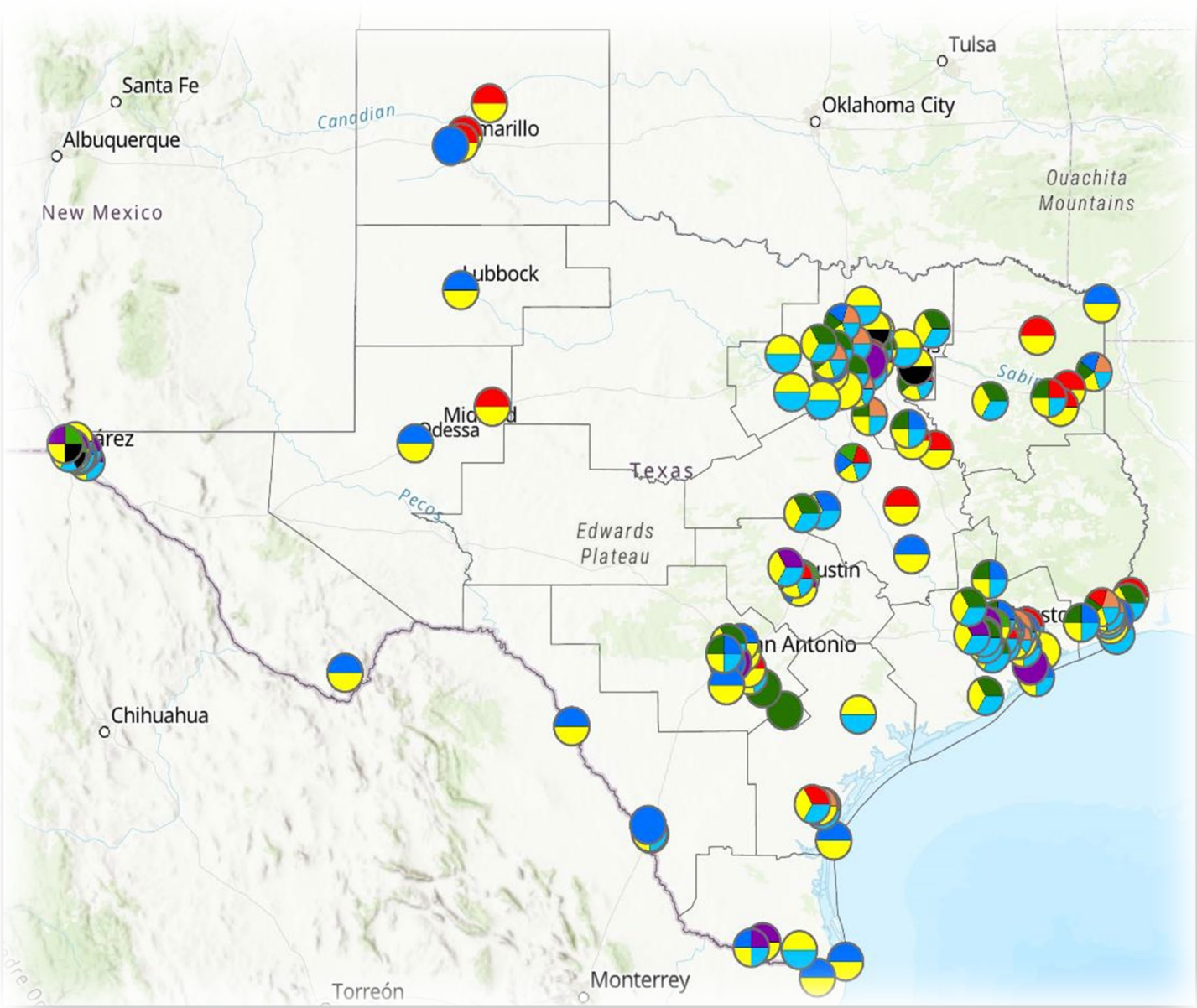
2020 Texas Five-Year Ambient Monitoring Network Assessment



Texas Commission on Environmental Quality
Monitoring Division
Ambient Monitoring Section
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Acronyms and Abbreviations

