

Texas Commission on Environmental Quality

INTEROFFICE MEMORANDUM

To: Commissioners **Date:** November 24, 2009

Thru: LaDonna Castañuela, Chief Clerk
Mark R. Vickery, P.G., Executive Director

From: *pk* Susana M. Hildebrand, P.E., Chief Engineer
h Chief Engineer's Office

Subject: Commission Consideration of 1997 Annual Fine Particulate Matter (PM_{2.5})
National Ambient Air Quality Standard (NAAQS) Nonattainment Area
Designation Recommendation Request for Clinton Drive PM_{2.5} in Harris County

Harris County\Clinton Drive PM_{2.5} Designation Recommendation

Background and reasons for the request:

On October 8, 2009, the United States Environmental Protection Agency's (EPA) Acting Regional Administrator Larry Starfield sent the governor of Texas a letter (Starfield letter) initiating the process under the Federal Clean Air Act (FCAA), §107(d)(3) to redesignate Harris County and those nearby areas contributing to the violation of the 1997 annual PM_{2.5} NAAQS. The EPA is initiating the redesignation process based on ambient air quality monitoring data from 2006 through 2008 that indicate one monitor in Harris County is violating the 1997 annual PM_{2.5} NAAQS. The state's recommendation must be submitted to the EPA within 120 days of receipt of the EPA's notification of information indicating that designation within the state should be revised.

The 1997 annual PM_{2.5} NAAQS is 15.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). A violation is a value greater than 15.0 $\mu\text{g}/\text{m}^3$ averaged over a rolling three-year period. Currently, all counties in Texas are designated attainment for the 1997 annual PM_{2.5} standard. Since 2004, all PM_{2.5} monitors in the Houston area except the Clinton Drive monitor have recorded readings lower than 15.0 $\mu\text{g}/\text{m}^3$. Daytime, weekday concentrations are the main cause of high PM_{2.5} levels at the Clinton Drive site. Analysis of chemical speciation data shows the calculated mass of soil at Clinton Drive is higher than at any other speciation sites in the Houston area, with the soil contribution being approximately 1.5 to 2.0 $\mu\text{g}/\text{m}^3$ higher at Clinton Drive than at other sites.

The EPA's request, which uses only the 2006 through 2008 monitoring data, does not take into account exceptional events (defined as an event affecting air quality that is uncontrollable, or a natural event). The TCEQ did an advanced analysis of the PM_{2.5} and meteorological data as well as the chemical speciation data from the site to identify the cause, source type, and source areas contributing to the excessive particulate matter concentrations. Concurrently, the TCEQ began working with the Port of Houston Authority (PHA), the City of Houston, Harris County, and local industry to get voluntary reductions. The combined efforts of the various organizations have improved particulate matter air quality to the point that the 2008 PM_{2.5} annual average at Clinton Drive was 14.0 $\mu\text{g}/\text{m}^3$, even when exceptional event days are included.

Without removing exceptional event days, the 2006 through 2008 design value for Clinton Drive is 15.2 $\mu\text{g}/\text{m}^3$. After removing exceptional event days identified by TCEQ meteorologists, the design value is 14.6 $\mu\text{g}/\text{m}^3$. Continuous PM_{2.5} data from 2009 show a continued downward trend in PM_{2.5} concentrations at Clinton Drive, including exceptional event days. The 2009 January to June PM_{2.5} annual average to date is 12.8 $\mu\text{g}/\text{m}^3$, and the 2007 through 2009 (January to June 2009) design value is 14.4 $\mu\text{g}/\text{m}^3$.

Scope of the request:

A) Summary of what the request will do: Consideration of this recommendation would allow the TCEQ to submit to the governor for his consideration a designation recommendation for transmittal to the EPA to comply with the FCAA.

B) Scope required by federal regulations or state statutes: Yes. Section 107(d)(3) of the FCAA requires states to submit to the EPA a recommendation regarding attainment, nonattainment, or unclassifiable for all areas of the state within 120 days after receiving a notification of information indicating that designation within the state should be revised.

C) Executive Director's Recommendation: Considering 2006 through 2008 PM_{2.5} monitoring data and other factors, the Executive Director recommends that all of Texas remain designated attainment for the 1997 annual PM_{2.5} NAAQS.

Statutory authority: FCAA, §107(d)(3) and Texas Clean Air Act, §§382.002, 382.011, and 382.013.

Effect on the:

A) Regulated community: If Harris County or some portion of Harris County or an area larger than Harris County is designated nonattainment for the 1997 annual PM_{2.5} NAAQS, regulated entities may be subject to new requirements, for example, nonattainment new source review permitting.

B) Public: Since the unofficial data for 2009 make it clear that the 2007 through 2009 data will show attainment of the 1997 annual PM_{2.5} NAAQS, no additional emission reductions would be required by a nonattainment designation, so there would be no air quality benefit to the public from such a designation.

C) Agency programs: If the state has new nonattainment and/or maintenance areas, agency programs and functions associated with air issues will have additional work in planning, rulemaking, program implementation, monitoring, permitting, and enforcement. If EPA designates the area as nonattainment and then subsequently redesignated the area as attainment, the agency would be required to develop two 10-year maintenance plans for the area. Development of maintenance plans are not a trivial exercise and involve measureable staff resources.

Stakeholder meetings: The Air Quality Division conducted a public meeting in Houston on November 19, 2009, to discuss the designation process and invited comments for use in preparing a recommendation.

Potential controversial concerns and legislative interest:

- The EPA bases its redesignation recommendation on 2006 through 2008 monitoring data at one monitor in Harris County: Clinton Drive, located in the Houston Ship Channel area. Beginning in November 2007, the TCEQ has submitted numerous exceptional event flagging days to the EPA for concurrence. The EPA has not taken action on any of the flagging days. Without removing exceptional event days, the 2006 through 2008 design value for Clinton Drive is 15.2 µg/m³. The current estimate is that the 2007 through 2009 design value will be approximately 14.4 µg/m³, including all exceptional events days. The official data may not be available until after expiration of the 120-day response period for the EPA nonattainment designation proposal.
- The EPA PM_{2.5} designation guidance, *Designations for the Fine Particle National Ambient Air Quality Standards*, April 1, 2003, states “the presumptive use of metropolitan area boundaries to define urban areas is based on recent evidence that violations of the PM_{2.5} air quality standards generally include a significant urban-scale contribution as well as a significant larger-scale regional contribution.” TCEQ analysis of speciation data shows that the mass of soil contributing to the PM_{2.5} design value at Clinton Drive was higher by 1.5 to 2.0 µg/m³ than at other sites in Harris County, including one site three miles to the northeast of Clinton Drive. Without this unusually large contribution of soil to the PM_{2.5} mass at the Clinton Drive monitor, the monitor would not have a design value over the 15.0 µg/m³ annual NAAQS. Analysis of the data from Clinton Drive and other sites has identified the source of the

excessive soil contribution as dust from Clinton Drive itself plus dust from the industrial workyards between Clinton Drive and the Houston Ship Channel.

- There have been no legislative inquiries to date.

Will this request affect any current policies or require development of new policies? No.

What are the consequences if this request does not go forward? Are there alternatives to the request?

The FCAA requires that states submit a recommendation. Should the state opt not to submit a recommendation package, the EPA would then make final designations and nonattainment area boundary determinations without state input.

Key dates in the request schedule: The governor's recommendation is due to the EPA 120 days after receipt of the EPA letter notifying the state of the EPA's intent to redesignate. The recommendation is due to the EPA on February 5, 2010.

Receipt of EPA letter: October 8, 2009

Stakeholder meeting: November 19, 2009

Public comment period: October 30 through November 23, 2009

Anticipated approval date: December 4, 2009

Commission's recommendation to governor: January 5, 2010

Governor's recommendation due to EPA: February 5, 2010

Agency contacts:

Margaret Earnest, Project Manager, 239-4581, Air Quality Division
Terry Salem, Staff Attorney, 239-0469, Environmental Law Division

Attachments

cc: Chief Clerk, 5 copies
Executive Director's Office
Susana M. Hildebrand, P.E.
Kevin Patteson
Curtis Seaton
Daniel Womack
Office of General Counsel
Margaret Earnest

**Summary of Comments Received on Clinton Drive,
Harris County Designation Recommendation for Fine particulate Matter**

November 23, 2009

General

The Houston-Galveston Area Council's (H-GAC) Transportation Policy Council supported the Texas Commission on Environmental Quality's (TCEQ) recommendation to remain attainment for the 1997 annual National Ambient Air Quality Standard for fine particulate matter (PM_{2.5}). H-GAC, the TCEQ, and other state and local agencies along with local businesses have been working to reduce the concentration of PM_{2.5} in the Clinton Drive area. Voluntary efforts to reduce PM_{2.5} in the community included paving, spraying of dust suppressants, and fuel switching to low sulfur fuels. H-GAC is also committed to spending approximately \$5 million in federal stimulus funds to continue improvements in the area to reduce PM_{2.5} through paving, drainage improvements, and landscaping. PM_{2.5} reduction projects are scheduled for completion in 2010 and 2011.

Galena Park Councilmember R.C. Clowers asked about installing an additional monitor inside Galena Park city boundaries, which monitors all criteria pollutants and volatile organic compounds. He is concerned about PM_{2.5} as well as other air contaminants impacting community health.

Harris County Public Health and Environmental Services (HCPHES) commented that it appreciated the work done by the TCEQ and community partners to reduce PM_{2.5} at the Clinton Drive monitor. Additionally, HCPHES suggested that the TCEQ be proactive and reduce PM_{2.5} source permits in preparation of a more strict future PM_{2.5} standard.

The Sierra Club's Lone Star Chapter and the Houston Regional Group made four comments as follows.

- 1) The Sierra Club urged the TCEQ to be proactive and take the opportunity to go below the current 15 micrograms per cubic meter 2006 annual PM_{2.5} standard, as the standard was expected to go down in the next five year evaluation in 2011.
- 2) The Sierra Club supported the resurfacing of Clinton Drive and encouraged all the partners to push for totally restructuring of the road as Clinton is an important artery of the port.
- 3) The Sierra Club was concerned with the TCEQ's suggestion at the November 19, 2009 meeting that 10 micrograms per cubic meter was close to background and might be difficult to achieve if the PM_{2.5} standard became tighter.
- 4) The Sierra Club suggested more strict enforcement of the Chapter 111 dust control rules, specifically §111.143 on materials handling; §111.145 on construction and demolition; §111.147 for roads and alleys; and §111.149 for parking lots. If needed, the TCEQ should update the rules to ensure effective PM reductions.

The Hyco company claimed its equipment could reduce bus emissions to zero for public transit. Hyco has worked with the Brazos Transit District for a project in The Woodlands to provide zero emission fuel cell buses and a renewable energy-produced hydrogen fueling station, and it could do the same for Houston. Hyco would be glad to answer any questions about their program.

One individual requested the Starfield letter from United States Environmental Protection Agency (EPA) and attachments. The Jackson letter from the EPA was available on the TCEQ Web site.

