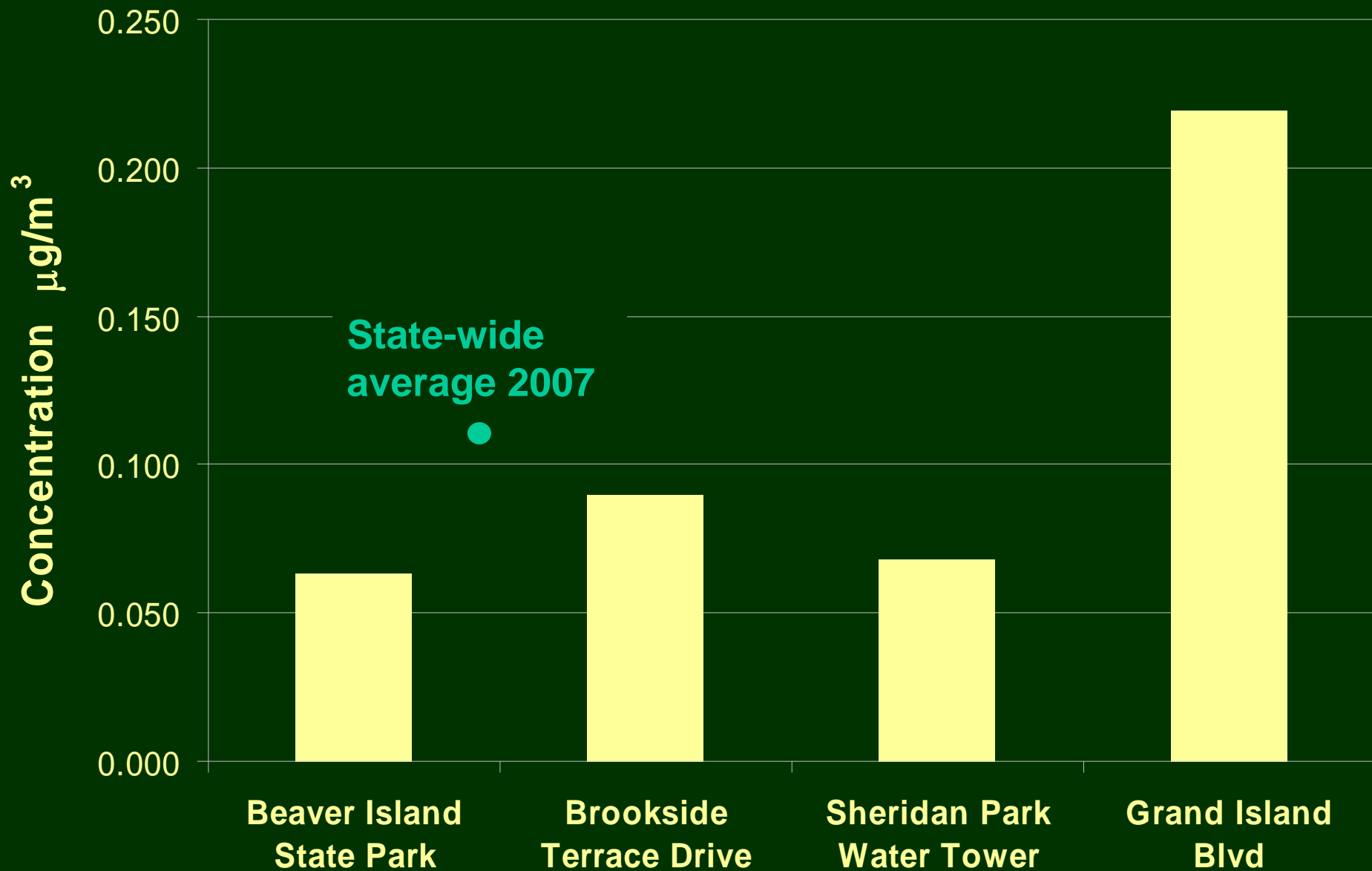
# 1,3-Butadiene

six month average



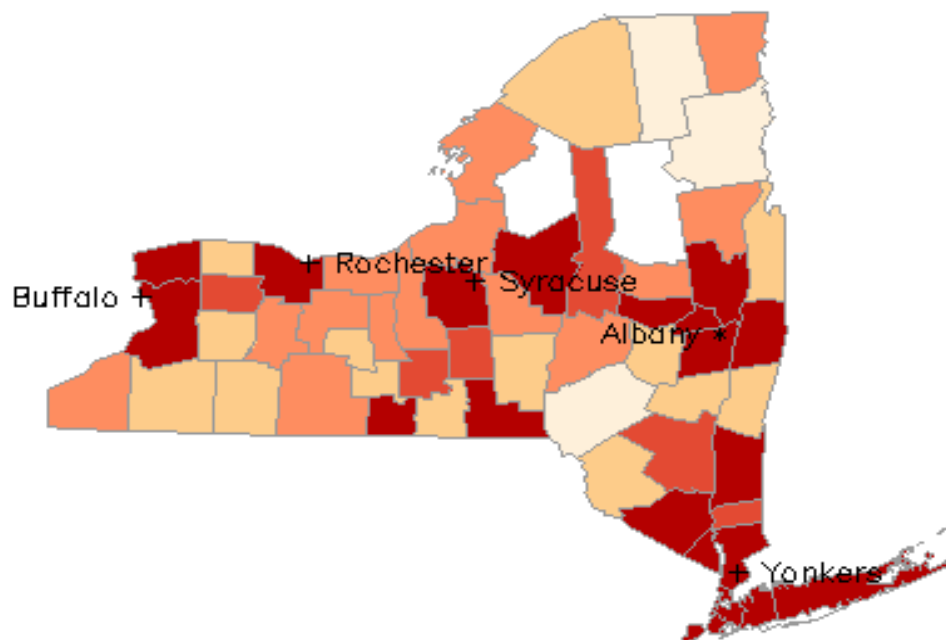
# 1,3-Butadiene

six month average



# 1999 NATA Results

## 1999 Estimated County Median Ambient Concentrations 1,3-Butadiene — NEW YORK Counties



### Distribution of U.S. Ambient Concentrations

Highest In U.S.	0.70
95	0.11
90	0.078
Percentile 75	0.032
50	0.009 3
25	0.004 3
Lowest In U.S.	0.000 087

County Median Ambient Pollutant Concentration  
(micrograms / cubic meter)

