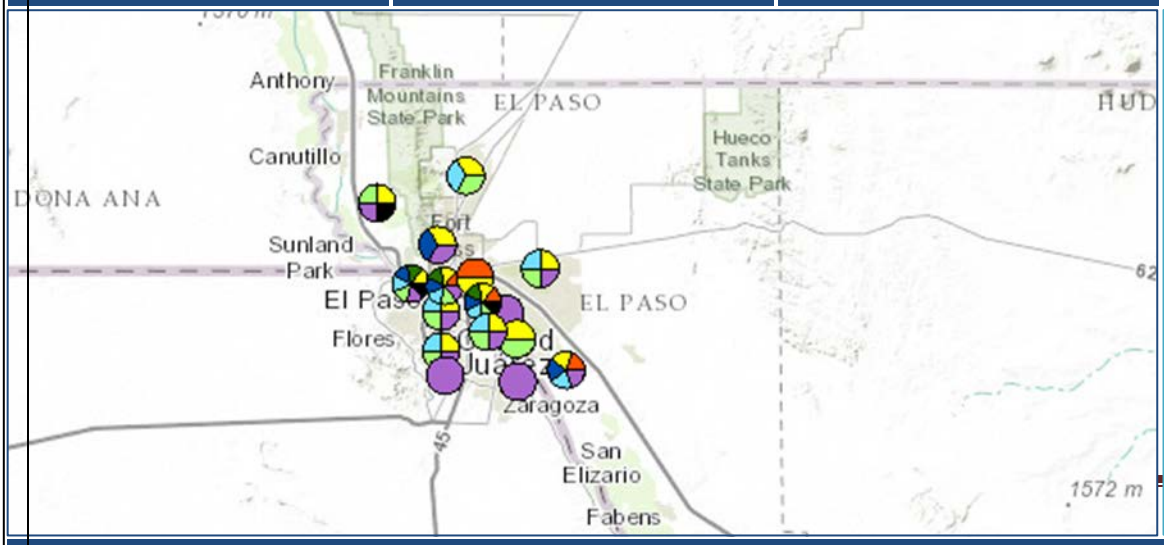
Texas Commission on Environmental Quality

Texas Five-Year Ambient Monitoring Network Assessment

El Paso Area

2015



Executive Summary

The Texas Commission on Environmental Quality (TCEQ) conducted an assessment of the El Paso air monitoring network in advance of a statewide monitoring network assessment in partial fulfilment of requirements under 40 Code of Federal Regulation (CFR) §58.10(d). The TCEQ evaluated the existing network of ambient air monitors measuring ozone, carbon monoxide (CO), oxides of nitrogen (NO_x), sulfur dioxide (SO_2), lead, particulate matter of 10 micrometers or less in diameter (PM_{10}), particulate matter of 2.5 micrometers or less in diameter ($PM_{2.5}$), volatile organic compounds (VOCs), carbonyls, semivolatile organic compounds (SVOCs), and speciated $PM_{2.5}$. Only the monitors in the El Paso area that meet some federal obligation, either through rule or grant commitment, were included in this evaluation. There are additional monitors in El Paso that also monitor air quality, but data from these monitors are not used to meet Federal Clean Air Act (FCAA) obligations.

This evaluation was intended to determine if the current regulatory network continues to meet federal requirements. Any proposed changes to the monitoring network are provided to the United States Environmental Protection Agency (EPA) in the annual monitoring network plan and are not included in this evaluation. A 30-day public comment period is provided for both this five year assessment and the annual monitoring network plan.

The assessment of the El Paso area air monitoring network indicates that the existing network meets federal requirements for evaluating ambient air quality in El Paso and Hudspeth Counties. Monitors are still located in densely populated areas and near areas with the greatest impact(s) from point and international sources of air pollutants.

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Introduction

Since 1970, the EPA has been responsible for establishing and, when necessary, updating national ambient air quality standards (NAAQS) under the FCAA. The EPA delegated responsibility for designing and implementing ambient air quality surveillance networks to determine compliance with these NAAQS to state air pollution control agencies. As monitors were deployed, air quality issues were addressed, and changes in populations and landscapes occurred, it became necessary to re-evaluate the monitoring network's design. In 2006, the EPA finalized a requirement to conduct an assessment of these networks every five years. EPA's final regulation, found at Title 40 CFR §58.10, requires:

> (d) The state, or where applicable local, agency shall perform and submit to the EPA Regional Administrator an assessment of the air quality surveillance system every 5 years to determine, at a minimum, if the network meets the monitoring objectives defined in appendix D to this part, whether new sites are needed, whether existing sites are no longer needed and can be terminated, and whether new technologies are appropriate for incorporation into the ambient air monitoring network. The network assessment must consider the ability of existing and proposed sites to support air quality characterization for areas with relatively high populations of susceptible individuals (e.g., children with asthma), and, for any sites that are being proposed for discontinuance, the effect on data users other than the agency itself, such as nearby states and tribes or health effects studies. The state, or where applicable local, agency must submit a copy of this 5-year assessment, along with a revised annual network plan, to the Regional Administrator. The assessments are due every five years beginning July 1, 2010.

In partial compliance with the 40 CFR §58.10 requirement and to fulfil commitments made to the Far East El Paso Citizens United (FEEPCU) citizen's group in the 2014 annual monitoring network plan, the TCEQ conducted this assessment of the El Paso area[1] monitoring network in advance of the statewide assessment. A full statewide evaluation that complies with the 40 CFR §58.10 requirement will be provided for public comment in May 2015. The assessment was intended to determine whether the existing network of regulatory ambient air quality monitors still meets the required objective in 40 CFR §58 Appendix D. This evaluation assessed whether the El Paso monitoring network continues to meet these objectives. This assessment also evaluated whether individual monitors within this network should be added, moved, or decommissioned to best understand and evaluate air quality given existing resources.

This assessment does not include an in-depth analysis of the monitoring network's compliance with the federal monitoring requirements found in 40 CFR §58. The TCEQ

[1] For the purposes of this assessment, the El Paso area is defined as El Paso and Hudspeth Counties, which contain the El Paso metropolitan statistical area.

provides detailed analysis regarding the 40 CFR §58 requirements and how the network meets these requirements in its annual monitoring network plan. In its January 14, 2015, letter, the EPA approved the TCEQ's 2014 annual monitoring network plan, indicating that the existing El Paso area network met the existing monitoring requirements. An updated analysis will be provided in the TCEQ's 2015 annual monitoring network plan, which will be available for public review and comment in May 2015.

Due to the stated purpose of this assessment, the TCEQ did not include an evaluation of monitors that are operated for purposes other than demonstrating compliance with the NAAQS. The TCEQ uses the data from these monitors for many purposes, and often moves these monitors to address local public health and welfare concerns. Information and data from these state-initiated monitors are available to the public on the TCEQ's Texas Air Monitoring Information System (TAMIS) (http://www.tceq.texas.gov/goto/tamis).

Evaluation Methods

Overview

The TCEQ used multiple techniques in assessing the El Paso area's monitoring network. When available, existing and future point sources were evaluated in conjunction with population density data to determine federal monitoring requirements and geographical monitoring coverage. Regional characteristics such as climate and topography were also considered because of their impact on pollutant transport and dispersion throughout the area, and ozone formation. A monitor-by-monitor analysis of the existing network assessed the monitor's purpose, history, data trends, and value of each monitor.

Evaluation Tools

Anthropogenic Emission Sources

The TCEQ used data from its 2011 National Emissions Inventory and 2013 annual point source emissions inventory to evaluate the relative contributions of anthropogenic sources of each primary pollutant, as well as to evaluate the spatial placement of existing ambient air quality monitors in relation to point sources of emissions. The FCAA requires that states submit an emissions inventory (EI) for ozone precursor emissions every three years. The total inventory of NO_x and VOC emissions for an area is derived from estimates developed for five general categories of emissions sources: point, area, non-road mobile, on-road mobile, and biogenic. In addition, stationary point source emissions data are collected annually from sites that meet the reporting requirements of 30 Texas Administrative Code (TAC) §101.10. More information about the Texas EI is available to the public on the TCEQ's Point Source Emissions Inventory webpage (http://www.tceq.texas.gov/airquality/point-source-ei/psei.html).

The TCEQ also reviewed its database for pending and issued air permits within the El Paso area to evaluate potential geographic trends in the location of new point sources.

Because emissions from existing sources would be included in the EI, this review focused only on the issuance of permitting actions related to the construction of new facilities at new sites from January 1, 2010, to present and excluded any permitting actions related to existing point source sites. Populated areas with a high density of point sources and areas with larger point source emissions were further evaluated to determine if the existing monitoring network was adequately representative of the airshed.

Correlation Data

The TCEQ used the correlation tool made available through the NetAssess application developed by the Lake Michigan Air Directors Consortium (LADCO) to evaluate eight-hour ozone and 24-hour $PM_{2.5}$ monitoring data. The application pulled monitor location and concentration data from the EPA's Air Quality System (AQS) database and used the R statistical package to calculate a Pearson correlation coefficient, average relative difference, and distance between monitors for the January 1, 2011, through December 31, 2013, time period. This tool provides correlation analysis to identify possible redundant monitors. More information about the NetAssess application is available on LADCO's website at http://ladco.github.io/NetAssessApp/.

Evaluation of correlation output is provided in the ozone and $PM_{2.5}$ network evaluation sections in this report. When more than two monitors are evaluated, a figure showing the correlation output is provided. Although the TCEQ's convention is to use site name, the tool only allows for the display of AQS numbers in the output. AQS numbers are provided in Appendix A as a cross-reference. The shape of the ellipses represents the Pearson correlation coefficient between sites. The circular ellipses have the weakest correlation indicating monitors are unique. The flatter, narrower ellipses have a stronger correlation indicating potential monitor redundancies. The color of the ellipse represents the average relative difference between monitors. Purple and red ellipses indicate higher average relative differences of 1 and 0.8, respectively. Lighter yellow and white ellipses indicate lower average relative differences of 0.2 and 0, respectively. The average relative difference indicates if monitors measure pollutant concentrations at levels substantially higher or lower compared to each other. Site pairs with a lower average relative difference are more similar to each other than pairs with a larger difference. The number in each ellipse is the distance in kilometers between the two sites.

The TCEQ used the results of the correlation tool to rate the uniqueness of each monitor's data on a three-point scale. Monitor pairs that were located greater than 5 kilometers (3 miles) apart, weakly correlated (e.g., had a Pearson correlation coefficient of less than 0.6), and had a relative percent difference greater than 0.2 were considered highly unique, not redundant, and therefore, determined to be appropriately located. Medium value monitors were moderately correlated with nearby monitors (e.g., had a Pearson correlation coefficient of between 0.6 and 0.9) and had a relative percent difference between 0.1 and 0.2. Low value monitors were highly correlated (e.g., had a Pearson correlation coefficient of greater than 0.9) with a relative percent difference of less than 0.1 and were considered fully redundant with nearby monitors.

Population Data

A review of population trends was conducted to ensure that monitors with the objective of measuring pollutant concentrations in populated areas were still properly sited. The TCEQ predominantly relied on population counts from the most recent decennial census and 2013 population estimates from the United States Census Bureau in this assessment.

Evaluating future population projections was also necessary because ozone, CO, NO_2, SO_2, $PM_{2.5}$, and PM_{10} monitoring requirements are at least partially based on metropolitan statistical area (MSA) population. The TCEQ evaluated population projection data available from the Texas State Data Center to evaluate potential future monitoring needs based on changing populations. The Texas State Data Center uses three projection scenarios to forecast populations. According to the Texas State Data Center, Texas experienced an uncharacteristically high urban growth rate from 2000 to 2010. One population projection scenario assumed that this growth rate would continue through 2020. The other scenarios assumed half of the 2000 to 2010 growth rate and a zero migration growth. The TCEQ conservatively used the scenario with the highest growth rate to determine if an area's population in 2020 were likely to trigger additional monitoring requirements in the next five years. More information about these state population projections is available online at http://txsdc.utsa.edu/.

Monitor History and Data

The TCEQ relied on TAMIS for evaluating historical changes to the monitoring network, objectives, and locations. All monitoring information discussed in this evaluation is available to the public online at http://www.tceq.texas.gov/goto/tamis. The TCEQ verified monitoring network information against the information in the EPA's AQS to ensure consistency.

Monitor Value Calculation

At the completion of each pollutant network evaluation, the TCEQ scored each existing monitor on a three-point scale (high, medium, and low) based on the value the monitor provides to the network. The monitor's overall value was calculated by considering following metrics.

- Regulatory value of the monitor was assessed based on federal monitoring requirements. High value monitors met an explicit federal requirement, medium value monitors supported the number of monitors required in an area, and low value monitors supported monitoring efforts but did not satisfy an explicit requirement.
- The value of the data was assessed by evaluating the importance of the data to the network. Factors considered in this evaluation included the proximity of design values to the NAAQS, representativeness of a particular area (such as sensitive populations or incoming background), or historical trends. High value monitors provided data critical to the understanding of air quality in an area. Medium value monitors supported other area monitors by providing meaningful data, but were not essential to the network. Low value monitors

provided data of minimal use to the evaluation of air quality (such as monitoring for a specific point source pollutant in an area without that point source).

- Monitor uniqueness was scored based on monitor-by-monitor correlation, as discussed in the correlation section above. The NetAssess application only provided correlation data for ozone and $PM_{2.5}$; therefore, other pollutant monitors were not rated according to this metric. High value monitors provided unique data that was only marginally correlated with nearby monitors. Data from medium value monitors indicated some correlation with nearby monitors. Data from low value monitors were fully redundant with nearby monitors.
- Source impact value was assessed based on the monitor's value in evaluating the impacts of pollutant sources to the area's air quality. High value monitors provided important data on the impact of sources, such as a monitor downwind of a point source or a monitor placed to evaluate incoming transport of area sources. Medium value monitors helped provide information about source contribution but were not specifically sited to measure source impacts, such as speciation monitors providing data on dust composition. Low value monitors were minimally impacted by sources.
- Monitor appropriateness was assessed by comparing the intended monitoring objective to existing conditions near the location. A table detailing summary information on the monitor name, location, objective, and monitoring scale as required in 40 CFR §58, Appendix D, is provided in Appendix A. High value monitors continued to meet their intended objective and monitoring scale. Medium value monitors had some indication that the area may be in a transition, such as a neighborhood that was slowly changing from residential homes to commercial/industrial facilities. Low value monitors no longer met their intended objective or monitoring scale.
- Historical value was assessed based on the number of years the parameter had been monitored at the site. High value monitors have provided more than 16 years of data. Medium value monitors have provided six to fifteen years of data. Low value monitors have provided five or less years of data.

A summary of each monitor's value assessment is provided in Appendix C. Consistent with the purpose of this document, low monitor values do not necessarily mean that the monitor will be decommissioned. The TCEQ will continue to use the annual monitoring network plan to recommend any changes to the monitoring network.

Monitoring Technology Review

The TCEQ continually evaluates advances in ambient air monitoring technology. However, because regulatory monitors used for determination of compliance with the NAAQS are required to be a federal reference method (FRM), federal equivalent method (FEM), or approved regional method, a full review of available technology was not detailed in this assessment. All of the TCEQ's regulatory monitors comply with existing monitoring method requirements and, in the vast majority of cases, the monitors

provide consistent data return of high quality. When TCEQ encounters mechanical or logistical problems, they are addressed promptly to restore data collection. The TCEQ will continue to evaluate newer technologies as they become available and will propose any method changes through the annual monitoring network plan process.

Regional Characteristics

Terrain

The El Paso area lies in the northwestern portion of the Trans-Pecos area of Texas and can be described by topographic transitions from mountains to inter-mountain plains. The Franklin Mountains (southern edge of the Rocky Mountains) extend into the City of El Paso from the north, dividing west El Paso in the Upper Valley and east El Paso in the Lower Valley. The Lower Valley extends to the Hueco and Diablo Mountains on the eastern edge of Hudspeth County. The Rio Grande River basin forms the southern border of the area. The region ranges from approximately 3,800 to 4,000 feet in elevation, with individual mountains reaching elevations of over 7,000 feet. A topographic map of the region is provided in Figure 1, along with wind roses showing annual average wind speed and direction from meteorological sensors at ambient air monitoring stations. The length of each wind rose bar corresponds to the frequency of the wind coming from the indicated direction. The wind roses from monitors closest to the international border highlight the impact of the Rio Grande River basin in the dominant northwest/southeast wind pattern. Wind roses from sites further removed from the basin, such as Ojo De Agua and Skyline Park, highlight differing wind patterns due to the influence of the Franklin Mountains.

Regional terrain is important when considering typical wind patterns in this area. High winds can occur near the Skyline Park monitor due to funneling effects of the Franklin Mountains. The most pronounced terrain effects are seen in the Rio Grande River basin, where yearlong wind patterns are dominated by a west-northwest to southeast flow due to channeling in the pass between the Franklin Mountains to the north and Juarez Mountains to the south. The El Paso area shares this river basin and its airshed with Ciudad Juarez, as shown in Figure 1. More information on modeling of international emissions on El Paso area air quality can be found in Texas's State Implementation Plan (SIP) revision and FCAA Section 179B attainment demonstration for El Paso (69 FR 32450). Regional terrain characteristics impact how pollutants are transported into and out of areas, and how pollutants are dispersed throughout an area.

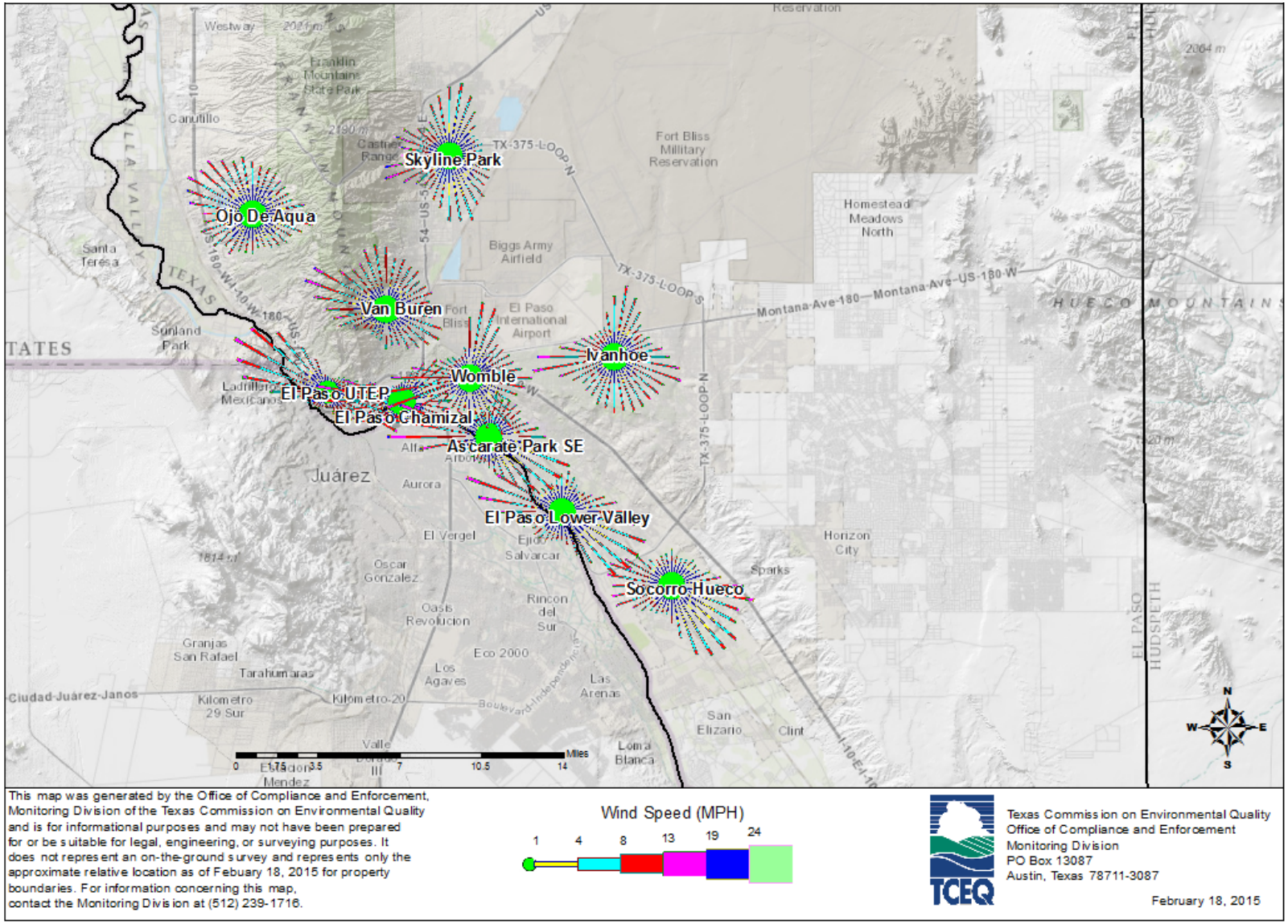


Figure 1: El Paso Area Wind Roses

Climate

The El Paso area is part of the Chihuahuan Desert, which extends from the Mexican state of Chihuahua into Arizona, New Mexico, and far West Texas. Average daily maximum temperatures range from 66 to 95 °F (19 to 35 °C). Ambient temperatures play a key role in regional air quality, as nighttime cooling, particularly during winter months, can form intense temperature inversions that trap pollutants emitted in the Rio Grande River basin area (El Paso SIP Revision). In addition, the low humidity and limited rainfall in this area (an average of 8.53 inches of rain per year, though highly variable) paired with the dried up lakebeds and playas composed of loose, fine soils of this scarcely vegetated desert make the region prone to dust storms during natural high wind events. More detail on the impact of these high wind events can be found in the TCEQ's *El Paso 2010-2012 Particulate Matter Exceptional Events Demonstration*. The El Paso climate makes the area more susceptible to increased pollutant concentrations during regional dust storms and temperature inversions. The high temperatures and lengthy sunny weather could also increase the number of days ozone could be formed, as evidenced by El Paso's year-round ozone season.