The Honorable Rick Perry
Governor of Texas
State Capitol
P. O. Box 12428
Austin, TX 78711-2428

Dear Governor Perry:

On October 8, 2009, the United States Environmental Protection Agency (EPA) sent a letter to your office requesting that you make a recommendation regarding the appropriate designations in the State of Texas for the 1997 annual primary National Ambient Air Quality Standard (NAAQS) for fine particulate matter (PM_{2.5}) due to monitored concentrations at the Clinton Drive monitor in Harris County during 2006 through 2008. Section 107(d)(3) of the Federal Clean Air Act requires the governor of each state to submit to the EPA a list of all areas with a designation recommendation of attainment, nonattainment, or unclassifiable. The letter is due to the EPA by February 5, 2010.

The annual primary PM_{2.5} standard was set to protect the public from exposure to particles smaller than 2.5 micrometers in diameter, but the sampler that collects official PM_{2.5} samples also collects some particles larger than 2.5 micrometers in diameter. Analysis of particle samples from the Clinton Drive monitor has shown a significant amount of mass from particles greater than 2.5 micrometers in diameter. A measured fine particulate mass influenced by particles larger than 2.5 micrometers suggests a lower health impact for an area near the regulatory level.

The EPA's rules for comparing air quality data to the NAAQS allow the exclusion of certain data caused by exceptional events beyond the control of U.S. regulatory agencies, including transport of dust from the Sahara Desert, of smoke from agricultural burning in southern Mexico and Central America, and of dust from dust storms in West Texas and New Mexico. Based on review and analysis of 2006 through 2008 PM_{2.5} monitoring data with the exclusion of exceptional events flagged days, the 2009 PM_{2.5} monitoring data collected to date, and the proactive actions taken to successfully address this issue, the Texas Commission on Environmental Quality (TCEQ) recommends that Harris County continue to be designated attainment for the 1997 annual PM_{2.5} standard.

As we move forward, the TCEQ will be in regular communication with the EPA regarding the achievability of this standard and the appropriate monitoring data to use.

Enclosed is a cover letter containing the designation recommendation for your signature to be submitted to the EPA by the February 5, 2010, deadline.

Thank you for your support and efforts in this matter. If I can be of any assistance, please contact me at 512-239-5510.

Sincerely,

Bryan W. Shaw, Ph.D
Chairman

Enclosures

Dr. Alfredo Armendariz
Regional Administrator
United States Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Dear Administrator Armendariz:

Pursuant to the requirements in Section 107(d)(3) of the Federal Clean Air Act and the October 8, 2009, letter from your office, enclosed is the recommendation for designation of areas in Texas with regard to the 1997 annual National Ambient Air Quality Standards fine particulate matter (PM_{2.5}).

The Texas Commission on Environmental Quality (TCEQ) developed the enclosed recommendation and supporting data, by considering currently available monitoring data in the Houston area from the 2006 through 2008 period. The State of Texas' recommendation also takes into account the 2009 data, which will be certified in accordance with the EPA requirements. The TCEQ recommends that Harris County continue to be designated attainment.

The TCEQ understands the EPA plans to use the most recent three years of certified monitoring data as the basis for the designations. Additionally, TCEQ staff is available to work with you regarding the appropriate data submission for newly certified monitoring data from calendar year 2009.

If you have any questions or need additional information, please feel free to contact TCEQ Chairman Bryan W. Shaw, Ph.D., at 512-239-5510.

Sincerely,

Rick Perry
Governor

Enclosures

cc: Mr. Bryan W. Shaw, Ph.D., Chairman, TCEQ

Resolution Concerning the 1997 Annual Fine Particulate Matter (PM_{2.5}) National Ambient Air Quality Standard Designation Recommendations

WHEREAS, the Texas Commission on Environmental Quality (Commission) met on December 4, 2009, to discuss and consider proposed designations for the 1997 annual PM_{2.5} National Ambient Air Quality Standard (NAAQS) for submittal to the Governor for his consideration and transmittal to the United States Environmental Protection Agency (EPA); and

WHEREAS, the Commission finds that the EPA requested submittal of designation for the 1997 annual PM_{2.5} NAAQS through a letter received by the Governor of Texas on October 8, 2009; and

WHEREAS, the Commission acknowledges that the FCAA, §107(d)(3), establishes a process for each Governor to provide recommendations to the EPA regarding appropriate designations for the 1997 annual PM_{2.5} NAAQS for their state; and

WHEREAS, the Commission acknowledges that the EPA has specified a deadline for the submittal of recommended designations for the 1997 annual PM_{2.5} NAAQS of 120 days from receipt of the October 8, 2009 letter; and

WHEREAS, the Commission acknowledges that the EPA recommends states identify attainment/nonattainment areas using the most recent three years of air quality data, stored in the EPA Air Quality System (AQS), from Federal Reference Method and Federal Equivalent Method monitors that are sited and operated in accordance with 40 Code of Federal Regulations (CFR) Part 58; and

WHEREAS, the Commission acknowledges that 40 CFR Parts 50 and 51 grant the EPA authority to exclude air quality monitoring data from regulatory determinations related to exceedances or violations of the NAAQS and avoid designating an area as nonattainment, or redesignating an area as nonattainment, if a State adequately demonstrates that an exceptional event has caused an exceedance or violation of a NAAQS; and

WHEREAS, the Commission finds that based on AQS monitoring data, excluding exceptional events, from 2006 through 2008, all monitors in Texas with data eligible for comparison to the 1997 annual PM_{2.5} NAAQS were reviewed, and the Commission finds that all of Texas should be recommended for designation as attainment or unclassifiable; and

RESOLVED, that the Commission hereby requests the Governor of Texas to submit a recommendation of attainment for the 1997 annual PM_{2.5} NAAQS to the EPA for consideration, by the EPA's requested deadline of February 5, 2010, and directs commission staff to provide supplemental information to the EPA to support designations, as necessary.

TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY

Bryan W. Shaw, Ph.D., Chairman

Harris County/Clinton Drive 1997 Annual Fine Particulate Matter (PM_{2.5}) Fact Sheet November 2009

Issue

On October 8, 2009, the Texas Commission on Environmental Quality (TCEQ) was notified that Governor Perry would receive two letters from the United States Environmental Protection Agency (EPA): a letter from EPA Administrator Jackson stating that the EPA is looking at Harris County PM_{2.5} data, and a second from EPA Region 6, Acting Regional Administrator Starfield advising that the TCEQ submit a 1997 annual PM_{2.5} standard designation recommendation for Harris County, using 2006 through 2008 data.

Addressing this letter to the public, the TCEQ will host an informational meeting on Thursday, November 19, 2009, at 1:00 p.m., at the Alvin D. Baggett Community Center, 1302 Keene Street, Galena Park, Texas. Agency staff will present information on PM_{2.5} and provide an opportunity for discussion on the EPA's request for designation recommendation.

Commission action on a staff recommendation is anticipated at the December 4, 2009, Commissioners' Work Session. The TCEQ's recommendation is scheduled to go to the governor on January 5, 2010, and the governor's recommendation to the EPA is due February 5, 2010.

Background

PM_{2.5} describes fine particulate matter that is 1/30th the diameter of a human hair. PM_{2.5} is a mixture of microscopic solids and liquid droplets suspended in air. It is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores). Particulate matter can be caused by natural phenomena or come from man-made sources. In high enough concentrations, particulates can aggravate existing respiratory problems or even trigger new ones. The 1997 annual PM_{2.5} National Ambient Air Quality Standard (NAAQS) is 15.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). A violation is a value greater than 15.0 $\mu\text{g}/\text{m}^3$ averaged over a rolling three-year period.

Since 2004, all PM_{2.5} monitors in the Houston area except the Clinton Drive monitor have recorded readings lower than 15.0 $\mu\text{g}/\text{m}^3$. PM_{2.5} data for the Clinton Drive monitor showed a 2005 annual average of 15.9 $\mu\text{g}/\text{m}^3$ and a three-year average of 15.0 $\mu\text{g}/\text{m}^3$. The TCEQ conducted an advanced analysis of the PM_{2.5}, meteorological data, and the chemical speciation data to identify the cause (what portion and component of PM_{2.5}), source types, and source areas contributing to the excessive particulate matter concentrations. Daytime, weekday concentrations are the main cause of high PM_{2.5} levels at the Clinton Drive site. Analysis of chemical speciation data shows the calculated mass of soil at Clinton Drive is approximately 1.5 to 2.0 $\mu\text{g}/\text{m}^3$ higher than at any other speciation monitoring site in the Houston area. The data indicate that the higher elevated PM_{2.5} concentrations at the Clinton Drive monitor represent a limited area, as the Clinton Drive monitor is located directly across from the entrance to the Port of Houston Authority (PHA) and unpaved ship yards along the Houston Ship Channel. The railroad also runs parallel to this section of Clinton Drive.

Concurrently, the TCEQ began working with the PHA, the City of Houston, Harris County, and local industry to address this issue. A list of voluntary actions to date is attached. The combined efforts of the various organizations has improved particulate matter air quality to the point that the 2008 PM_{2.5} annual average at Clinton Drive was 14.0 $\mu\text{g}/\text{m}^3$, even when exceptional event days are included.

Determination of the attainment status for the standard requires comparison of the most recent average of PM_{2.5} data for three complete years, which are currently 2006, 2007, and 2008. The EPA procedures also provide for exclusion of data for exceptional events such as transported Saharan Desert dust and smoke transported from fires in southern Mexico and Central America. The EPA is still reviewing the TCEQ's

flags for exceptional event days for 2006 through 2008. The TCEQ has provided additional supporting documentation in response to EPA requests.

Without removing exceptional event days, the 2006 through 2008 design value for Clinton Drive is $15.2 \mu\text{g}/\text{m}^3$. After removing exceptional event days identified by TCEQ meteorologists, the 2006 through 2008 design value is $14.6 \mu\text{g}/\text{m}^3$. The 2009 monitoring data collected from January through June indicate a preliminary annual average of $12.8 \mu\text{g}/\text{m}^3$. Using the validated January through June 2009 data and a conservative estimate for the rest of 2009 based on historical measurements at this site, the projected 2007 through 2009 design value is $14.4 \mu\text{g}/\text{m}^3$.

Efforts to Improve Air Quality in the Clinton Drive Area

In addition to the individual efforts of the organizations previously identified, in July 2009, the TCEQ hosted a roundtable meeting with EPA Region 6, the Texas Department of Transportation, Harris County, the Cities of Houston and Galena Park, Houston-Galveston Area Council, the PHA, the Port Terminal Rail Association (PTRA), local regulated industries, and environmental groups. See attachment, Efforts to Reduce Local $\text{PM}_{2.5}$ Emissions in the Clinton Drive Area as of December 2009.

Next Steps

Continuous $\text{PM}_{2.5}$ data from 2009 show a downward trend in $\text{PM}_{2.5}$ concentrations at Clinton Drive. The EPA indicated that it could consider 2009 data if it is quality assured and quality controlled by TCEQ staff by the end of this calendar year.

On November 19, 2009, an informational meeting in Houston will include a presentation by TCEQ and allow a question and answer period. Informal comments will be accepted until November 23, 2009.

