CleanAir HAMILTON

Annual Report 2005/2006

Presentation to

Planning & Development Committee

Brian McCarry, CAH Chair

June 5, 2007

Clean Air Hamilton

- Initiated as implementation committee to act on recommendations in 1997 HAQI Reports.

- Community Initiative directed at:
  - Researching Air Quality & Health Issues
  - Examining Policies that Affect Air Quality
  - Advising City Council on Air Quality Issues
  - Encouraging Emission Reductions Strategies
  - Educating the Public

- Stakeholders include:
  - MOE, Environment Canada, Dofasco, Stelco,
  - Green Venture, McMaster University, Citizens, City Staff

Clean Air Hamilton

- City provides financial support to CAH
- CAH leverages expert volunteer support
- CAH leverages funding from other sources
  - MOE, Environment Canada, corporate sponsors
- Programs include:
  - Upwind/Downwind Conference – February 25/26, 2008
  - Hamilton Air Monitoring Network – 4 years in operation
  - Mobile Monitoring Surveys – now in Phase 2
  - Tree Planting – including heritage trees
  - Commuter Challenge – annual event
  - Residential Energy Efficiency
  - Fugitive Dust Workshop

Clean Air Hamilton Report

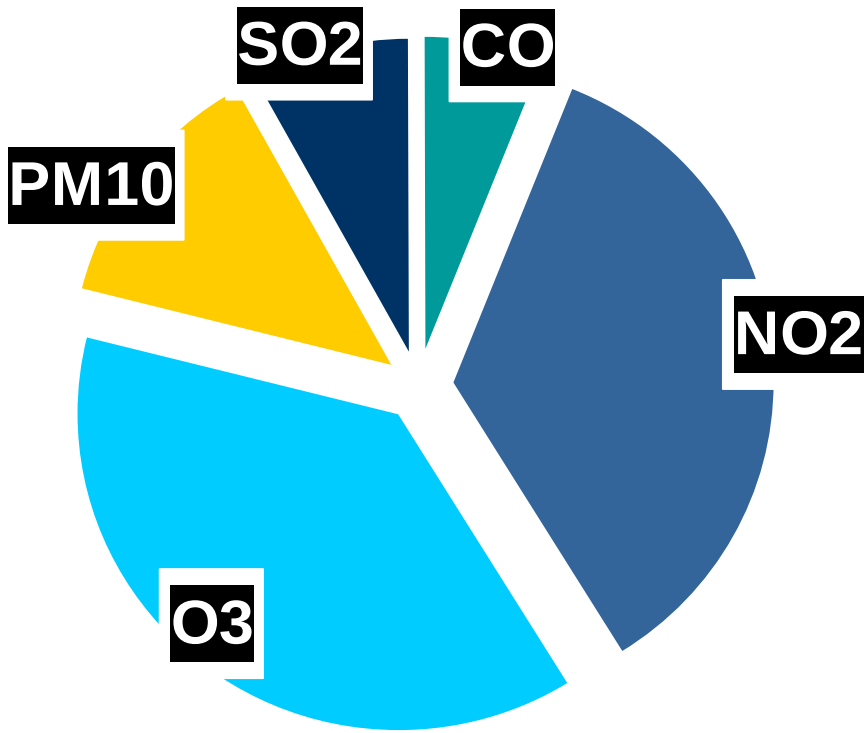
- 10- to 15-Year Trends in Air Quality Data
- Comparisons to Air Quality Data from other Ontario Cities
- Emission Sources in Hamilton
- Health Impacts of Air Quality Study – 2003
- Mobile Monitoring Studies and Modeling Study
- Report on 2006 Upwind/Downwind Conference
- Air Quality-supported programs - 2005/2006
- Plans for the Future – 2007/2008
- Recommendations

Hamilton Air Quality Health Assessment, 2003

5 Key Air Pollutants have the following health effects outcomes in Hamilton each year:

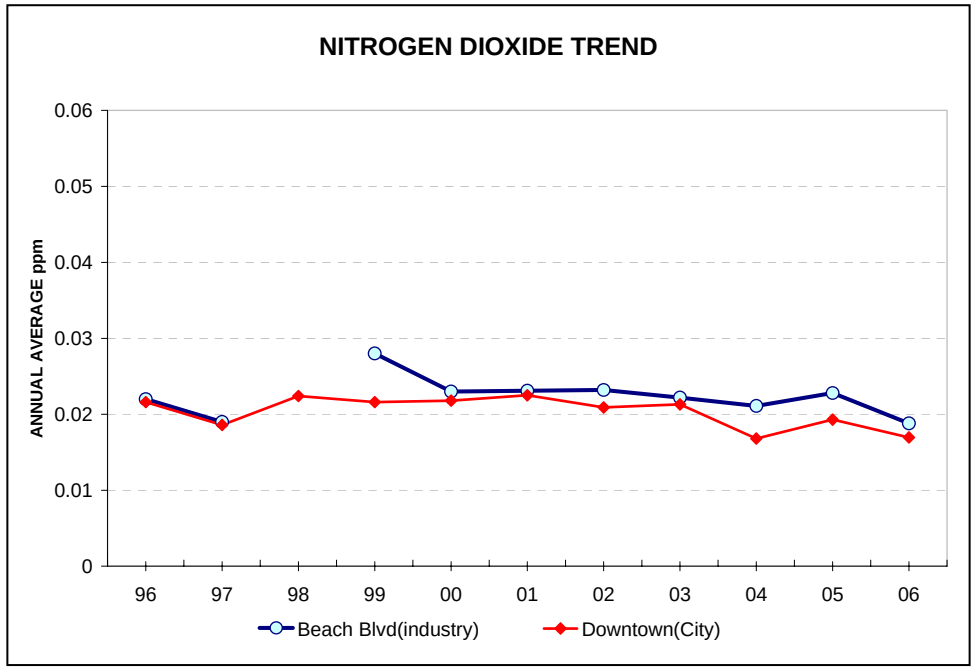
- >100 premature deaths
- >620 respiratory & cardiovascular hospital admissions

