Recent Airport Air Quality Studies

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Airport Air Quality Issues

- **Expanding airports and increasing operations**
- **Proximity to surrounding communities**
- **Lead content of general aviation fuel**
- **Emissions of black carbon and ultrafine particles**
- **Airport includes multiple sources of air pollution**
  - **Aircraft, ground equipment, terminal, traffic**

Previous Airport Air Monitoring Studies

- **Chicago O'Hare (2000)**
  - Impact of airport on adjacent communities found for species such as acetaldehyde, benzene, formaldehyde, polycyclic organics, toluene and lead, but measured levels still typical of urban environments
- **TF Green Airport, Warwick, RI (2005-2006)**
  - VOCs and PM mass comparable to other urban sites, aircraft emissions not distinguishable from other sources
  - Higher formaldehyde near runway may be due to other local sources (off-gassing)
  - Continuous black carbon measurements suggest an aircraft influence near runway
- **Teterboro Airport, New Jersey (2006)**
  - Focuses on air toxics and PM near airport
  - Results not yet finalized or available
- **LAX Study by UCLA/CARB (2005-2006)**

Previous SCAQMD Airport Monitoring Studies

- **John Wayne Airport Study (1991-1992)**
  - Focused on particulate fallout
  - No increase in PM10 or settling particulates observed
- **LAX**
  - Ambient air quality near passenger terminals (May 1998) focusing on worker/public exposure
  - Community monitoring (1997 – 1998)
  - Both studies found some CO, PM10 and VOC concentrations slightly higher than AQMD Network sites (but still below standards)
  - I-405 a potential source for the community monitoring

General Aviation Airports Study Objectives

- Part of a U.S. EPA Community-Scale Air Toxics Grant
- Characterize air toxics levels in the communities around two GA airports
- Compare data to other air toxics studies such as SCAQMD's Multiple Air Toxics Exposure Study (MATES-III)
- Determine potential impact of airport emissions on measured pollutant levels
- Provide baseline data for future studies