Efforts to Reduce Local PM_{2.5} Emissions in the Clinton Drive Area as of December 2009

PHA Projects:

- PHA along with eight other Houston Ship Channel industries are the recipients of \$3.47 million in an EPA National Clean Diesel Campaign that provides funding through the Diesel Emission Reduction Act (DERA), as part of the recently enacted nationwide economic stimulus package, the American Recovery and Reinvestment Act. PHA has been awarded \$611,466, while \$2.8 million has been awarded to eight port industrial partners.
- The PHA reports widespread use of emulsified asphalt beginning October 1, 2007.
- PHA is taking bids for new, large yards that will include dust suppression measures.
- Valero Asphalt paved its large leases located across Clinton Drive to the southeast of the monitor.

Road Projects:

- The City of Houston installed barriers to keep trucks from driving off Clinton Drive onto the dirt shoulders of the road.
- The City installed a traffic light at Clinton Drive and the Industrial Park East gate to control traffic at the intersection and completed a landscaping project along Clinton Drive.
- The TCEQ commissioners approved a Supplemental Environmental Project to pave the parking lot directly adjacent to the monitoring station. The paving was completed in the summer of 2009.

Railroad Projects:

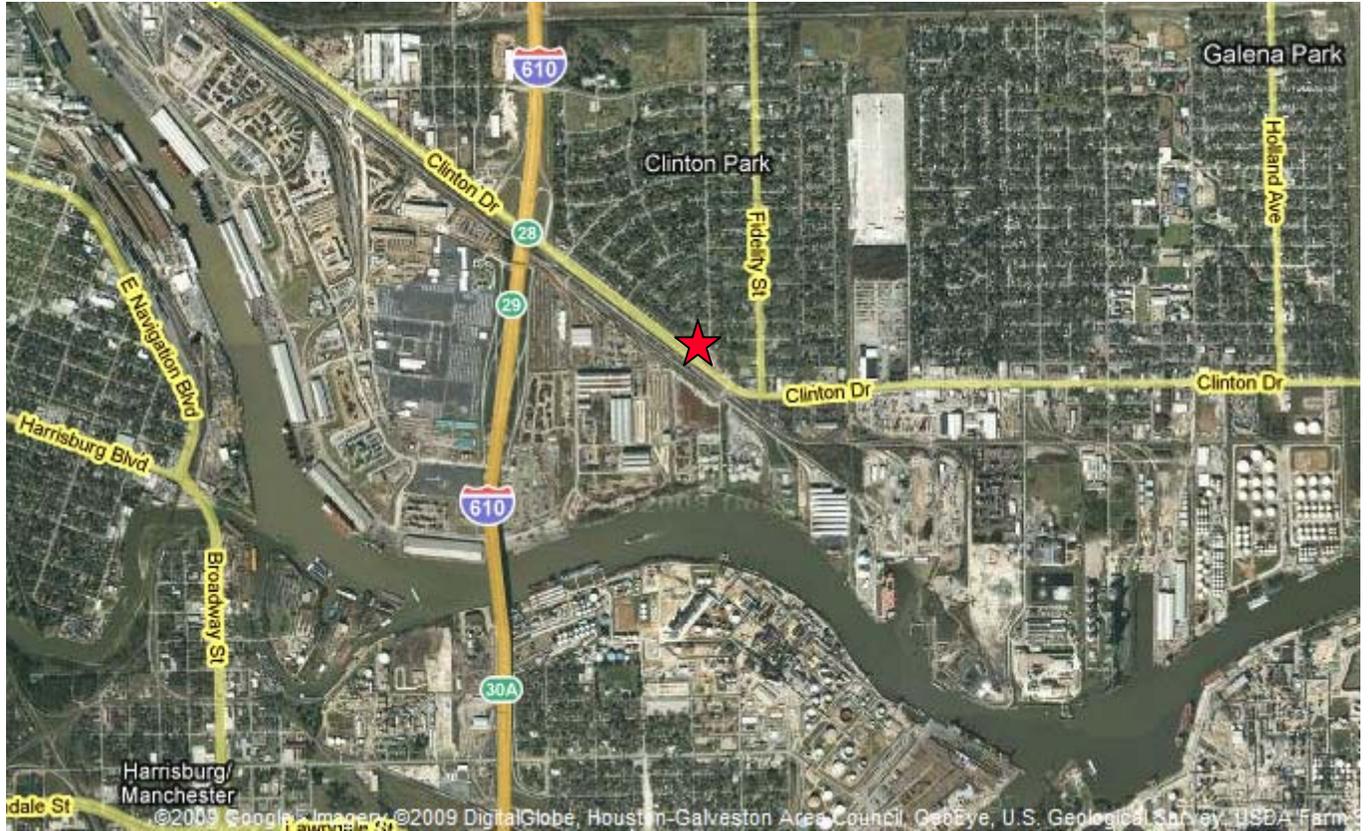
- PTRAs and Union Pacific (UP) are operating newly refurbished switcher engines on the Clinton line.
 - UP currently has 52 new gensets in the Houston area.
 - UP has 13 Tier 2 locomotives being funded by Texas Emissions Reduction Plan (TERP).
- 60% of UP switcher engines operating in the area have anti-idling control.
- PTRAs have stopped the steel loading activities on a dirt area to the south of the monitor.

Regulated Industry Projects:

- DuPont, a PHA tenant, has implemented new dust control best management practices at its fluorspar unloading and storage facility.
- Federal consent decrees are anticipated to result in an estimated 33,900 tons per year (tpy) of sulfur dioxide (SO₂) reductions in the upper Texas Gulf Coast.
 - Valero Refining has already implemented control measures to reduce SO₂ emissions by 3,500 tpy.
 - The Rhodia sulfuric acid plant will decrease its SO₂ emissions by 8,984 tpy from 2005 actual emissions by 2012.



Clinton Dr. Area



PM_{2.5} Designation Recommendation for Harris County

David Brymer, Air Quality Division Director
Texas Commission on Environmental Quality



Agenda

- EPA's Designation Request
- Fine Particulate Matter (PM_{2.5}) Background
- Monitoring Data and Trends
- Local Efforts to Reduce Particulate Matter
- Designation Recommendation Considerations
- Comments/Questions

EPA's Designation Request



EPA's Designation Request

On October 8, 2009, the governor received a letter from the EPA requesting a designation recommendation within 120 days. The EPA initiated the redesignation process based on 2006-2008 monitoring data, which indicates one monitor in Harris County may be violating the annual PM_{2.5} NAAQS of 15.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).



120 Day Timeline

October 8, 2009	Governor receives letter from the EPA
October 29, 2009	TCEQ Commissioner Work Session
October 30, 2009 – November 23, 2009	Informal comment period
November 19, 2009	TCEQ hosts informational meeting
December 4, 2009	TCEQ Commissioner Work Session
January 5, 2010	TCEQ submits designation recommendation to governor
February 5, 2010	120 day deadline to submit recommendation to the EPA

Fine Particulate Matter (PM_{2.5}) Background Information



Fine Particulate Matter (PM_{2.5}) – Background Information

- PM_{2.5} describes particulate matter that is 2.5 micrometers in diameter and smaller - 1/30th the diameter of a human hair.
- PM_{2.5} is a mixture of microscopic solid and liquid particles suspended in air.
- PM_{2.5} is made up of a number of components, including ammonium sulfate, organic carbonaceous material, ammonium nitrate, black carbonaceous material (soot), soil dust particles, and allergens (such as fragments of pollen or mold spores).



Fine Particulate Matter (PM_{2.5}) – Background Information

- Exposure
 - Inhalation
- Health Effects
 - Reduced lung function
 - Chronic bronchitis
- People with heart disease are especially susceptible to the negative effects of PM_{2.5}.



Fine Particulate Matter (PM_{2.5}) – Background Information

- Annual average standard = 15.0 µg/m³

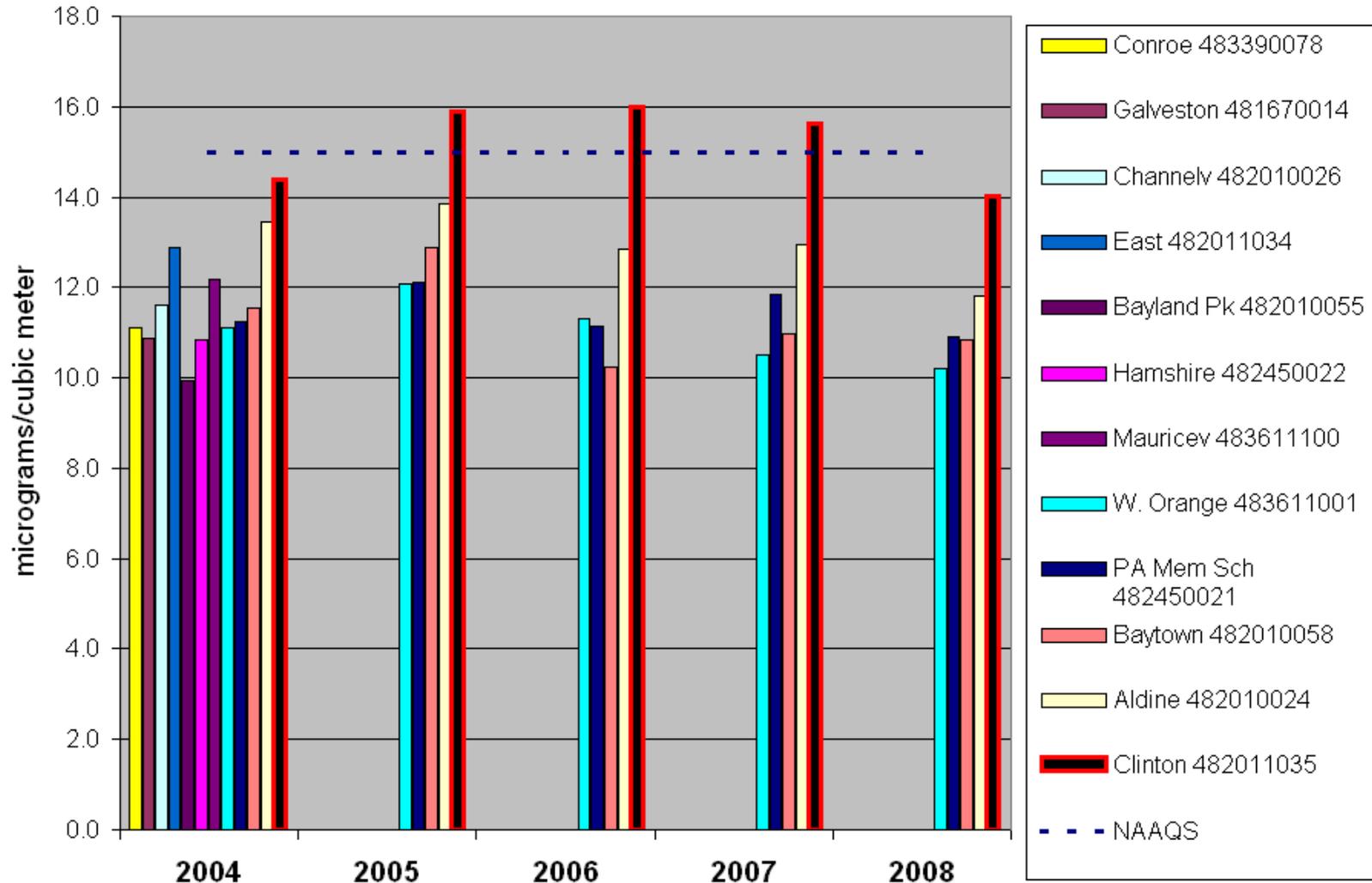
To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 micrograms per cubic meter (µg/m³).