Population

According to the 2010 United States Census, the El Paso MSA had a population of 804,123 people. The El Paso area is smaller and downwind of Ciudad Juarez, Mexico, which had a 2010 population of 1,422,863. The 2013 U.S. Census Bureau population estimate indicates a population of 831,036 people, which is a 3.3% increase in the last three years. Figure 2 indicates the regional population is condensed in central El Paso and areas west of State Highway 375. The 2010 United States Census estimated the Fort Bliss military installation population at 8,591 people. In 2010, Hudspeth County was completely rural, with a total population of 3,476 people.

Based on 2013 population estimates, the El Paso area is required to have three ozone, one NO_x, one lead, three $PM_{2.5}$, and between four and eight PM_{10} monitors. An evaluation of the placement of these and supplemental (or special purpose) monitors is provided in the pollutant-specific reviews below.

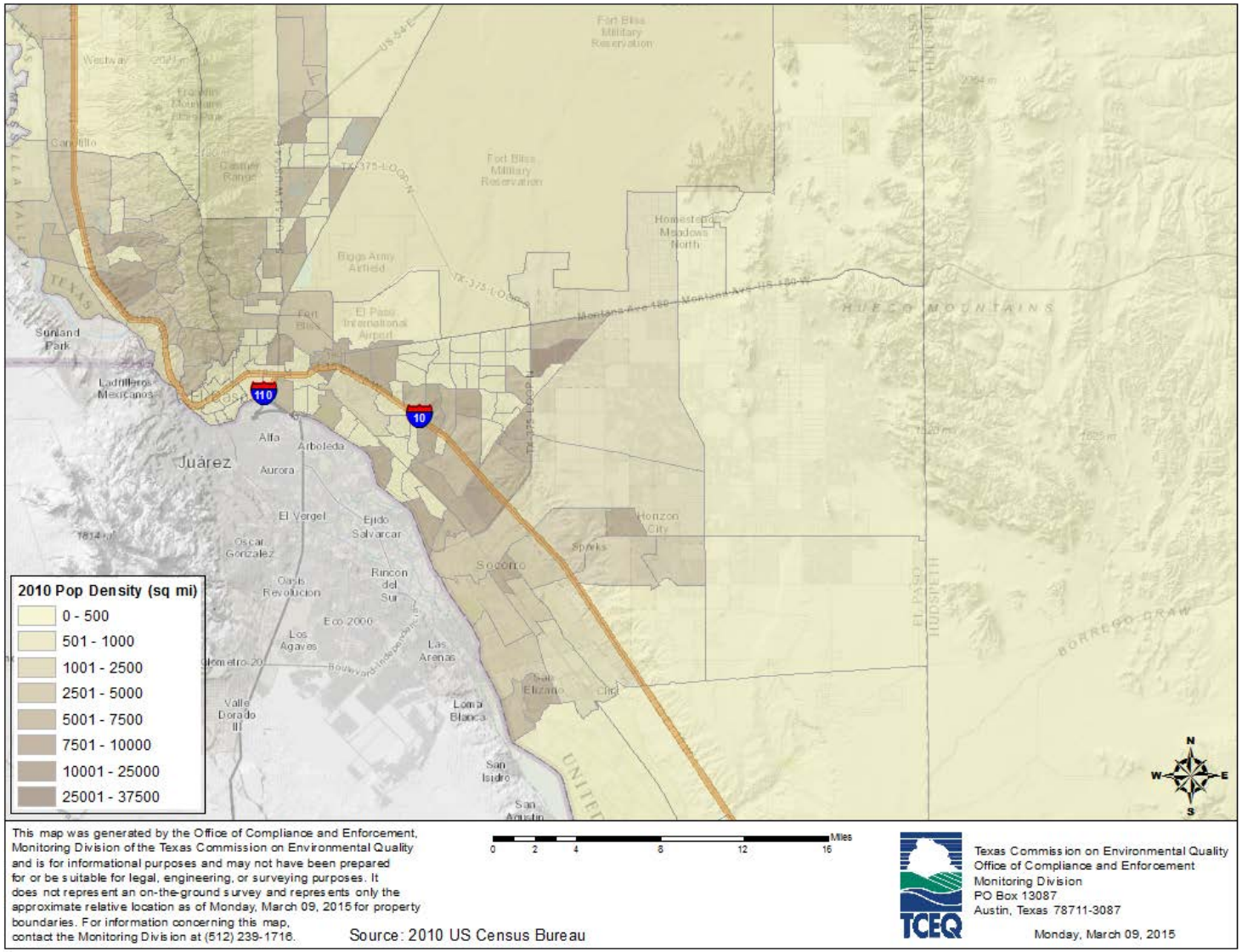


Figure 2: El Paso Area Population Density

Pollutant Sources

Anthropogenic Sources

Anthropogenic source review is important for assessing source based federal monitoring requirements and the need for monitors in areas likely impacted by large point sources. An overview of the reported emissions used in this assessment is provided in Table 1. The majority of emissions in the El Paso area were reported from El Paso County. As expected, on-road mobile sources emitted the most CO and NO_x out of the sectors represented in the EI. Area sources contributed the most $PM_{2.5}$, PM_{10}, and VOCs. Point sources, closely followed by area sources, emitted the most SO_2. Finally, lead emissions remained low for all sources in the El Paso area.

Evaluation review of pending and issued air permits within the El Paso area revealed the authorization of only seven new point source sites in El Paso County, as detailed in Table 2. These new facilities are evenly distributed from northwest of El Paso (within three miles of the Ojo De Agua monitoring site), central El Paso, and to the east of El Paso (within approximately five miles of State Highway 375 from north of State Highway 62 to south of Farm-to-Market Road 1281). This review of permitting actions did not reveal any dense clusters of new sources that would necessitate the addition of air quality monitors. The TCEQ will continue to evaluate the need for ambient air quality monitors as changes in industrial activity and populations occur.

Table 1: El Paso Area Emissions Inventory of Criteria Air Pollutants and Volatile Organic Compounds

Pollutant	Area Source (2011)	On-Road Mobile (2011)	Non-Road Mobile (2011)	Point Source (2013)
Carbon Monoxide (El Paso)	2,008.51	60,640.42	17,953.16	1,931.39
Carbon Monoxide (Hudspeth)	132.92	3,037.23	555.92	125.05
Oxides of Nitrogen (El Paso)	1,139.89	11,740.52	3,185.11	2,767.20
Oxides of Nitrogen (Hudspeth)	10.20	1,582.91	1,001.42	483.45
Sulfur Dioxide (El Paso)	199.53	45.89	38.68	284.83
Sulfur Dioxide (Hudspeth)	2.33	2.97	10.78	6.04
Lead (El Paso)	0.00	0.00	0.22	0.81
Lead (Hudspeth)	0.00	0.00	0.01	0.00
$PM_{2.5}$ (El Paso)	2,128.14	369.38	212.13	290.83
$PM_{2.5}$ (Hudspeth)	276.71	48.64	40.28	11.73
PM_{10} (El Paso)	15,548.51	495.77	221.13	348.37
PM_{10} (Hudspeth)	2,032.55	53.76	41.68	11.73
Volatile Organic Compounds (El Paso)	7,623.70	4,459.98	1,311.42	1,008.00
Volatile Organic Compounds (Hudspeth)	100.80	126.43	135.05	10.44

Notes:

The El Paso Metropolitan Statistical Area is comprised of El Paso and Hudspeth Counties. The county where the emissions were reported is noted in parentheses.

Point source data is for 2013 and includes emissions from routine operations, emissions events, and scheduled maintenance/start-up/shutdown emissions. All non-point category data is for 2011.

All emissions are presented in tons per year (tpy)

$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

PM_{10} – particulate matter of 10 micrometers or less in diameter

Table 2: New Permitted Sources in the El Paso Area, 2010-2014

Customer Identification Number (CN)	Company	Reference Number (RN)	Address	Project Completion Date
CN603500554	Carefusion 213 LLC	RN102195153	1550 Northwestern Dr, El Paso	05/27/2010
CN603828427	Air System Components Inc	RN102316981	12504 Weaver Rd, El Paso	12/19/2011
CN601503253	Cardinal Health 200 LLC	RN102958253	1 Butterfield Trail Blvd, El Paso	09/17/2013
CN603403973	CEMEX Construction Materials South LLC	RN104752621	2050 Cherrington St, El Paso	01/11/2011
CN603774274	AER Electronics Inc	RN106030349	1790 Commerce Park Dr, El Paso	09/28/2012
CN600352819	El Paso Electric Company	RN106392624	Approximately 0.7 miles north of the intersection of United States Highway 62/180 and United States Highway 659/Zaragosa Road, El Paso	10/02/2014
CN600495840	The Humane Society of El Paso, Inc	RN106874878	4991 Fred Wilson Ave, El Paso	11/15/2013

Natural Sources

Blowing dust generated by regional high wind events outside of the El Paso area has historically had a heavy impact on $PM_{2.5}$ and PM_{10} levels in the El Paso area. The overall dust storm frequency and intensity is highly dependent on weather conditions and soil moisture content, but daily average concentrations can reach as high as 130 micrograms per cubic meter ($\mu g/m^3$) for $PM_{2.5}$ and 249 $\mu g/m^3$ PM_{10}. These dust storms are most commonly caused by regional high winds associated with large low pressure systems.

Less frequently, regional blowing dust can be transported into the El Paso area from the White Sands area in New Mexico, eastern New Mexico, and the Texas Panhandle behind strong cold fronts. These large regional-scale dust storms occur mainly in the spring, but can occur from late October through the winter and spring into early June. On a local scale, high winds from nearby thunderstorms can generate dust that is transported into the El Paso area. These local-scale thunderstorm high wind dust events are most common in June and July.

Long-range transport from other types of events also impact particulate matter in the El Paso area, including smoke from forest fires in the Rocky Mountains and haze and smoke accumulated from man-made emissions in the United States and Mexico (also known as continental haze). These smoke and haze transport events affect $PM_{2.5}$ levels

more than PM_{10} levels because of the inherent small particle sizes, but are relatively rare overall.

Gill et al. (2007) investigated dust source hot spots for multiple dust storm events from 2002 to 2006. Their research found that a huge playa complex within the Lake Palomas region of northern Chihuahua, Mexico, frequently contributed concentrated plumes of particulate matter that spread into the El Paso/Ciudad Juarez area. Surface sediment particle size analyses from these playas revealed very fine clays and silts with grain sizes in the $PM_{2.5}$ and PM_{10} ranges, including particles as small as 0.2 micrometers.

Regional Air Quality

Criteria Pollutants

The FCAA requires the EPA to set air quality standards to protect both public health and public welfare (e.g., visibility, crops, and vegetation). As of January 2015, the El Paso area is designated attainment for current ozone, lead, CO, NO_2, and $PM_{2.5}$ NAAQS and the 24-hour and annual SO_2 NAAQS. The City of El Paso is in moderate nonattainment of the PM_{10} NAAQS. The Governor has recommended designating El Paso in attainment of the one-hour SO_2 NAAQS, but a final action has not been taken by the EPA. Recent and historical design values for each of the criteria pollutants are provided in the Monitoring Network section below.

Current Nonattainment Designations

On November 15, 1990, the FCAA amendments specified that all former Particulate Matter Group I areas, including El Paso, were to be designated nonattainment. In November 1991, Texas adopted a PM_{10} attainment demonstration for El Paso. This attainment demonstration included air quality and meteorological analyses, including data from a special December 1990 study that demonstrated the international scope of the air quality problem in El Paso. Section 179B of the FCAA contains special provisions for nonattainment areas like El Paso that are affected by emissions coming from outside the United States. Modeling of United States emissions indicated that El Paso would have attained the PM_{10} NAAQS in 1991 and by the 1994 attainment deadline, if not for emissions transported from Mexico. Texas also adopted control measures to minimize impacts from United States sources, including fugitive dust controls. The EPA approved the El Paso PM_{10} attainment demonstration on January 18, 1994 (59 FR 2532).

On January 25, 2012, the TCEQ adopted a PM_{10} SIP revision that updated the particulate matter controls for streets and alleys, and incorporated a revised Memorandum of Agreement between the TCEQ and the City of El Paso based on those updated controls. More information about the SIP to improve air quality in the El Paso area is available on the TCEQ's webpage (http://www.tceq.texas.gov/airquality/sip/elp/sip-elp).

Prior Nonattainment Designations

Carbon Monoxide

A portion of El Paso was designated moderate nonattainment for CO upon enactment of the 1990 FCAA amendments. A CO attainment demonstration SIP revision was adopted by the TCEQ's predecessor agency in September 1992 to address CO nonattainment in El Paso. This SIP revision included a comprehensive 1990 base year inventory, an oxygenated fuel program effective throughout El Paso County, new source review provisions for major CO sources, and a commitment to make corrections to an existing vehicle inspection and maintenance (I/M) program.

In January 2006, the TCEQ submitted a CO Redesignation Request and Maintenance Plan SIP Revision for El Paso to the EPA. El Paso was eligible for redesignation to

attainment of the eight-hour CO NAAQS because there had been no monitored violations of the standard since 2001. The EPA published a direct final approval on January 23, 2007. However, before the comment period closed, the EPA received adverse comments and withdrew its final approval on March 26, 2007.

On January 30, 2008, the TCEQ adopted a revision to the SIP modifying the existing maintenance plan for CO in El Paso. This revised maintenance plan replaced the maintenance plan submitted in January 2006, amending the previously submitted CO redesignation request. The EPA proposed approval of the redesignation request and maintenance plan and the associated motor vehicle emissions budget in the *Federal Register* (73 FR 45162) on August 4, 2008, and it became effective on October 3, 2008.

Ozone

One-Hour Ozone Standard

In 1997, the one-hour ozone standard was replaced by the more protective eight-hour ozone standard. The one-hour standard has been revoked in all areas, although some former one-hour ozone nonattainment areas have continuing obligations to comply with the anti-backsliding requirements described in 40 CFR 51.905(a).

As a result of the 1990 FCAA amendments, El Paso County was designated nonattainment of the one-hour ozone NAAQS of 0.12 parts per million (ppm). El Paso County was classified as a serious nonattainment area with an attainment deadline of November 15, 1999. Plans to reduce emissions of VOCs by 15% in El Paso County were submitted in 1993 and 1994.

In September 1994, the TCEQ's predecessor agency adopted a demonstration for the El Paso area that included modeling showing that El Paso could attain the NAAQS with the planned 15% reduction in emissions from the United States side of the border alone. In December 2002, the TCEQ adopted changes to the El Paso vehicle I/M program to make onboard diagnostic testing a contingency measure. This action was based on the El Paso area having experienced five years with no monitored violations of the ozone standard.

1997 Eight-Hour Ozone Standard (1997 to Present)

On April 15, 2004, the EPA designated El Paso County attainment (effective June 15, 2004) for the 1997 eight-hour ozone NAAQS of 0.08 ppm. El Paso County monitors at that time showed attainment of both the one-hour and eight-hour ozone NAAQS. The EPA's Phase I Implementation Rule for the eight-hour ozone standard directed that areas designated nonattainment for the one-hour ozone standard but attainment for the eight-hour ozone standard submit a maintenance plan for the 1997 eight-hour ozone standard by June 15, 2007. The TCEQ submitted this maintenance plan to the EPA on January 20, 2006. On January 15, 2009, the EPA proposed approval of the El Paso ozone maintenance SIP revision (74 FR 2387). The EPA did not receive any adverse comments regarding the maintenance plan approval and the plan became effective on March 16, 2009.

2008 Eight-Hour Ozone Standard (2008 to Present)

On March 10, 2009, the Governor recommended to the EPA that El Paso County be designated nonattainment for the 2008 ozone standard. In September 2009, the EPA announced it would reconsider the 2008 NAAQS. On January 19, 2010, the EPA proposed to lower the primary ozone standard to a range of 0.060 to 0.070 ppm and proposed a separate secondary standard based on cumulative seasonal average ozone concentrations. On September 2, 2011, President Obama announced that he had requested the EPA withdraw the proposed reconsidered ozone standard.

In a memo dated September 22, 2011, from EPA Assistant Administrator Gina McCarthy, the EPA announced that it would proceed with initial area designations under the 2008 eight-hour ozone standard, starting with the recommendations states made in 2009 and updating them with the most current, certified air quality data (2008 through 2010). On May 21, 2012, the EPA published final designations for the 2008 eight-hour ozone standard in the *Federal Register* (77 FR 30088). The updated air quality data indicated that air quality had improved and that a nonattainment designation was no longer appropriate. El Paso County was designated attainment/unclassifiable under the 2008 eight-hour ozone NAAQS, effective July 20, 2012.

Air Toxics

The TCEQ develops screening levels that are set to protect human health and welfare, termed air monitoring comparison values (AMCVs), to evaluate monitored concentrations of ambient pollutants. AMCVs are used by the TCEQ to determine if there is a potential concern, which would trigger a more in-depth review and focus agency resources, such as in areas on the Air Pollutant Watch List (APWL). The APWL is the TCEQ's program to address areas in Texas where monitoring data show persistent, elevated concentrations of air toxics. The TCEQ uses the APWL process to focus its resources, notify the public, engage stakeholders, and develop strategic actions to reduce emissions.

Over the past five years, in TCEQ Region 6, El Paso, exposure to all measured VOC, SVOC, $PM_{2.5}$ metals, and carbonyl concentrations would not be expected to cause adverse health effects or odorous conditions.

Monitoring Network

Overview

This section details the history and current evaluation of air monitors in Texas. Each ambient air pollutant evaluated differs in its emission source, fate, and transport in the environment. Therefore, the evaluation of each pollutant or pollutant class, in the case of air toxics, was conducted independently. In each evaluation, pollutant sources, regional characteristics such as climate and topography, population density, monitoring objective, and existing federal monitoring requirements were considered. A table detailing summary information on the monitor name, location, objective, and monitoring scale is provided in Appendix A.

Ozone

Sources

Ground-level ozone is not emitted directly into the air, but is created by chemical reactions between NO_x and VOCs in the presence of sunlight. Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents are some of the major sources of NO_x and VOCs. In addition, biogenic sources (living organisms or biological processes) also release VOCs that can contribute to ground-level ozone.

Network History

There are six ozone monitors in the El Paso area as listed in Appendix A. El Paso Chamizal and El Paso UTEP were deployed in 1998 and were the first ozone monitors in the area. The El Paso Chamizal ozone monitor was deployed in central El Paso to evaluate ambient concentrations in populated areas likely impacted by maximum ozone precursor concentrations. Ozone monitors at El Paso UTEP and Ascarate Park SE, deployed soon after, were intended to provide ozone concentration data upwind and downwind of the City of El Paso core, depending on the wind flow. The Socorro Hueco ozone monitor was added in 1999 to provide data on background ozone concentrations in a populated area further removed from the city. Skyline Park and Ivanhoe ozone monitors were added in 2000 to improve spatial coverage in the populated area to the north and east of the downtown city core.

Design Values and Trends

Eight-hour ozone design values in the El Paso area have continually declined since 2002 as shown in Table 3 and Figure 3. At 0.072 ppm, the area's 2013 design value is just below the current eight-hour NAAQS of 0.075 ppm, and ambient concentrations decreased 10% overall from 2000 to 2013. The highest ozone concentrations continue to be measured by the El Paso UTEP and El Paso Chamizal monitors, which are located closest to the city's urban core and the international border. The lowest ozone concentrations have been recorded on the east side of the City of El Paso's urban core at the Socorro Hueco and Ivanhoe monitors.

Table 3: Eight-Hour Ozone Design Values in the El Paso Area

Site	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
El Paso Area	0.080	0.076	0.081	0.079	0.078	0.076	0.078	0.079	0.078	0.075	0.071	0.071	0.072	0.072
Ivanhoe	*	0.071	0.075	0.072	0.074	0.072	0.075	0.077	0.077	0.075	0.069	0.065	0.061	*
El Paso UTEP	0.073	0.075	0.079	0.078	0.075	0.076	0.078	0.079	0.078	0.072	0.071	0.069	0.072	0.072
El Paso Chamizal	0.080	0.076	0.081	0.079	0.078	0.072	0.073	0.074	0.075	0.071	0.070	0.068	0.070	0.069
Ascarate Park SE	*	*	0.081	0.078	0.078	0.076	0.077	0.075	0.072	0.069	0.069	0.067	0.068	0.064
Socorro Hueco	*	*	0.074	0.070	0.071	0.073	0.076	0.076	0.072	0.071	0.068	0.066	*	*
Skyline Park	*	*	0.076	0.076	0.076	0.074	0.075	0.074	0.072	0.072	0.071	0.071	0.069	0.068

All reported values in parts per million.

*Design values are not available for these years.