– number
§ - part

% – percent

> – greater than

≥ - greater than or equal to

< – less than

µg/m^3 – micrograms per cubic meter

AERMOD – American Meteorological Society EPA Regulatory Model

AMCV - Air Monitoring Comparison Values

AMNP – annual monitoring network plan

APWL – Air Pollutant Watch List

AQS – Air Quality System

autoGC – automated gas chromatograph

BPA – Beaumont-Port Arthur

CBSA – core based statistical area

CFR – Code of Federal Regulations

CO – carbon monoxide

COH – City of Houston

DFW – Dallas-Fort Worth

DRR – Data Requirements Rule

EI – emissions inventory

EPA – United States Environmental Protection Agency

FCAA – Federal Clean Air Act

FEM – federal equivalent method

FRM – federal reference method

FYA – five-year assessment

GLCmax – ground level concentration

HGB – Houston-Galveston-Brazoria

LBJ – Lyndon B. Johnson

LLC – limited liability company

MSA – metropolitan statistical area

NA – not applicable

NAAQS – National Ambient Air Quality Standards

NAD83 – North American Datum of 1983

NCore – National Core Multipollutant Monitoring Stations

NEI – National Emissions Inventory

NLCD – National Land Cover Dataset

NO_2 – nitrogen dioxide

NO – nitrogen oxide

NO_x – oxides of nitrogen

NO_Y – total reactive nitrogen compounds

NWS – National Weather Service

O_3 – ozone

OMB – United States Office of Management and Budget

PAMS – Photochemical Assessment Monitoring Stations

Pb – lead

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

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

$PM_{10-2.5}$ – coarse particulate matter

ppb – parts per billion

ppm – parts per million

PRIME - Building Profile Input Program with Plume Rise Model Enhancements

PWEI – population weighted emissions index

QC – quality control

RA-40 – Regional Administrator 40

SE – southeast

SETRPC – South East Texas Regional Planning Commission

SH – State Highway

SLAMS – State or Local Air Monitoring Stations

SO_2 – sulfur dioxide

SPM – special purpose monitor

SVOC – semi-volatile organic compound

TAC – Texas Administrative Code

TAD – technical assistance document

TAMIS – Texas Air Monitoring Information System

TCEQ – Texas Commission on Environmental Quality

TEOM – tapered element oscillating microbalance

tpy – tons per year

TSP – total suspended particulate

U.S. – United States

USGS – United States Geological Survey

UTEP – University of Texas at El Paso

UTM – Universal Transverse Mercator

VOC – volatile organic compound

Introduction

The United States Environmental Protection Agency (EPA) establishes and updates National Ambient Air Quality Standards (NAAQS) under the Federal Clean Air Act (FCAA). The EPA assigned responsibility for designing and implementing ambient air quality surveillance networks to determine NAAQS compliance to state air pollution control agencies. In 2006, the EPA finalized a requirement for states to conduct a network assessment every five years. The EPA's final regulation, in 40 Code of Federal Regulation (CFR) Part (§)58.10, is as follows.

> (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 five 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 five-year assessment, along with a revised annual network plan, to the Regional Administrator. The assessments are due every five years beginning July 1, 2010.

To meet this requirement, the Texas Commission on Environmental Quality (TCEQ) conducted the *Texas 2020 Five-Year Ambient Monitoring Network Assessment* (FYA) to confirm that the existing network continues to meet the objectives in 40 CFR §58, Appendix D and to evaluate whether individual network monitors should be added, relocated, or decommissioned to best understand and evaluate air quality with existing resources.

The TCEQ provides an analysis of the Texas monitoring network's compliance with the federal monitoring network design requirements under 40 CFR §58 in its annual monitoring network plan. The EPA approved the *TCEQ 2019 Annual Monitoring Network Plan* (AMNP) in a November 4, 2019, letter, indicating that the existing network met the current monitoring requirements. An updated analysis is provided in the *TCEQ 2020 Annual Monitoring Network Plan*, which was made available for public review and comment on April 15, 2020.