- The entire state of Texas is currently designated as “Unclassifiable/Attainment” for the annual average PM_{2.5} standard. The EPA issued these designations on January 5, 2005, (70 FR 943).

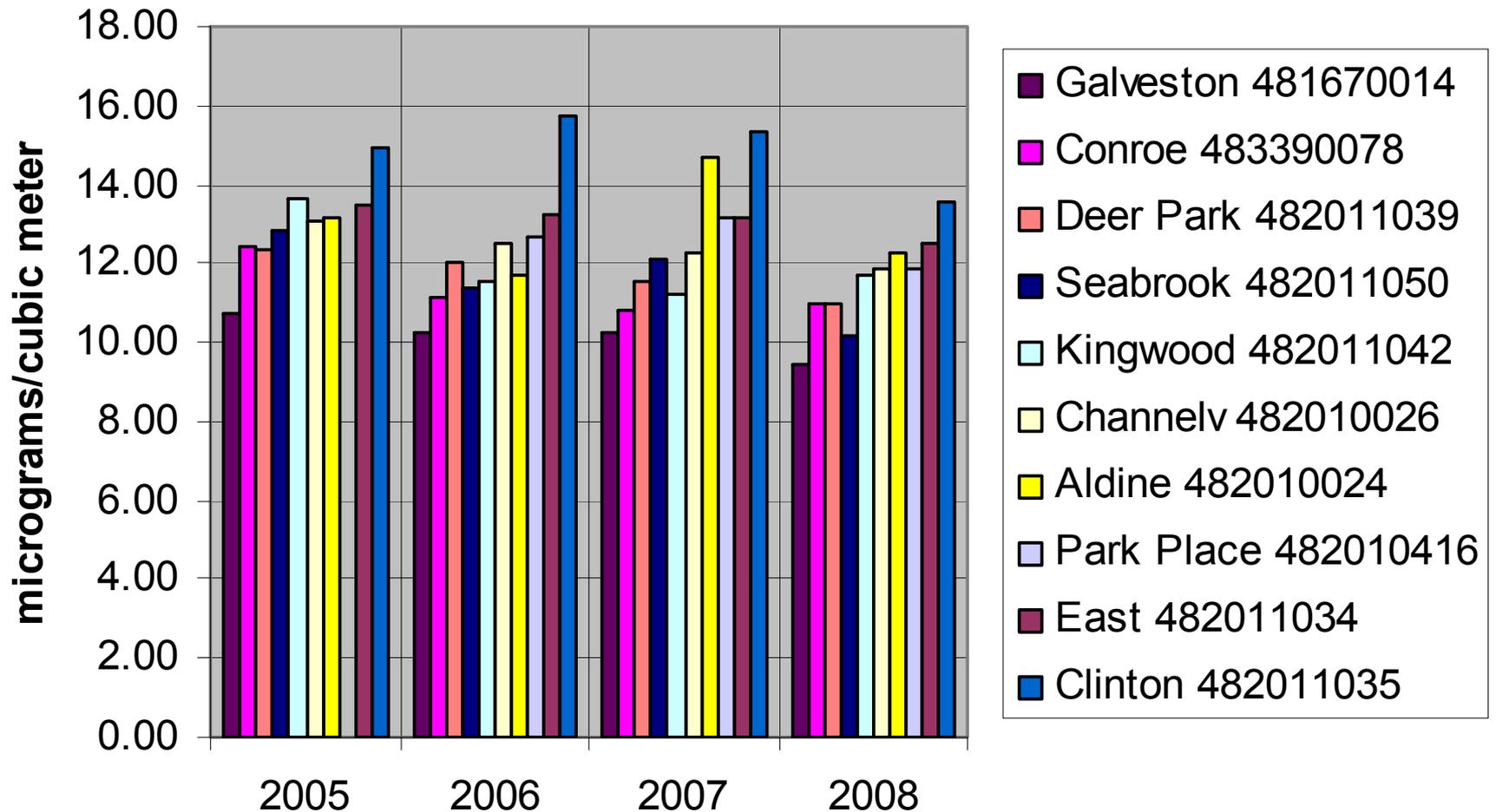
Monitoring Data and Trends



PM_{2.5} Annual Means, 2004-2008, All Regulatory Monitors in the Upper Texas Coast (Exceptional Event Data Included)

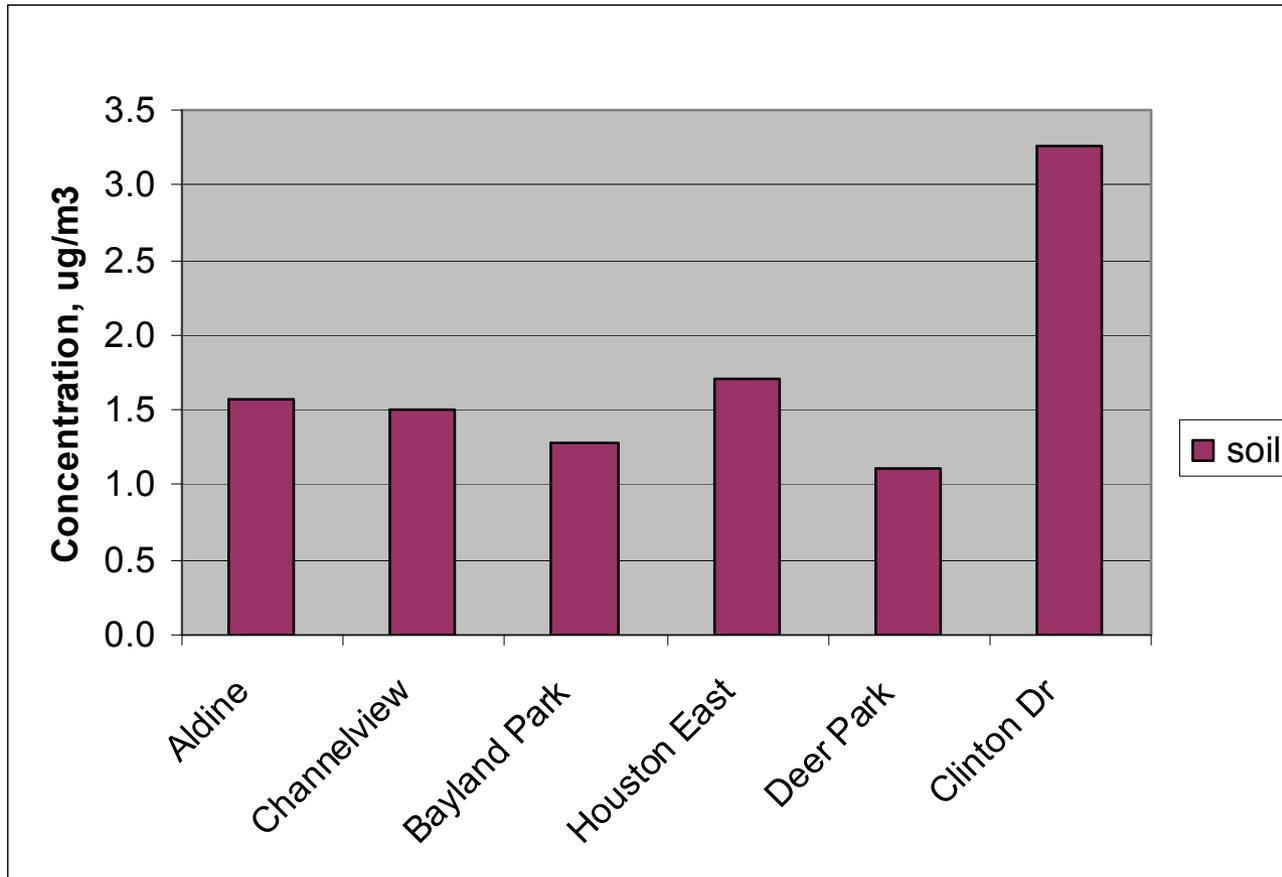


TEOM PM_{2.5} Annual Means Houston Region 2005-2008





Mean Reconstructed Soil Component at Clinton, Summer 2006, Compared to Other Sites from Summer 2005





Data Analysis Results for the Clinton Monitor

After removing African dust transport days, two contributing local dust components were identified:

- Fine soil (dust) $PM_{2.5}$ from the SSE-through-SSW.
 - This “soil/crustal material” contains silicon, aluminum, titanium, and iron.
- Calcium and calcium sulfate from the SSE through the WNW.
 - Soil containing calcium and calcium sulfate contributes more $PM_{2.5}$ mass than the “soil/crustal material” source factor does.