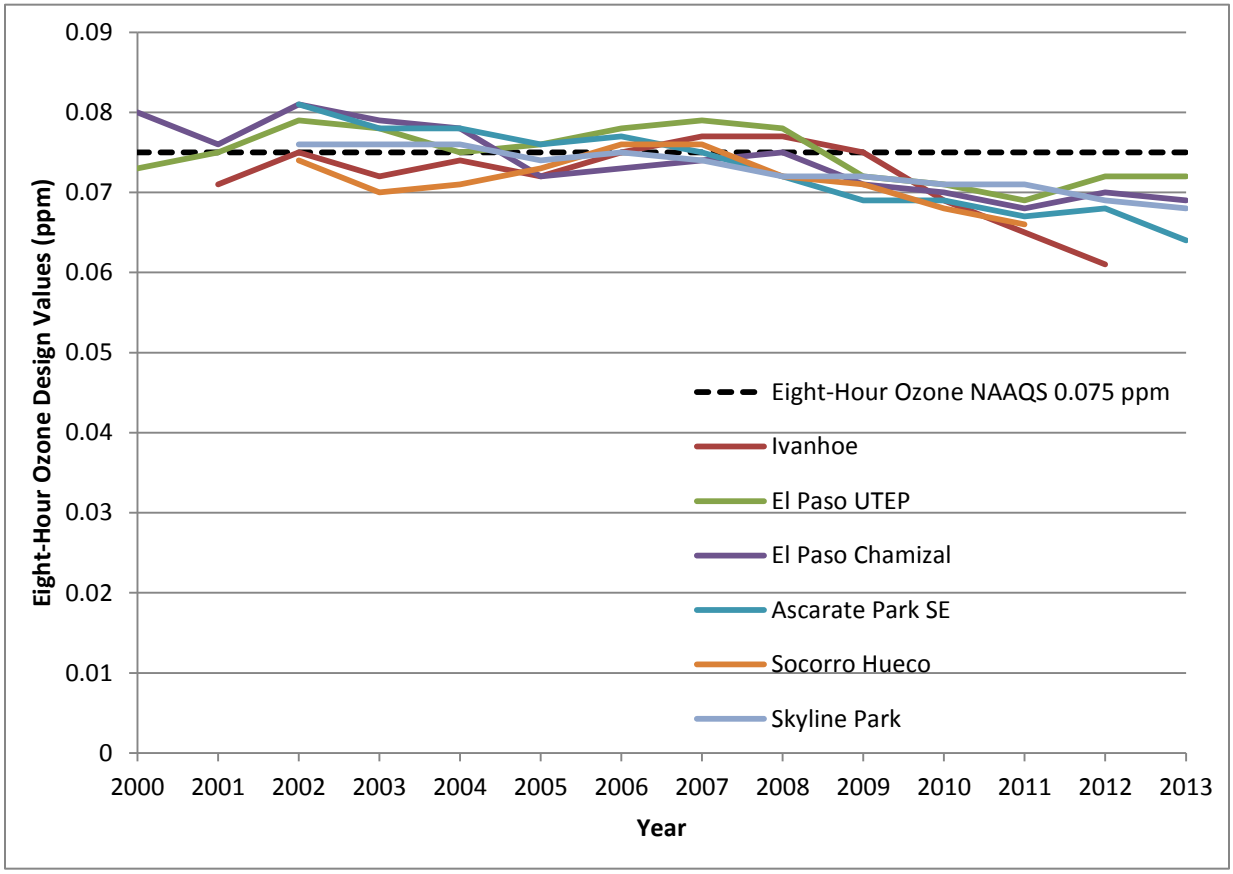


Figure 3: Eight-Hour Ozone Design Value Trends in the El Paso Area

Network Evaluation

Two monitoring requirements currently apply to the El Paso area for ozone. Title 40 CFR §58, Appendix D, Section 3 requires one ozone monitor at the National Core (NCore) site in El Paso and Section 4.1 requires two ozone monitors due to population and the 2013 design value. The ozone monitors at El Paso UTEP and El Paso Chamizal are meeting these requirements and are considered of high value.

Peak ozone concentrations have continued to be measured in the City of El Paso's urban core and near the international border. As shown by the design value trends in Figure 3, the El Paso UTEP monitor continues to have the highest ozone concentrations in the El Paso area. The greatest reductions in ozone concentrations have been noted at the Ivanhoe monitor (23% decrease since 2002) and the Ascarate Park SE monitor (19% decrease since 2002). These two monitors have also measured the lowest ozone concentrations in the area. This trend is consistent with the information provided in the TCEQ's SIP revision, which attributes much of the El Paso area ozone to international transport from the Juarez area. Therefore, given current and historical ozone concentrations, prevailing winds, and increased population in these areas, the ozone monitor placement along and near the international border continues to be appropriate. All of the six active ozone monitors in the El Paso area are considered of high value.

These monitors cover multiple monitoring objectives including measuring maximum concentrations and upwind/downwind concentrations in populated locations. The monitors will be retained in their current positions.

Correlation Analysis

Figure 4 shows the correlation, relative difference, and distance between the El Paso area ozone sites. Sites are identified by AQS numbers, which can be referenced in Appendix A.

The closest ozone correlations are between El Paso Chamizal (481410044) and El Paso UTEP (481410037). The two sites are 4 kilometers apart. Even though these sites are spatially close together, they are both required under the current PAMS requirements. They also provide spatial ozone gradient information for the area.

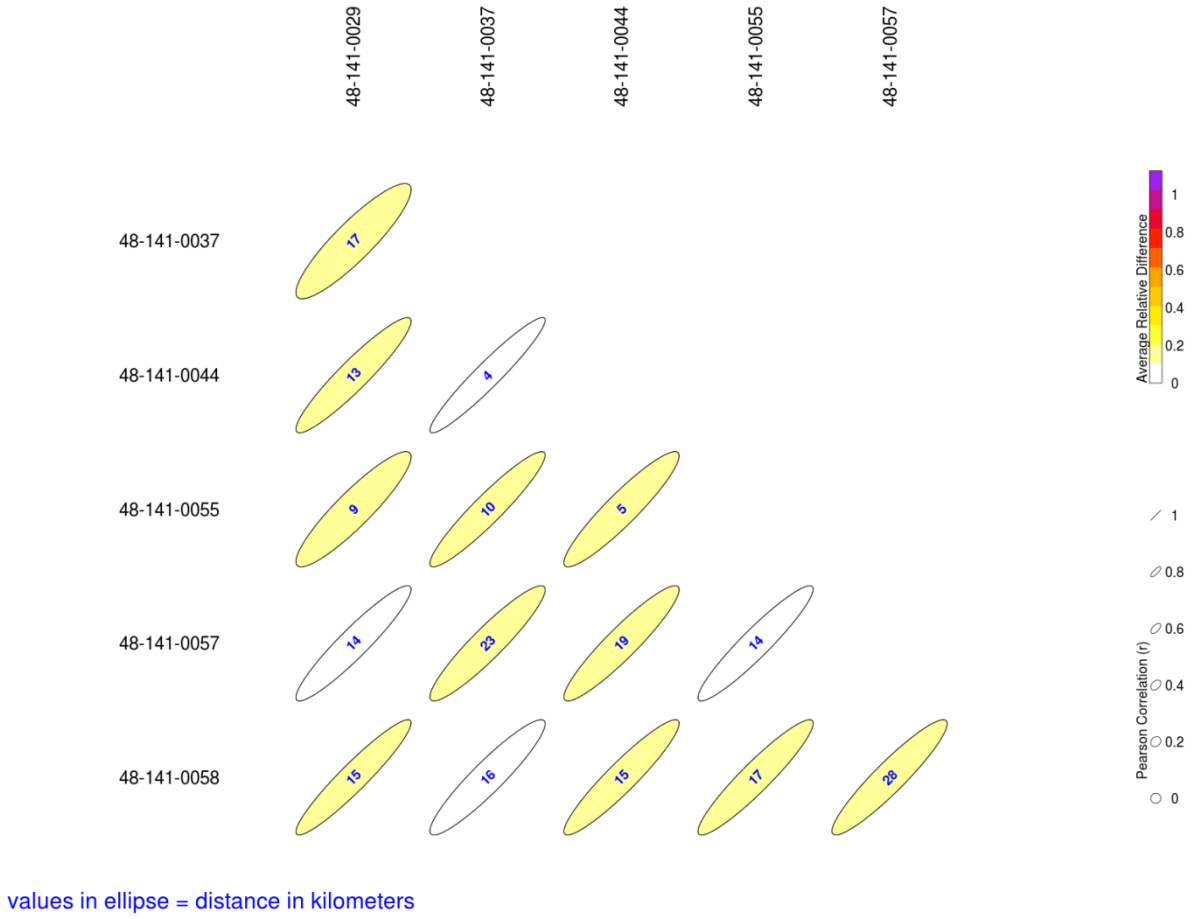


Figure 4: Eight-Hour Daily Maximum Ozone Concentration Correlations in the El Paso Area, 2011-2013

Carbon Monoxide

Sources

CO is a colorless, odorless gas formed by the incomplete reaction of air with fuel. CO pollution occurs primarily from emissions produced by fossil fuel powered engines, including motor vehicles and non-road engines and vehicles (such as construction equipment and boats). Higher CO levels generally occur in areas with heavy traffic congestion such as downtown, at border crossings, and near or on major highways. Other CO emission sources specific to the El Paso area include industrial processes, residential wood burning, residential trash burning, and natural sources. Figure 5 shows point sources reporting emissions in 2013, as well as urbanized areas and CO monitor locations in the El Paso area.

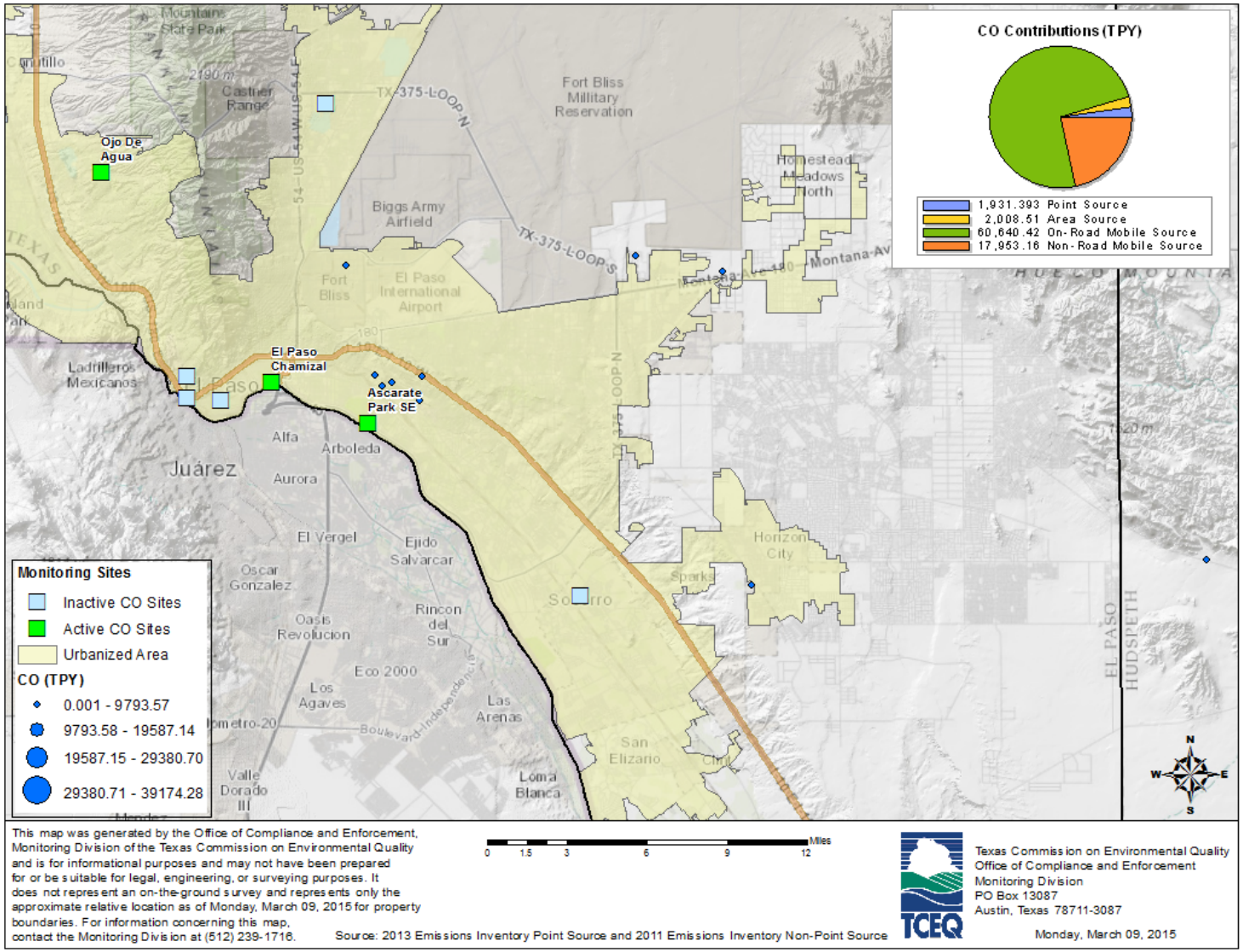


Figure 5: El Paso Area Carbon Monoxide Monitors and Point Sources

Network History

There are three CO monitors in the El Paso area as listed in Appendix A. The TCEQ began monitoring CO at El Paso UTEP in 1998 to evaluate ambient concentrations in the urban El Paso area. The Ascarate Park SE CO monitor was deployed the following year because modeling projected the highest CO concentrations could occur in the area. A CO monitor was added at Skyline Park in 2000 to monitor CO concentrations in urban neighborhoods further from downtown El Paso.

In 2010, a high sensitivity CO monitor was placed at El Paso Chamizal as part of the Photochemical Assessment Monitoring Station (PAMS) network. Title 40 CFR §58, Appendix D, Section 5, requires that Type 2 sites be established to monitor the magnitude and type of precursor emissions in an urban area where maximum precursor emissions are expected. El Paso Chamizal is the only Type 2 PAMS site in the El Paso area and also serves as a federally required NCore site.

The CO monitors at the Socorro Hueco and Sun Metro sites were decommissioned in 2012 because the monitors were operated beyond minimum requirements and maintained design values well below the one-hour of 35 ppm and eight-hour of 9 ppm CO NAAQS.

In the 2013 annual monitoring network plan, the TCEQ proposed decommissioning several CO monitors operating beyond minimum requirements. Since their installation, the CO monitors at Skyline Park and El Paso UTEP have maintained design values well below the one-hour and eight-hour CO NAAQS. As a result, these two CO monitors were decommissioned late in 2014.

In 2013, the Tillman monitor property was sold, and the monitors were relocated to Ojo De Agua. The Ojo De Agua CO monitor provides data that is representative of populated residential areas in Northwest El Paso. Design values are not yet available for this monitor.

Design Values and Trends

The El Paso area has an extensive CO monitoring history due to previous federal monitoring requirements and the previous nonattainment status. Most of the high CO episodes measured in the El Paso area have occurred at night in conjunction with light winds, cold temperatures, and clear or partly cloudy skies. With these conditions, atmospheric mixing and transport is very limited and pollutants emitted near ground level are quickly accumulated in a shallow layer adjacent to the ground. The greatest frequency of inversion episodes occurs in November and December, with occasional episodes in October and January. No exceedances of the CO NAAQS have been recorded from April through August.

Figure 5 illustrates seasonal CO concentration trends from the El Paso Chamizal monitor in downtown El Paso from 2010 to 2014.

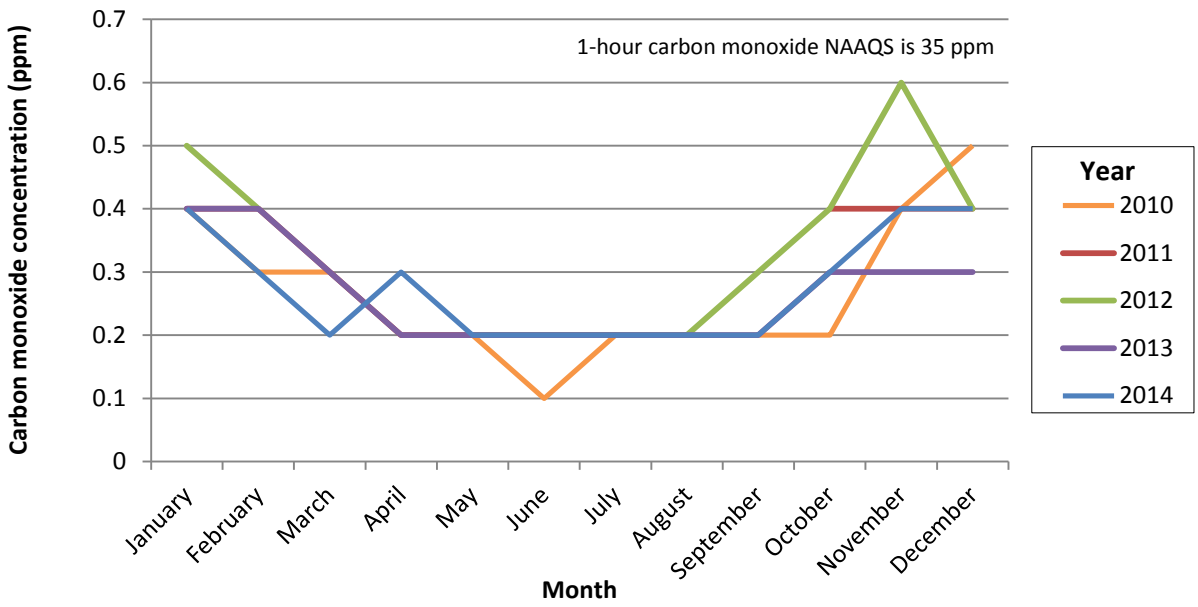


Figure 6: Monthly Carbon Monoxide Averages at El Paso Chamizal, 2010-2014

El Paso area one-hour and eight-hour CO design values are shown in Figure 7 and Figure 8, respectively. As shown in the figures, design values at the El Paso Chamizal and Ascarate Park SE CO monitors have remained nearly identical since 2003. These two monitors are located only 3.34 miles apart, and data from both sites have remained well below the NAAQS of 35 ppm.

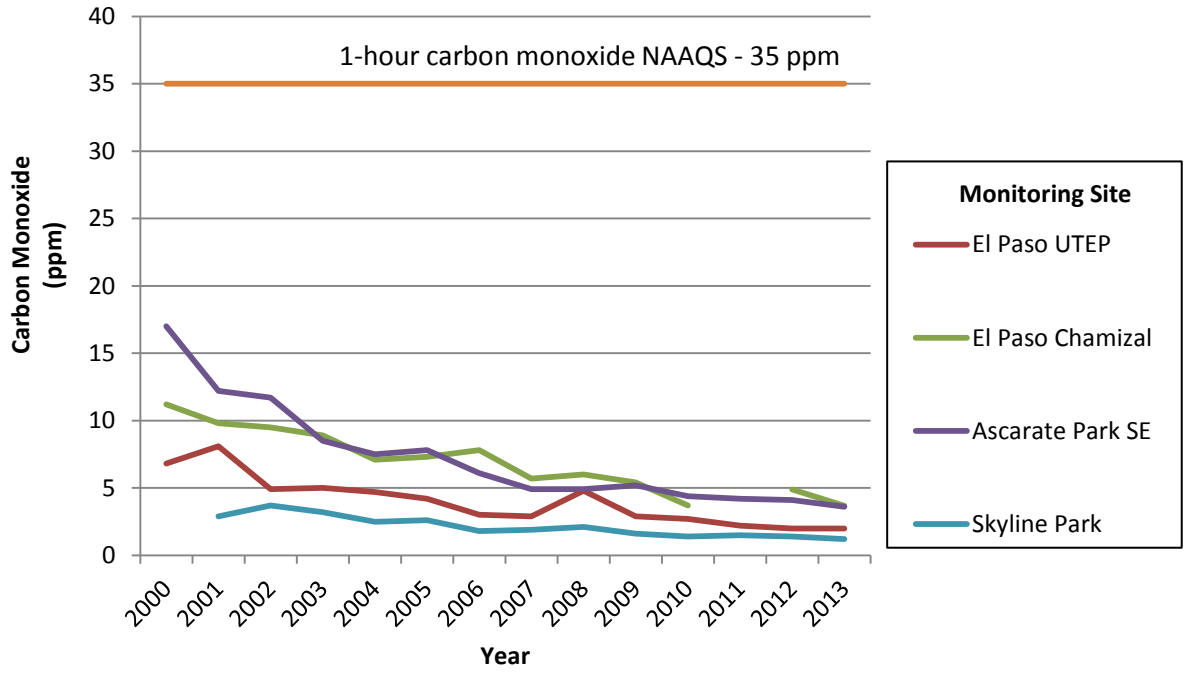


Figure 7: One-Hour Carbon Monoxide Design Value Trends at El Paso Area Monitors, 2000-2013

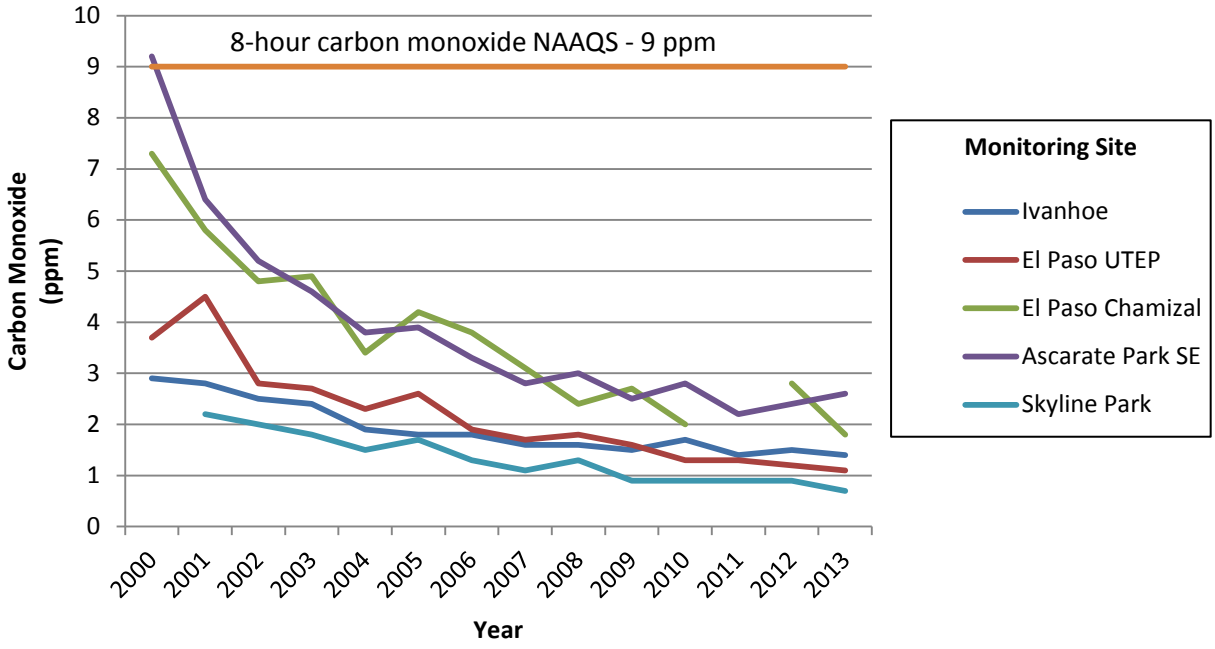


Figure 8: Eight-Hour Carbon Monoxide Design Value Trends at El Paso Area Monitors, 2000-2013

Network Evaluation

All CO monitors in the El Paso area have maintained design values well below the one-hour and eight-hour CO NAAQS since 2001. The steady decrease in CO levels throughout the El Paso area can be attributed to El Paso's naturally arid climate combined with several emissions reduction programs, including:

- enhanced vehicle emissions inspections;
- increased use of fuel efficient and mixed fuel vehicles;
- gasoline vapor recovery programs;
- the Texas Low Emission Diesel (TxLED) Program; and
- the El Paso Oxygenated Fuel Program.