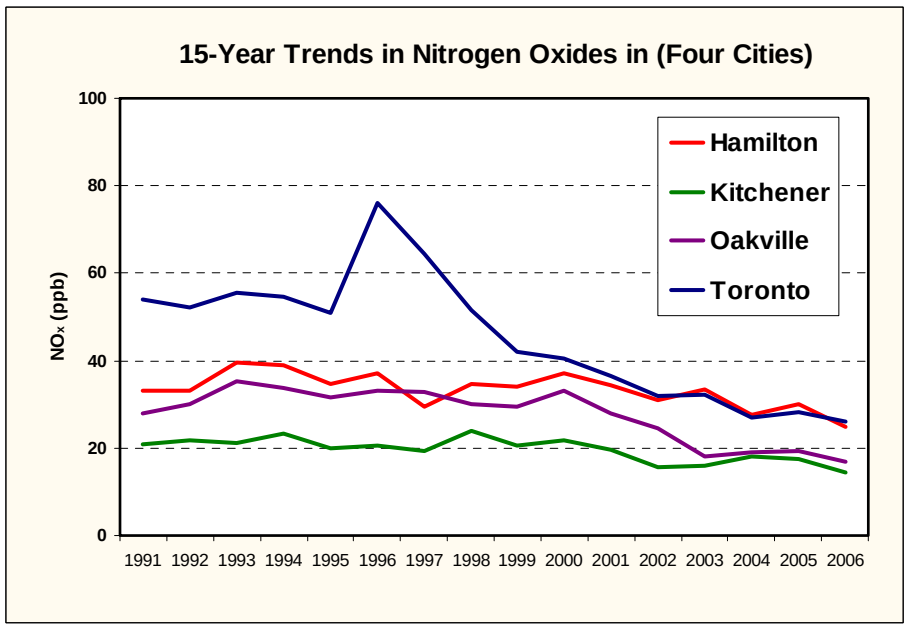
- Primary focus of CAH efforts is reduction of human exposures to:
  - 1. particulate material (PM)
  - 2. nitrogen oxides (NO_2) and
  - 3. ground level ozone (O_3)