Source: U.S. EPA / QAQPS  
1999 NATA National-Scale Air Toxics Assessment



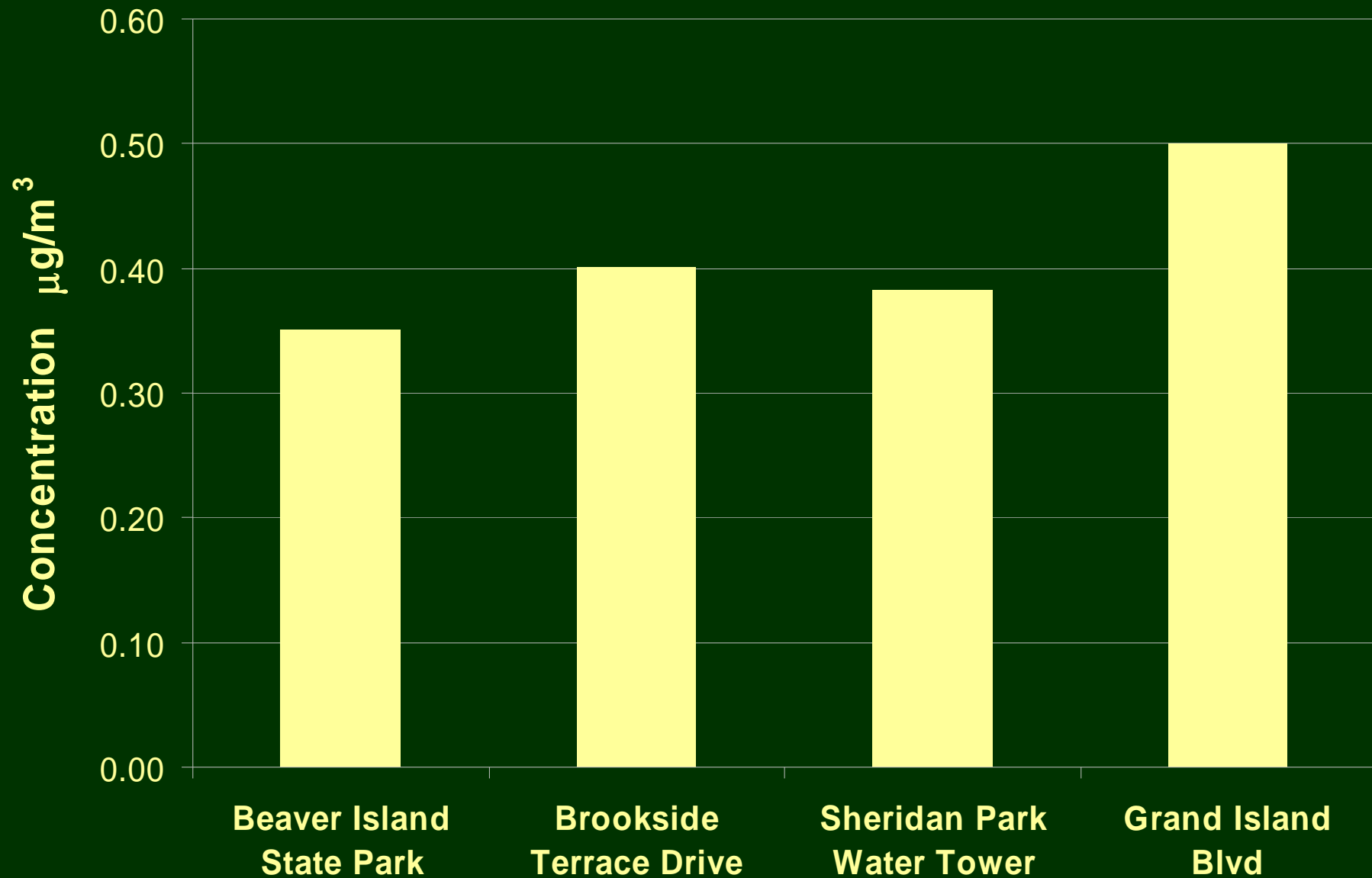
# Acrolein

- **Manmade sources**
  - tobacco smoke
  - chemical manufacturing (acrylic acid)
  - combustion of petrochemical fuels and coal
  - mobile source exhaust (cars, trucks, airplanes)
  - formed when cooking fats are overheated
  - breakdown by sunlight of various hydrocarbon pollutants (such as 1,3-butadiene)
  - used as an herbicide and algicide
- **Natural sources**
  - product of fermentation and ripening processes
  - released when organic matter such as trees and other plants, including tobacco, are burned



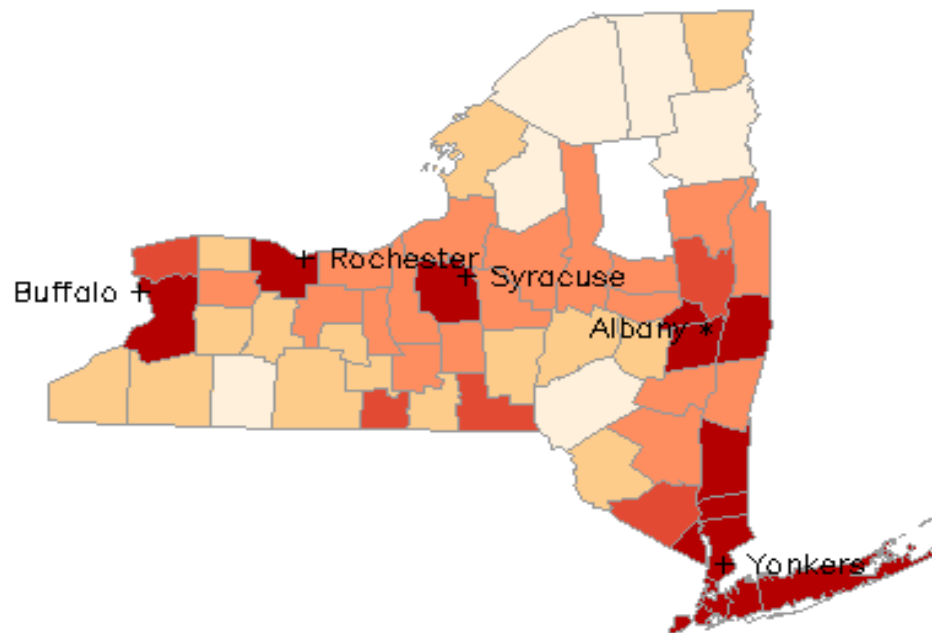
# Acrolein

six month average

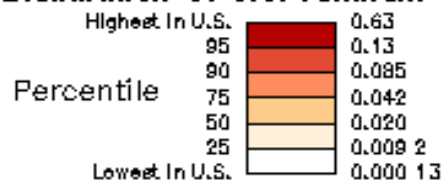


# 1999 NATA Results

## 1999 Estimated County Median Ambient Concentrations Acrolein — NEW YORK Counties



### Distribution of U.S. Ambient Concentrations



County Median Ambient Pollutant Concentration  
( micrograms / cubic meter )

Source: U.S. EPA / QAQPS  
1999 NATA National-Scale Air Toxics Assessment



# Next Steps

- Continue air monitoring
- Upon completion of air monitoring, evaluate data and characterize risk
- Develop inventory of small sources
- Model emissions from large and small sources
- Evaluate modeled results with air monitoring



# Commitment to the Public

- Keep public informed by holding public meetings to discuss project and results
- Collaborate with the Clean Air Coalition of Western N.Y.





# Questions



# Contact

- Questions about facilities and emissions
  - Larry Sitzman (716) 851-7130
- Questions about Tonawanda study
  - Tom Gentile (518) 402-8402
  - Garry Boynton (518) 402-8508