The FYA does not include an evaluation of monitors funded through non-federal mechanisms or operated for purposes other than complying with federal monitoring requirements. The TCEQ uses the data from these state-initiative monitors for many purposes and often locates these monitors to address local public health and welfare concerns. Information and data from these state-initiative monitors are available to the public on the TCEQ's Texas Air Monitoring Information System (TAMIS) located at https://www17.tceq.texas.gov/tamis/index.cfm?fuseaction=home.welcome.

Evaluation Methods

Overview

Texas has a diverse geography, population, and economy, and each air pollutant evaluated differs in its emission source, transport, and environmental fate. Due to the pollutant complexity and diverse regional characteristics, the TCEQ divided the FYA into individual pollutant assessments within six major Texas areas listed below and detailed in Appendix D.

- Coastal (Beaumont-Port Arthur, Corpus Christi, Houston-The Woodlands-Sugar Land, and Victoria areas)
- Central (Austin-Round Rock-Georgetown, College Station-Bryan, Killeen-Temple, San Antonio-New Braunfels, and Waco areas)
- Far west (El Paso area)
- Lower Rio Grande Valley (Brownsville-Harlingen, Laredo, and McAllen-Edinburg-Mission areas)
- North and Northeast (Dallas-Fort Worth-Arlington, Longview, Sherman-Denison, Texarkana, and Tyler areas)
- Panhandle and West Texas (Abilene, Amarillo, Lubbock, Midland, Odessa, San Angelo, and Wichita Falls areas)

To assess the monitoring network within these areas, the TCEQ considered monitors individually and in relation to the network as a whole using the following information.

- Regional wind patterns were considered due to the potential impact on ozone (O_3) formation, pollutant transport, and area dispersion.
- Population density and trends were reviewed to ensure that monitors with the objective of measuring pollutant concentrations in populated areas were still properly sited.
- Area-wide emissions were evaluated in conjunction with population density to determine federal monitoring requirements and spatial coverage.
- Regional air quality was evaluated based on area attainment/nonattainment status.
- Technology advancement, availability, and applicability were considered but are assessed annually in the AMNP.
- Monitor purpose, history, data trends, and network value were evaluated to assess monitor importance and data usage.
- Monitor regulatory value, percent of the NAAQS, data trends, historical values, and source impacts were calculated and summed to form an overall value to characterize importance to the network.

Evaluation Tools

Wind Patterns

Annual average wind patterns, summarized in wind roses, were reviewed to ascertain if monitors continue to meet stated location monitoring objectives. Wind roses are included with population density maps. The length of each wind rose bar corresponds to the frequency of the wind coming from the indicated direction. Wind data indicate

the area's dominate flow pattern. Area average wind direction and wind speed information is a component of initial site and monitor selection and is considered during the review of existing sites, for new sites, and relocations.

Population

Population projections were reviewed to ensure that monitors with the objective of measuring pollutant concentrations in populated areas were still properly sited. The TCEQ used estimated population counts in all maps from the 2010 census and five-year projections from the Texas Demographics Center in this assessment. Population projections are provided in statistical areas defined by the United States Office of Management and Budget (OMB). The OMB defined core based statistical areas (CBSAs) and metropolitan statistical areas (MSAs) overlap in Texas, and the terms are used interchangeably in this assessment according to usage in the federal regulations.

The TCEQ evaluated population projection data available from the Texas Demographics Center because O_3, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter of 2.5 micrometers or less in diameter ($PM_{2.5}$), and particulate matter of 10 micrometers or less in diameter (PM_{10}) monitoring requirements are partially based on MSA population. In addition, the SO_2 population weighted emissions index (PWEI) monitoring requirement calculation was evaluated utilizing projected 2025 population estimates and current emissions inventory data for each CBSA.

According to the Texas Demographics Center, Texas experienced an uncharacteristically high urban growth rate from 2000 to 2010 as compared to the previous 10 years. Since 2010, Texas continues to have strong population growth and for each year between 2010 and 2016, had the nation's largest annual population growth. More information about these state population projections is available online at https://demographics.texas.gov/Data/TPEPP/Projections/.