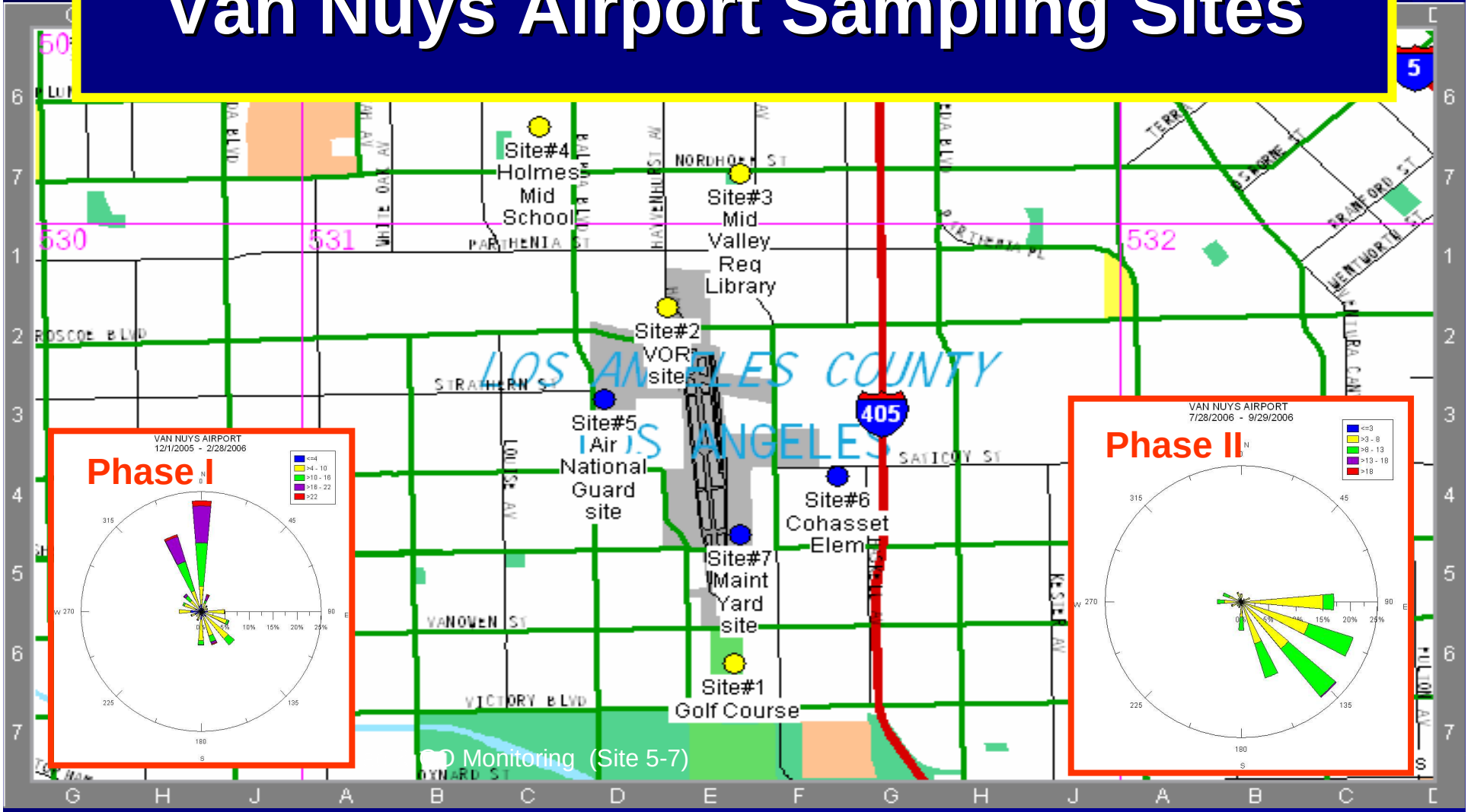
Measurements

- TSP Lead and Hexavalent Chromium
- PM10 Mass and Carbon
- PM2.5 Mass & Components
- Continuous Particle Count (ultrafine)
- Volatile Organic Compounds (3 x 8 hour periods)
- Carbonyls (acetaldehyde, etc.)
- Continuous Carbon Monoxide
- Study occurred between November 2005 and March 2007
- Nominal three months at each airport in two different seasons