Under existing regulations, only the El Paso Chamizal CO monitor is required to meet federal monitoring requirements (40 CFR §58, Appendix D, Sections 3 and 5). This monitor is a good indicator of the highest CO levels in the El Paso MSA, as shown in Figure 7 and Figure 8. Although eight-hour CO concentrations can be slightly higher at Ascarate Park SE than El Paso Chamizal, concentrations at both locations are well below the level of the NAAQS and have remained within 1 part per billion (ppb) of each other. The El Paso Chamizal CO monitor is likely impacted by on-road emissions from downtown El Paso located less than a mile away, in addition to a major highway and a heavily trafficked border crossing located less than a quarter mile away.

Because CO concentrations have consistently remained well below the NAAQS and no new significant CO sources have been identified, the Ascarate Park SE and Ojo De Agua CO monitors are considered of lower value. The TCEQ may consider further evaluation of low value, redundant CO monitors in future annual monitoring network plans.

Oxides of Nitrogen

Sources

Nitric oxide (NO) and nitrogen dioxide (NO_2) is commonly called NO_x. NO_x is associated with respiratory effects in addition to contributing to the formation of ground-level ozone and fine-particle pollution. NO_x is most commonly emitted from on-road emissions sources such as cars, trucks, and buses. The vast majority (62%) of El Paso area NO_x emissions are produced by on-road mobile sources, as shown in Table 1. As expected, higher NO_x levels generally occur in areas of El Paso with heavy traffic congestion such as the downtown area, at border crossings, and near or on major highways. Other NO_x emission sources specific to the El Paso area include industrial point sources (approximately 14%) and non-road processes such as residential trash burning and emissions from off-road engines and vehicles. Figure 9 shows the location of 2013 NO_x point source emissions in relation to area monitors.

Network History

The TCEQ currently monitors for NO_x at three locations: El Paso UTEP, El Paso Chamizal, and Ascarate Park SE. The NO_x monitors at El Paso UTEP and El Paso Chamizal were deployed in 1998 to evaluate ozone precursor concentrations in populated areas where modeling projected the highest ozone concentrations in the El Paso MSA. Since deployment, the El Paso UTEP NO_x monitor has provided valuable information about ambient NO_x concentrations around the heavily populated University of Texas at El Paso and is situated in a prime location to monitor NO_x emissions coming across the border, as well as emissions from downtown El Paso. The El Paso Chamizal site is located less than one mile from downtown El Paso and less than a mile from a major highway and a heavily trafficked border crossing, both of which are considered major on-road sources of NO_x.

The NO_x monitor at Ascarate Park SE was originally established late in 1999 to meet PAMS requirements found in 40 CFR §58 Appendix D. The monitor is located in a densely populated area, surrounded by sensitive population indicators (schools), and well-sited to monitor NO_x emissions without interference from emissions generated in downtown El Paso due to its predominately upwind location.

The TCEQ decommissioned the Socorro Hueco and Skyline Park NO_x monitors in 2008 because the monitors were considered to be of low value. Both monitors were operated beyond minimum requirements and maintained design values well below the one-hour and eight-hour NO_2 NAAQS.

In 2010, a monitor measuring reactive nitrogen compounds (NO_y) at El Paso Chamizal to comply with NCore monitoring requirements. NO_y compounds are considered ozone and $PM_{2.5}$ precursors.

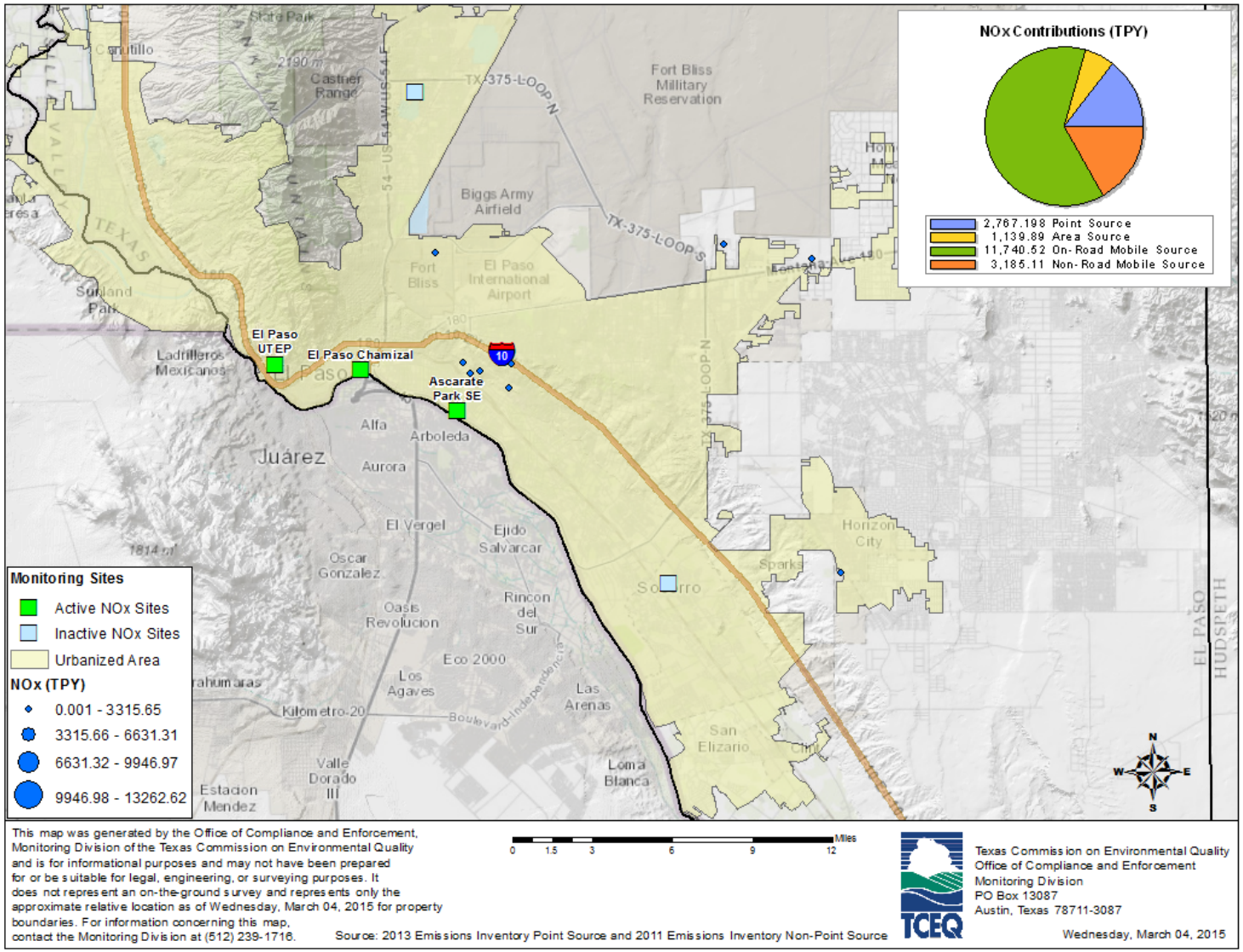
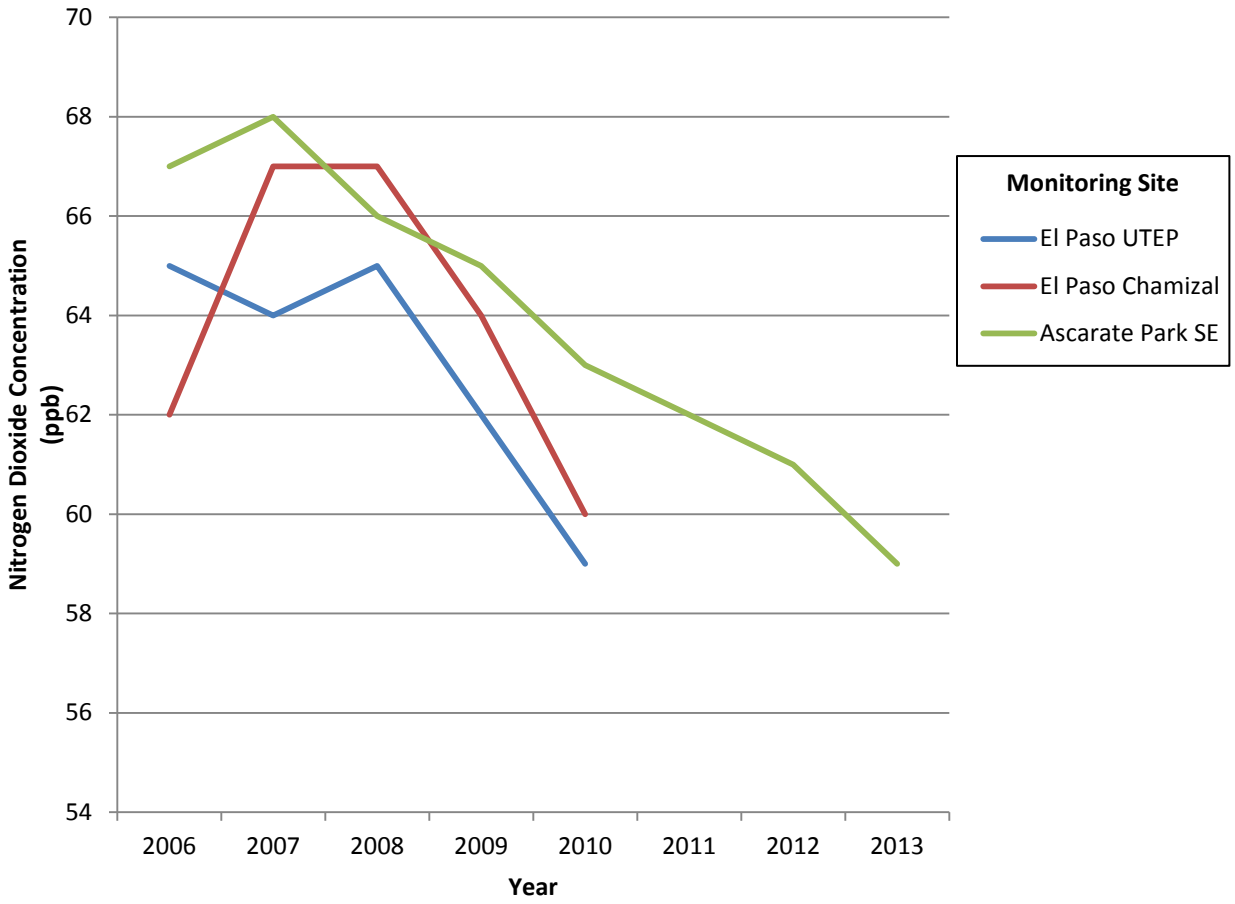


Figure 9: El Paso Area Oxides of Nitrogen (NO_x) Monitors and Point Sources

Design Values and Trends

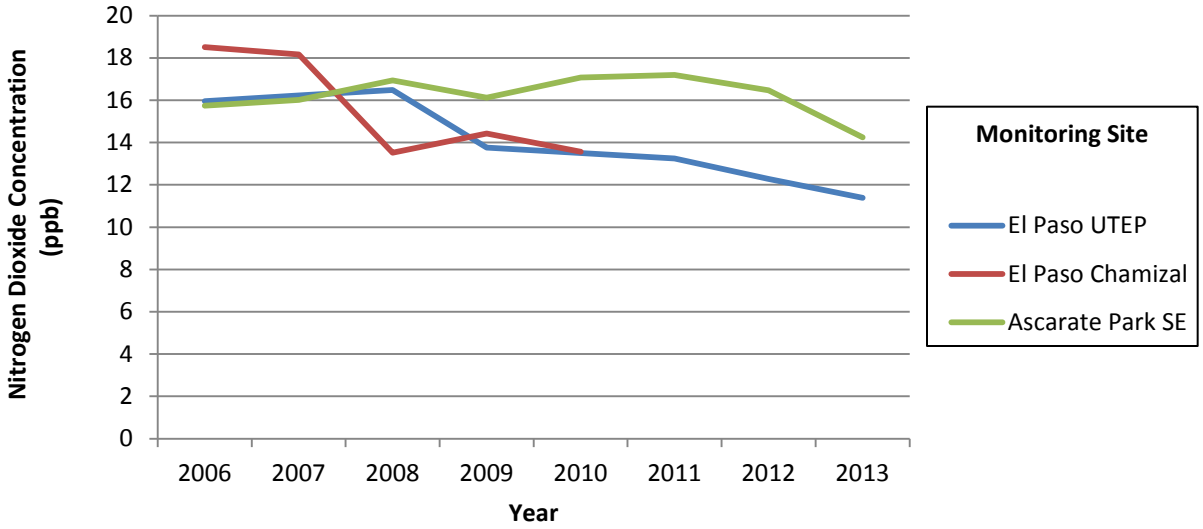
Since their installation, all three active NO_x monitors have consistently measured NO_2 design values well below both the one-hour NAAQS of 100 ppb and the eight-hour NAAQS of 53 ppb, as shown in Figure 10 and Figure 11. Design values from all three sites have also been on a downward trend since 2008 due to increased emissions control measures such as:

- enhanced vehicle emissions inspection;
- increased use of fuel efficient and mixed fuel vehicles;
- gasoline vapor recovery programs;
- the TxLED Program; and,
- the El Paso Oxygenated Fuel Program.



Insufficient data return for the El Paso UTEP and El Paso Chamizal sites precluded calculation of a design value in 2011-2013.

Figure 10: One-Hour Nitrogen Dioxide Design Value Trends in the El Paso Area, 2006-2013



Insufficient data return for the El Paso UTEP and El Paso Chamizal sites precluded calculation of a design value in 2011-2013.

Figure 11: Eight-Hour Nitrogen Dioxide Design Value Trends in the El Paso Area, 2006-2013

Network Evaluation

Three federal monitoring requirements currently apply to the NO_x monitors in the El Paso MSA. Title 40 CFR §58, Appendix D, Section 3 requires one NO_x monitor at the NCore site and Section 5 requires one NO_x monitor at a PAMS Type 2 site. The NO_x monitor at Chamizal satisfies both of these federal requirements and is considered of high value.

The third requirement is for state and local air monitoring stations (SLAMS), as outlined in 40 CFR §58, Appendix D, Section 4.3. Under this section, the El Paso area must have one NO_x monitor that is sited in a location to protect susceptible and vulnerable populations. Ascarate Park SE was chosen to satisfy this requirement because three elementary schools and a juvenile detention center are located within a mile and a half of the monitor. The green flags in Figure 12 indicate the location of additional sensitive population indicators (schools) in the immediate area surrounding Ascarate Park SE. For these reasons, the Ascarate Park SE site is also considered of high value for NO_x.

In addition, 40 CFR §58, Appendix D, Section 3(b) and 4.3.6 require an NO_y monitor at the NCore site. The El Paso Chamizal NO_y monitor satisfies this requirement and is considered of high value. The data are used in evaluating ozone formation and are not directly comparable to an ambient air quality standard.

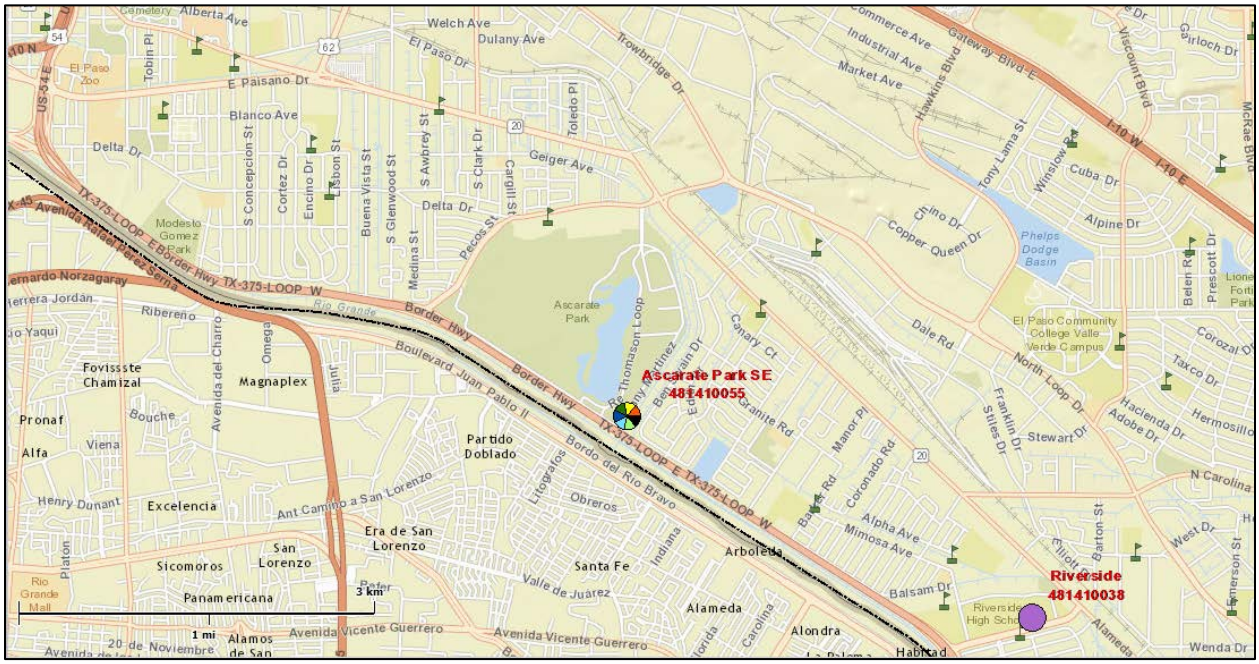


Figure 12: Schools Surrounding Ascarate Park SE

The NO_x monitor at the El Paso UTEP site is beyond minimum federal monitoring requirements. While El Paso UTEP has traditionally provided valuable information regarding NO_x concentrations around the University of Texas at El Paso, the site is located only 2.69 miles from El Paso Chamizal and has consistently produced NO_x values lower than Ascarate Park SE and El Paso Chamizal since mid-2006, as shown in Figure 10. Although the El Paso UTEP NO_x monitor is not of high value for NO_2 attainment, the monitor is considered of medium value for the historical information it provides on ozone formation.

Under 40 CFR §58, Appendix D, Section 4.3, the El Paso area will be required to have one near-road NO_x monitor by January 1, 2017. The analysis and selection process for this site will be detailed in the annual monitoring network plan released for public comment in May 2016.

Sulfur Dioxide

Sources

In general, the largest SO_2 emission source is fossil fuel combustion at power plants and other industrial facilities. SO_2 emissions also come from metal extraction from ore and burning high-sulfur fuels in locomotives, large ships, and non-road equipment. Based on the 2013 point source emissions data, industrial processes are the two largest contributors of SO_2 in the El Paso area. Figure 13 provides the location of El Paso area SO_2 point sources in relation to area monitors. Once emitted, SO_2 is generally removed from the atmosphere through oxidation into other sulfur compounds or deposited. Therefore, SO_2 is not considered a regional or area-wide pollutant.

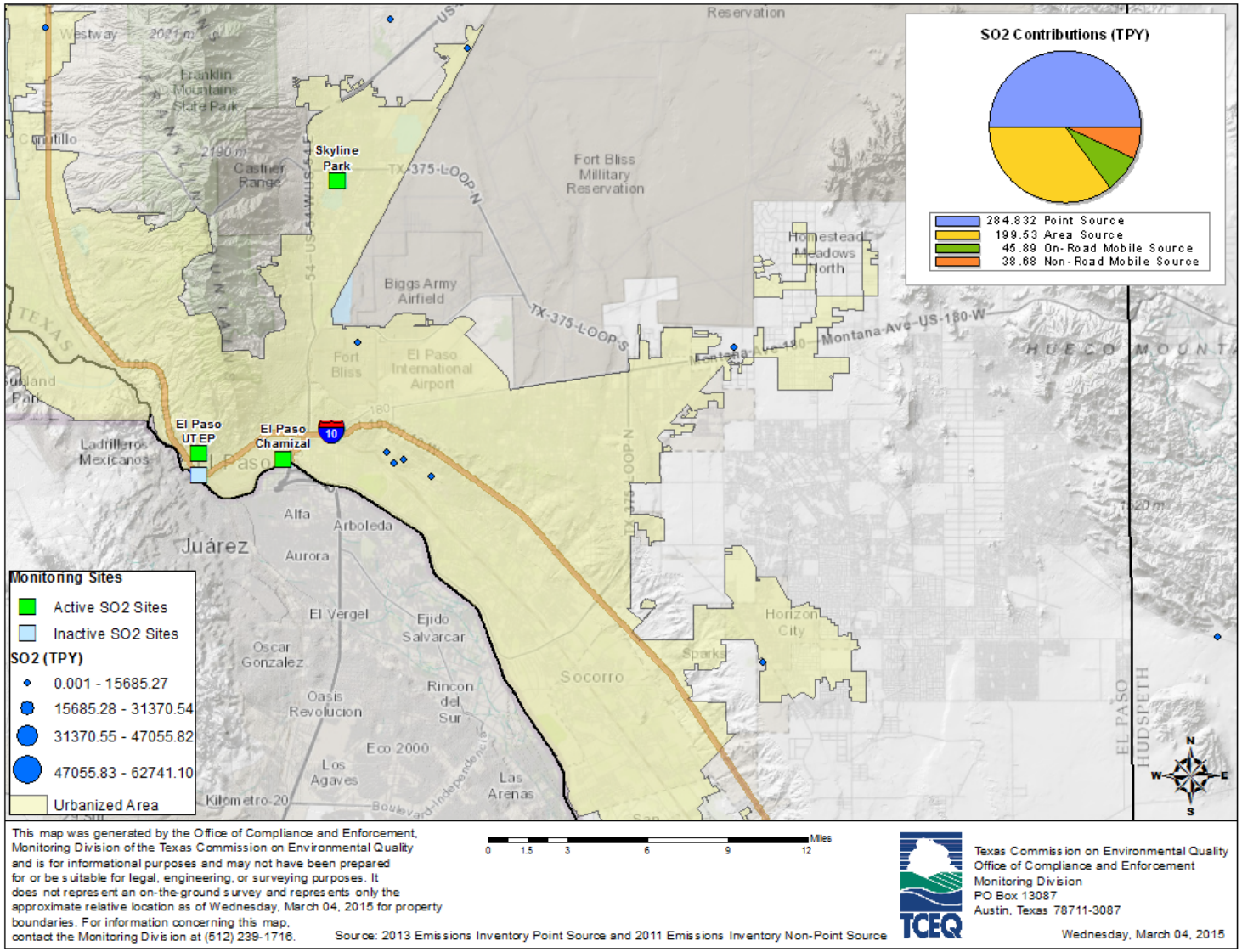


Figure 13: El Paso Area Sulfur Dioxide Monitors and Point Sources

Network History

As of 2008, there were four active SO_2 monitors in the El Paso area. The El Paso UTEP monitor was originally deployed to measure SO_2 concentrations in a populated area downwind of the American Refining and Smelting Company (ASARCO), LLC smelter, located east of downtown. Skyline Park was later deployed in 2000 to measure typical concentrations in areas of high population density. In 1998, an SO_2 monitor was deployed at the El Paso Sun Metro site, which was located in an area likely to measure the highest SO_2 concentrations in the area, as well as emissions coming across the international border. The site was located near the United States-Mexico border, just west of multiple railroad tracks and Interstate 10. Although the El Paso Sun Metro site was the design value site for El Paso, SO_2 concentrations remained less than 20% of the NAAQS. The site was decommissioned in 2012 when the property was sold. A trace level SO_2 monitor was deployed at the El Paso Chamizal site, located south of Interstate 10 and just west of the international bridge in late 2010 to comply with NCore monitoring requirements found in 40 CFR §58 Appendix D, 3(b).