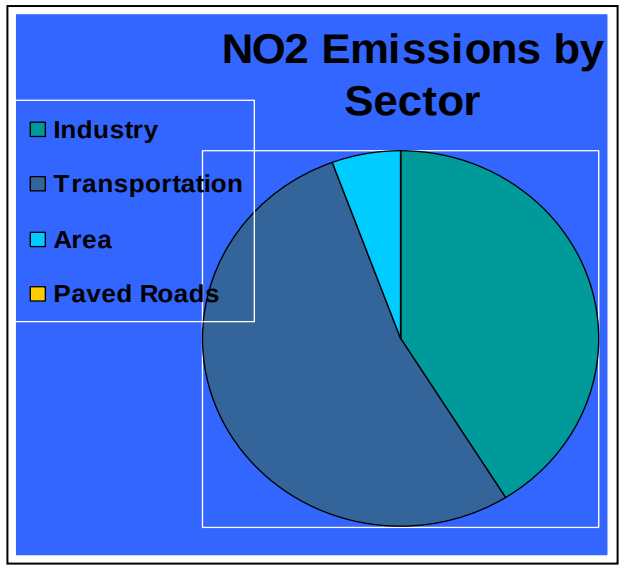


Air Quality Trends: Nitrogen Oxides

Local, Southern Ontario and Emissions by Sector

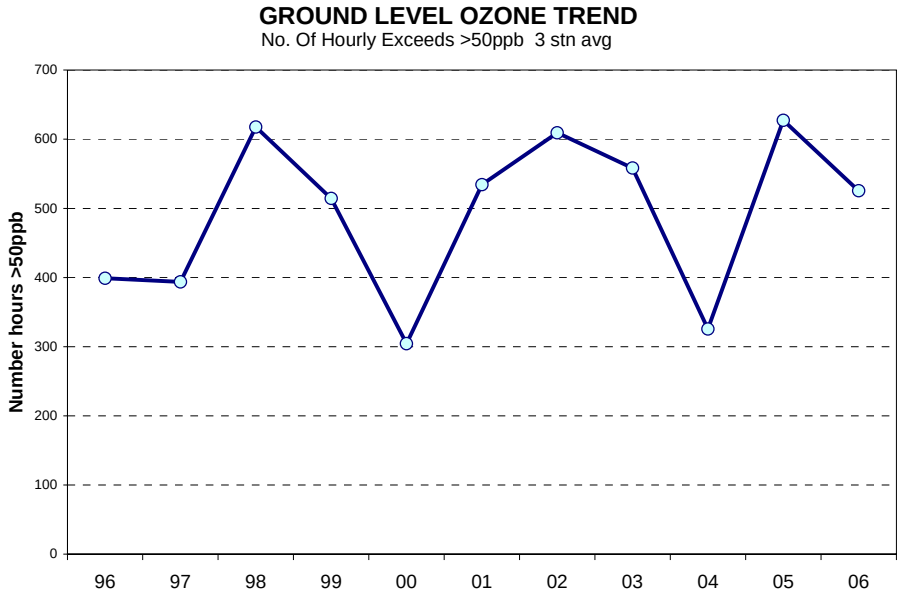


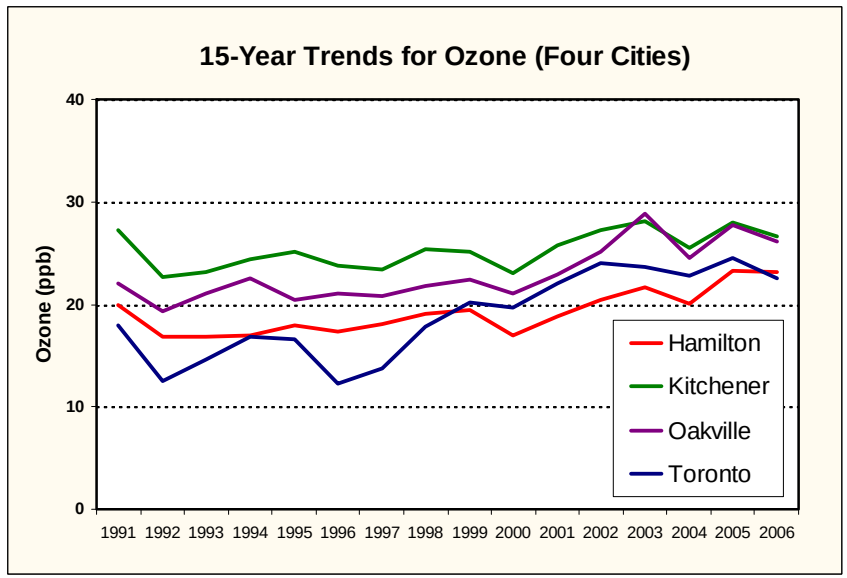


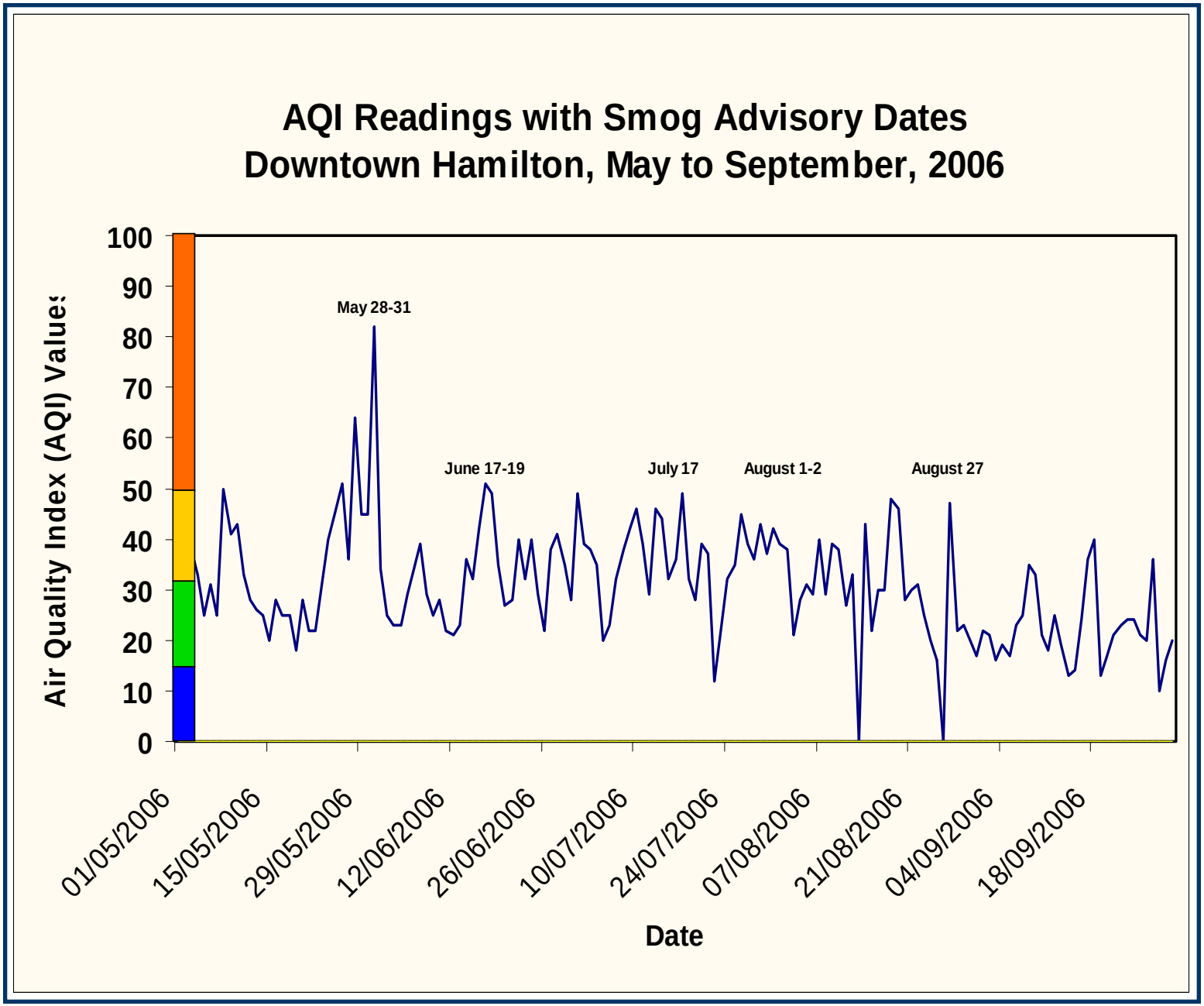


Air Quality Trends: Ozone

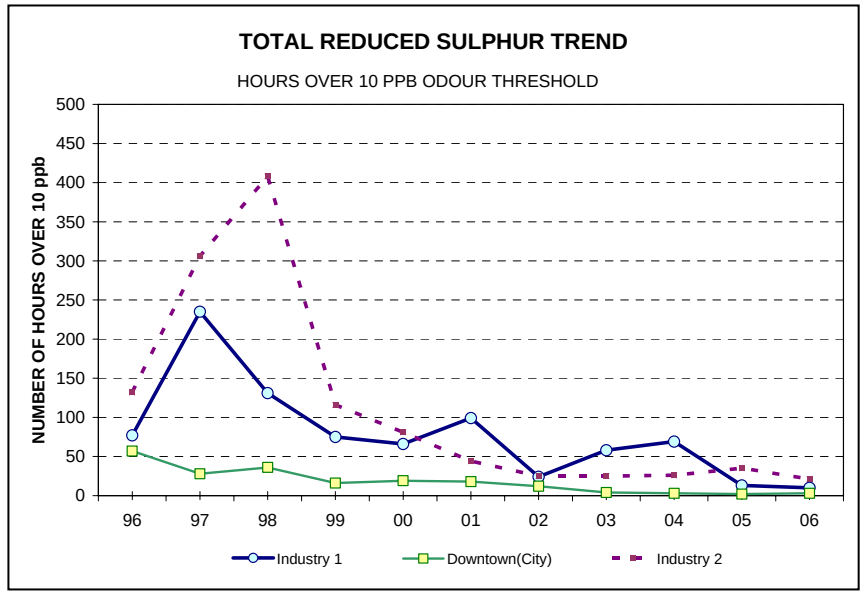
Local, Southern Ontario, Trans-boundary Impacts