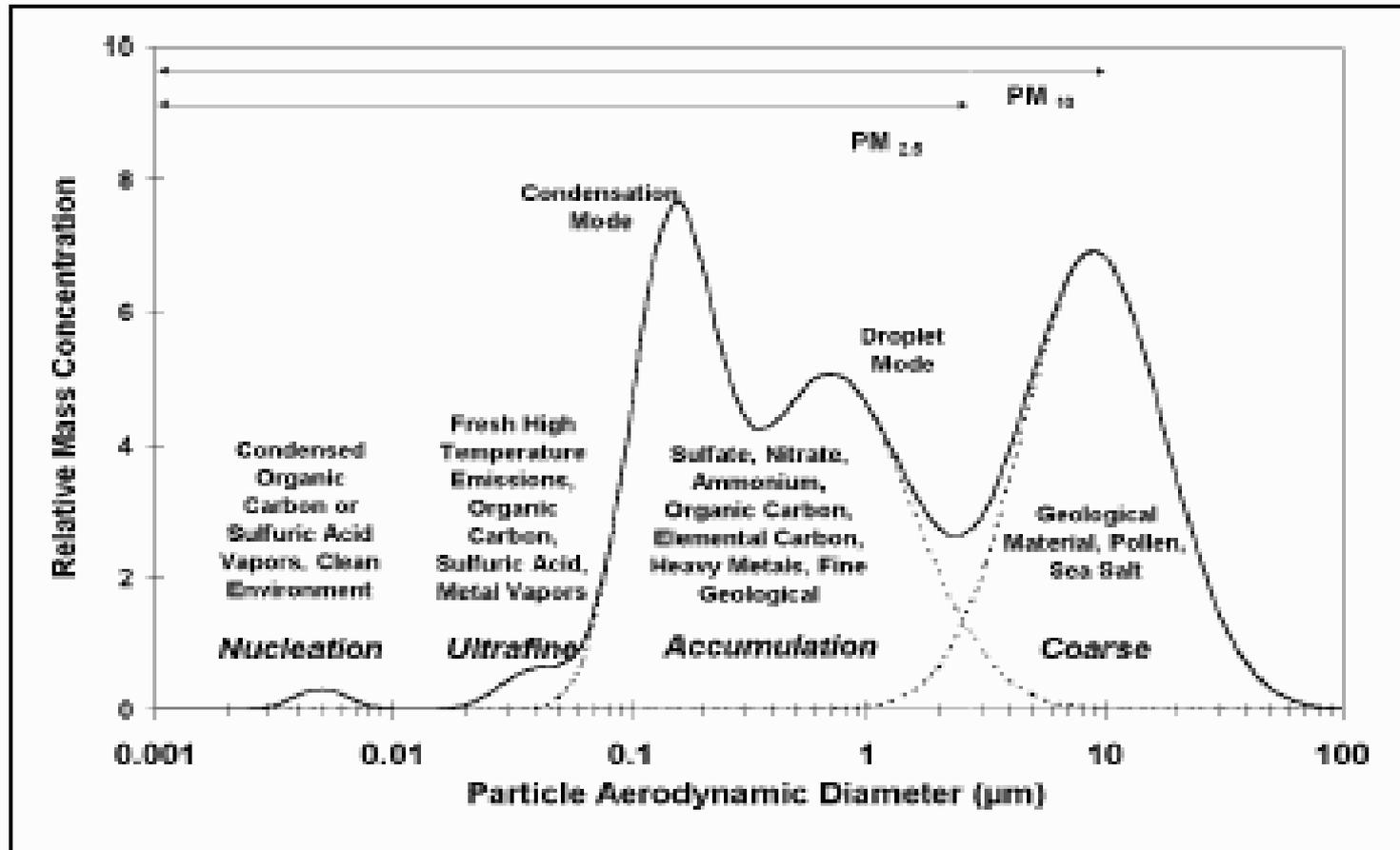


Clinton Dr. Area





Dust and Soil Particles Are Generally Larger Than PM_{2.5}

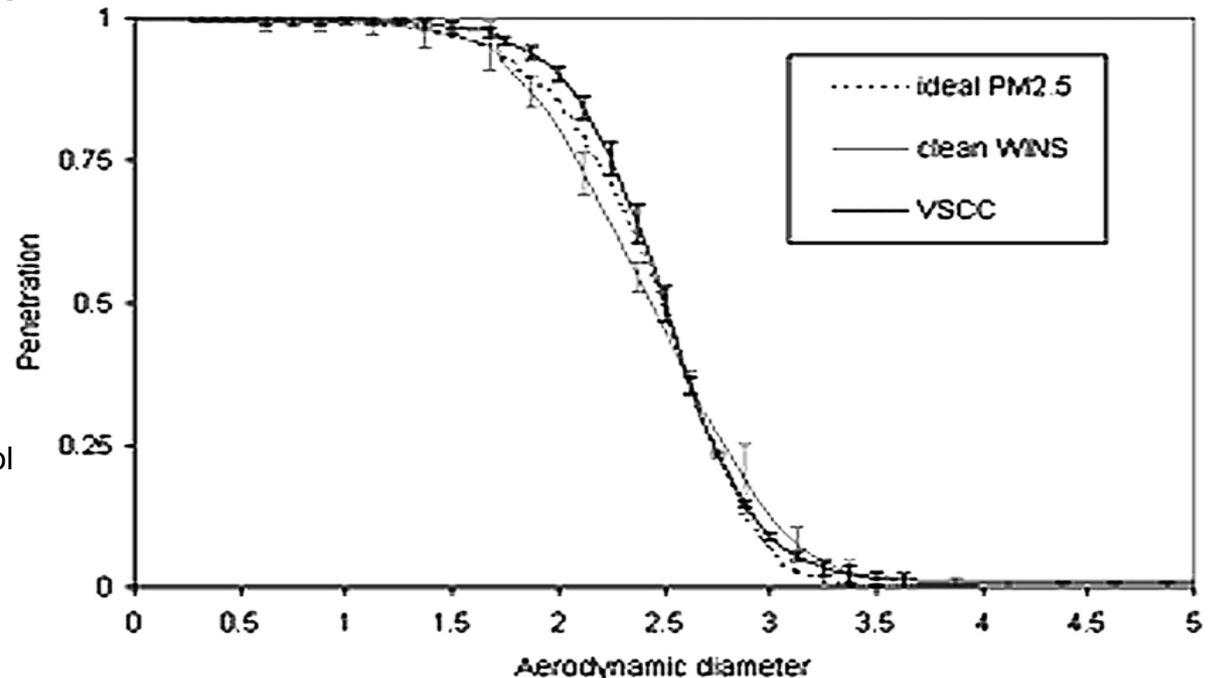


Watson, J. G., "Visibility: Science and Regulation," *J. Air & Waste Manage. Assoc.* 52 (2002) 628–713



Clinton Drive PM_{2.5} Measurements Include Large Amounts of Coarse Particulates

- Clinton Drive filters contain soil and dust particles.
- Electron microscopy shows a significant portion of the sample weight from coarse particulates.
- Not surprising based on sampler design and significantly impacts measurements and health implications.



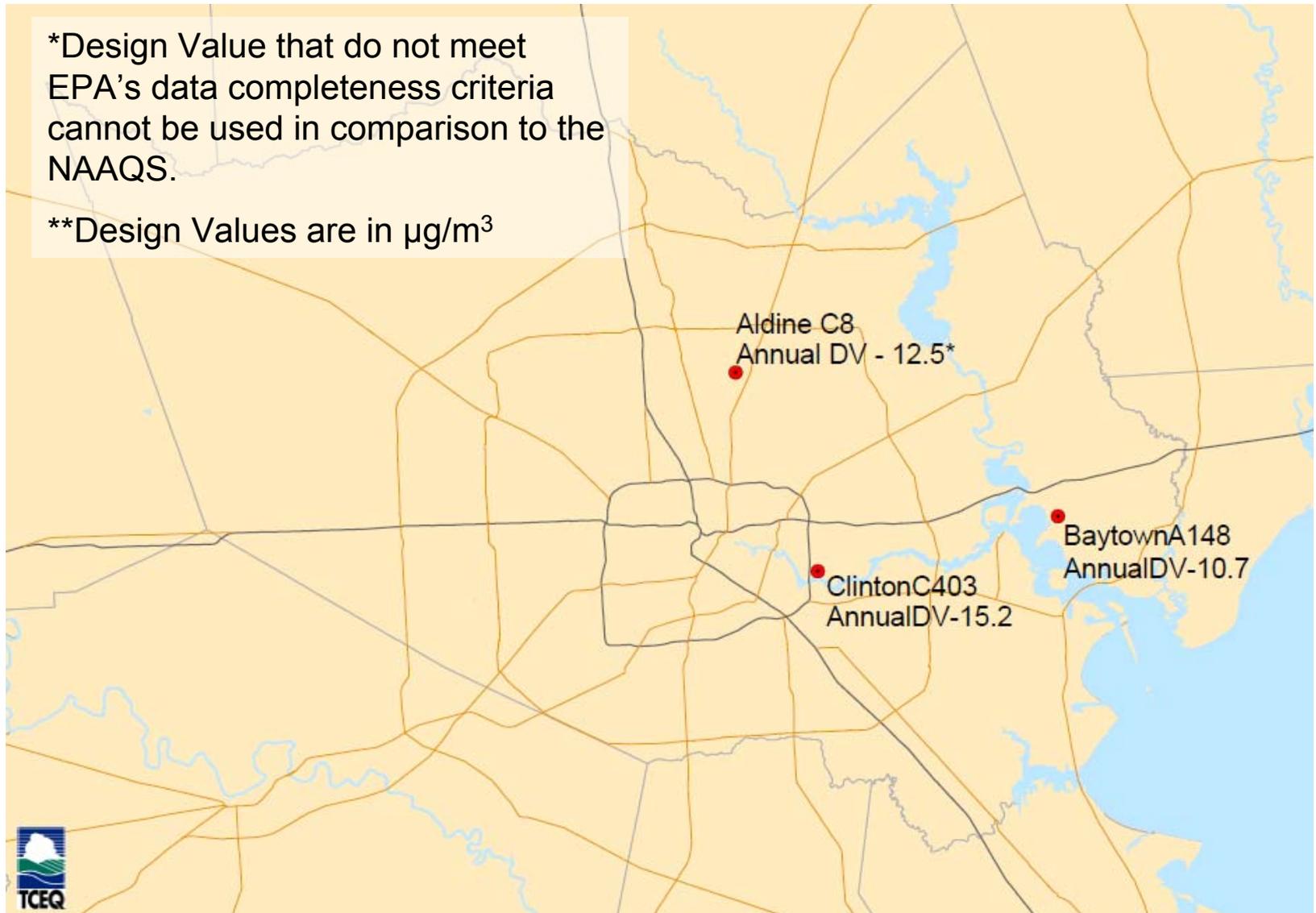
Kenny, L. C., Merrifield, T., Mark, D., Gussman, R. and Thorpe, A. (2004) 'The Development and Designation Testing of a New USEPA-Approved Fine Particle Inlet: A Study of the USEPA Designation Process', *Aerosol Science and Technology*, 38: 12, 15-22



2008 Annual PM_{2.5} Design Values in Harris County Including Exceptional Events

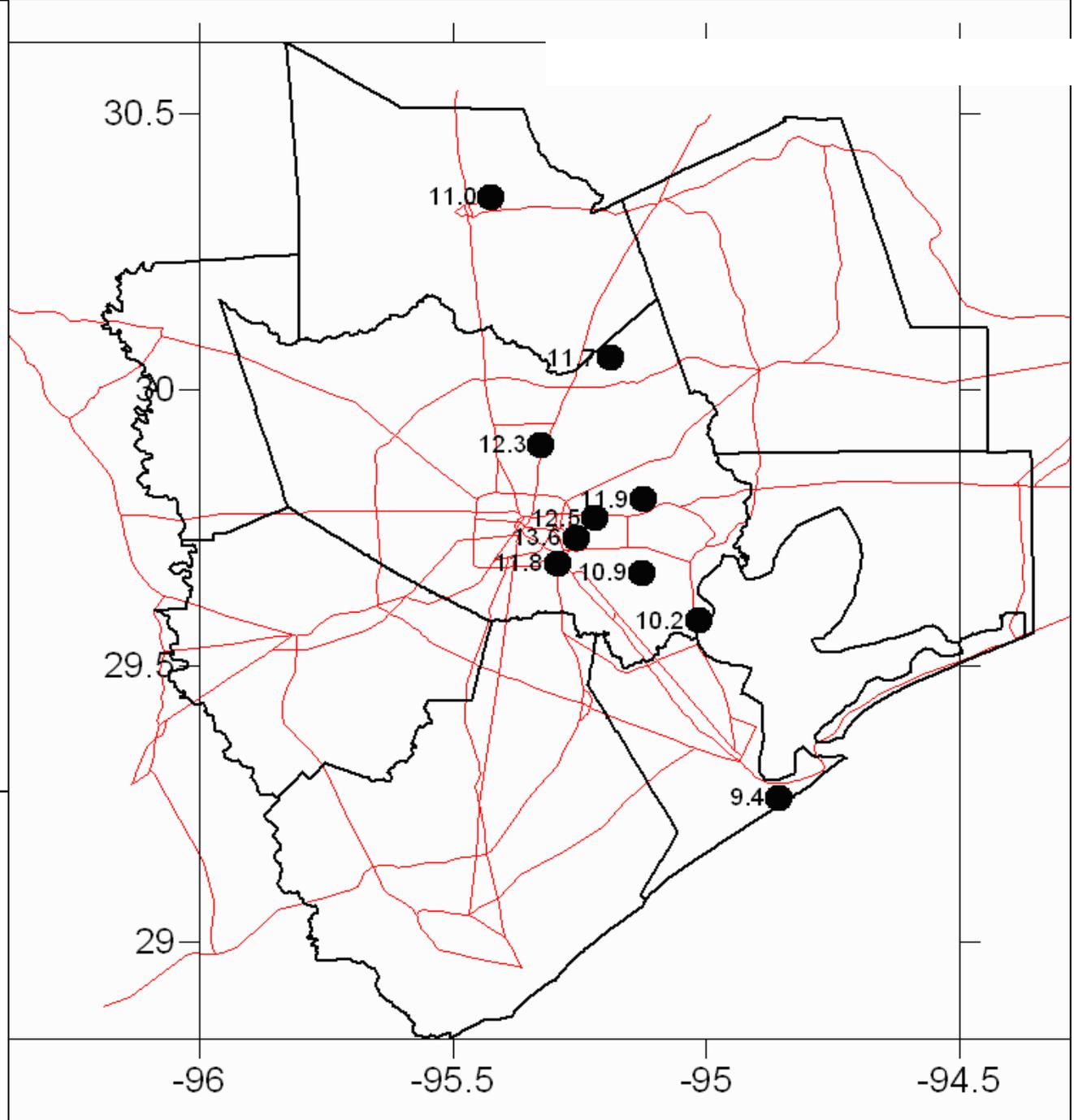
*Design Value that do not meet EPA's data completeness criteria cannot be used in comparison to the NAAQS.