Design Values and Trends

Design values for the three monitors in El Paso County are presented in Table 4. The design values have shown a decreasing trend since 2008 and are consistently well below the one-hour SO_2 NAAQS of 75 ppb. The trace level monitor at El Paso Chamizal did not produce sufficient data for an official design value calculation, but the highest one hour measurement at this site (15.4 ppb) was only 20% of the NAAQS.

Table 4: One-Hour Sulfur Dioxide Design Values in the El Paso Area and Percentage of the One-Hour Sulfur Dioxide National Ambient Air Quality Standard

Year	El Paso UTEP	% of NAAQS	El Paso Sun Metro	% of NAAQS	Skyline Park	% of NAAQS
2008	10	13	12	16	8	11
2009	9	12	11	15	6	8
2010	9	12	12	16	5	7
2011	8	11	11	15	3	4
2012	7	9	10	13	3	4
2013	7	9	*	*	3	4

* Design values are not available for these years.

Network Evaluation

Even though the ASARCO facility was demolished in 2013, the El Paso UTEP monitor still provides data representative of ambient conditions to which members of the population could be exposed. The University of Texas at El Paso is located to the west of

the site and residential neighborhoods to the south. Skyline Park is located in the north central area of El Paso and is surrounded on three sides by residential areas.

Only one federal SO_2 monitoring requirement currently applies to the El Paso area. Title 40 CFR §58, Appendix D, Section 3 requires one high sensitivity SO_2 monitor at the NCore site. El Paso Chamizal is the NCore site and is therefore considered of high value for SO_2.

Ambient SO_2 levels are below a level of concern in the El Paso area. The El Paso area does not have any significant SO_2 sources. Further, El Paso SO_2 concentrations are among the lowest in the state. Design values for El Paso monitors demonstrated a 78% drop in SO_2 measurements from 67 ppb in 2000 to 15 ppb in 2002, followed by a fairly steady trend well below 20 ppb since 2002. Because emissions and monitored concentrations are so low, two of the existing SO_2 monitors (El Paso UTEP and Skyline Park) that exceed current SO_2 monitoring requirements are considered of low value. However, there will be no changes to the TCEQ's statewide SO_2 monitoring network until after the EPA finalizes its SO_2 Data Requirements Rule, and the commission evaluates how best to meet those requirements.

Lead

Sources

Lead is a point-source pollutant that exhibits concentrations that drop rapidly as one measures further away from the source. Lead can be released directly into the air as suspended particles.

The largest historical source of lead in the El Paso area was the ASARCO smelter. The smelter operated from 1887 to 1999. Site-wide demolition was completed in 2013, and all remedial activities are projected to be complete by early 2016. Air monitoring performed by the ASARCO site trustee indicates that possible lead emissions from the site are minimal during the site remediation process. More information about the site and its remediation can be found online at http://www.recastingthesmelter.com/.

As indicated in Figure 14, five sources in the El Paso area reported lead emissions in 2013. None of these sources reports emissions greater than 0.06 tons of lead per year. Therefore, none of these sources is considered significant.

Network History

Lead is monitored at three locations in the El Paso area as shown in Figure 14. Prior to 2000, the TCEQ monitored ambient lead concentrations at the Tillman and Kern sites, which were located in the populated downtown El Paso area. In 2005, a third lead monitor was deployed in the El Paso area at Skyline Park to measure background ambient lead concentrations in a populated area. The fourth lead monitor was deployed at Ascarate Park SE in 2011 to meet NCore monitoring requirements. In 2012, the lead monitor at the Kern site was relocated to El Paso UTEP for logistical reasons. In 2013, the Tillman monitor property was sold, and the monitors were relocated to Ojo De Agua, which is located in a populated residential area in Northwest El Paso.

In the 2013 annual monitoring network plan, the TCEQ proposed decommissioning lead monitors operating beyond minimum requirements. Since installation, the lead monitor at Skyline Park has maintained design values well below the lead NAAQS of 0.15 μg/m^3. As a result, the Skyline Park lead monitor was decommissioned late in 2014.

Design Values and Trends

Due to incomplete data, the 2013 lead design values are not available. However, unofficial combined site summaries for the former Tillman, Kern, and Skyline Park monitors and three current monitors in El Paso County are presented in Table 5.

Table 5: Highest Valid Combined Site Values at Current and Historical Lead Monitors in the El Paso Area

Site Name	2011	2012	2013
Tillman	0.03	0.03	0.03
Kern	0.02	0.02	*
El Paso UTEP	*	0.03	0.03
Ascarate Park SE	0.01	0.02	0.01
Skyline Park	0.02	0.02	0.03
Ojo De Agua	*	*	0.02

* Design values are not available for these years.

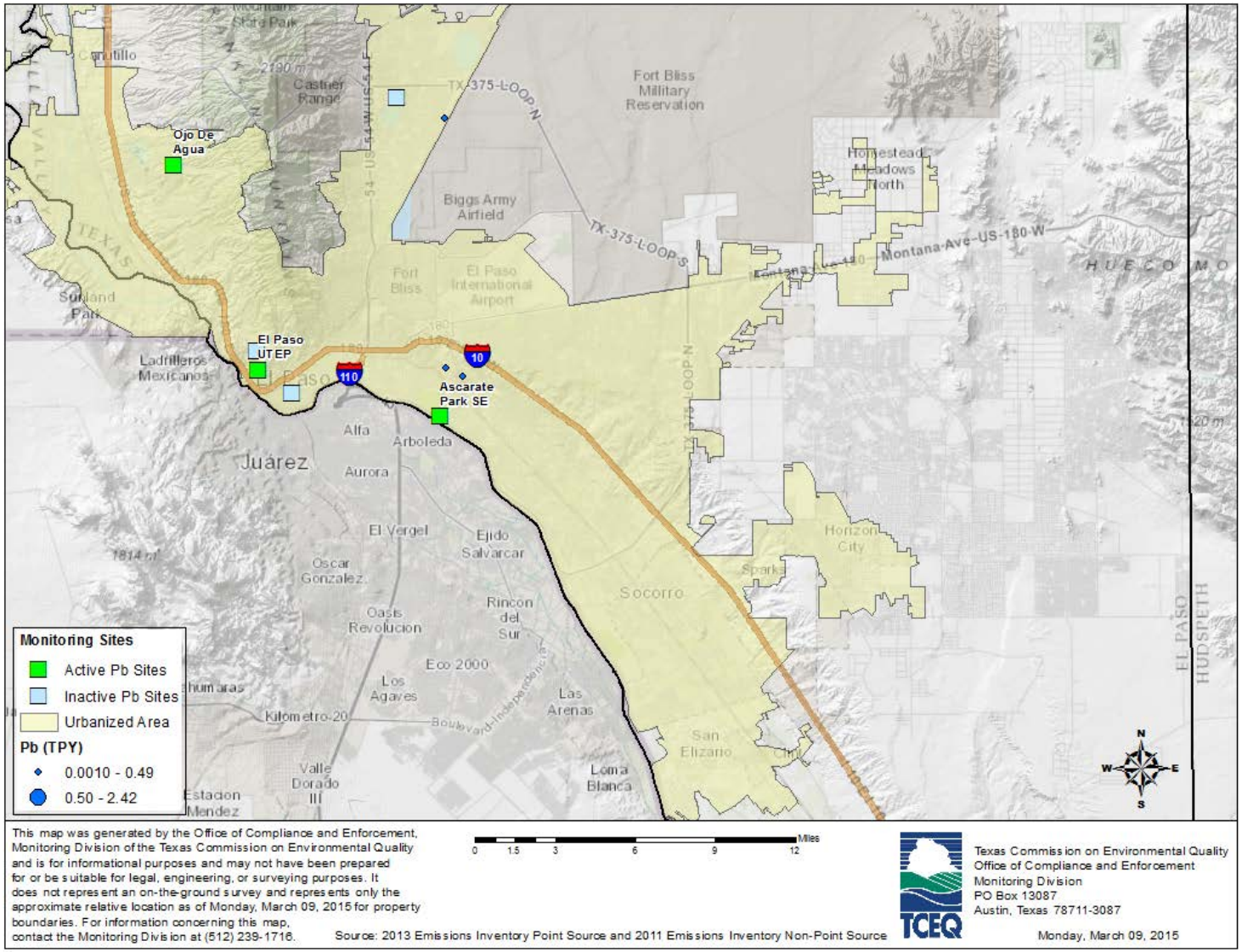


Figure 14: El Paso Area Lead Monitors and Point Sources

Network Evaluation

One lead monitor is federally required in the El Paso area. Title 40 CFR §58, Appendix D, Section 3 requires a lead monitor at NCore sites. Although not the NCore site, this requirement is satisfied with the Ascarate Park SE monitor, making it a high value monitor for lead.

Currently, the presence of two lead monitors in the El Paso area exceeds minimum monitoring requirements. Title 40 CFR §58, Appendix D, 4.5, requires a minimum of one source-oriented ambient air lead monitoring site to measure maximum concentrations near each facility that emits 0.50 tpy or more of lead based on the most recent National Emission Inventory or other scientifically justifiable methods and data. None of the sources in the El Paso area emit lead at this level. In addition, lead has been monitored at five locations across the City of El Paso since 2005. Ambient concentrations at all of these locations have remained well below the level of the NAAQS. For these reasons, El Paso UTEP and Ojo De Agua lead monitors are considered of low value. The TCEQ may consider further evaluation of these low value monitors in future annual monitoring network plans so that resources can be reallocated to monitoring other pollutants of higher value to the network.

Particulate Matter of 2.5 Micrometers or Less

Sources

$PM_{2.5}$ includes a complex mixture of particles that are 2.5 micrometers or less in diameter that can be emitted from a variety of natural and anthropogenic sources. An evaluation of the most recent El Paso area $PM_{2.5}$ EI indicates area sources, including road construction and unpaved roads, account for more than 70% of $PM_{2.5}$ emissions in both El Paso and Hudspeth Counties. As indicated in Figure 15, there are only a few point sources in the El Paso area reporting $PM_{2.5}$ emissions and only five of the sources reported more than 10 tpy in 2013. Other anthropogenic sources include automobiles, heating fires, and refuse combustion in Ciudad Juarez. Ciudad Juarez has minimal controls on the burning of wood, tires, scrap plastics, and construction debris. In addition, the automobiles in Ciudad Juarez are on average much older than those in El Paso and have greater emissions per vehicle. El Paso and nearby Sunland Park, New Mexico, have strict controls on pollution sources from various combustion types that are considered reasonably available control technology (RACT) or reasonably available control measures (RACM). Finally, $PM_{2.5}$ is often formed as secondary particulate matter from various gaseous pollutant precursors in urban areas.

The El Paso area is also affected by natural particulate matter sources due to the region's terrain and climate, as documented by the TCEQ and published literature. The TCEQ submitted an exceptional event demonstration package for the El Paso area detailing the effect of high wind events on particulate matter concentrations in 2010, 2011, and 2012. The exceptional event demonstration package included historical trends, satellite and webcam imagery, and wind patterns for ten events, and demonstrated that the blowing dust sources that caused these events were about 50 to 150 miles away from the El Paso area and could last from 4 to 13 hours per event. More information on the analyses can

be found in the *El Paso 2010-2012 Particulate Matter Exceptional Events Demonstration* package.

Furthermore, a study of blowing dust plume origins in the Chihuahua Desert area surrounding El Paso based on satellite imagery for 26 episodes from 2001 through 2009 indicated that the origin locations were primarily in northern Mexico and southwestern New Mexico (Baddock, Gill, Bullard, Acosta, & Rivera, 2011). This study did not find any large blowing dust sources in the immediate El Paso area. The closest blowing dust sources identified were about 30 to 35 miles east-northeast of the El Paso area, and these sources would not have been a factor on the proposed exceptional event days since they were not upwind of El Paso.

Network History

Particulate matter monitoring occurs either by collection of a filter over a discrete 24-hour period or through continuous one-hour measurements. The TCEQ currently has six $PM_{2.5}$ monitors in the El Paso area. The El Paso Chamizal filter-based $PM_{2.5}$ monitor was deployed in January 1999, and a speciated filter-based sampler was deployed in October 2000 to monitor ambient conditions in populated areas expected to experience the highest $PM_{2.5}$ concentrations and to meet federal monitoring requirements. Supplemental speciation measurements began in December 2000 at the Sun Metro site and March 2001 at the El Paso Chamizal site to evaluate trends of particulate species. In February 2000, the TCEQ deployed a continuous $PM_{2.5}$ sampler at El Paso UTEP, followed by a filter-based $PM_{2.5}$ sampler in January 2005 to monitor ambient concentrations in the populated area on the west side of downtown El Paso. In November 2010, the TCEQ relocated a continuous $PM_{2.5}$ sampler from El Paso Chamizal to Ascarate Park SE to monitor concentrations in the populated area on the east side of downtown El Paso. The TCEQ decommissioned the El Paso Chamizal $PM_{2.5}$ speciation sampler and a collocated speciation sampler at the El Paso Sun Metro site in November 2010 to create efficiencies within the $PM_{2.5}$ network. Following the sale of the property in 2012, the TCEQ relocated a continuous $PM_{2.5}$ sampler from El Paso Sun Metro to Socorro Hueco, to monitor $PM_{2.5}$ concentrations in a more background populated area to the southeast of El Paso.

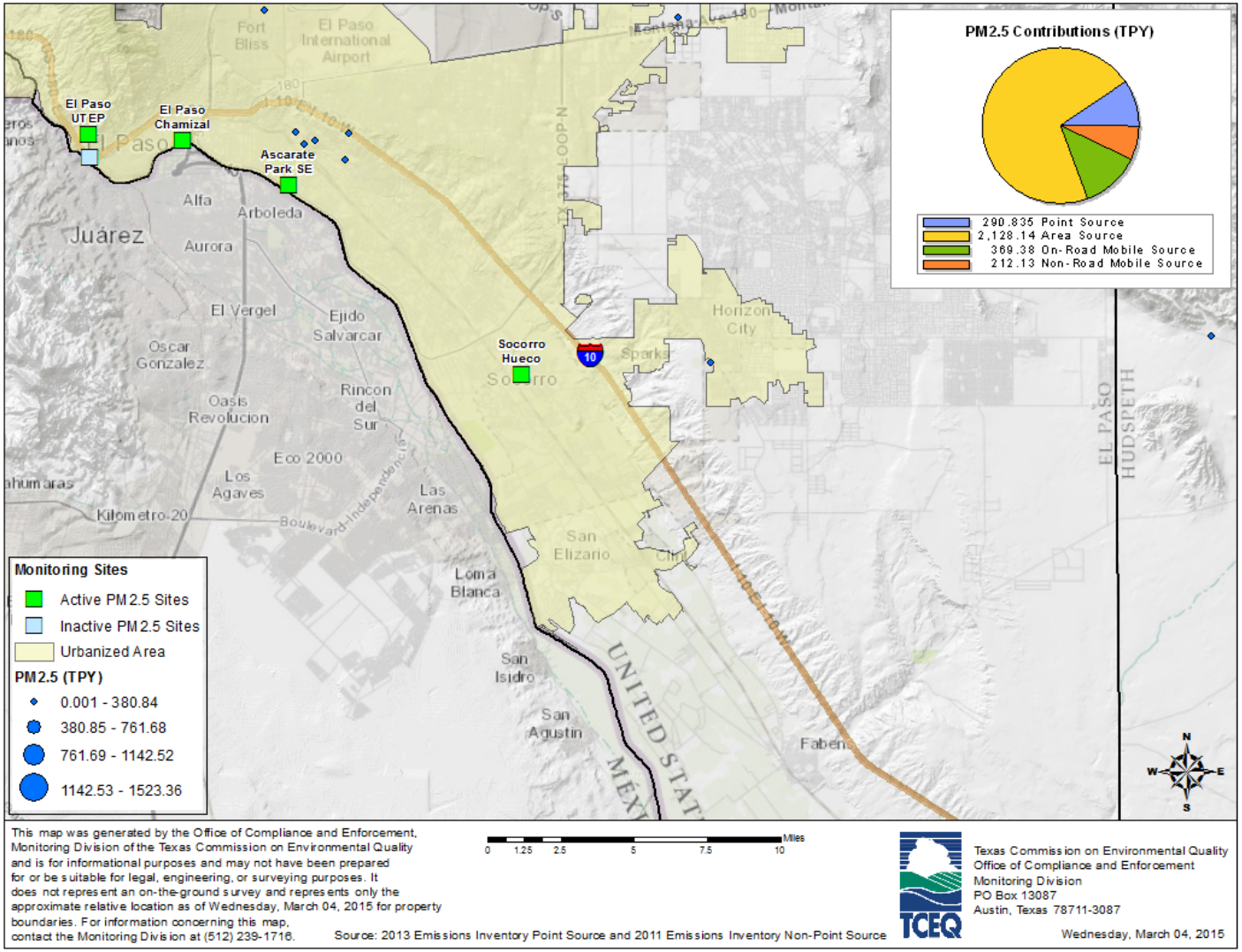


Figure 15: El Paso Area Particulate Matter of 2.5 Micrometers or Less in Diameter ($PM_{2.5}$) Monitors and Point Sources

Design Values and Trends

Overall, the annual $PM_{2.5}$ levels in the El Paso area have been stable since 2000, while the 24-hour average $PM_{2.5}$ measurements have shown more variability from year to year. Since the 98th percentile of the 24-hour average represents the highest 2 percent of all 24-hour measurements, the presence or absence of dust events on sampling days can greatly influence trend variability. Figure 16 depicts the trends in both the annual and 98th percentile of the 24-hour average using FRM data collected on a one-in-six day frequency from the El Paso Chamizal and El Paso UTEP monitors. The El Paso UTEP and El Paso Chamizal FRM monitors were not operational from April 2003 through 2005, resulting in a gap in the presented data.

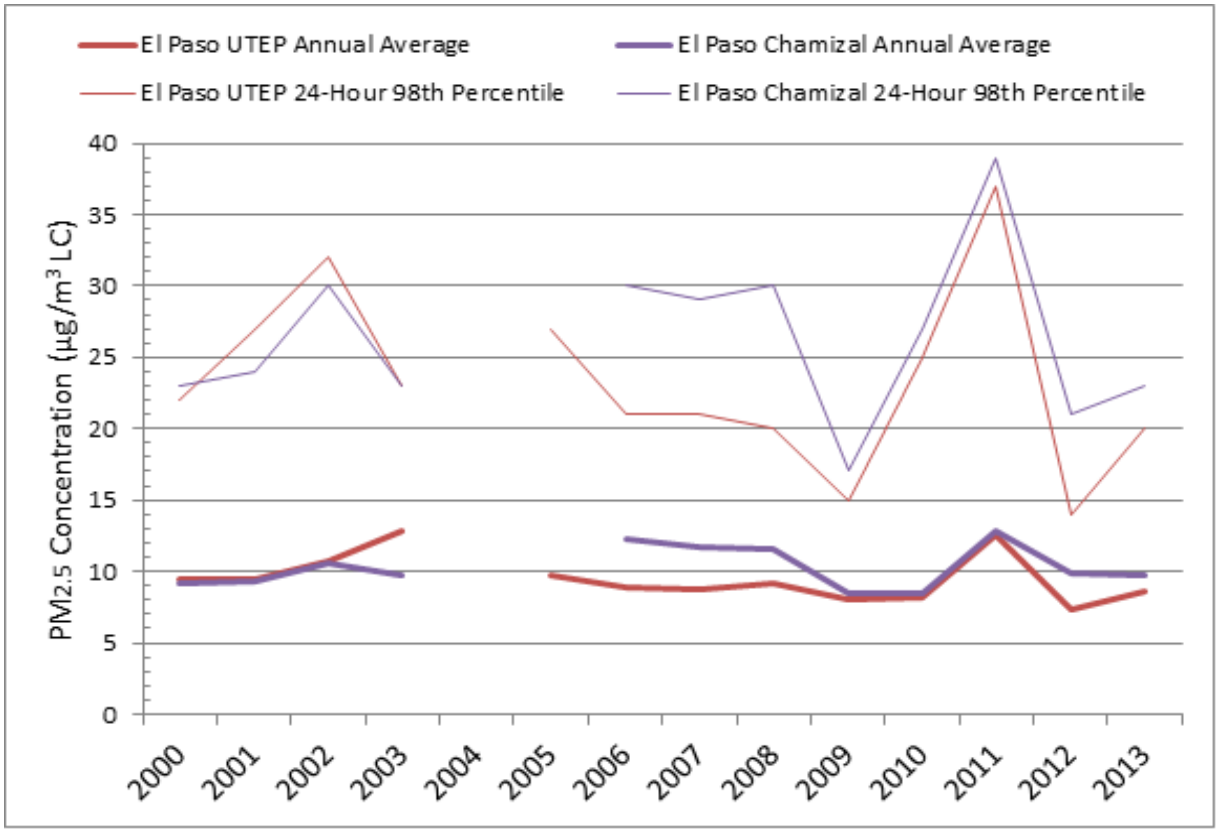


Figure 16: Trends of Annual Averages and 98th Percentiles of 24-Hour Averages for Long-Term Particulate Matter of 2.5 Micrometers or Less in Diameter ($PM_{2.5}$) Monitoring Sites in the El Paso Area Including Exceptional Event Days

Increased sampling frequency may have artificially inflated 2011 $PM_{2.5}$ concentrations at the El Paso Chamizal site in Figure 16. Prior to 2011, El Paso Chamizal had regulatory data from the filter-based monitor, which sampled every sixth day. In 2011, a regulatory continuous monitor was also installed at El Paso Chamizal. Data handling procedures require regulatory continuous data be used when data from the filter-based monitor are unavailable for calculation of design values. The increased monitoring captured more high $PM_{2.5}$ days, causing an increase in the annual average $PM_{2.5}$. Some of those high days are exceptional events (typically dust events).