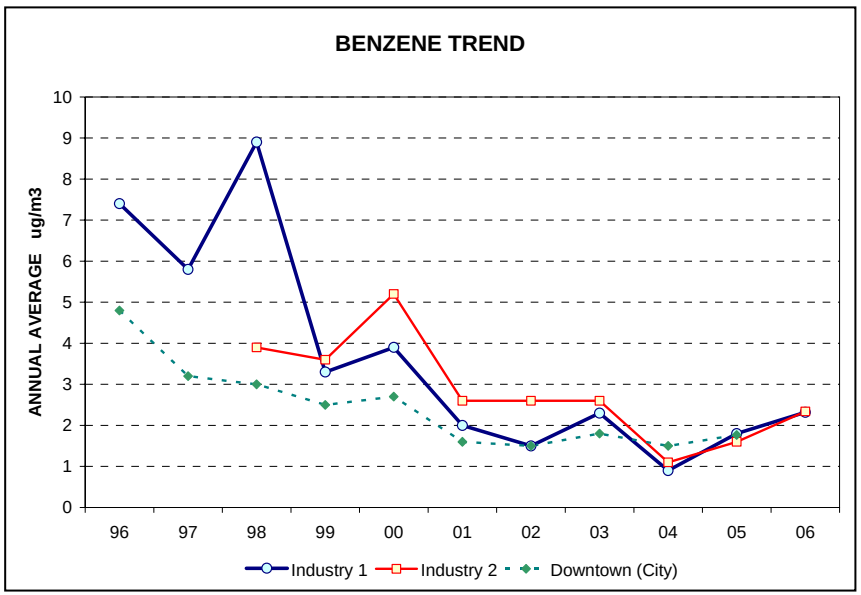


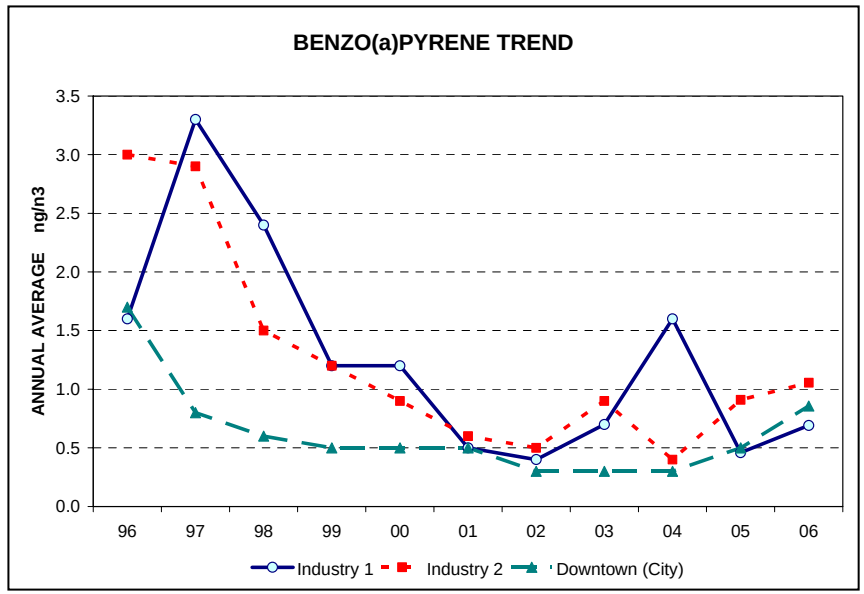



AQI Readings with Smog Advisory Dates
Downtown Hamilton, May to September, 2006
Air Quality Index (AQI) Values
100
90
80
70
60
50
40
30
20
10
0
May 28-31
June 17-19
July 17
August 1-2
August 27
01/05/2006
15/05/2006
29/05/2006
12/06/2006
26/06/2006
10/07/2006
24/07/2006
07/08/2006
21/08/2006
04/09/2006
18/09/2006
Date

Emissions Reductions from Steel Industry in Recent Years have resulted in Measurable Improvements in Air Quality