**Design Values are in $\mu\text{g}/\text{m}^3$



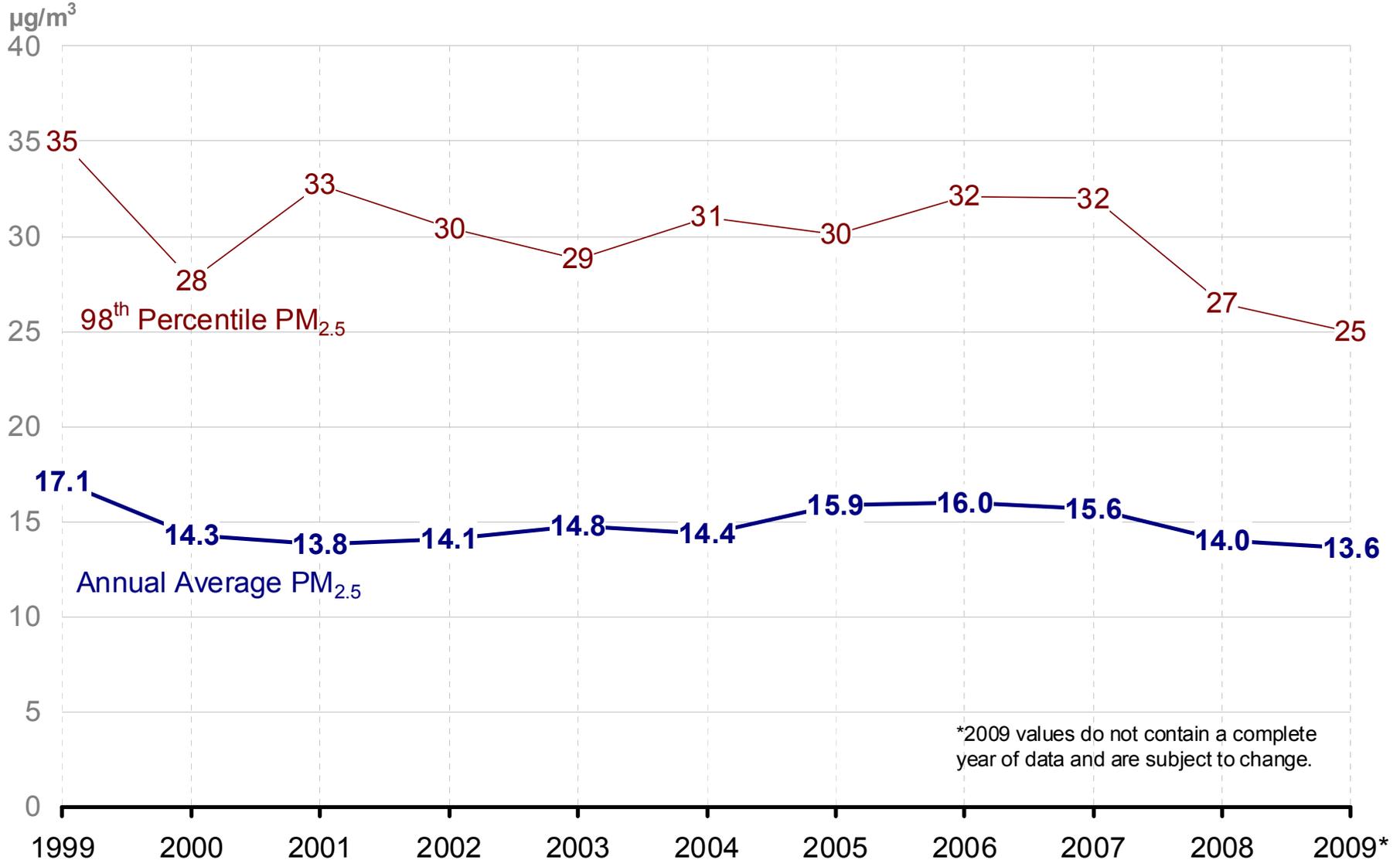
2008 PM_{2.5} Annual Averages at TEOM Monitors in the HGB Region

These monitors
show the
distribution of
PM_{2.5} levels, but
they are not
official for
comparison to
the NAAQS.



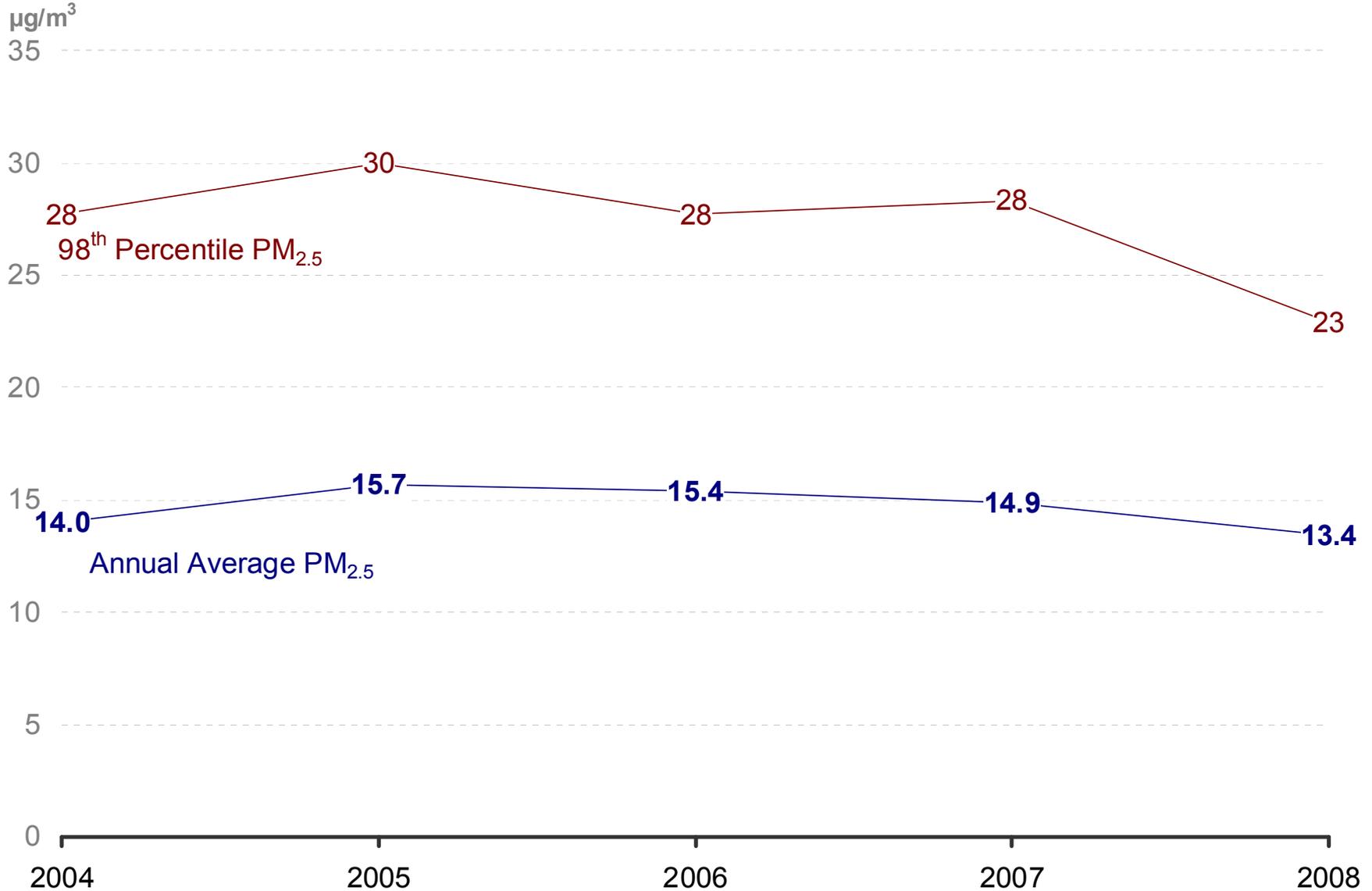


Annual Average and 98th Percentile PM_{2.5} at the Clinton Drive Monitor Including Exceptional Events