Table 6 provides the El Paso UTEP and El Paso Chamizal 24-hour $PM_{2.5}$ design values. As indicated in the table, the El Paso Chamizal location has consistently measured higher $PM_{2.5}$ concentrations than the El Paso UTEP monitor. Design value concentrations at the El Paso Chamizal monitor have been above 85% of the NAAQS in 2012 and 2013, while design values at the El Paso UTEP monitor have remained at about 70% of the NAAQS.

Table 6: 24-Hour Design Values for El Paso Area Monitors of Particulate Matter of 2.5 Micrometers or Less in Diameter and Percentage of the National Ambient Air Quality Standard of 35 µg/m³

	El Paso UTEP	% of NAAQS	El Paso Chamizal	% of NAAQS
2007	23	66	*	*
2008	21	60	29	83
2009	19	54	25	71
2010	20	57	24	69
2011	26	74	24	69
2012	25	71	30	86
2013	24	69	33	94

Concentrations are provided in micrograms per cubic meter (µg/m³).
* A design value was not available for El Paso Chamizal in 2007.

Table 7 provides the El Paso UTEP and El Paso Chamizal annual $PM_{2.5}$ design values. As indicated in the table, annual design values have been more stable and have remained in closer proximity to the annual NAAQS than the 24-hour design values. Design value concentrations at the El Paso Chamizal site were above 90% of the NAAQS in 2012 and 2013, while design values at the El Paso UTEP site remained at about 80% of the NAAQS from 2011 through 2013.

Table 7: Annual Design Values for El Paso Area Monitors of Particulate Matter of 2.5 Micrometers or Less in Diameter and Percentage of the National Ambient Air Quality Standard of 12 µg/m³

	El Paso UTEP	% of NAAQS	El Paso Chamizal	% of NAAQS
2007	9.1	76	*	*
2008	8.9	74	11.9	99
2009	8.7	73	10.6	88
2010	8.5	71	9.5	79
2011	9.6	80	9.6	80
2012	9.3	78	10.8	90
2013	9.5	79	11.6	97

Concentrations are provided in micrograms per cubic meter (µg/m³).
* A design value was not available for El Paso Chamizal in 2007.

Correlation

Twenty-four hour data from the El Paso UTEP and El Paso Chamizal FRM monitors are not well correlated (Pearson's coefficient=0.768; relative difference=0.291). Because the monitors are within four kilometers of each other and are not highly correlated, both of these monitors offer the TCEQ valuable data.

Twenty-four hour continuous data are similarly poorly correlated. Figure 17 shows the results of analysis of the four continuous monitors in the El Paso area. Sites are identified by EPA AQS numbers, which can be cross-referenced in Appendix A. The closest correlation is between Ascarate Park SE (481410055) and Socorro Hueco (481410057) monitors (Pearson's coefficient=0.888, relative difference=0.287). The moderate correlation and high relative difference of the El Paso area $PM_{2.5}$ data indicate the existing $PM_{2.5}$ monitors are not redundant and provide valuable, unique data.

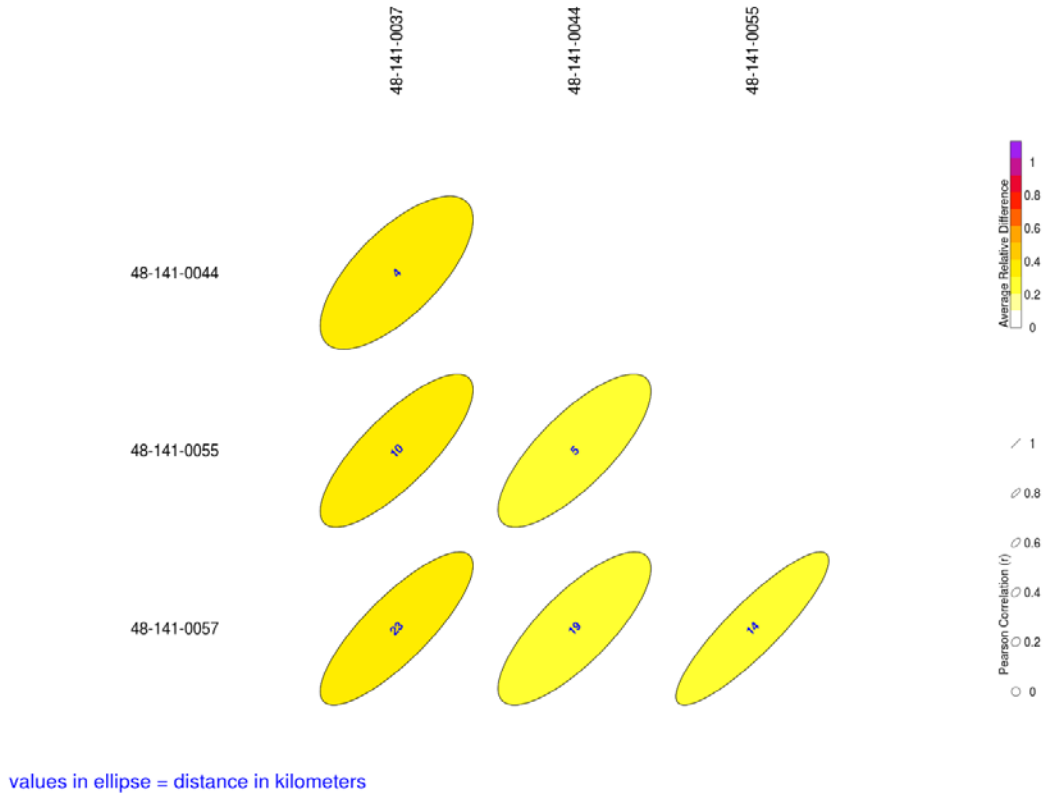


Figure 17: Correlation Matrix for 24-Hour Particulate Matter of 2.5 Micrometers or Less in Diameter ($PM_{2.5}$) Monitors in the El Paso Area, 2011-2013

Network Evaluation

Based on its population and ambient concentrations, the El Paso area is required to have a minimum of two $PM_{2.5}$ monitors to comply with 40 CFR 58, Appendix D, Section 4.7. In addition, 40 CFR 58, Appendix D, Section 3 requires $PM_{2.5}$ filter-based and continuous monitors at all NCore sites. Texas currently meets these minimum monitoring requirements with the monitors at El Paso UTEP and El Paso Chamizal.

Title 40 CFR 58, Appendix D, Section 4.7.2 also requires continuous measurements of $PM_{2.5}$ at half of the required sites. The continuous monitor requirement is met at both sites.

Texas is required to conduct chemical speciation monitoring at sites designated as $PM_{2.5}$ Chemical Speciation Network (CSN) sites. The network was formerly known as Speciation Trends Network (STN) and includes analysis for elements, selected anions and cations, and carbon. The STN site in the El Paso area is El Paso Chamizal.

The current $PM_{2.5}$ design values in the El Paso area are higher than 90% of the NAAQS; therefore, all current $PM_{2.5}$ monitors are considered of high value. Since the highest $PM_{2.5}$ concentrations appear to be attributable to natural, international sources, the TCEQ will continue to evaluate monitoring opportunities near the border to better understand the impact of dust transported into the El Paso area and its effect on ambient $PM_{2.5}$ concentrations.

Particulate Matter of 10 Micrometers or Less

Sources

Like $PM_{2.5}$, PM_{10} is a mix of small particles and liquid droplets and can include acids, organic chemicals, metal, dust, or soil. Although the PM_{10} NAAQS is set to be protective of exposure to particles between 2.5 and 10 micrometers in size, regulatory ambient air monitors measure all particles less than 10 micrometers in size as PM_{10}. There is only one requirement (40 CFR §58, Appendix D, Section 3) for monitoring of PM Coarse or $PM_{10\text{-}2.5}$.

As with $PM_{2.5}$, PM_{10} can be emitted from a variety of natural and anthropogenic sources. An evaluation of the most recent El Paso area PM_{10} EI indicates area sources, including road construction and unpaved roads, account for more than 90% of PM_{10} emissions in both El Paso and Hudspeth Counties. Based on the 2013 point source EI data, there are 15 point sources in the El Paso area. Figure 18 provides locations and relative emission amounts for these sources and current and inactive monitor locations.

Network History

There are six primary and one collocated PM_{10} samplers currently in the El Paso area as listed in Appendix A. The TCEQ began monitoring PM_{10} in the El Paso area in the mid-1980s at the Vilas, Lindbergh, Ivanhoe, and Riverside sites, which were sited to evaluate regional air quality in populated El Paso areas. In 2000, a PM_{10} monitor was added to the Socorro Hueco site in order to evaluate background concentrations in the populated area to the southeast of El Paso. Another PM_{10} monitor was deployed at the Clendenin School site in 2001 to evaluate maximum ambient concentrations. In 2002, a PM_{10} monitor was deployed at the Skyline Park site, but was deactivated in 2003, along with PM_{10} monitors at the Vilas and Lindbergh sites. In 2010, the Clendenin School site was relocated to the nearby Van Buren site. In 2011, a $PM_{10\text{-}2.5}$ monitor was deployed at the El Paso Chamizal site in order to comply with NCore monitoring requirements. Finally, in 2013, the PM_{10} monitor was moved from the Tillman site to a new site on Ojo De Agua Drive due to sale of the Tillman site property.

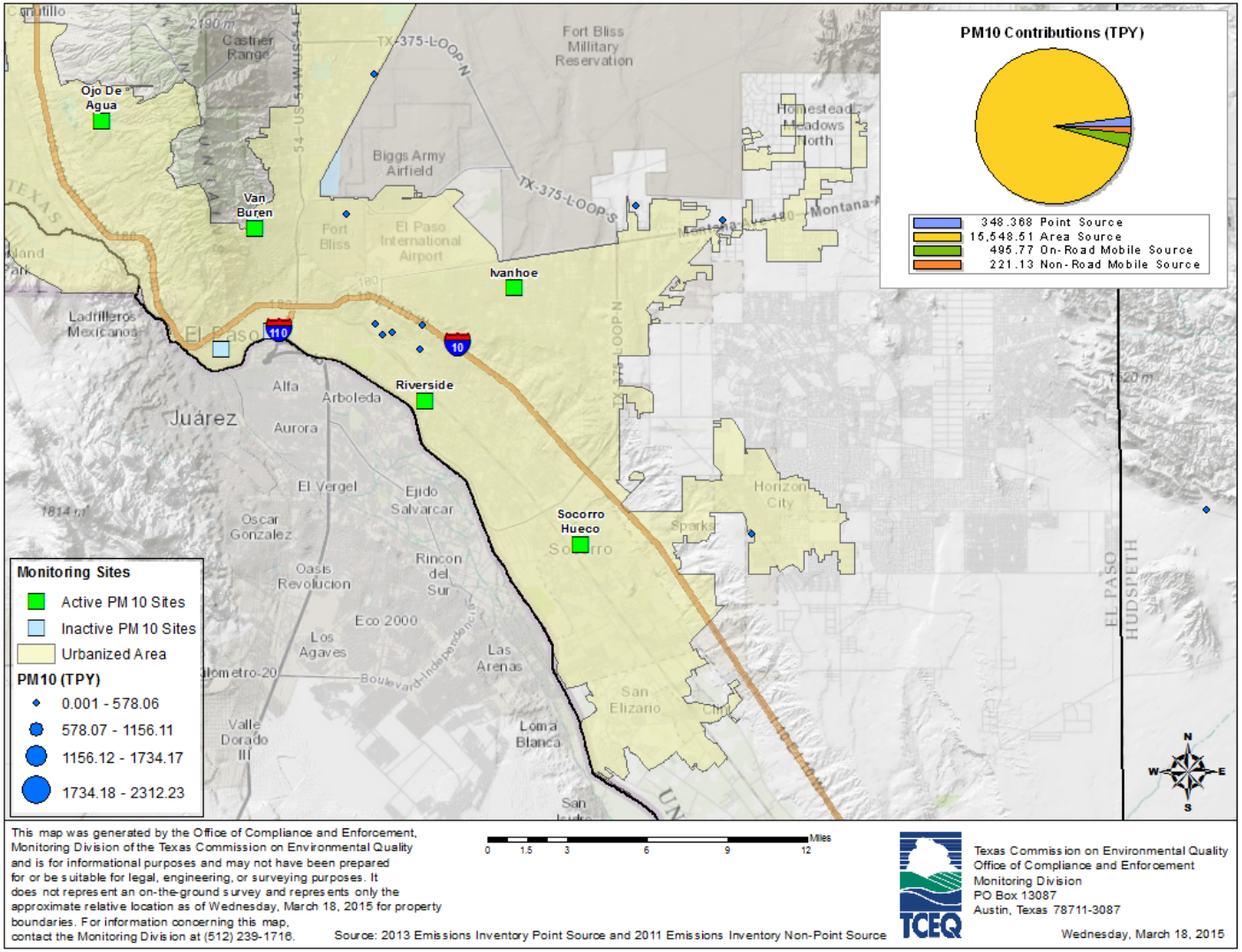


Figure 18: El Paso Area Particulate Matter of 10 Micrometers or Less in Diameter (PM_{10}) Monitors and Point Sources

Design Values and Trends

The El Paso area has been classified as nonattainment for the 24-hour PM_{10} NAAQS since November 15, 1990. As shown in Table 8, the estimated number of exceedances per year has decreased at all monitoring sites since 2005. Socorro Hueco exceedances have been more variable due to impact from regional blowing dust, but still exhibit a slight decline. Design values from 2010 to present are only available from the Socorro Hueco, Riverside, and Ivanhoe sites. The Clendenin School, Vilas, Lindbergh, and Tillman sites do not have recent design values because they were decommissioned. Similarly, as shown in Figure 19, trends in the PM_{10} annual maximum 24-hour averages for El Paso show an overall decline from 2000 to 2013, but are influenced by exceptional dust events coinciding with sampling days.

Table 8: El Paso Area Estimated Number of Exceedances of the National Ambient Air Quality Standard for Particulate Matter of 10 Micrometers or Less in Diameter

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Ivanhoe	6.1	2	0	*	*	*	0	0	0
Riverside	2	2	0	*	*	*	*	0	0
Vilas^	4.1	*	*	*	*	*	*	*	*
Lindbergh^	4	*	*	*	*	*	*	*	*
Socorro Hueco	6.2	2.2	0	0	0	2	6.1	6.1	4
Skyline Park	3.8	*	*	*	*	*	*	*	*
Clendenin School^	0	*	*	*	*	*	*	*	*
Van Buren	*	*	*	*	*	*	*	*	0

The average estimated exceedance values are computed based on the 3-year period ending with the represented year.
* Data were unavailable for design value calculation.
^ Deactivated sites.

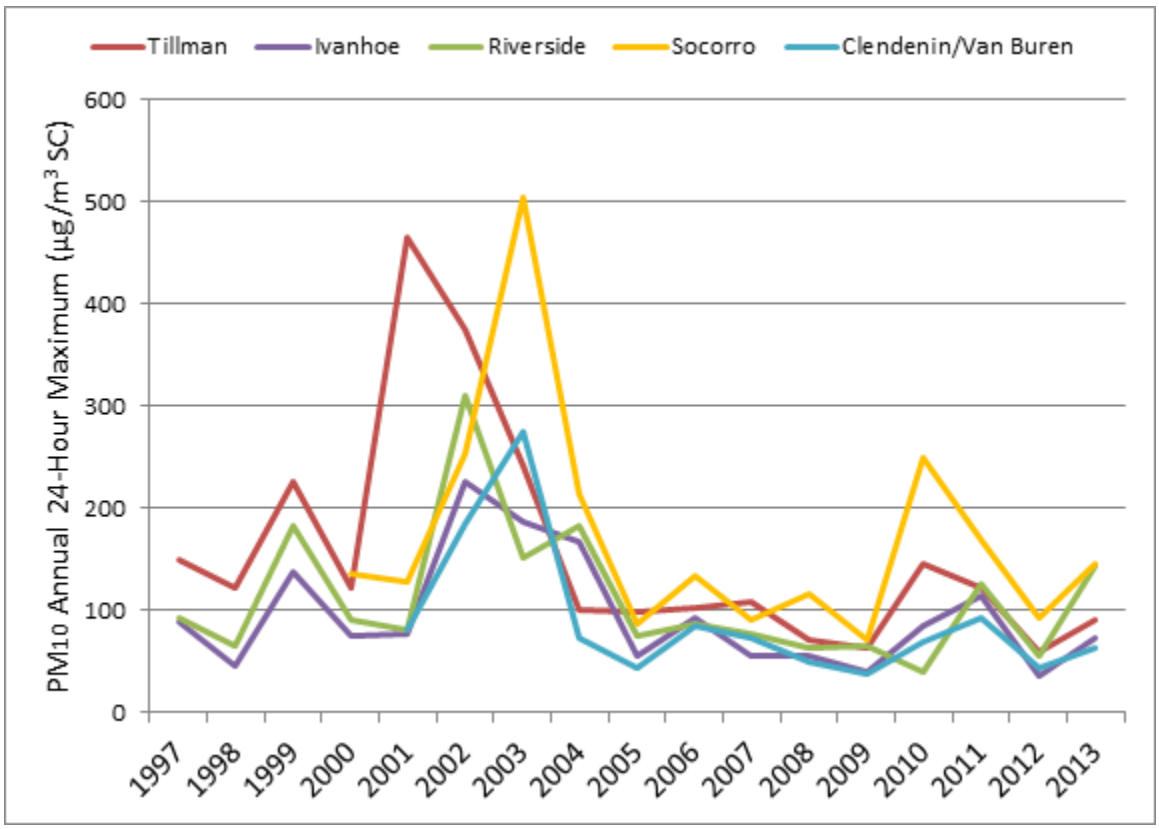


Figure 19: Trends of El Paso Area Particulate Matter of 10 Micrometers or Less in Diameter (PM_{10}) Annual Maximum 24-Hour Averages Including Exceptional Event Days

Network Evaluation

Title 40 CFR §58, Appendix D, 4.6, specifies PM_{10} monitoring requirements in MSAs based on population and monitored design values, if available. Based on the latest concentration and population data, the El Paso area is required to have between 4 and 8 PM_{10} monitors. Therefore, all of the current monitors are of high value.

The PM_{10} monitors are placed in appropriate locations to evaluate ambient concentrations in populated areas. The Socorro Hueco monitor is properly sited to measure highest concentrations, since it has measured the highest PM_{10} concentrations in the El Paso area since 2009. Finally, as with $PM_{2.5}$, the TCEQ will continue to evaluate monitoring opportunities near the border to better understand the impact of dust transported into the El Paso area and its effect on ambient PM_{10} concentrations.

Air Toxics

Background

The term air toxics includes multiple different pollutants associated with adverse health effects but with no federal ambient air standards. Air toxics are emitted from a variety of

natural and anthropogenic sources. Figure 20 shows the locations of sources reporting VOC emissions in 2013.

Texas currently monitors ambient air concentrations of 142 air toxic pollutants, including VOCs, carbonyls, SVOCs, and metals at the sites provided in Appendix A. A full list of target analytes is provided in Appendix B. Ambient concentrations of these pollutants are compared to AMCVs. More information about AMCVs is available on the TCEQ Toxicology Division's webpage at https://www.tceq.texas.gov/toxicology.

This evaluation focuses on federal ambient air monitoring requirements and conclusions from the TCEQ Toxicology Division's annual monitoring data evaluations. Although most air toxics monitors in the El Paso area were deployed to evaluate regional air quality and trends in ozone precursors in populated areas, the Toxicology Division also evaluates all air toxics monitoring data annually for their potential to cause health or welfare concerns. According to the annual monitoring data evaluations, exposure to all measured VOC, SVOC, metals, and carbonyl concentrations in the El Paso area over the past five years would not be expected to cause adverse health effects or odorous conditions. Full Toxicology Division evaluations of ambient air data are available to the public online at http://www.tceq.state.tx.us/toxicology/regmemo/AirMain.html.