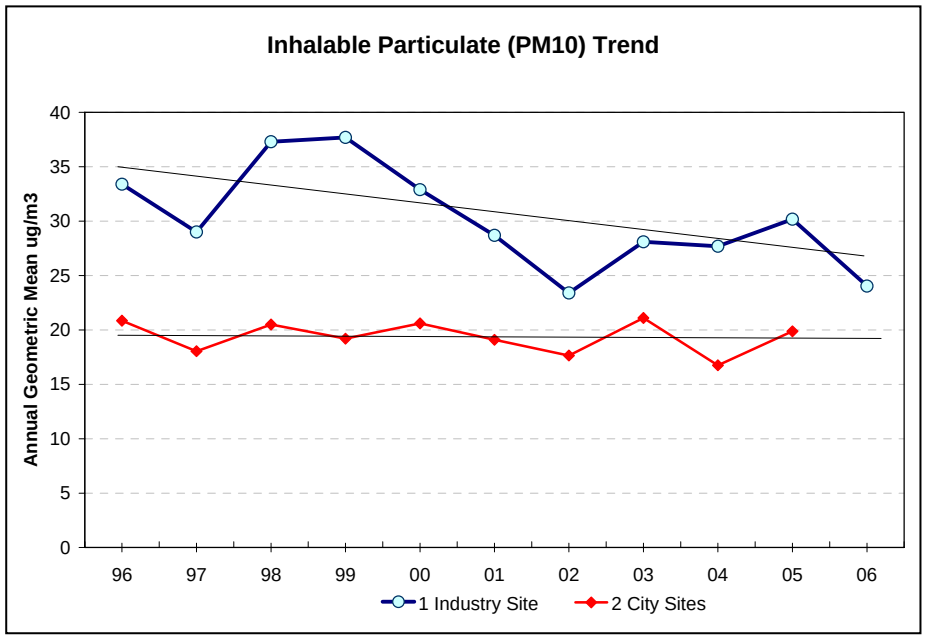


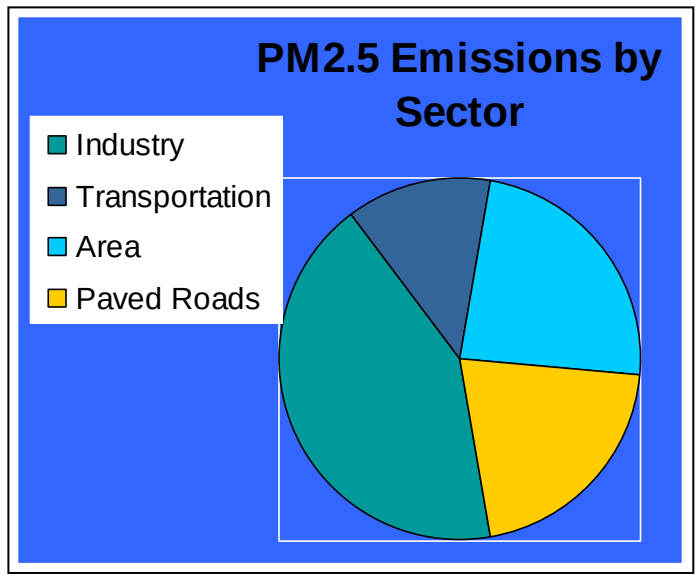




Air Quality Trends: PM

City & Industrial Areas
PM Sources
Road Dust Impacts



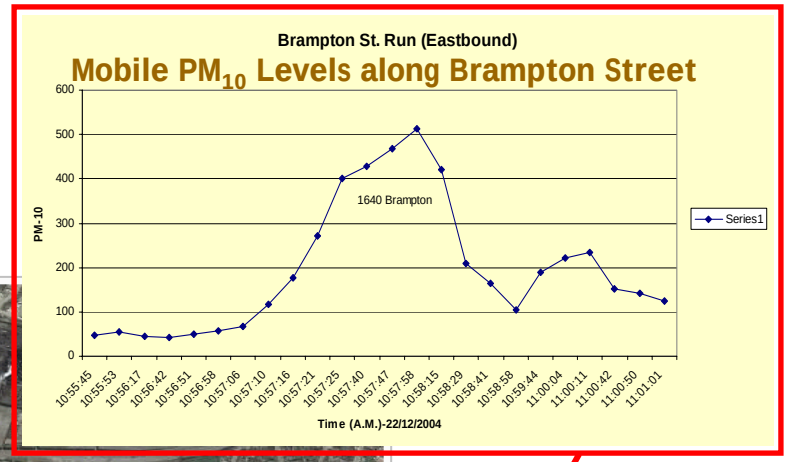


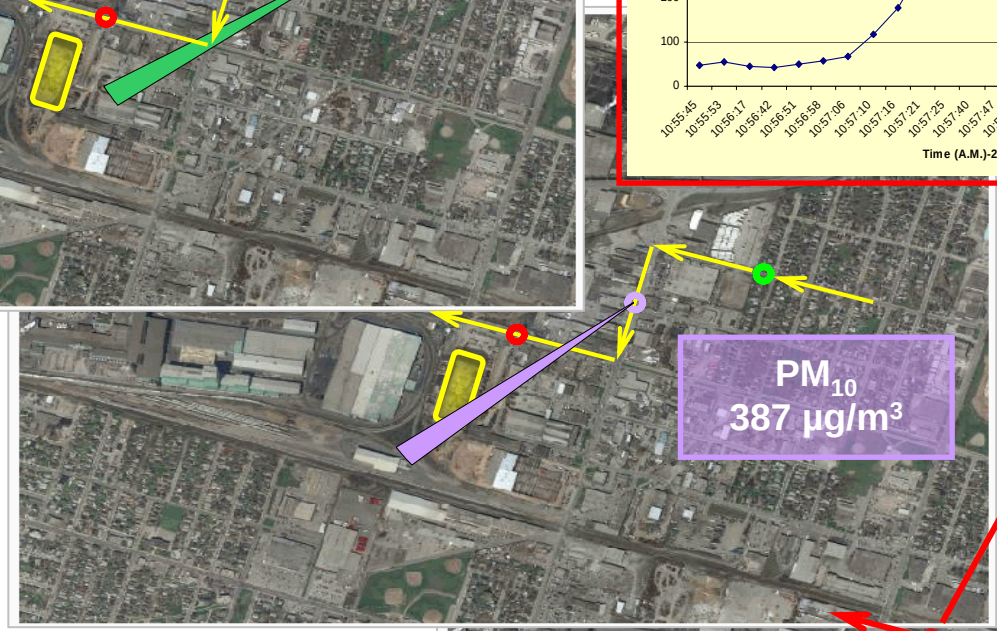
PM_{10} "Pollution Rose" from Six Months of Real-time PM Data

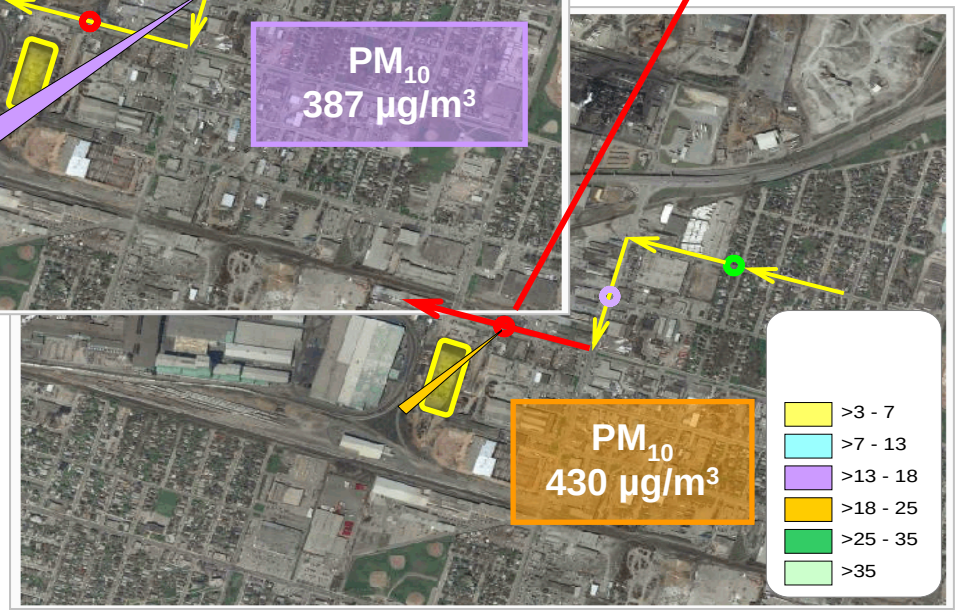
VFT
Stelwire
Columbian
Poscor
LaFarge
Walcorp
Westway

Result: Road dust identified as the major source of PM_{10}. Local Industries have been approached by HIEA member companies to reduce "drag-out" and to pave their yards.