Van Nuys Airport

- Largest Number of General Aviation Operations in the Country

Van Nuys Airport Sampling Sites

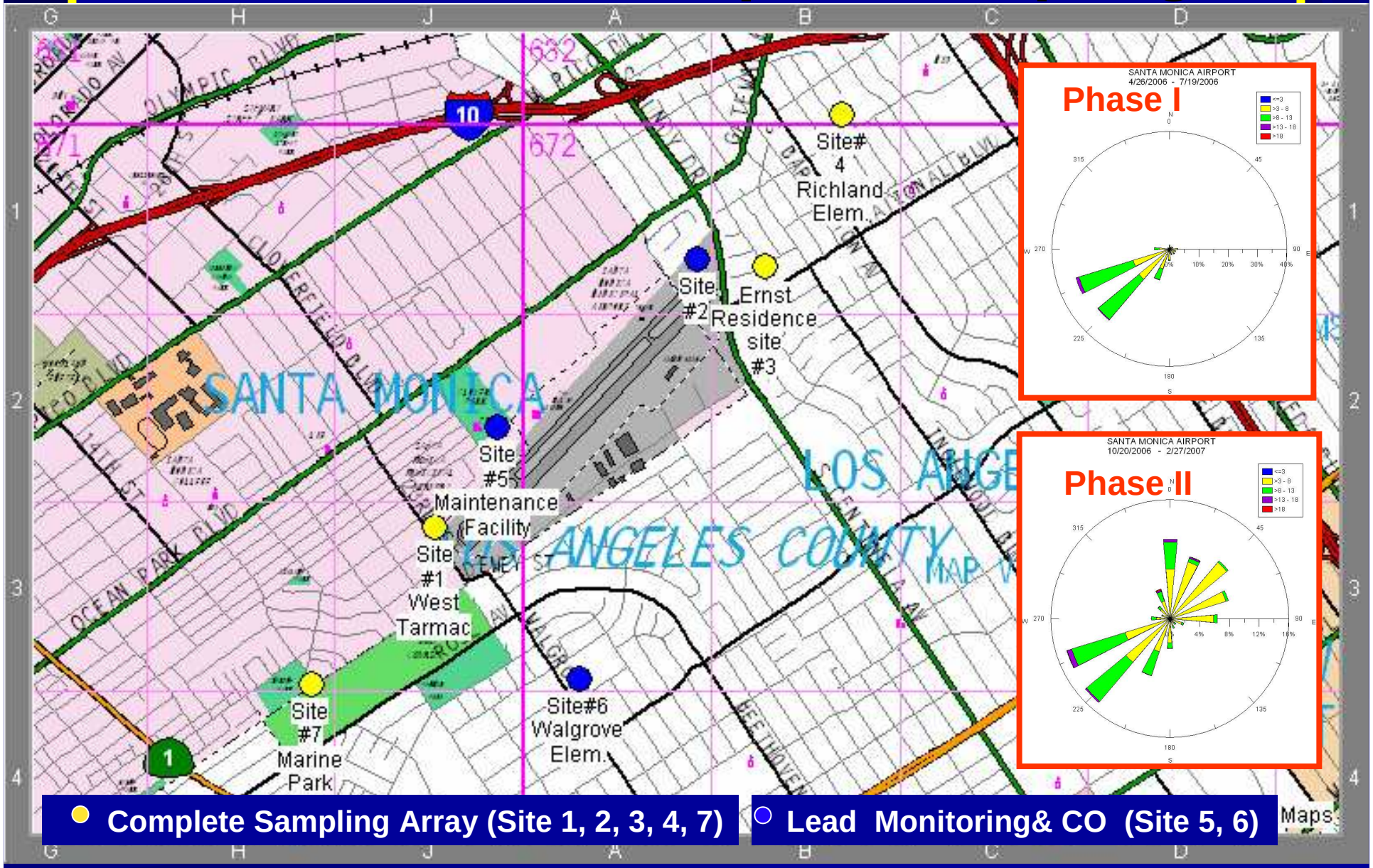


- Complete Sampling Array (Site 1, 2, 3, 4)
- Lead & CO Monitoring (Site 5, 6, 7)