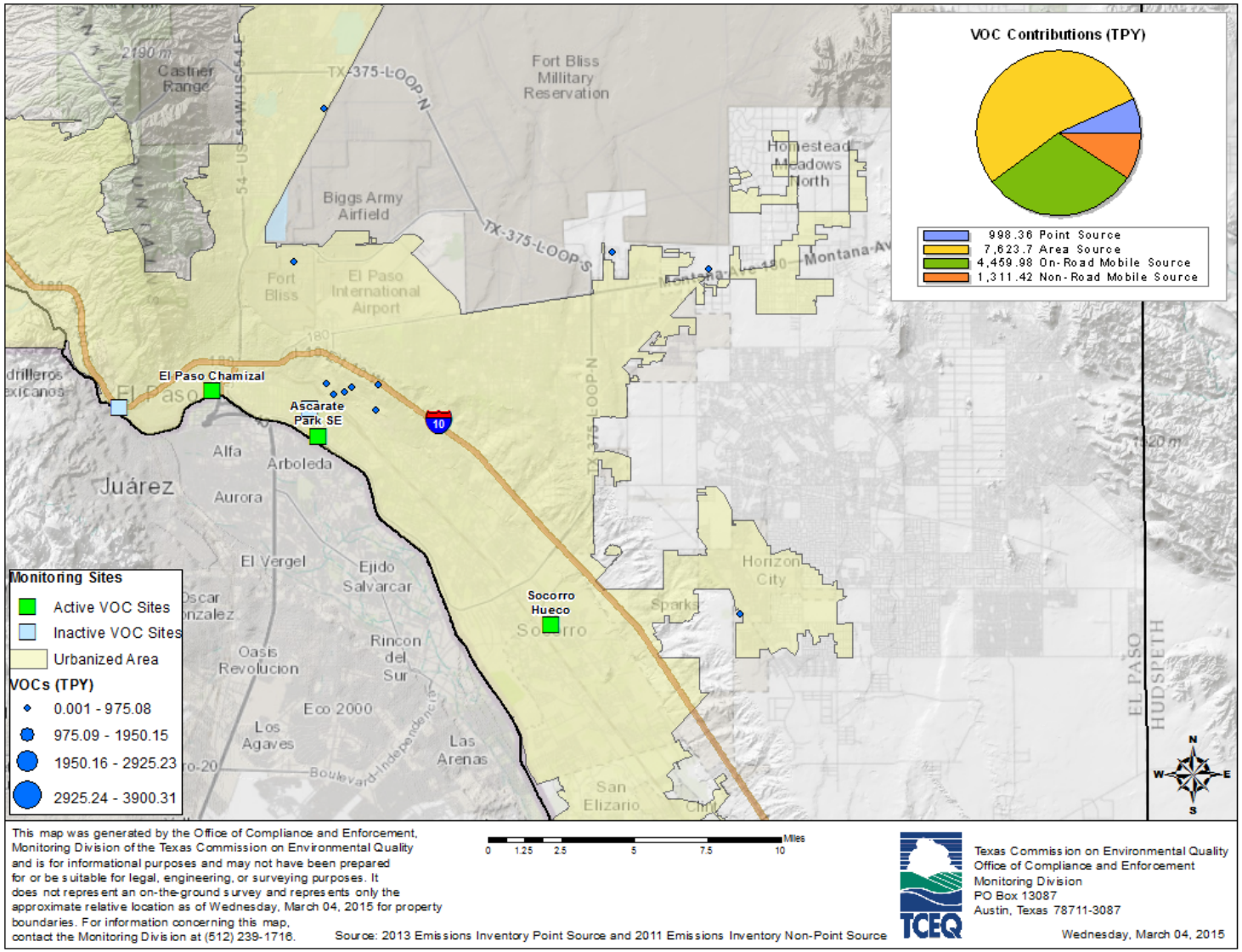


Figure 20: El Paso Area Volatile Organic Compound (VOC) Monitors and Point Sources

Network History

VOCs

The El Paso area currently has one autoGC measuring VOCs. The El Paso Chamizal autoGC was deployed in 1995 to meet the PAMS network requirement and characterize short-term changes in regional and local ambient air conditions in the El Paso area. A canister sampler was deployed at the Ascarate Park SE site in 2010 to monitor concentrations in populated areas and better understand background VOC concentrations. Under the United States/Mexico Border grant, an autoGC was deployed at the El Paso Delta site as part of a short-term study to characterize ozone precursor emissions. The El Paso Delta site was decommissioned in August 2013 when the study was completed. Also in 2013, the canister sampler at the Ascarate Park SE site was deactivated due to low historical VOC concentrations and adequate monitoring coverage by the El Paso Chamizal autoGC and other non-regulatory El Paso area VOC monitors.

Other Air Toxics

The El Paso area currently has one $PM_{2.5}$ speciation sampler, one carbonyl, and one SVOC sampler. Since 2000, the TCEQ has had $PM_{2.5}$ samples collected every third day from the El Paso Chamizal site analyzed for a set of 40 speciated metals and ions. The metals data are representative of ambient concentrations in a populated, urban area and provide meaningful information about area windblown dust.

In 2010, the carbonyl sampler was relocated from El Paso Chamizal to Ascarate Park SE to address logistical issues. Every sixth day, this sampler collects a 24-hour sample that is analyzed for 17 carbonyl compounds. Data are used to characterize ozone precursor concentrations and assess ambient concentrations in populated areas.

In 2012, the SVOC sampler was relocated from Sun Metro to Socorro Hueco after the sale of the Sun Metro property. As with carbonyls, a 24-hour sample is collected every sixth day for subsequent laboratory analysis. SVOC data provide information about ambient concentrations of certain combustion products, as well as provide concentration trends in an urban environment that are useful for direct toxicological evaluations.

Network Evaluation

Ambient air toxics concentrations in the El Paso area have remained below a level of potential health concern for over five years, even in areas that are closest to sources and expected to have the highest concentrations. Each of the three remaining air toxics monitors is considered of high value because of continued federal PAMS monitoring requirements or because of the value in the continued evaluation of air toxics trends in the El Paso area.

Benzene is a common air pollutant in ambient air, particularly in urban areas impacted by mobile sources. Benzene is also frequently the VOC measured at concentrations closest to its AMCV. Therefore, benzene is a good surrogate for evaluating trends in air quality, particularly in urban settings. As shown in Figure 21, rolling annual average benzene concentrations have decreased since the mid-1990s in the El Paso area. This

decreasing trend is consistent with the statewide decrease in benzene over the past five years.

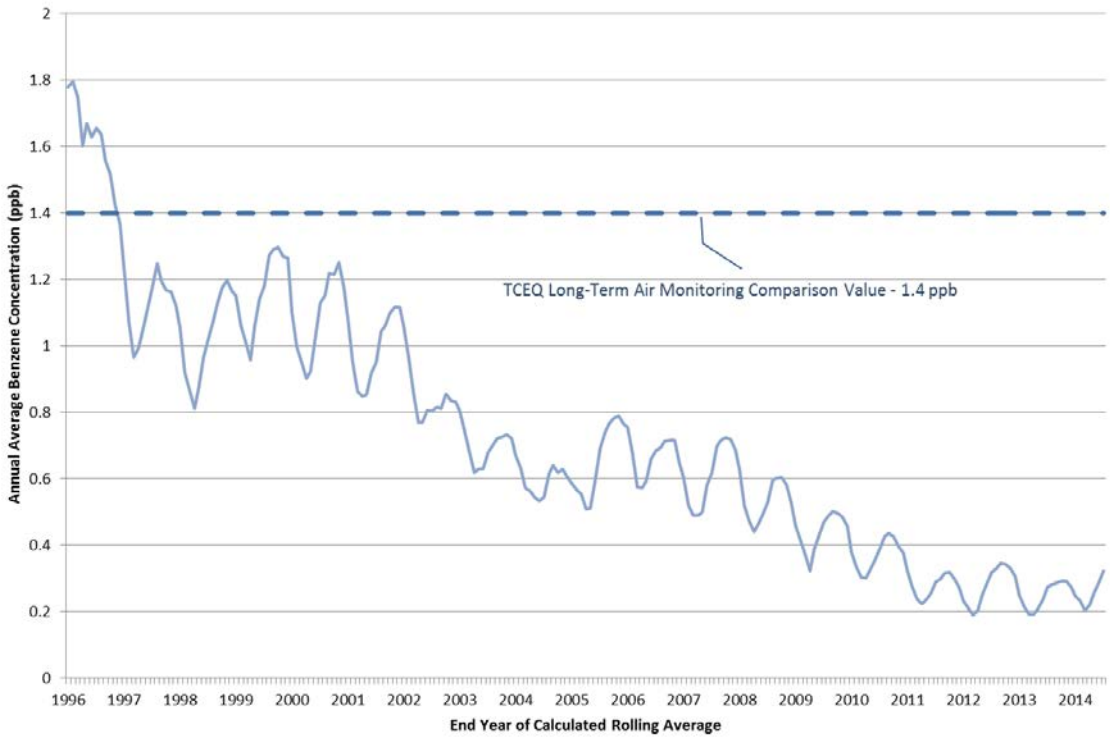


Figure 21: Rolling Annual Average Benzene Trends at El Paso Chamizal, 1996-2014

In addition, the existing air toxics network is adequately sited to evaluate air toxics trends in populated El Paso areas. El Paso Chamizal and Ascarate Park SE provide representative air quality data in the populated urban core, as well as information on air toxics emissions from the international border.

Because air toxics concentrations have remained below a level of concern and monitors are appropriately sited for both health effects evaluations and ozone precursor emission evaluations, additional monitoring is not anticipated at this time. Monitoring needs will continue to be assessed in this area as new data and regulatory requirements are made available.

Potential Monitoring Changes

Potential Changes Due to Current Regulatory Requirements

By January 2017, the TCEQ will deploy a near-road NO_x monitor in the El Paso area in accordance with 40 CFR §58, Appendix D, Section 4.3.2. Proposed locations for the new site will be provided for public comment in the 2016 annual monitoring network plan.

No additional changes to the monitoring network are necessary under existing regulatory requirements. The El Paso area monitoring network meets all regulatory monitoring requirements for an MSA with a population under one million people. There would also be no required changes in monitors as part of the El Paso area's SIP or maintenance plan. Finally, with the exception of PM_{10} at Socorro, all 2013 design values meet the level of the current standards. The TCEQ requested exclusion of daily PM_{10} average concentrations on two days in 2011 that were influenced by regional blowing dust. The exceptional event demonstration document is still pending EPA action. The preliminary 2014 design value shows compliance without exclusion of exceptional events.

Potential Changes Due to Future Regulatory Actions

Sulfur Dioxide

On April 17, 2014, the EPA proposed the Data Requirements Rule to establish emission thresholds and deployment deadlines for source-oriented monitoring and/or modeling to characterize ambient air quality impacts from larger SO_2 sources. The proposed rule provided three options for emission threshold levels based on actual SO_2 emissions from sources in heavily populated (greater than 1 million people) and less populated areas. By January 1, 2017, states would need to submit to the EPA either modeled or monitored off-site SO_2 concentrations downwind of large SO_2 sources.

In addition, on May 19, 2014, EPA filed a proposed consent decree with environmental groups related to their litigation over EPA's failure to designate for the 2010 SO_2 NAAQS. On March 2, 2015, the court upheld the consent decree, giving the EPA until July 2, 2016, to designate areas that have monitored violations of the NAAQS or contain sources that have not been announced for retirement and that emit greater than 16,000 tons of SO_2 in 2012 or that had more than 2,600 tons of SO_2 and an annual average emission rate of greater than or equal to 0.45 pounds SO_2 per million British thermal units in 2012.

The El Paso area is not impacted by the consent decree and is unlikely to be directly impacted by the proposed Data Requirements Rule. None of the sources in the El Paso area are above the thresholds provided in these actions. However, the continued need for El Paso area SO_2 monitors may be further considered once the final Data Requirements Rule is promulgated in order to ensure the best use of state monitoring resources. The Fall 2014 edition of the Unified Agenda of Federal Regulatory and

Deregulatory Actions estimates final rule publication of the SO_2 Data Requirements Rule in September 2015.

Ozone

On December 17, 2014, the EPA published a notice of proposed rulemaking regarding the NAAQS for ozone in the *Federal Register* (79 FR 75234). The EPA accepted public comments on the proposed rule until March 17, 2015. In addition to lowering the NAAQS, the EPA took comment on redesigning the ozone and PAMS monitoring requirements. The proposed rule would only require PAMS monitoring at existing NCore sites in nonattainment areas. The El Paso Chamizal autoGC is the only VOC monitor in the El Paso area being operated under PAMS requirements. Since this monitor is already at the El Paso area's NCore site, there is unlikely to be any direct impact on the El Paso area network. The EPA has a court-ordered deadline to publish the final rule by October 2015. Once the rule is final, the TCEQ will reevaluate the ozone and ozone precursor network in the El Paso area, as well as the rest of the state, as part of the next annual monitoring network plan. Adjustments in monitoring being conducted beyond minimum requirements may be necessary depending on the level of the standard and extent of revisions to the monitoring network design rules.

Lead

On September 11, 2014, the EPA proposed revisions to ambient monitoring quality assurance requirements (79 FR 54356). As part of this proposed rule, the EPA proposed removing the requirement for lead monitoring at NCore sites. If the final rule includes this removal, the lead monitor at Ascarate Park SE will no longer be required. The TCEQ will reevaluate the need for this monitor when the final rule is published. Publication is currently delayed beyond the January 2015 anticipated release date of the revised ambient monitoring quality assurance requirements in the Fall 2014 edition of the Unified Agenda of Federal Regulatory and Deregulatory Actions.

Conclusions

The existing monitor network in the El Paso area is sufficient to adequately characterize and evaluate air quality. A summary of factors considered in this evaluation is provided in Appendix C. The analysis presented in this review indicates monitors that were originally sited in populated areas are still located in areas of dense population. The current monitor locations are also well suited to evaluate the largest pollutant point sources. Area-wide pollutant sources continue to be the largest contributor of particulate matter and VOC pollutants. The TCEQ will continue to evaluate the need for additional monitoring of these pollutants as pending federal monitoring requirements are finalized and further air quality evaluations are conducted.

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Appendix A

Site List

AQS Site ID	TCEQ Region	Site Name	Address/Location	Sampler Type	AQS Network & Monitor Type	Operating Schedule	Monitoring Objective*	Location Setting	Spatial Scale	Sampler Status	Sampler Status Date
481410002	06-El Paso	Tillman	J Harold Tillman Hlt Ct 222 S Campbell S, El Paso	CO	SLAMS	Continuous	Population Exposure	Urban and Center City	Neighborhood	Inactive	5/21/2013
481410002	06-El Paso	Tillman	J Harold Tillman Hlt Ct 222 S Campbell S, El Paso	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Highest Concentration	Urban and Center City	Neighborhood	Inactive	4/11/2013
481410002	06-El Paso	Tillman	J Harold Tillman Hlt Ct 222 S Campbell S, El Paso	PM10 (FRM)	QA Collocated/ SLAMS	24 Hours; 1/12 Days	Highest Concentration	Urban and Center City	Neighborhood	Inactive	4/11/2013
481410002	06-El Paso	Tillman	J Harold Tillman Hlt Ct 222 S Campbell S, El Paso	TSP (Pb)	Other/Spm	24 Hours; 1/6 Days	Population Exposure	Urban and Center City	Neighborhood	Inactive	4/11/2013
481410002	06-El Paso	Tillman	J Harold Tillman Hlt Ct 222 S Campbell S, El Paso	TSP (Pb)	QA Collocated/ Spm	24 Hours; 1/12 Days	Population Exposure	Urban and Center City	Neighborhood	Inactive	4/11/2013
481410029	06-El Paso	Ivanhoe	10834 Ivanhoe (Ivanhoe Fire Station), El Paso	O3	Other/Spm	Continuous	Population Exposure	Suburban	Neighborhood	Active	3/29/2000

AQS Site ID	TCEQ Region	Site Name	Address/Location	Sampler Type	AQS Network & Monitor Type	Operating Schedule	Monitoring Objective*	Location Setting	Spatial Scale	Sampler Status	Sampler Status Date
481410029	06-El Paso	Ivanhoe	10834 Ivanhoe (Ivanhoe Fire Station), El Paso	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Suburban	Neighborhood	Active	10/1/1988
481410033	06-El Paso	Kern	301 East Robinson, El Paso	TSP (Pb)	Other/ SLAMS	24 Hours; 1/6 Days	Population Exposure	Urban and Center City	Neighborhood	Inactive	5/22/2012
481410037	06-El Paso	El Paso UTEP	250 Rim Rd, El Paso	CO	SLAMS	Continuous	Population Exposure	Urban and Center City	Neighborhood	Inactive	12/31/2014
481410037	06-El Paso	El Paso UTEP	250 Rim Rd, El Paso	NO/NO2/NOx	PAMS	Continuous	Max Ozone Concentration; Population Exposure	Urban and Center City	Neighborhood	Active	6/3/1998
481410037	06-El Paso	El Paso UTEP	250 Rim Rd, El Paso	O3	PAMS	Continuous	Population Exposure; Max Ozone Concentration	Urban and Center City	Neighborhood	Active	6/3/1998
481410037	06-El Paso	El Paso UTEP	250 Rim Rd, El Paso	PM2.5 (FRM)	SLAMS/Spm	24 Hours; 1/3 Days, 24 Hours; 1/1 Days, 24 Hours; 1/6 Days	Population Exposure	Urban and Center City	Neighborhood	Active	1/1/2005
481410037	06-El Paso	El Paso UTEP	250 Rim Rd, El Paso	PM2.5 (TEOM)	Spm	Continuous	Highest Concentration	Urban and Center City	Neighborhood	Active	2/1/2000
481410037	06-El Paso	El Paso UTEP	250 Rim Rd, El Paso	SO2	SLAMS	Continuous	Population Exposure	Urban and Center City	Neighborhood	Active	6/3/1998
481410037	06-El Paso	El Paso UTEP	250 Rim Rd, El Paso	TSP (Pb)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Urban and Center City	Neighborhood	Active	4/25/2012
481410038	06-El Paso	Riverside	301 Midway Dr. (Riverside High School), El Paso	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Suburban	Neighborhood	Active	10/12/1988

AQS Site ID	TCEQ Region	Site Name	Address/Location	Sampler Type	AQS Network & Monitor Type	Operating Schedule	Monitoring Objective*	Location Setting	Spatial Scale	Sampler Status	Sampler Status Date
481410041	06-El Paso	VILAS	220 Lawton St, El Paso	PM10 (FRM)	SLAMS/Other	24 Hours; 1/6 Days	Population Exposure; Highest Concentration	Suburban	Neighborhood	Inactive	12/31/2003
481410044	06-El Paso	El Paso Chamizal	800 S San Marcial Street, El Paso	Carbonyl	PAMS	24 Hours; 1/6 Days	Highest Concentration; Maximum Precursor Emissions Impact	Urban and Center City	Neighborhood	Inactive	10/25/2010
481410044	06-El Paso	El Paso Chamizal	800 S San Marcial Street, El Paso	CO	SLAMS	Continuous	Highest Concentration; Maximum Precursor Emissions Impact	Urban and Center City	Neighborhood	Inactive	11/16/2010
481410044	06-El Paso	El Paso Chamizal	800 S San Marcial Street, El Paso	CO (High Sensitivity)	NCore	Continuous	Highest Concentration	Urban and Center City	Neighborhood	Active	11/16/2010
481410044	06-El Paso	El Paso Chamizal	800 S San Marcial Street, El Paso	NO/NO2/NOx	PAMS	Continuous	Highest Concentration; Maximum Precursor Emissions Impact	Urban and Center City	Neighborhood	Active	6/24/1998
481410044	06-El Paso	El Paso Chamizal	800 S San Marcial Street, El Paso	NOy (High Sensitivity)	NCore/Spm	Continuous	Highest Concentration	Urban and Center City	Neighborhood	Active	11/18/2010
481410044	06-El Paso	El Paso Chamizal	800 S San Marcial Street, El Paso	O3	NCore/ PAMS/ SLAMS	Continuous	Maximum Precursor Emissions Impact; Population Exposure	Urban and Center City	Neighborhood	Active	6/24/1998
481410044	06-El Paso	El Paso Chamizal	800 S San Marcial Street, El Paso	PM10 (TEOM)	Spm	Continuous	General/ Background	Urban and Center City	Neighborhood	Inactive	11/16/2010
481410044	06-El Paso	El Paso Chamizal	800 S San Marcial Street, El Paso	PM10-2.5	NCore/Spm	Continuous	Highest Concentration; Population Exposure	Urban and Center City	Neighborhood	Active	1/25/2011

AQS Site ID	TCEQ Region	Site Name	Address/Location	Sampler Type	AQS Network & Monitor Type	Operating Schedule	Monitoring Objective*	Location Setting	Spatial Scale	Sampler Status	Sampler Status Date
481410044	06-El Paso	El Paso Chamizal	800 S San Marcial Street, El Paso	PM2.5 (FRM)	SLAMS/Spm	24 Hours; 1/3 Days, 24 Hours; 1/1 Days, 24 Hours; 1/6 Days	Highest Concentration; Population Exposure	Urban and Center City	Neighborhood	Active	1/1/1999
481410044	06-El Paso	El Paso Chamizal	800 S San Marcial Street, El Paso	PM2.5 (Speciation)	Trends Speciation	24 Hours; 1/3 Days	Highest Concentration	Urban and Center City	Neighborhood	Active	10/1/2000
481410044	06-El Paso	El Paso Chamizal	800 S San Marcial Street, El Paso	PM2.5 (TEOM)	Spm	Continuous	Highest Concentration; Population Exposure	Urban and Center City	Neighborhood	Inactive	11/16/2010
481410044	06-El Paso	El Paso Chamizal	800 S San Marcial Street, El Paso	SO2 (High Sensitivity)	NCore	Continuous	Highest Concentration	Urban and Center City	Neighborhood	Active	11/18/2010
481410044	06-El Paso	El Paso Chamizal	800 S San Marcial Street, El Paso	Speciated VOC (AutoGC)	PAMS	Continuous	Highest Concentration; Maximum Precursor Emissions Impact	Urban and Center City	Neighborhood	Active	7/1/1995
481410045	06-El Paso	LINDBERGH	250 Lindbergh Ave (Lindbergh Elem School), El Paso	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Suburban	Neighborhood	Inactive	6/23/2003
481410053	06-El Paso	El Paso Sun Metro	700 West San Francisco Ave, El Paso	CO	SLAMS	Continuous	Highest Concentration	Urban and Center City	Neighborhood	Inactive	12/4/2012
481410053	06-El Paso	El Paso Sun Metro	700 West San Francisco Ave, El Paso	PM2.5 (Speciation)	Supplemental Speciation	24 Hours; 1/6 Days	Highest Concentration	Urban and Center City	Microscale	Inactive	11/1/2010