Fugitive Dust Workshop held in Dec. 2006



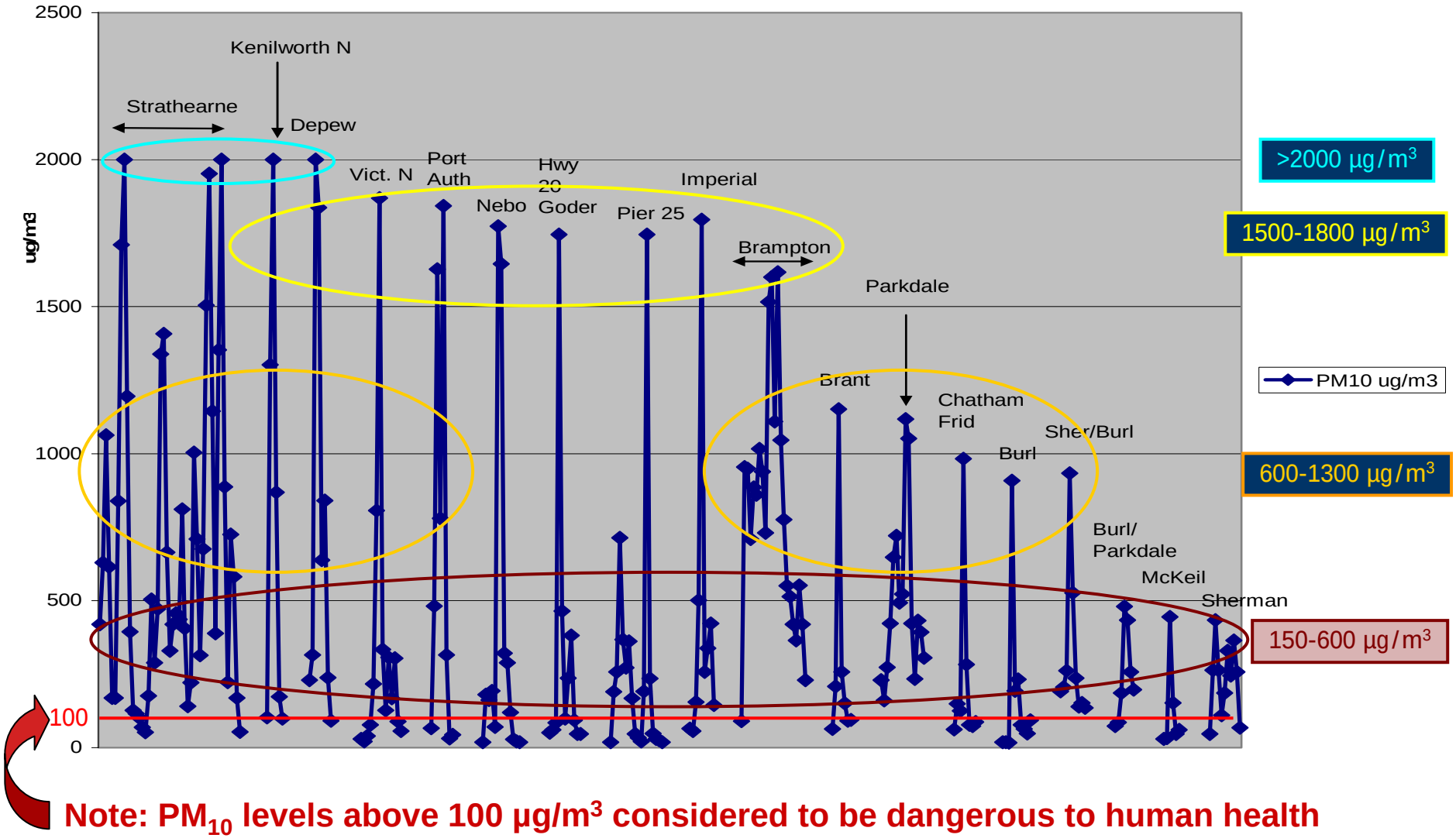




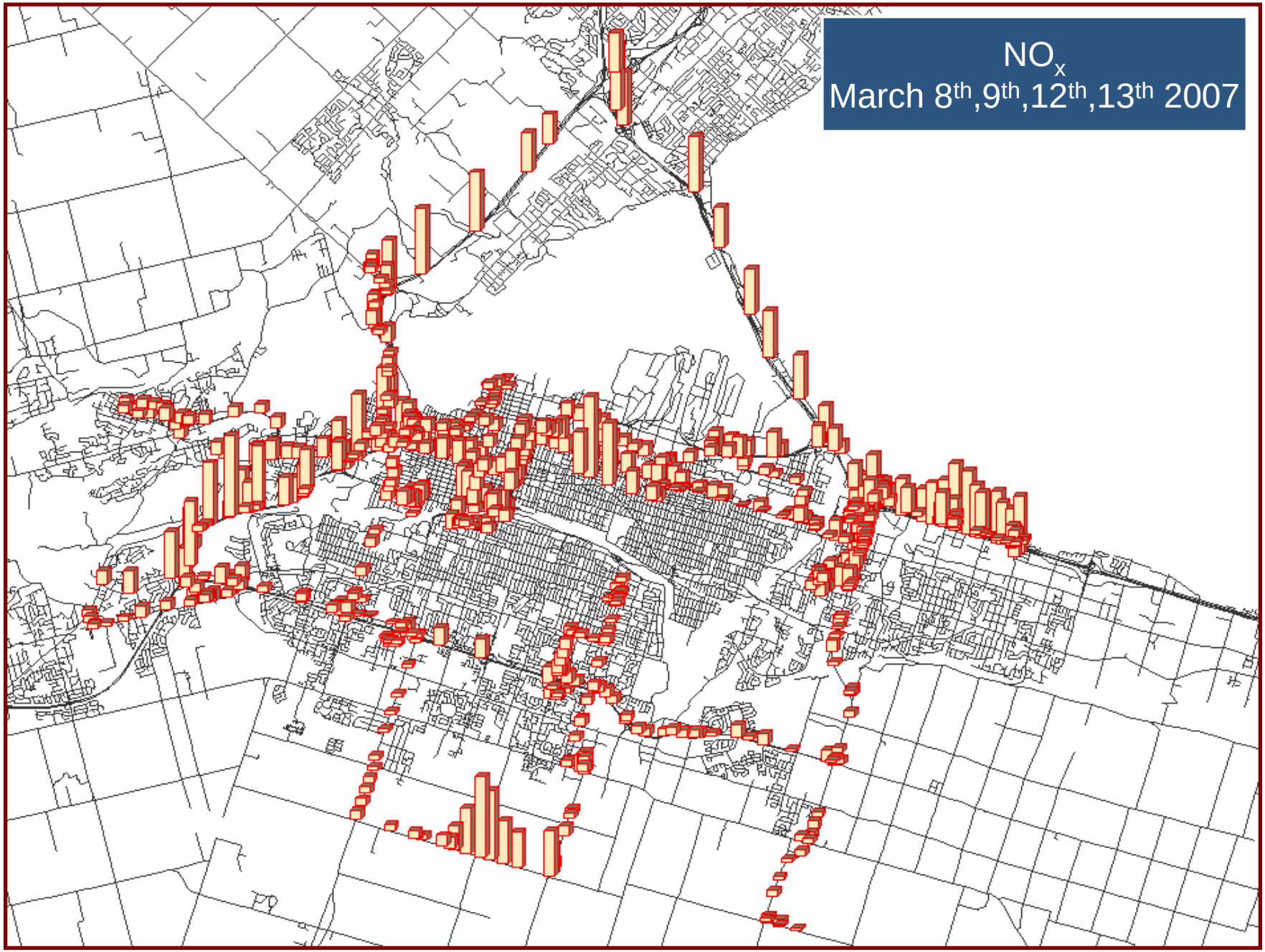
Mobile Monitoring Survey: Tracking PM_{10} Releases from a Scrap Yard Operation with High Off-site PM_{10} Impacts

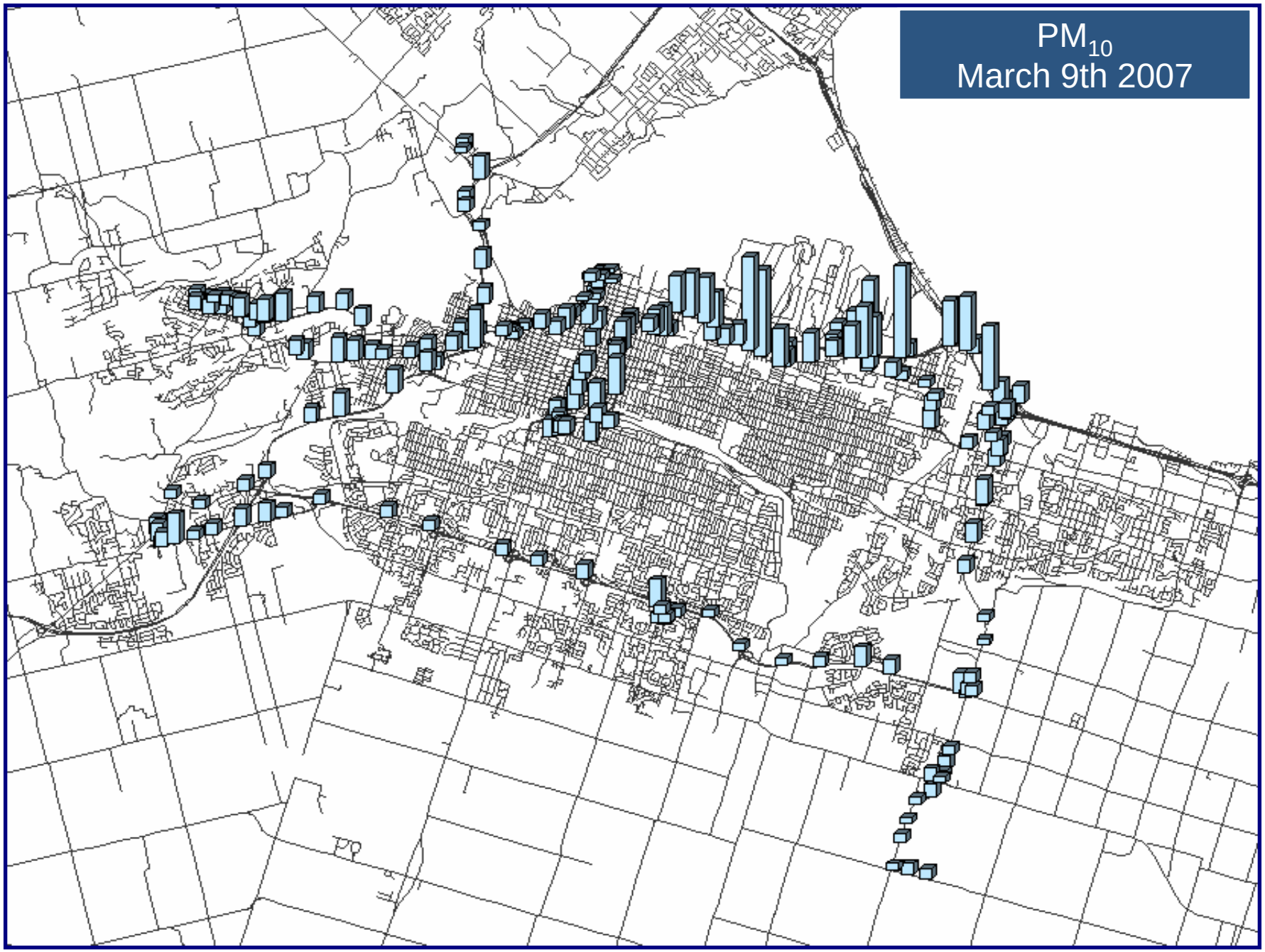
Monitoring Van drove along **"yellow route"** then stopped at "circled" sites for 10 minutes to collect wind and PM_{10} data