Santa Monica Airport

- Runways adjacent to neighborhoods
- Increased Number of Private Jet Traffic

Santa Monica Airport Sampling



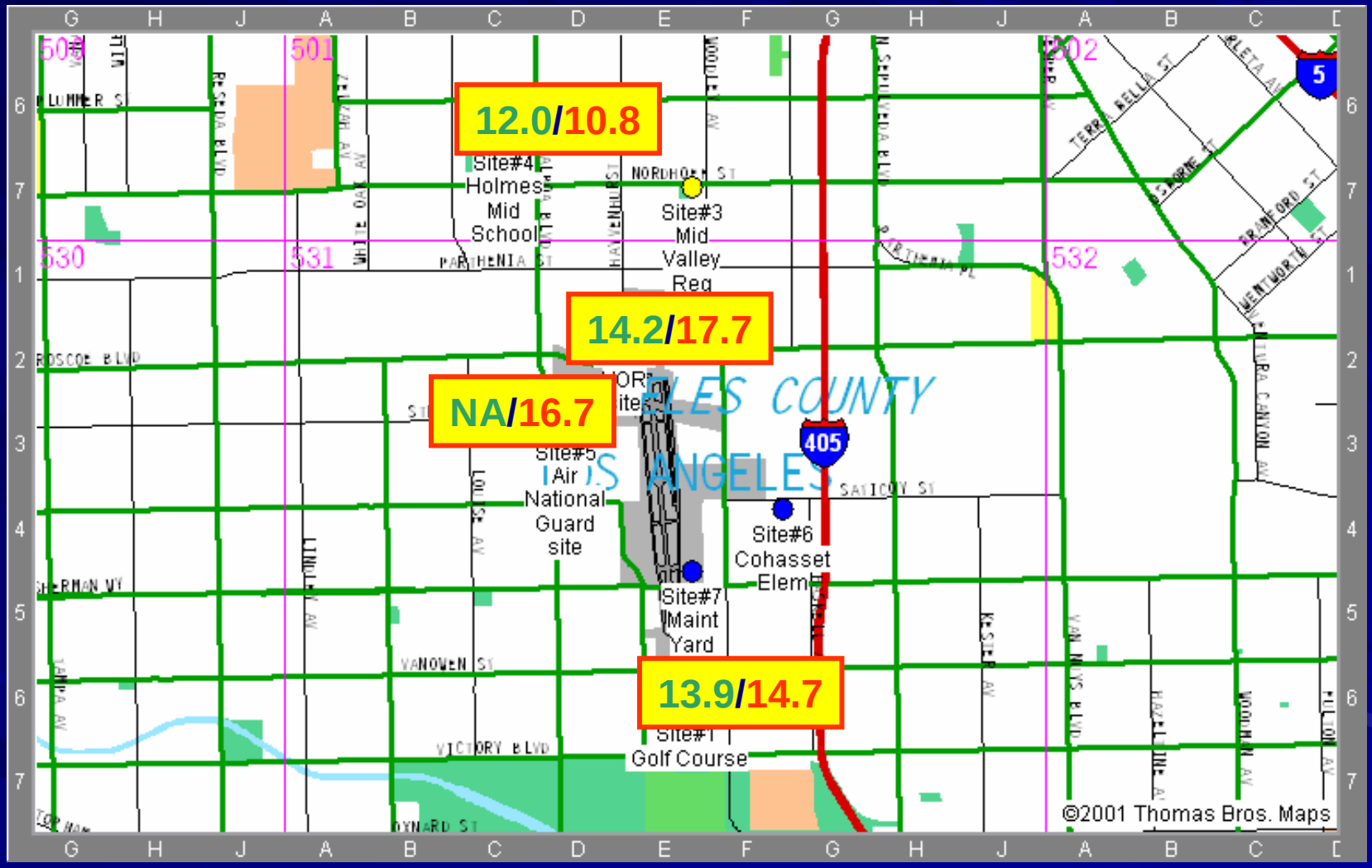
Santa Monica Airport Sampling Sites

Preliminary Santa Monica Airport PM2.5 Mass (µg/m³)
Phase II - Oct 06 - Feb 07

Annual Basin Average **18.1**

Preliminary Van Nuys Airport PM2.5 Mass ($\mu g/m^3$)

Phase I - Nov 05 - Feb 06, Phase II - Jul 06 - Sep 06



Annual Basin Average **18.1**

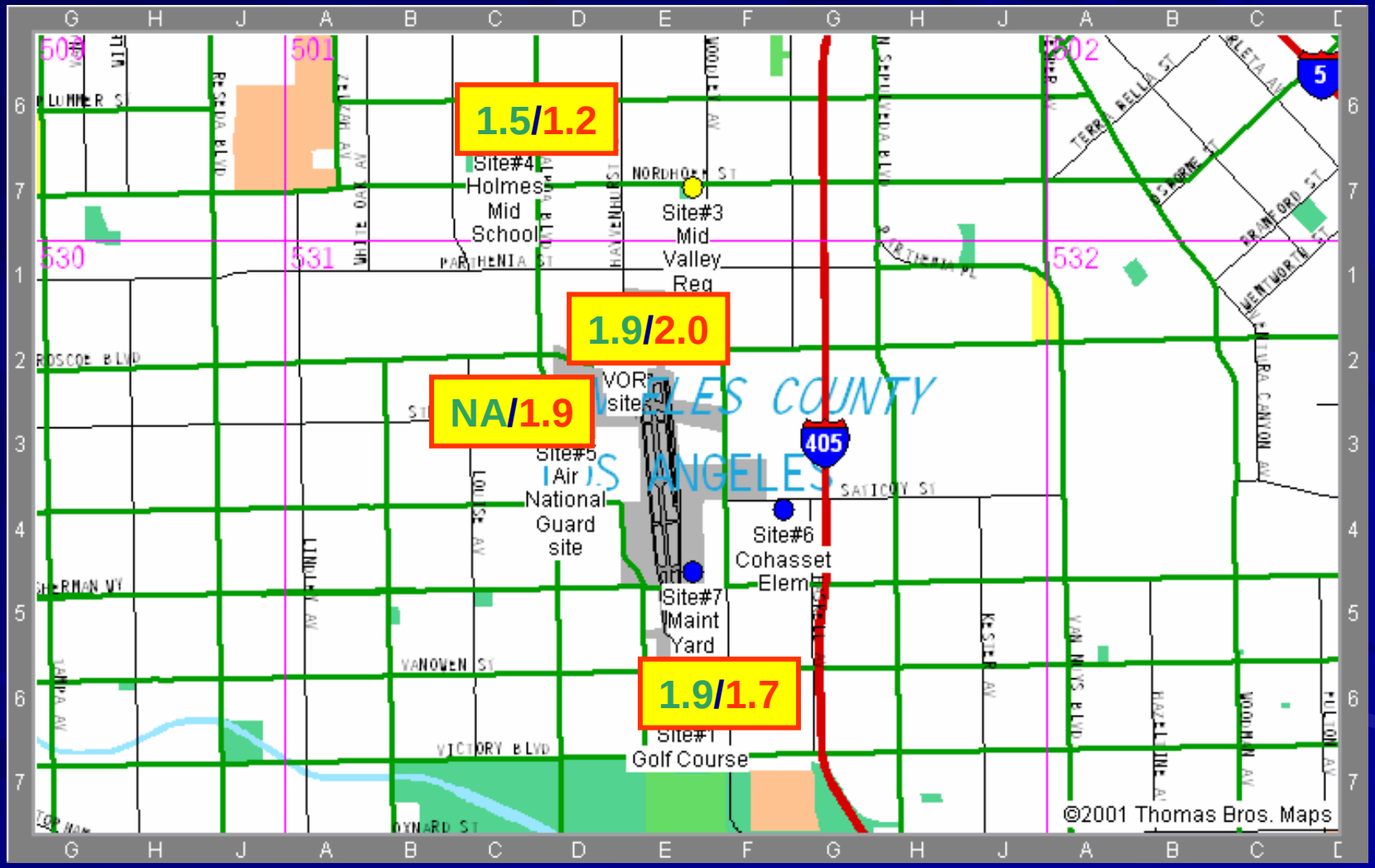
Preliminary Santa Monica Airport PM2.5 Elemental Carbon (µg/m³)