AQS Site ID	TCEQ Region	Site Name	Address/Location	Sampler Type	AQS Network & Monitor Type	Operating Schedule	Monitoring Objective*	Location Setting	Spatial Scale	Sampler Status	Sampler Status Date
481410053	06-El Paso	El Paso Sun Metro	700 West San Francisco Ave, El Paso	PM2.5 (TEOM)	Spm	Continuous	Highest Concentration	Urban and Center City	Microscale	Inactive	12/4/2012
481410053	06-El Paso	El Paso Sun Metro	700 West San Francisco Ave, El Paso	SO2	Spm	Continuous	Highest Concentration	Urban and Center City	Neighborhood	Inactive	12/4/2012
481410053	06-El Paso	El Paso Sun Metro	700 West San Francisco Ave, El Paso	SVOC	Spm	24 Hours; 1/6 Days	Highest Concentration	Urban and Center City	Neighborhood	Inactive	12/4/2012
481410055	06-El Paso	Ascarate Park SE	650 R E Thomason Loop, El Paso	Carbonyl	PAMS	24 Hours; 1/6 Days	Max Ozone Concentration; Upwind Background	Suburban	Neighborhood	Active	10/29/2010
481410055	06-El Paso	Ascarate Park SE	650 R E Thomason Loop, El Paso	CO	SLAMS	Continuous	Highest Concentration	Suburban	Neighborhood	Active	9/1/1999
481410055	06-El Paso	Ascarate Park SE	650 R E Thomason Loop, El Paso	NO/NO2/NOx	PAMS	Continuous	Highest Concentration; Upwind Background; Population Exposure	Suburban	Neighborhood	Active	9/24/1999
481410055	06-El Paso	Ascarate Park SE	650 R E Thomason Loop, El Paso	O3	PAMS	Continuous	Max Ozone Concentration; Upwind Background	Suburban	Neighborhood	Active	9/24/1999
481410055	06-El Paso	Ascarate Park SE	650 R E Thomason Loop, El Paso	PM2.5 (TEOM)	Spm	Continuous	Population Exposure	Suburban	Neighborhood	Active	11/19/2010

AQS Site ID	TCEQ Region	Site Name	Address/Location	Sampler Type	AQS Network & Monitor Type	Operating Schedule	Monitoring Objective*	Location Setting	Spatial Scale	Sampler Status	Sampler Status Date
481410055	06-El Paso	Ascarate Park SE	650 R E Thomason Loop, El Paso	Speciated VOC (Canister)	PAMS	24 Hours; 1/6 Days	Max Ozone Concentration; Upwind Background	Suburban	Neighborhood	Inactive	5/31/2013
481410055	06-El Paso	Ascarate Park SE	650 R E Thomason Loop, El Paso	TSP (Pb)	NCore/ SLAMS	24 Hours; 1/6 Days	Population Exposure	Suburban	Neighborhood	Active	1/27/2011
481410057	06-El Paso	Socorro Hueco	320 Old Hueco Tanks Road, El Paso	CO	SLAMS	Continuous	General/ Background	Suburban	Neighborhood	Inactive	2/8/2012
481410057	06-El Paso	Socorro Hueco	320 Old Hueco Tanks Road, El Paso	NO/NO2/NOx	Spm	Continuous	General/ Background	Suburban	Urban Scale	Inactive	1/16/2008
481410057	06-El Paso	Socorro Hueco	320 Old Hueco Tanks Road, El Paso	O3	SLAMS	Continuous	Population Exposure	Suburban	Neighborhood	Active	12/5/2012
481410057	06-El Paso	Socorro Hueco	320 Old Hueco Tanks Road, El Paso	PM10 (FRM)	SLAMS/Spm	24 Hours; 1/6 Days	General/ Background; Population Exposure	Suburban	Neighborhood	Active	12/5/2012
481410057	06-El Paso	Socorro Hueco	320 Old Hueco Tanks Road, El Paso	PM10 (FRM)	QA Collocated/ SLAMS	24 Hours; 1/6 Days	Population Exposure	Suburban	Neighborhood	Active	12/5/2012
481410057	06-El Paso	Socorro Hueco	320 Old Hueco Tanks Road, El Paso	PM2.5 (TEOM)	Spm	Continuous	Population Exposure	Suburban	Neighborhood	Active	12/5/2012
481410057	06-El Paso	Socorro Hueco	320 Old Hueco Tanks Road, El Paso	SVOC	Spm	24 Hours; 1/6 Days	Population Exposure	Suburban	Neighborhood	Active	12/5/2012

AQS Site ID	TCEQ Region	Site Name	Address/Location	Sampler Type	AQS Network & Monitor Type	Operating Schedule	Monitoring Objective*	Location Setting	Spatial Scale	Sampler Status	Sampler Status Date
481410058	06-El Paso	Skyline Park	5050A Yvette Drive, El Paso	PM10 (FRM)	Other	24 Hours; 1/6 Days	General/Background	Suburban	Neighborhood	Inactive	6/30/2003
481410058	06-El Paso	Skyline Park	5050A Yvette Drive, El Paso	CO	SLAMS	Continuous	Population Exposure	Suburban	Neighborhood	Inactive	12/31/2014
481410058	06-El Paso	Skyline Park	5050A Yvette Drive, El Paso	NO/NO2/NOx	Spm	Continuous	Population Exposure	Suburban	Neighborhood	Inactive	1/8/2008
481410058	06-El Paso	Skyline Park	5050A Yvette Drive, El Paso	O3	SLAMS	Continuous	Population Exposure	Suburban	Neighborhood	Active	7/11/2000
481410058	06-El Paso	Skyline Park	5050A Yvette Drive, El Paso	SO2	SLAMS/Spm	Continuous	Population Exposure	Suburban	Neighborhood	Active	7/11/2000
481410058	06-El Paso	Skyline Park	5050A Yvette Drive, El Paso	TSP (Pb)	SLAMS/Spm	24 Hours; 1/6 Days	Population Exposure	Suburban	Neighborhood	Inactive	12/31/2014
481410059	06-El Paso	Clendenin School	2701 Harrison Ave, El Paso	PM10 (FRM)	Spm	24 Hours; 1/6 Days	Highest Concentration	Urban and Center City	Neighborhood	Inactive	7/31/2010
481410693	06-El Paso	Van Buren	2700 Harrison Avenue, El Paso	PM10 (FRM)	Spm	24 Hours; 1/6 Days	Population Exposure	Urban and Center City	Neighborhood	Active	8/6/2010
481411011	06-El Paso	El Paso Delta	6700 Delta Drive, El Paso	Speciated VOC (AutoGC)	Spm	Continuous	Maximum Precursor Emissions Impact	Urban and Center City	Neighborhood	Inactive	8/13/2013

AQS Site ID	TCEQ Region	Site Name	Address/Location	Sampler Type	AQS Network & Monitor Type	Operating Schedule	Monitoring Objective*	Location Setting	Spatial Scale	Sampler Status	Sampler Status Date
481411021	06-El Paso	Ojo De Agua	6767 Ojo De Agua, El Paso	CO	SLAMS	Continuous	Population Exposure	Suburban	Neighborhood	Active	6/6/2013
481411021	06-El Paso	Ojo De Agua	6767 Ojo De Agua, El Paso	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Suburban	Neighborhood	Active	4/15/2013
481411021	06-El Paso	Ojo De Agua	6767 Ojo De Agua, El Paso	PM10 (FRM)	QA Collocated	24 Hours; 1/12 Days	Population Exposure	Suburban	Neighborhood	Active	4/15/2013
481411021	06-El Paso	Ojo De Agua	6767 Ojo De Agua, El Paso	TSP (Pb)	SLAMS/Spm	24 Hours; 1/6 Days	Population Exposure	Suburban	Neighborhood	Active	4/15/2013
481411021	06-El Paso	Ojo De Agua	6767 Ojo De Agua, El Paso	TSP (Pb)	QA Collocated/ SLAMS	24 Hours; 1/6 Days, 24 Hours; 1/12 Days	Population Exposure	Suburban	Neighborhood	Active	4/15/2013

Notes

*The monitoring objectives listed in this appendix are based off of the monitoring site types defined in 40 Code of Federal Regulations §58, Appendix D, Section 1.1.1 and descriptions of spatial scales provided in the pollutant-specific monitoring network design criteria in Appendix D. The "population exposure" monitoring objective does not suggest that the monitoring data is an appropriate surrogate for an individual's exposure to the pollutant, but rather represents ambient concentrations to which members of the public could be exposed.

AQS – air quality system

CO – carbon monoxide

O_3 - ozone

SO_2 – sulfur dioxide

TSP (Pb) – lead in total suspended particles

PM_{10} - particulate matter of 10 micrometers or less in diameter

$PM_{2.5}$ - particulate matter of 2.5 micrometers or less in diameter

FRM - federal reference method; a filter-based gravimetric sampler

NO/NO2/NOx - oxides of nitrogen; includes nitric oxide (NO) and nitrogen dioxide (NO_2)

TEOM - tapered element oscillating microbalance

NO_y - highly reactive nitrogen oxide species

$PM_{10-2.5}$ - coarse particulate matter between 2.5 and 10 micrometers in diameter

VOC - volatile organic compound

SVOC – semivolatile organic compounds

AutoGC - automated gas chromatograph

QA Collocated – quality assurance collocated

SLAMS - state and local air monitoring station

PAMS - photochemical air monitoring station

Spm - special purpose monitor

NCore - National Core, as defined by 40 Code of Federal Regulations §58, Appendix D, Section 3

Appendix B

Air Toxics Target Analyte List

Volatile Organic Compounds

Target Analytes for Canisters (84 compounds)

- 1,1,2,2-Tetrachloroethane
- 1,1,2-Trichloroethane
- 1,1-Dichloroethane
- 1,1-Dichloroethylene
- 1,2,3-Trimethylbenzene
- 1,2,4-Trimethylbenzene
- 1,2-Dichloropropane
- 1,3,5-Trimethylbenzene
- 1,3-Butadiene
- 1-Butene
- 1-Hexene & 2-Methyl-1-Pentene
- 1-Pentene
- 2,2,4-Trimethylpentane
- 2,2-Dimethylbutane
- 2,3,4-Trimethylpentane
- 2,3-Dimethylbutane
- 2,3-Dimethylpentane
- 2,4-Dimethylpentane
- 2-Chloropentane
- 2-Methyl-2-Butene
- 2-Methylheptane
- 2-Methylhexane
- 2-Methylpentane
- 3-Methyl-1-Butene
- 3-Methylheptane
- 3-Methylhexane
- 3-Methylpentane
- 4-Methyl-1-Pentene
- Acetylene
- Benzene
- Bromomethane
- Carbon Tetrachloride
- Chlorobenzene
- Chloroform
- Chloromethane
- cis-1,3-Dichloropropene
- cis-2-Butene
- cis-2-Hexene
- cis-2-Pentene
- Cyclohexane
- Cyclopentane
- Cyclopentene
- Dichlorodifluoromethane
- Dichloromethane
- Ethane
- Ethylbenzene
- Ethylene

- Ethylene Dibromide
- Ethylene Dichloride
- Isobutane
- Isopentane
- Isoprene
- Isopropylbenzene
- m/p Xylene
- m-Diethylbenzene
- Methyl Chloroform
- Methylcyclohexane
- Methylcyclopentane
- m-Ethyltoluene
- n-Butane
- n-Decane
- n-Heptane
- n-Hexane
- n-Nonane
- n-Octane
- n-Pentane
- n-Propylbenzene
- n-Undecane
- o-Ethyltoluene
- o-Xylene
- p-Diethylbenzene
- p-Ethyltoluene
- Propane
- Propylene
- Styrene
- Tetrachloroethylene
- Toluene
- trans-1,3-Dichloropropene
- trans-2-Butene
- trans-2-Hexene
- trans-2-Pentene
- Trichloroethylene
- Trichlorofluoromethane
- Vinyl Chloride

Target Analytes for AutoGCs (46 compounds)

- 1-Butene
- 1-Pentene
- 1,2,3-Trimethylbenzene
- 1,2,4-Trimethylbenzene
- 1,3-Butadiene
- 1,3,5-Trimethylbenzene
- 2-Methylheptane
- 2-Methylhexane
- 2,2-Dimethylbutane
- 2,2,4-Trimethylpentane
- 2,3-Dimethylpentane
- 2,3,4-Trimethylpentane
- 2,4-Dimethylpentane
- 3-Methylheptane
- 3-Methylhexane
- Acetylene
- Benzene
- c-2-Butene
- c-2-Pentene
- Cyclohexane
- Cyclopentane
- Ethane

- Ethylbenzene
- Ethylene
- Isobutane
- Isopentane
- Isoprene
- Isopropylbenzene - Cumene
- Methylcyclohexane
- Methylcyclopentane
- n-Butane
- n-Decane
- n-Heptane
- n-Hexane
- n-Nonane
- n-Octane
- n-Pentane
- n-Propylbenzene
- o-Xylene
- p-Xylene + m-Xylene
- Propane
- Propylene
- Styrene
- t-2-Butene
- t-2-Pentene
- Toluene

Carbonyls (17 compounds)

- 2,5-Dimethylbenzaldehyde
- Acetaldehyde
- Acetone
- Acrolein - Unverified
- Benzaldehyde
- Butyraldehyde
- Crotonaldehyde
- Formaldehyde
- Heptanal
- Hexanaldehyde
- Isovaleraldehyde
- Methacrolein
- Methyl Ethyl Ketone
- Propionaldehyde
- Valeraldehyde
- m & p-Tolualdehyde
- o-Tolualdehyde

Semivolatile Organic Compounds (16 compounds)

- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Chrysene
- Dibenzo(a,h)anthracene
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Naphthalene

- Phenanthrene
- Pyrene

$PM_{2.5}$ Metals (33 elements)

- Aluminum
- Antimony
- Arsenic
- Barium
- Bromine
- Cadmium
- Calcium
- Cerium
- Cesium
- Chlorine
- Chromium
- Cobalt
- Copper
- Indium
- Iron
- Lead
- Magnesium
- Manganese
- Nickel
- Phosphorus
- Potassium
- Rubidium
- Selenium
- Silicon
- Silver
- Sodium
- Strontium
- Sulfur
- Tin
- Titanium
- Vanadium
- Zinc
- Zirconium

Appendix C

Network Evaluation Summary Table

Site Name	Sampler Type	Used to Meet Minimum Requirement?	Percent of NAAQS	Design Value Trend	Historical Value	Regulatory Value	Data Value	Monitor Uniqueness Value	Source Impact Value	Monitor Value
Ivanhoe	Ozone	No (SPM)	**	Decrease	Medium	Low	High	High	N/A	High
El Paso UTEP	Ozone	Yes (PAMS)	96% (8-hour)	Slight Decrease	High	High	High	Medium	N/A	High
El Paso Chamizal	Ozone	Yes (NCore/ PAMS/ SLAMS)	92% (8-hour)	Slight Decrease	High	High	High	Medium	N/A	High
Ascarate Park SE	Ozone	Yes (PAMS)	85% (8-hour)	Decrease	Medium	Medium	High	High	N/A	High
Socorro Hueco	Ozone	Yes (SLAMS)	**	Decrease	Medium	Medium	High	High	N/A	High
Skyline Park	Ozone	Yes (SLAMS)	91% (8-hour)	Decrease	Medium	Medium	High	High	N/A	High
Ascarate Park SE	Carbon monoxide	Yes (SLAMS)	10% (1-hour); 29% (8-hour)	Slight Decrease	Medium	Medium	Low	--	Low	Low
Ojo De Agua	Carbon monoxide	Yes (SLAMS)	3% (1-hour); 8% (8-hour)	N/A	Low	Medium	Low	--	Low	Low
El Paso Chamizal	Carbon monoxide *	Yes (NCore)	11% (1-hour); 20% (8-hour)	Decrease	Low	High	Medium	--	Medium	High
El Paso UTEP	NO/NO2/ NOx	Yes (PAMS)	** (1-hour); 21% (annual)	Decrease	High	Medium	Medium	--	Medium	Medium

Site Name	Sampler Type	Used to Meet Minimum Requirement?	Percent of NAAQS	Design Value Trend	Historical Value	Regulatory Value	Data Value	Monitor Uniqueness Value	Source Impact Value	Monitor Value
El Paso Chamizal	NO/NO2/ NOx	Yes (PAMS)	** (1-hour); 26% (annual)	Slight Decrease (1-hour); Stable (annual)	High	High	Medium	--	Medium	High
Ascarate Park SE	NO/NO2/ NOx	Yes (PAMS)	59% (1-hour); 26% (annual)	Slight Decrease (1-hour); Stable (annual)	Medium	Medium	High	--	Medium	High
El Paso UTEP	Sulfur dioxide	No (SLAMS)	9% (1-hour)	Slight Decrease	High	Low	Low	--	Low	Low
Skyline Park	Sulfur dioxide	No (SLAMS)	4% (1-hour)	Decrease	Medium	Low	Low	--	Low	Low
El Paso Chamizal	Sulfur dioxide *	Yes (NCore)	**	N/A	Low	High	Low	--	Low	High
El Paso UTEP	Lead	Yes (SLAMS)	**	N/A	Low	Medium	Low	--	Low	Low
Ascarate Park SE	Lead	Yes (NCore/ SLAMS)	**	N/A	Low	High	Low	--	Low	High
Ojo De Agua	Lead	Yes (SLAMS)	**	N/A	Low	Medium	Low	--	Low	Low
Ojo De Agua	Lead	Yes (QA)	**	N/A	Low	Medium	Low	--	Low	Low
El Paso UTEP	PM2.5 (FRM)	Yes (SLAMS)	69% (24-hour); 79% (annual)	Variable	Medium	High	High	High	High (Area)	High
El Paso Chamizal	PM2.5 (FRM)	Yes (SLAMS)	94% (24-hour); 97% (annual)	Variable	High	High	High	High	High (Area)	High
El Paso Chamizal	PM2.5 (Speciation)	Yes (Trends Speciation)	**	N/A	Medium	High	High	Medium	High (Area)	High

Site Name	Sampler Type	Used to Meet Minimum Requirement?	Percent of NAAQS	Design Value Trend	Historical Value	Regulatory Value	Data Value	Monitor Uniqueness Value	Source Impact Value	Monitor Value
El Paso UTEP	PM2.5 (TEOM)	No (SPM)	**	N/A	Medium	Low	High	Medium	High (Area)	High
Ascarate Park SE	PM2.5 (TEOM)	No (SPM)	**	N/A	Low	Low	High	Medium	High (Area)	High
Socorro Hueco	PM2.5 (TEOM)	No (SPM)	**	N/A	Low	Low	High	Medium	High (Area)	High
Ivanhoe	PM10 (FRM)	Yes (SLAMS)	0	Decrease	High	High	High	--	High (Area)	High
Riverside	PM10 (FRM)	Yes (SLAMS)	0	Decrease	High	High	High	--	High (Area)	High
Socorro Hueco	PM10 (FRM)	Yes (SLAMS)	4	Variable	Low	High	High	--	High (Area)	High
Socorro Hueco	PM10 (FRM)	Yes (SLAMS)	4	Variable	Low	High	High	--	High (Area)	High
Van Buren	PM10 (FRM)	No (SPM)	0	N/A	Low	Medium	High	--	High (Area)	High
Ojo De Agua	PM10 (FRM)	Yes (SLAMS)	**	N/A	Low	High	High	--	High (Area)	High
Ojo De Agua	PM10 (FRM)	Yes (QA)	**	N/A	Low	High	High	--	High (Area)	High
El Paso Chamizal	PM10-2.5	Yes (NCore)	N/A	N/A	Low	High	High	--	High (Area)	High
El Paso Chamizal	NOy*	Yes (NCore)	N/A	N/A	Low	High	Medium	--	Medium	High
El Paso Chamizal	Speciated VOC (AutoGC)	Yes (PAMS)	N/A	N/A	High	High	High	--	Low	High
Ascarate Park SE	Carbonyl	Yes (PAMS)	N/A	N/A	Low	High	High	--	Medium	High
Socorro Hueco	SVOC	No (SPM)	N/A	N/A	Low	Medium	High	--	Medium (Area)	High

Notes

PM_{10} - particulate matter of 10 micrometers or less in diameter

O_3 - ozone

FRM - federal reference method; a filter-based gravimetric sampler

NO_x - oxides of nitrogen; includes nitric oxide (NO) and nitrogen dioxide (NO_2)

$PM_{2.5}$ - particulate matter of 2.5 micrometers or less in diameter

TEOM - tapered element oscillating microbalance

NO_y - highly reactive nitrogen oxide species

$PM_{10-2.5}$ - coarse particulate matter between 2.5 and 10 micrometers in diameter

VOC - volatile organic compound

AutoGC - automated gas chromatograph

SLAMS - state and local air monitoring station

PAMS - photochemical air monitoring station

SPM - special purpose monitor

NCore - National Core, as defined by 40 Code of Federal Regulations §58, Appendix D, Section 3

NAAQS - national ambient air quality standard

* - high sensitivity monitor

** - 2013 design value is not available

N/A - not applicable

-- - analysis not available

Percent of NAAQS - based on a percentage of the 2013 design value and the existing NAAQS as of 1/1/2015; averaging time is noted in parentheses where applicable; for PM_{10}, the three year average of the estimated number of exceedance days is provided

Design Value Trend - based on evaluation of the 2005 through 2013 design values

Historical Value - based on the length of time the monitor has provided air quality data as of 1/1/2015. High value monitors have provided more than 16 years of data. Medium value monitors have provided six to fifteen years of data. Low value monitors have provided five or less years of data.

Regulatory Value - based on the monitor's value to meeting federal monitoring requirements. High value monitors meet an explicit requirement (such as NCore requirements), medium value monitors support the number of monitors required in an area (such as PAMS requirements), and low value monitors may support monitoring efforts but do not satisfy an explicit requirement.

Data Value – based on subjective measure of the importance of the data to the network including proximity of design values to the NAAQS, representativeness of a particular area (such as sensitive populations or incoming background), or historical trends.

Monitor Uniqueness – based on monitor-by-monitor correlation; only available for ozone and $PM_{2.5}$. High value monitors provide unique data; medium value monitors indicate some correlation with nearby monitors; low value monitors are fully redundant with nearby monitors.

Source Impact Value – based on the monitor's value in evaluating source impact; high value monitors provide important data on the impact of sources (such as a monitor downwind of a point source); medium value monitors help provide information about source contribution but are not specifically sited to measure source impacts (such as speciation monitors providing data on dust composition); low value monitors are minimally impacted by sources.

The monitor appropriateness metric was not included in this table because all existing monitors met their intended objective and monitoring scale and were considered of high value.