Point Sources and Area-Wide Emissions

Air emissions are emitted from point sources (large stationary sources, such as fossil fuel fired power plants, smelters, industrial boilers, petroleum refineries, and manufacturing facilities) and non-point sources (area, on-road mobile, non-road mobile, and biogenic). Point source emissions data are reported annually from sources meeting the reporting requirements under 30 Texas Administrative Code (TAC) §101.10. In addition, the TCEQ develops estimates for non-point source emissions that are submitted to the EPA every three years as part of the National Emissions Inventory (NEI).

The TCEQ used data from the 2017 NEI and 2017 annual point source emissions inventory to evaluate the relative contributions of primary pollutant anthropogenic sources and to evaluate spatial monitor placement in relation to these sources. More information about the Texas Emissions Inventory (EI) is available on the TCEQ's Point Source Emissions Inventory webpage located at https://www.tceq.texas.gov/airquality/areasource.

In addition to anthropogenic sources, the TCEQ evaluated the potential for natural pollutant sources and pollutants resulting from long-range transport and wind flow patterns. Smoke from agricultural burning in Mexico can affect Texas seasonally when the winds bring in air from eastern Mexico and Central America. Long-range transport

from other types of events also can impact Texas, including wildfires and dust from large and intense regional dust storms from the West Texas-New Mexico-Northern Mexico area.

Regional Air Quality

Regional air quality plans were reviewed for areas with current and prior nonattainment designations, re-designations, and reclassifications to ensure monitor placement and quantity continue to show progress towards attainment.

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 meet federal reference method (FRM), federal equivalent method (FEM), or approved regional method requirements, a full review of available technology was not detailed in this assessment. TCEQ's regulatory monitors comply with existing monitoring method requirements and provide consistent, high quality data return. The TCEQ continues to evaluate newer technologies as they become available and proposes method changes through the AMNP.

Monitor History, Current Status, Design Values and Trends

The TCEQ used information from TAMIS for evaluating historical changes to the monitoring network, objectives, and locations. Monitoring information discussed in this evaluation is available online at https://www17.tceq.texas.gov/tamis/index.cfm?fuseaction=home.welcome. Unless otherwise noted, certified data was used through 2018 for this assessment. Design values were obtained from the EPA webpage, https://www.epa.gov/air-trends/air-quality-design-values. Appendix A lists active and recently decommissioned monitors (since the last FYA), locations, monitoring objectives, and associated spatial scales.

Monitor Value Calculation

During the overall network evaluation, several metrics were used to assess individual monitors to quantify their relative network importance: regulatory value, NAAQS value, data trend value, historical value, and source impact value. A value (one through four) was assigned to each metric, and a monitor's overall value was calculated and used to characterize its importance as critical, high, medium, or low. The evaluation metrics are summarized in Table 1.

Monitor Regulatory Values were determined by whether the monitor was used to meet a regulatory requirement under 40 CFR §58, Appendix D. These monitors were given a value of four. Monitors beyond the minimum requirements were given a value of one. Monitors with a Regulatory Value of four were automatically given an Assessment Value of critical.

Monitor NAAQS Values were assessed based on design value percentage of the NAAQS. Title 40 CFR §58.14 states that monitors with a 10 percent (%) or greater chance of exceeding 80% of the NAAQS within the next three years are not candidates for decommission. Monitors with design values 80% or greater of the NAAQS were given a NAAQS Value score of four and an automatic Assessment Value of critical. Monitors with design values between 70 and 79% of the NAAQS have a risk of approaching or

exceeding the NAAQS and were given a score of three. A score of two indicated a monitor with a design value between 50% and 69% of the NAAQS. Monitors with design values below 50% of the NAAQS were given a score of one. Pollutants with dual primary standards (like NO_x, CO, and $PM_{2.5}$) were evaluated for both standards and scored based on the standard with the highest NAAQS percentage. The NAAQS Value metric was not used for non-NAAQS comparable monitors and pollutants without NAAQS, including $PM_{2.5}$ monitoring by tapered element oscillating microbalance (TEOM) and monitoring for volatile organic compounds (VOCs), carbonyls, total reactive nitrogen compounds (NO_y), PM coarse ($PM_{10-2.5}$), and $PM_{2.5}$ speciation. If a new monitor was deployed or if a FEM monitor replaced a non-NAAQS comparable monitor in the last three years, design values are not yet effective, therefore the NAAQS Value metric was not used.