Phase I - Apr 06 - Jul 06, Phase II - Oct 06 - Feb 07

Annual Basin Average **2.2**

Preliminary Van Nuys Airport PM2.5 Elemental Carbon (µg/m³)

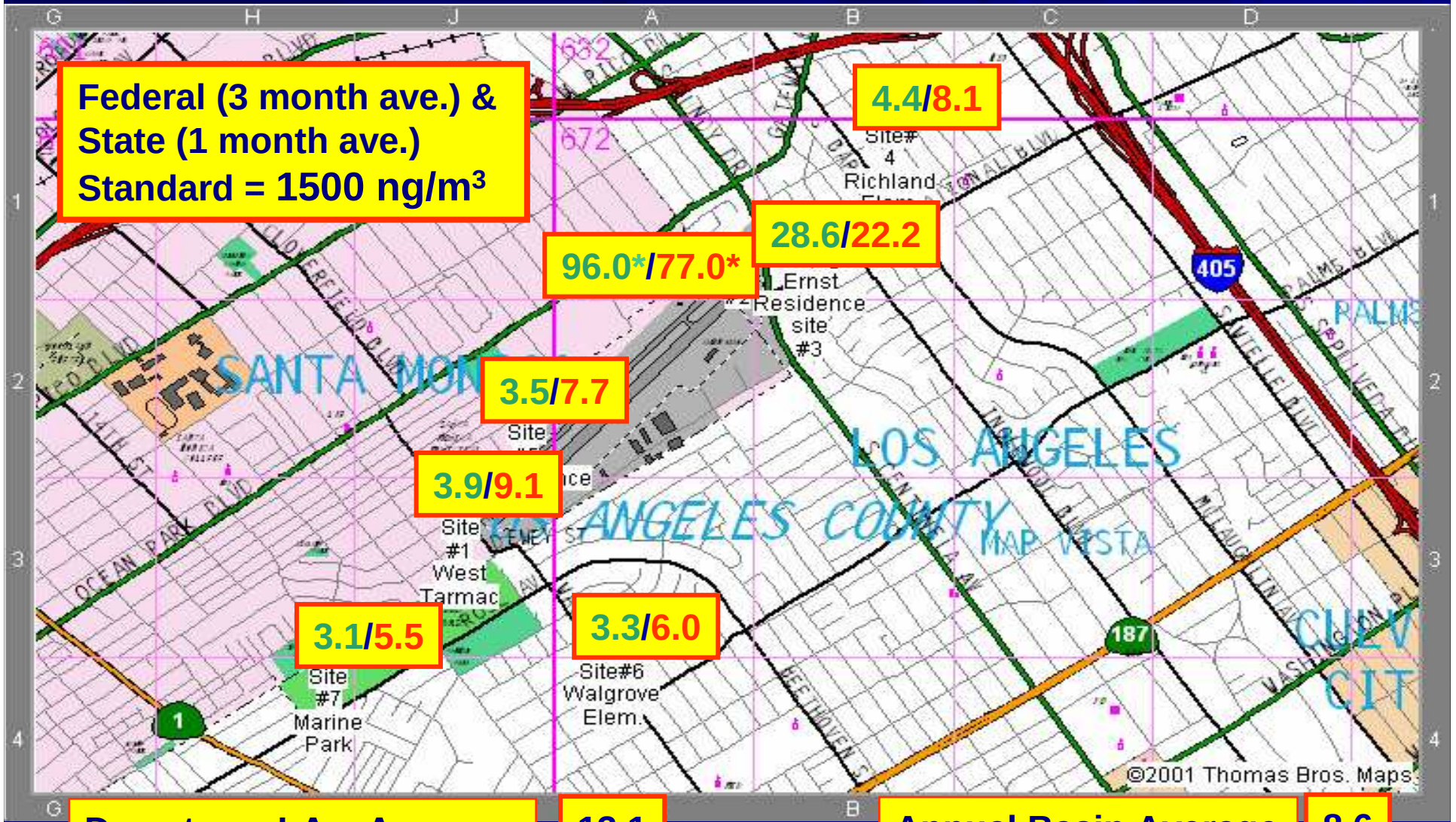
Phase I - Nov 05 - Feb 06, Phase II - Jul 06 - Sep 06