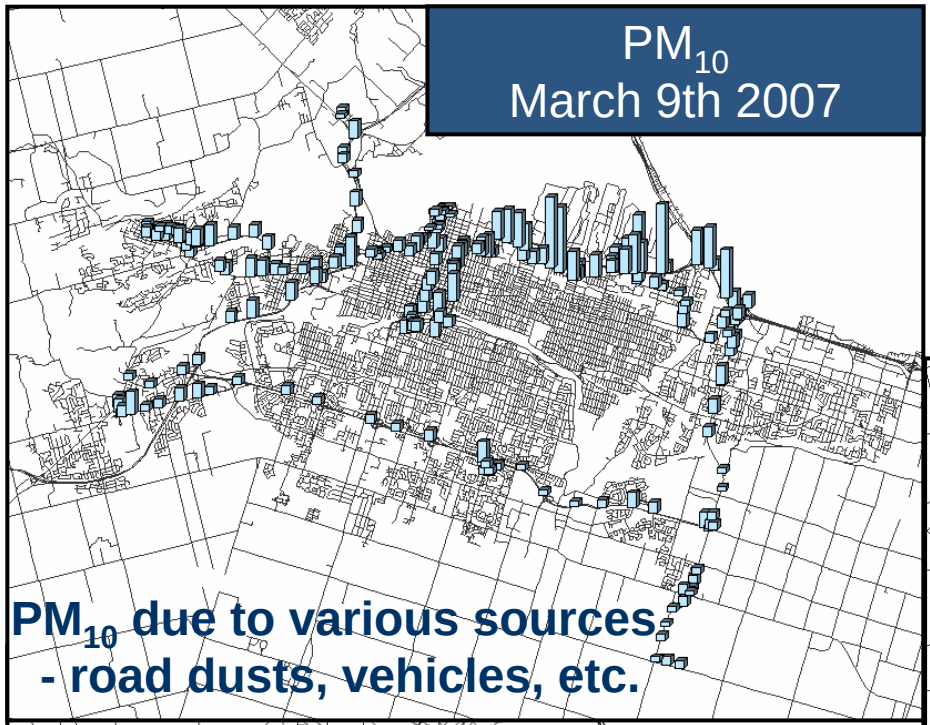
Mobile Monitoring Survey: Very High PM_{10} Levels Measured Near Some Industrial Sites



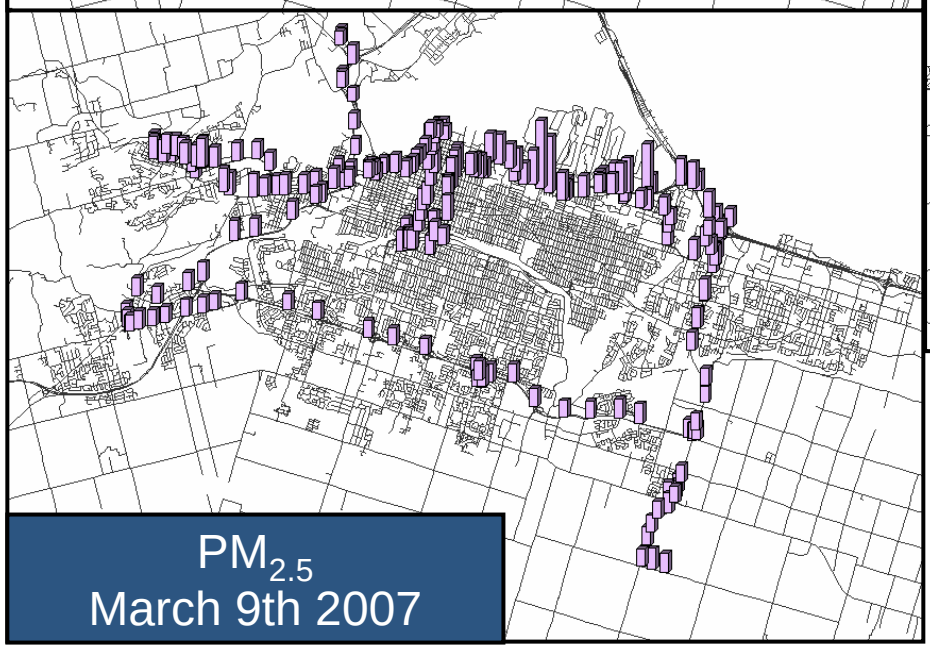
Note: PM_{10} levels above 100 µg/m³ considered to be dangerous to human health