The Data Trend Value was based on the monitor's historical concentration data from the last ten years, or as many years as available for assessment. Monitors with increasing concentration trends expected to exceed the NAAQS in the next five years were scored four, and monitors with increasing, stable, or decreasing concentration trends were respectively scored three, two, or one. Pollutants without NAAQS and non-NAAQS comparable monitors were not assessed with the Data Trend Value metric. If a new monitor was deployed or if a FRM or FEM monitor replaced a non-NAAQS comparable monitor in the last three years, design values are not yet effective, therefore the Data Trend metric was not used.

Historical Value was assessed based on the number of years the parameter has been monitored at the site. The longer a parameter has been continuously monitored, the better suited that monitor is to determine trends. Monitors with more than 15 years of data were scored four. Monitors providing 11 to 15 years of data were scored three. Monitors with 6 to 10 years of data were scored two, and monitors with 5 or fewer years of data received a one.

Source Impact Value was based on the monitor's importance in evaluating the impacts of pollutant sources on an area's air quality. Source-oriented monitors downwind of a single point source or a monitor evaluating area transport were scored as four. Monitors downwind of multiple sources were scored as three. Monitors providing source contribution information but not specifically sited to measure source impacts, such as speciation monitors providing data on dust composition, were scored as two. Monitors located in areas with minimal source contributions were scored as one.

The Total Monitor Value is the sum from each metric value. The monitor Assessment Value (critical, high, medium, or low) was determined by the Total Monitor Value. A critical value was assigned to monitors with a Regulatory Value or NAAQS Value metric score of four. For NAAQS comparable parameters with two or more years design values, Total Monitor Values of 13-19 were assigned high, values of 9-12 were assigned medium, and values of 5-8 were assigned low. For VOC, carbonyl, NO_y, $PM_{10-2.5}$, $PM_{2.5}$ TEOM, $PM_{2.5}$ speciation, and FEM monitors with less than two years design values, Total Monitor Values of 9-12 were assigned high, values of 5-8 were assigned medium, and values 3-4 were assigned low.

Monitor value assessments are included in each pollutant network evaluation discussion. Low monitor values do not necessarily indicate monitor decommission and critical or high monitor values do not guarantee that a site will not be relocated due to an unexpected event. The TCEQ continually assesses the network and includes associated recommendations in the AMNP.

Table 1: Pollutant Network Evaluation Metrics

Scale	Four Points	Three Points	Two Points	One Point
Regulatory Value	Explicit federal requirement, automatic critical Assessment Value	Not used for this metric	Not used for this metric	Beyond minimum requirements
NAAQS Value	Within 80% of the NAAQS or exceeds the NAAQS, automatic critical Assessment Value	Design value between 70% and 79% of the NAAQS	Design value between 50% and 69% of the NAAQS	Design value less than 50% of NAAQS
Data Trend Value	Trend increasing and forecasted to exceed the NAAQS within the next five years	Increasing trend	Stable trend	Decreasing trend
Historical Value	More than 15 years of data	Between 11 and 15 years of data	Between 6 and 10 years of data	5 or fewer years of data
Source impact Value	Source-oriented requirement or transport	Multiple source contributions	Source contribution information	Minimal, non-specific source contribution

% - percent
NAAQS – National Ambient Air Quality Standard

Background Information

Population Projections

The State of Texas population is projected to increase by 9% between 2015 and 2020 and by 20% between 2015 and 2025 based on information from the Texas Demographics Center. The largest projected increases are expected to occur in urban areas such as Austin, San Antonio, Dallas-Fort Worth, and Houston, and in the Midland and Odessa areas as illustrated in Figure 1.