Annual Basin Average **2.2**

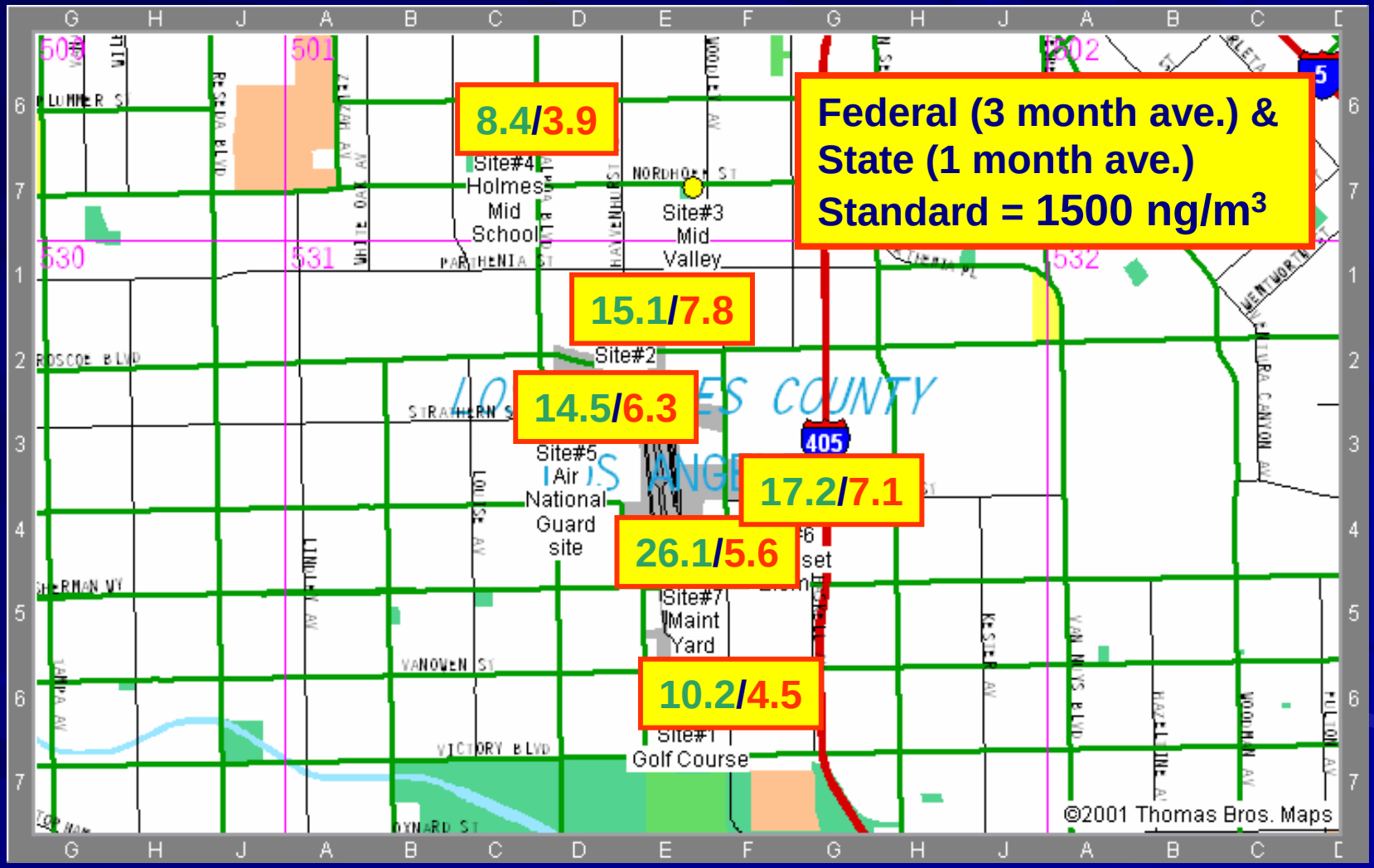
Preliminary Santa Monica Airport TSP Lead (ng/m³)

Phase I - Apr 06 - Jul 06, Phase II - Oct 06 - Feb 07



Preliminary Van Nuys Airport TSP Lead (ng/m³)