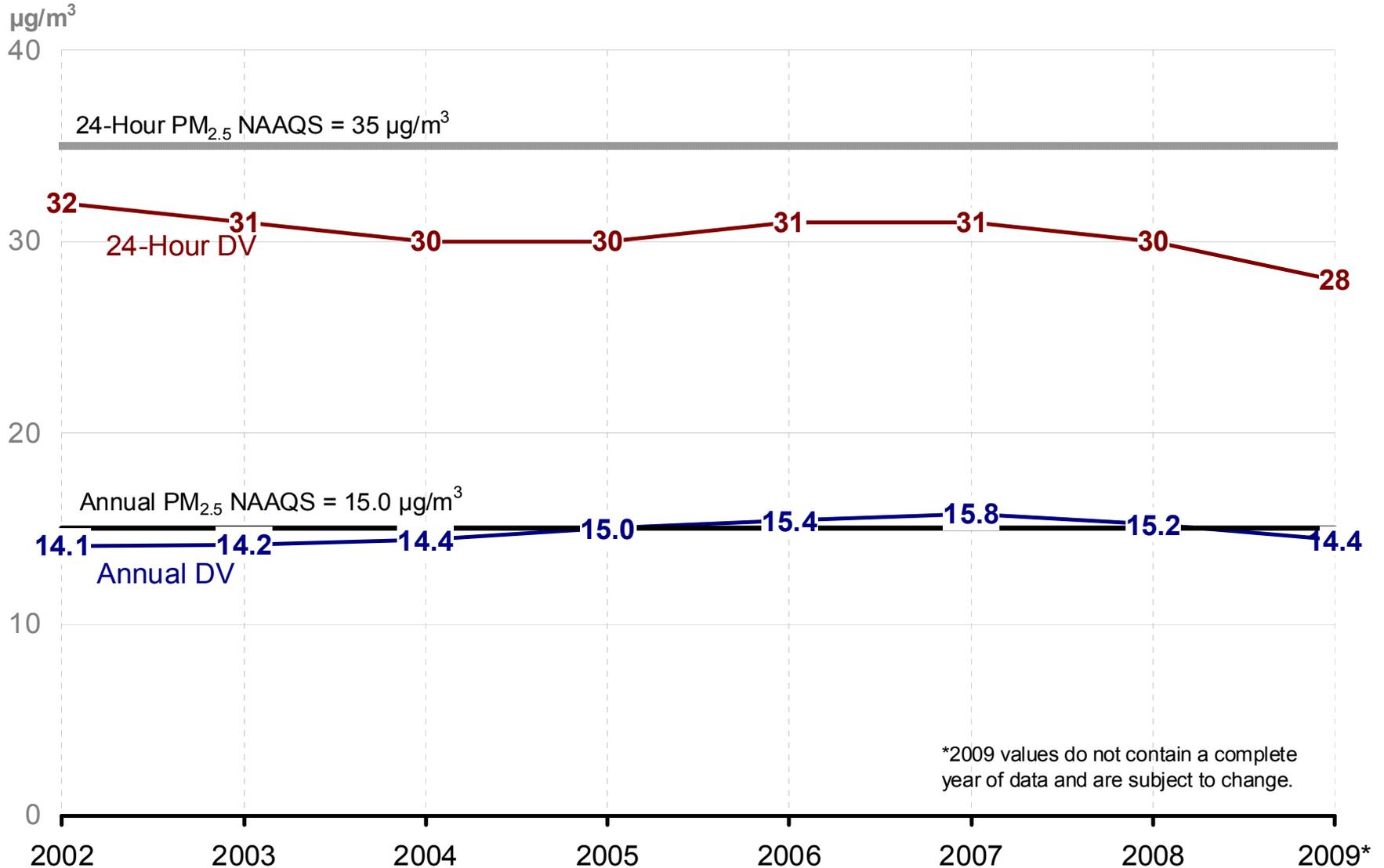


Annual Average and 98th Percentile PM_{2.5} at the Clinton Drive Monitor Excluding Exceptional Events



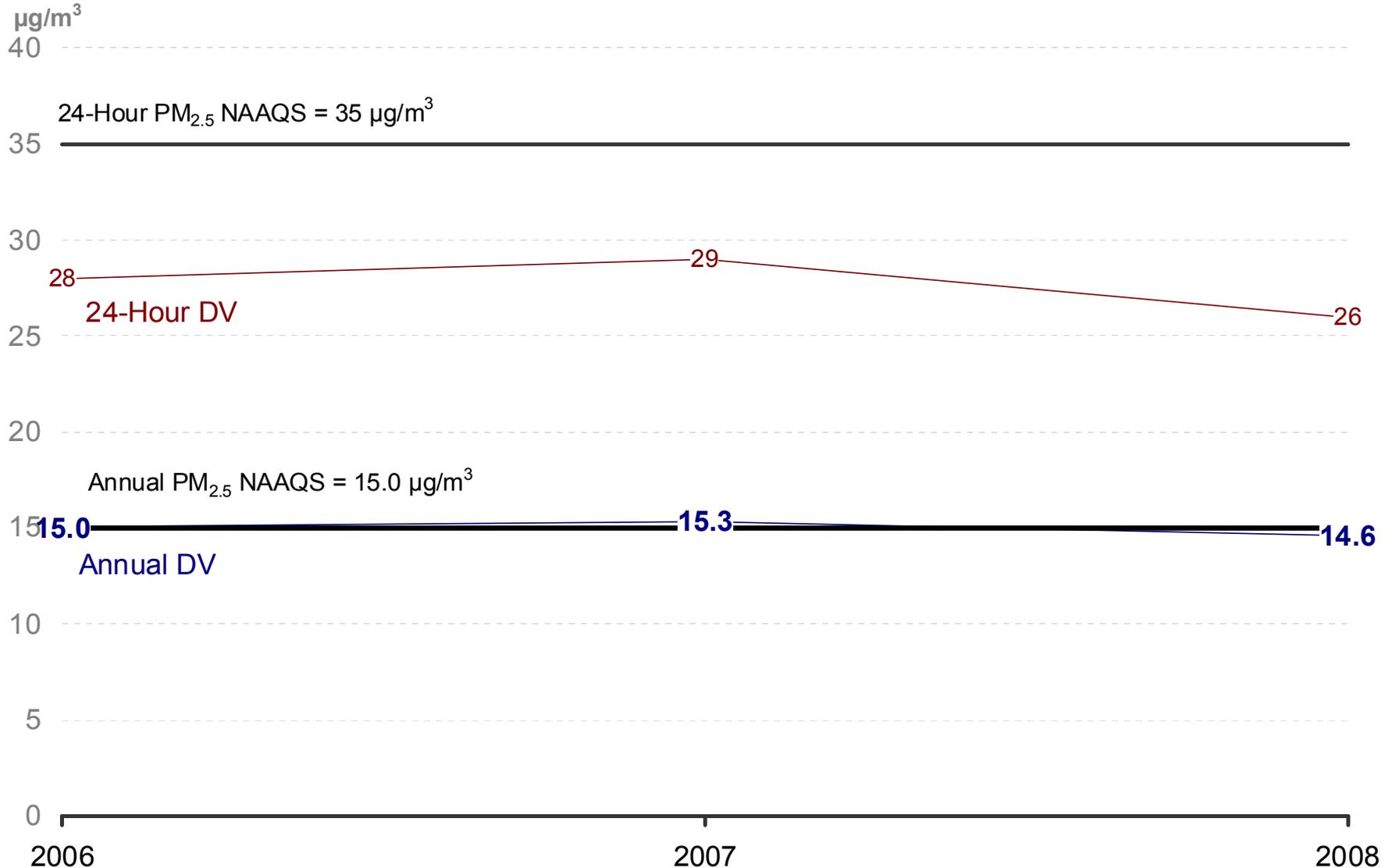


PM_{2.5} Design Values in Harris County Including Exceptional Events





PM_{2.5} Design Values at Clinton Drive Excluding Exceptional Events





Exceptional Event Days

- EPA guidance allows for the removal of “exceptional event days” from data sets.
- EPA defines “exceptional events” as events that:
 - Affect air quality
 - Are not reasonably controllable or preventable
 - Are caused by human activity unlikely to recur or a natural event
 - are determined through the process established in the regulations, 40 CFR Part 50.14



Smoke from Agricultural Fires in Mexico Satellite Image May 23, 2008





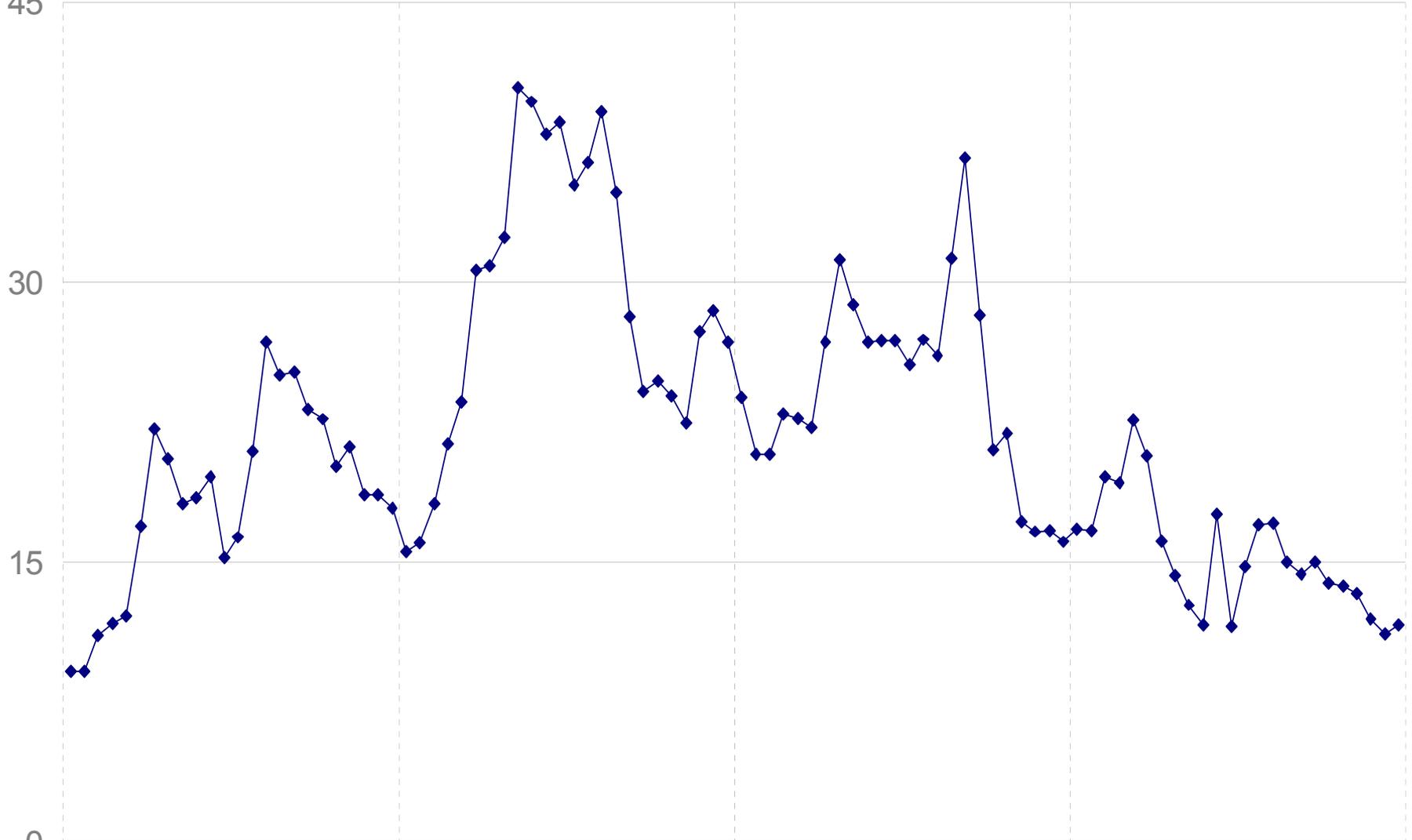
Smoke from Agricultural Fires in Mexico Satellite Image May 23, 2008

- Video insert of Animation for May 23, 2008:
http://www.tceq.state.tx.us/assets/public/compliance/monops/air/sig_events/08/080523ani-gulf.html
- May 21-25 smoke event description
http://www.tceq.state.tx.us/assets/public/compliance/monops/air/sig_events/08/event2008-05-21tx.html