NO_x
March 8th,9th,12th,13th 2007

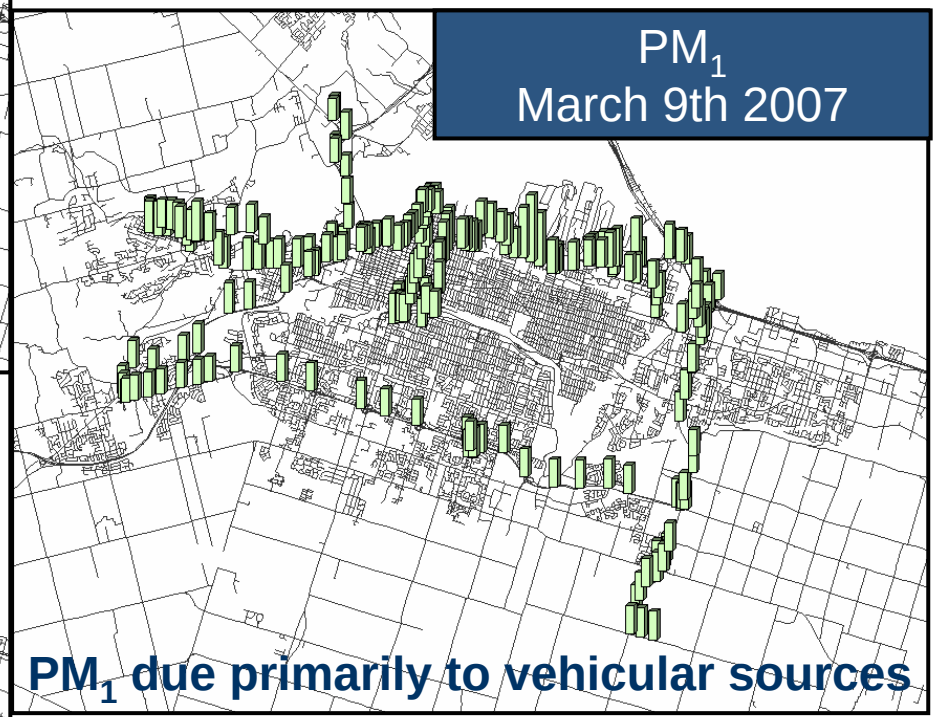

PM_{10}
March 9th 2007



PM_{10} due to various sources
- road dusts, vehicles, etc.

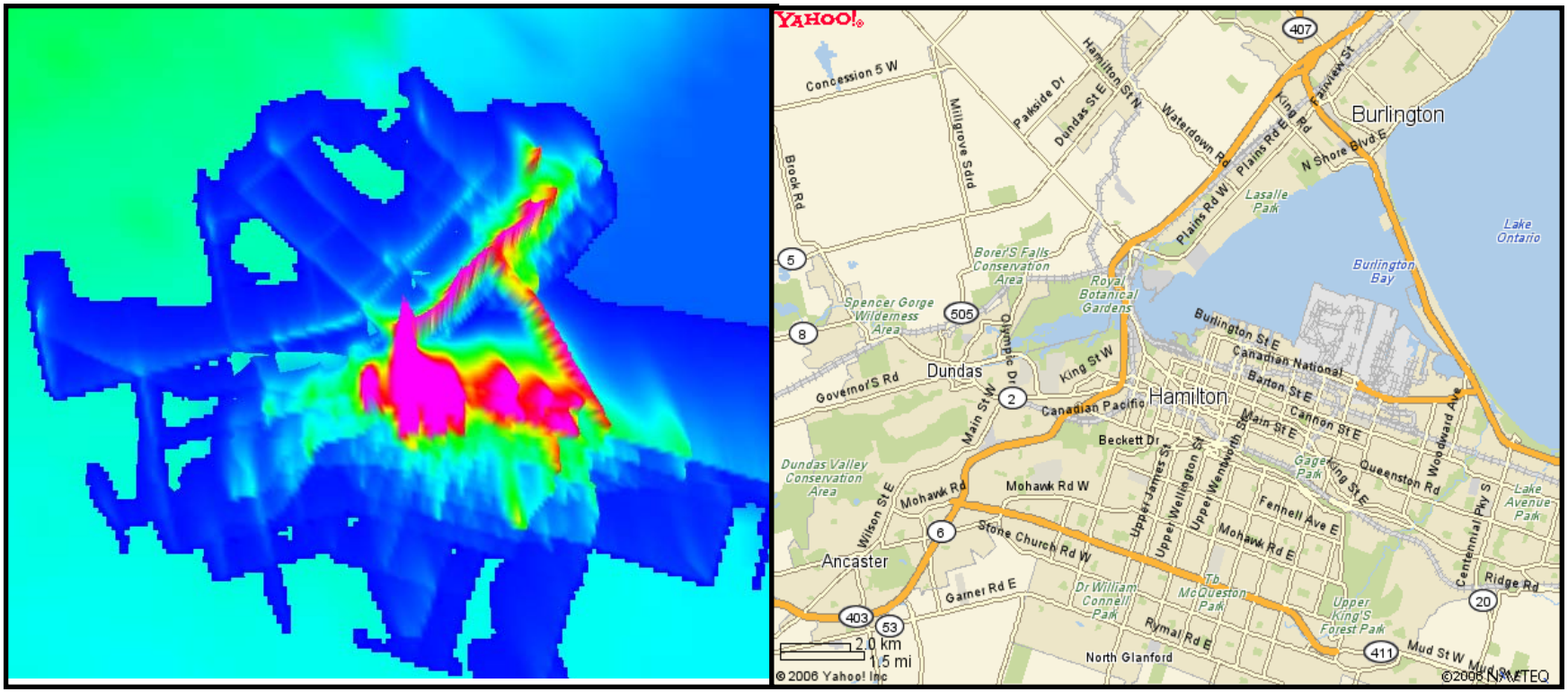


PM_1 levels are surprisingly uniform across the City compared to PM_{10} levels.



PM_1 due primarily to vehicular sources

Modeling of Traffic Emissions of Volatile Organic Compounds (VOCs) in Hamilton



Courtesy of Dr. J. Wallace, McMaster Spatial Analysis Group

Map: Yahoo

Air Quality & Transportation Sources

- Significant Health Impacts: associated with exposures from living and working near major traffic corridors.
- Traffic: a major source of nitrogen oxides (NO_x) and particulate material which account for approximately one-half of air quality impacts in humans.
- Nitrogen Oxides (NO_x): a significant precursor to ground level ozone (O_3), responsible for another one-third of adverse health outcomes.
- Transportation sources: major sources of inhalable particulate (PM_{10}) from exhaust emissions and the re-suspension of road dusts.
- Mobile Monitoring Surveys: show highest pollutant exposures occur near industrial sites (road dusts) and transportation corridors (road dusts and combustion emissions).

Future Actions and Changes

- **Health Impacts & Air Quality Trends suggest need for continued reductions in NO_2, PM & Ozone:**
  - PM, NO_2, SO_2 and odours are locally generated, and therefore locally manageable.
  - Anti-idling By-law: recently passed - a step in the right direction.

- **Needs for the Future:**
  - Urban Planning: need for compact, sustainable urban developments
  - Public Transit: need for continued investments
  - Road Dust: need for increased street sweeping of traffic corridors
  - Anti-idling: need for public education on emissions impacts
  - Energy Efficiencies: need for improvements in vehicles, homes, etc.
  - Alternative Fuels & Energy Technologies: City should lead the way
  - Continued Emissions Reductions: by both industry and citizens
  - Emissions Reductions from US Coal-fired Power Plants: reduce ozone.
  - Continuing Partnerships Important: between City, MOE, Env. Canada, local industries, McMaster Univ., citizens

Thank You

On Behalf of Clean Air Hamilton