Phase I - Nov 05 - Feb 06, Phase II - Jul 06 - Sep 06



Annual Basin Average **8.6**

Preliminary Santa Monica Airport Benzene (ppb)

Phase I - Apr 06 - Jul 06

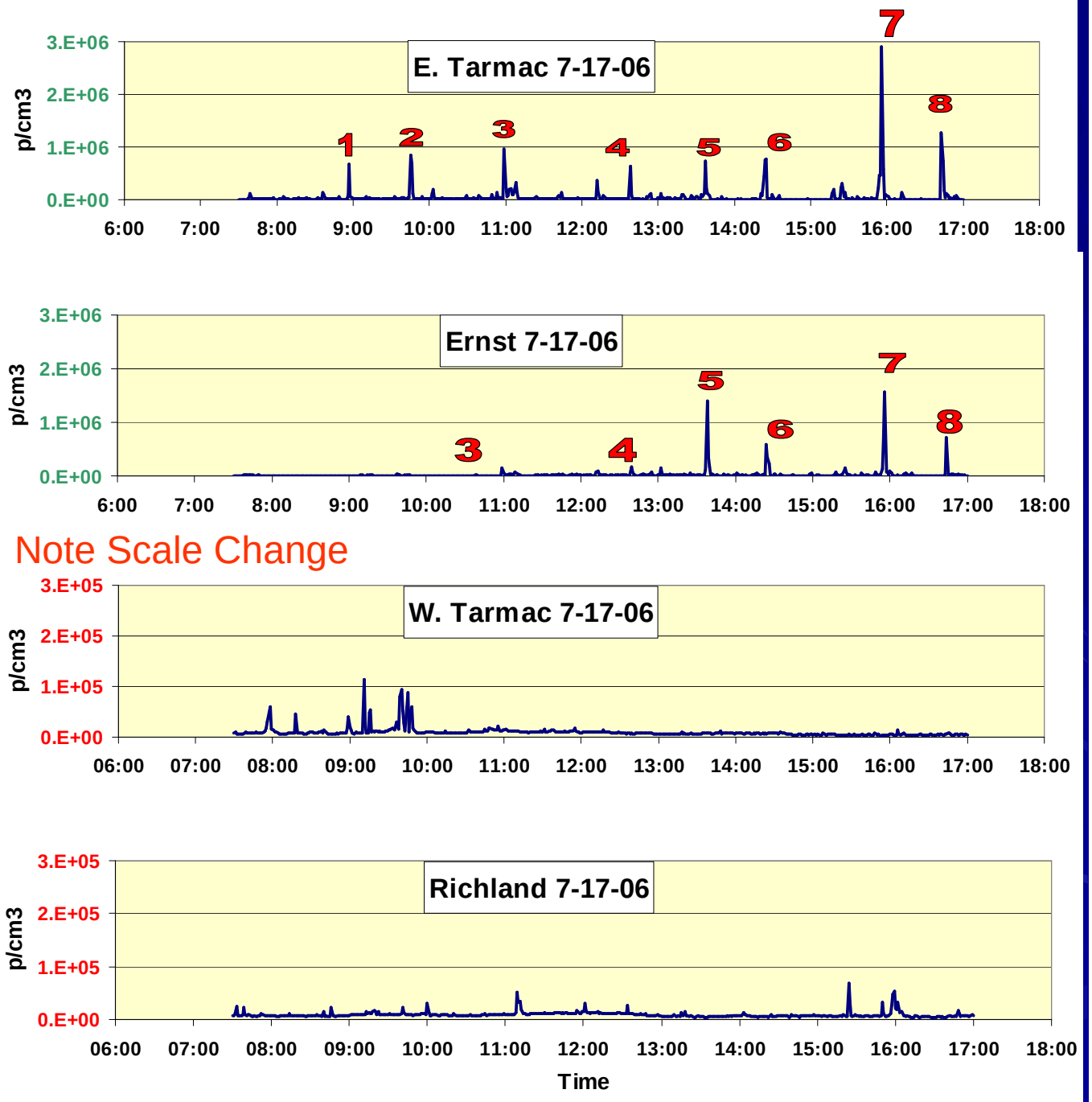
0:00-8:00, 8:00-16:00, 16:00-24:00

Annual Basin Average | 0.42

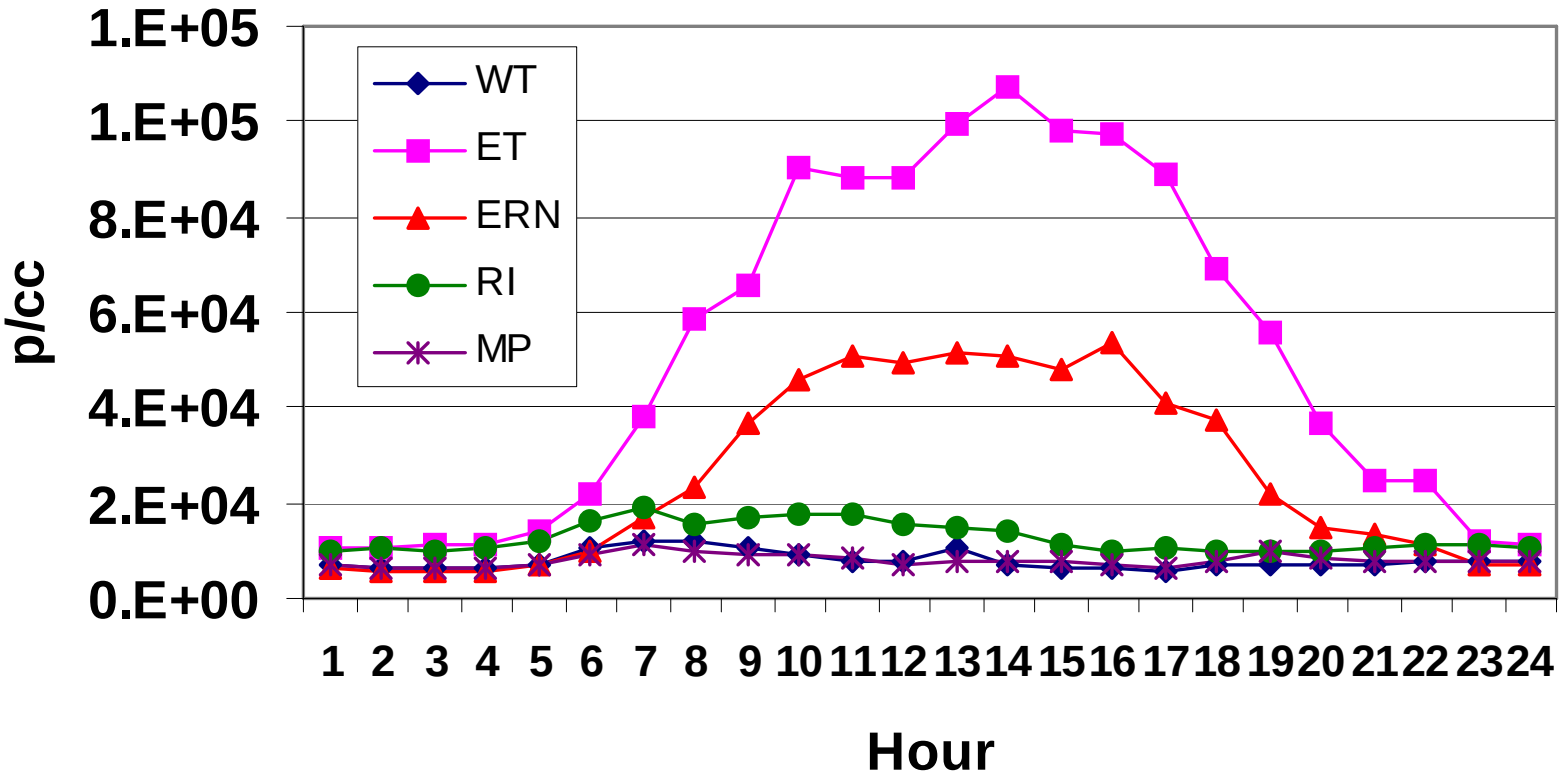
Santa Monica Continuous Number Concentrations

July 17, 2006

Red numbers correspond to aircraft take-offs



CPC Hourly Avg Santa Monica Phase I
Apr 06 - Jul 06



GA Airport Results

- Ultrafine particles (measured by number concentration) significantly elevated near runways during aircraft operations
- Lead levels in communities and near runways below federal and state standards, but elevated at near runway sites
- Elemental carbon levels slightly elevated near runways, but still comparable to basin averages
- Airport's influence on PM2.5 and benzene concentrations not conclusive, but may be higher than basin-wide averages during certain seasons or times of day

Planned LAX Study

- To be conducted by Los Angeles World Airports (LAWA), 2008-2009
- Comprehensive, state-of-the-art measurement and source apportionment study
- AQMD staff participation in Technical Working Group
- SCAQMD will receive a new U.S. EPA Community-Scale Air Toxics to supplement LAWA study with more continuous instrumentation on mobile sampling platforms