Hourly PM_{2.5} Concentrations at Clinton May 21-24, 2008

µg/m³
45





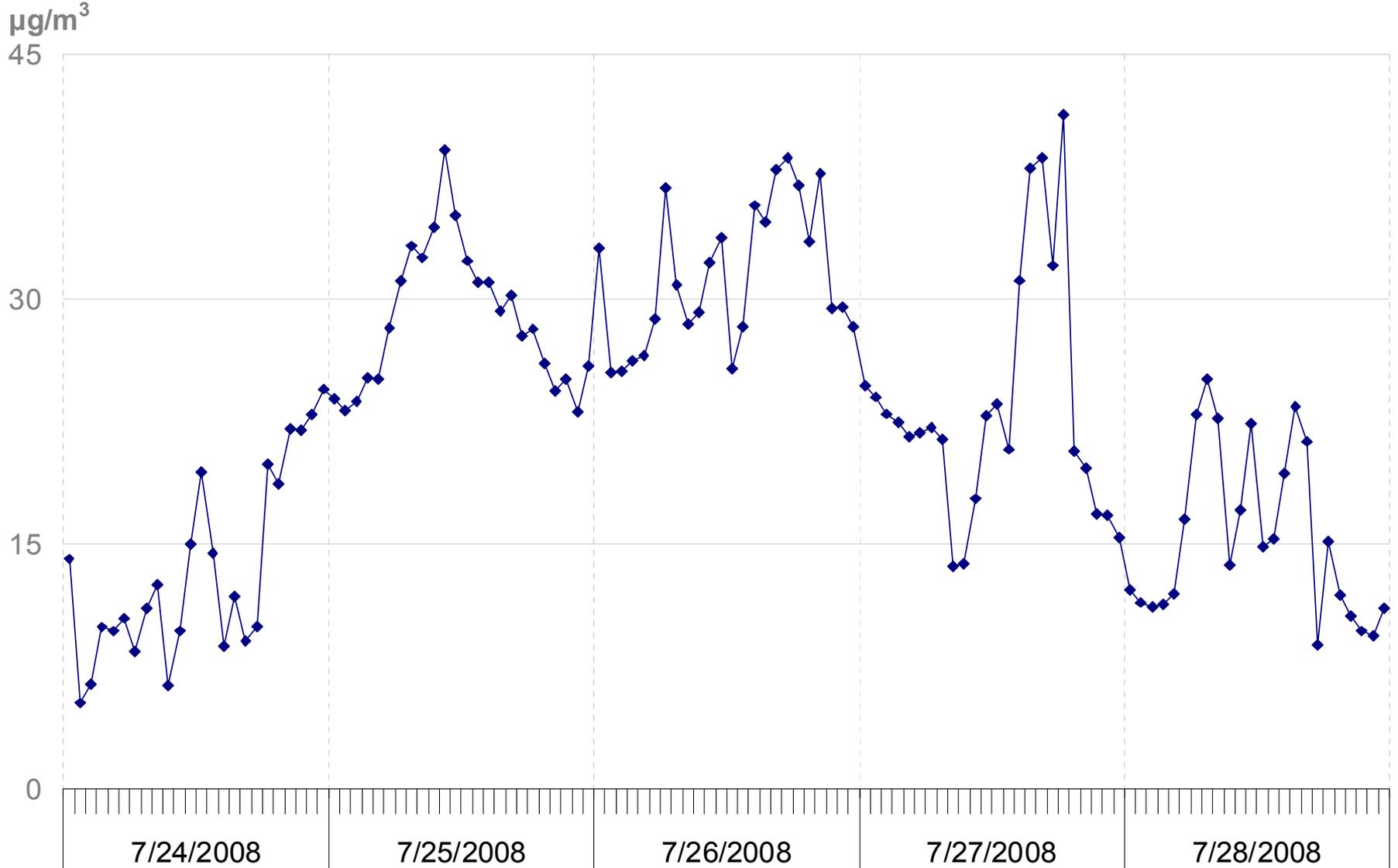
Saharan Dust Transport Across the Atlantic Satellite Image July 25-27, 2008

ppt insert of July 24-28 event 2008 :

<http://www.tceq.state.tx.us/assets/public/compliance/monops/air/sigevents/08/event2008-07-25tx.html>



Hourly PM_{2.5} Concentrations at Clinton July 24-28, 2008



Local Efforts to Reduce Particulate Matter in the Clinton Drive Area





Efforts to Reduce PM_{2.5} in the Clinton Drive Area

Efforts have included working with:

- EPA Region 6
- The City of Houston
- Harris County Commissioners
- Port of Houston Authority
- Port Terminal Rail Authority
- Local industry



Supplemental Environmental Project (SEP)

- TCEQ commissioners approved a SEP to pave the parking lot directly adjacent to the monitoring station.
- Construction was completed mid-2009.





City of Houston

- Installed barriers to keep trucks from driving onto the unpaved shoulder.
- Installed a traffic light at Clinton Drive and the Industrial Park East gate to control traffic at the intersection and completed a landscaping project along Clinton Drive.





Union Pacific (UP)

- UP reports that the current Tier locomotives used along Clinton Drive collectively emit 4.8 tpy PM less than an unregulated engines would
- UP currently has 52 new gensets in the Houston area
- 13 locomotives are being funded by Texas Emissions Reduction Plan (TERP)
- 60% of UP switcher engines have anti-idling control



Port Transit Rail Authority (PTRA)

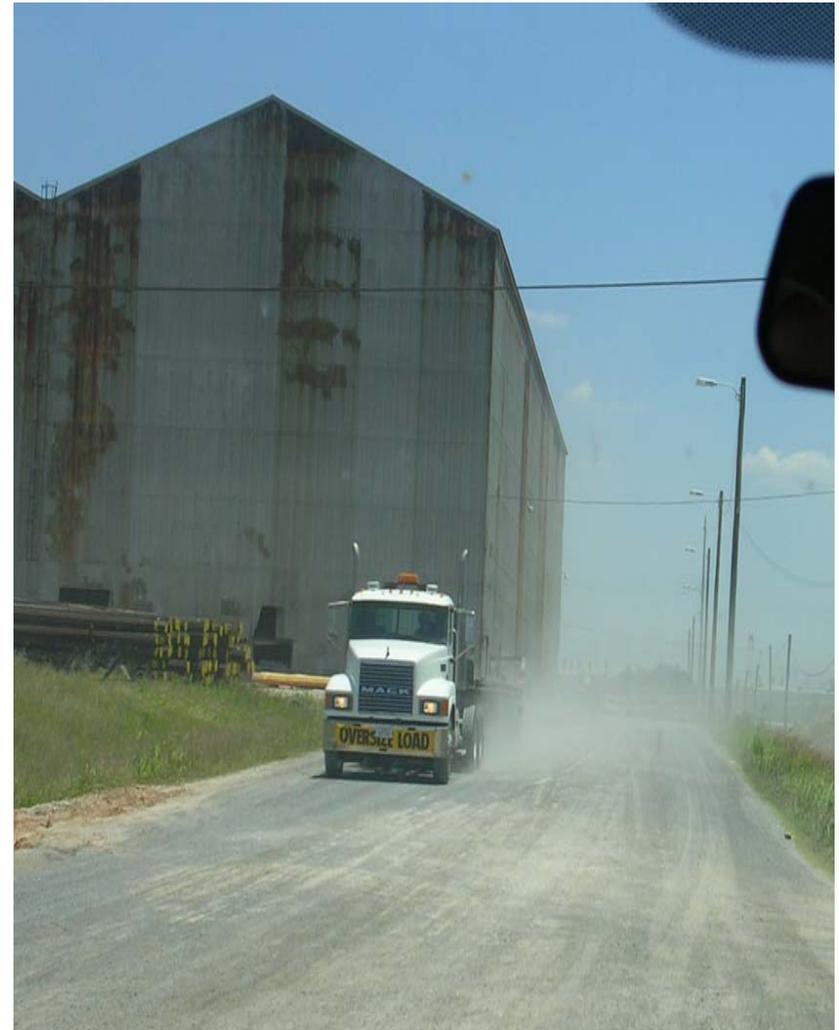
- PTRA will be operating newly-refurbished switcher engines on the Clinton line. These newly-refurbished 1996 engines were recently classified as Tier 0
- PTRA has stopped the steel loading activities on a dirt area to the south of the monitor.





Port of Houston Authority (Port)

- PHA along with eight other Houston Ship Channel industries are the recipients of \$3.4 million in an EPA National Clean Diesel Campaign that provides funding through the Diesel Emission Reduction Act (DERA), which will reduce port related diesel emissions.
- All new leases with the Port will include enhanced dust suppression requirements.
- The Port reports widespread use of emulsified asphalt beginning October 1, 2007.





Port and DuPont

DuPont, a Port tenant, has implemented a new dust control best management practice at its fluorspar unloading and storage facility.





Valero Asphalt

Valero Asphalt has paved its large work yard that is just across Clinton Drive to the southeast of the monitor.





Industrial Facilities

The EPA calculates the total federal consent decree reductions in SO₂ in the upper Texas Gulf Coast to be approximately 33,900 tpy.

- Valero Refining has already implemented control measures to reduce SO₂ emissions by 3,500 tpy.
- The Rhodia sulfuric acid plant to the southwest of Clinton will decrease its emissions by 8,984 tpy from 2005 actual emissions to post-control allowable emissions.
- Scoping modeling calculates a resulting 0.1 to 0.2 µg/m³ reduction in sulfate concentrations in the ship channel area from 2006 to the time that all federal consent decree SO₂ reductions are in place, approximately 2013.



EPA's Control of Emissions from Ships

- In March 2010, the Marine Environmental Protection Committee (MEPC) will consider a request to regulate Environmental Control Areas (ECA).
- ECAs would have to comply with more stringent fuel sulfur and engine NO_x limits extending 200 nautical miles around the nation's coastline
- U.S. applied for ECA designation in March 2009
- If approved, ships must use 1,000 ppm fuel sulfur by 2015, and new ships must use advanced emission controls by 2016
- EPA and U.S. Coast Guard will implement and enforce this plan.



Designation Recommendation Considerations



PM_{2.5} Designation Recommendation Considerations

- The area (and state) are currently designated as unclassifiable/attainment.
- The 2006-2008 data from one monitor in the Houston area resulted in a regulatory level above the annual NAAQS.
- These data include periodic and significant particulate contributions that are not controllable by the TCEQ
 - Saharan dust
 - Fires/Dust storms (from Central Mexico, Mexico, and the US).



PM_{2.5} Designation Recommendation Considerations (cont.)

- With exceptional events removed, 2006-2008 data at the Clinton Drive monitor ($14.6 \mu\text{g}/\text{m}^3$) is below the NAAQS.
- Proactive efforts by TCEQ and other stakeholders have resulted in local particulate matter reductions and continue to make local improvements.
- The 2009 data thus far indicate the continued trend in lower PM_{2.5} values at Clinton Drive.
 - Even without excluding any exceptional event days, the PM_{2.5} annual average (January – June) for 2009 is $12.8 \mu\text{g}/\text{m}^3$.
 - The projected 2007-2009 design value (using historical estimates for July – December) is $14.4 \mu\text{g}/\text{m}^3$.
 - The 2009 Clinton data are expected to be available in early February 2009.



PM_{2.5} Designation Recommendation Considerations (cont.)

- The most recent data available would not suggest that redesignation of Harris County in general or the Clinton Drive monitor is warranted based on the 2006-2008 data with exceptional events excluded, current data trends, and on 2009 data thus far collected.
- Resources and efforts can continue to focus on reducing the local particulate emissions to comply with the current and forthcoming federal standards rather than shifting focus to the revision of the State Implementation Plan process.

Comments/Questions



Comments

Send informal comments by close of business

November 23, 2009, to either:

- e-mail, PUBLICCOMMENT-AQD@tceq.state.tx.us
- regular mail or e-mail

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