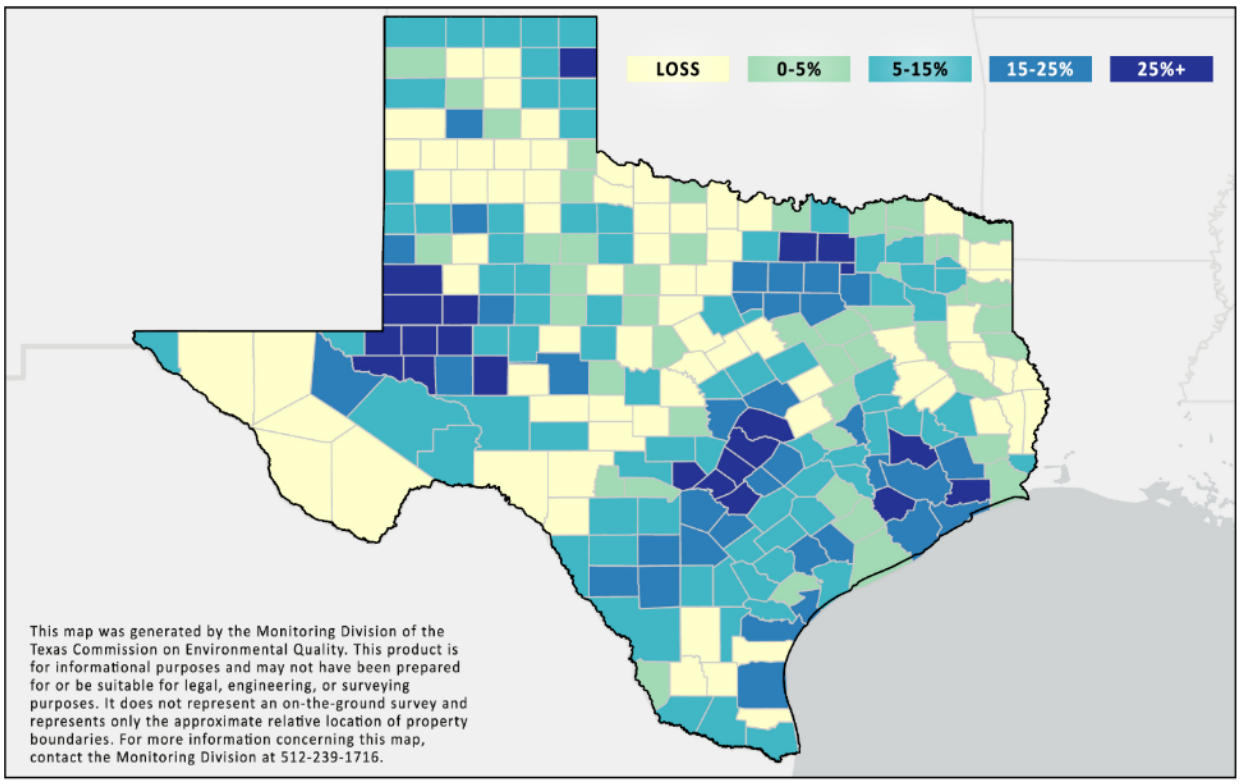


Figure 1: Texas Projected Population Change by County, 2010-2025

The period between the 2000 and 2010 censuses was marked by expansive urban population growth. According to the Texas Demographics Center, it is unlikely that the population will continue to grow at this rate in the long term, however, the TCEQ used projections made with this continued growth rate to estimate future monitoring expectations as this was the most conservative approach. The MSA population projections are provided in Table 2. According to the 2015 estimates and future projections, six MSAs will experience a 20% or greater increase in population by 2025.

Table 2: Texas Population Projections, 2015-2025

Core Based Statistical Area	2015	2020	2025	Change (2015-2020)	Change (2020-2025)	Change (2015-2025)
Abilene	168,955	172,648	176,064	2%	2%	4%
Amarillo	260,602	270,757	282,345	4%	4%	8%
Austin-Round Rock-Georgetown	1,970,909	2,246,701	2,541,890	14%	13%	29%
Beaumont-Port Arthur	395,075	401,319	405,882	2%	1%	3%
Brownsville-Harlingen	418,541	427,881	434,887	2%	2%	4%
College Station-Bryan	243,404	264,016	285,235	8%	8%	17%
Corpus Christi	428,860	455,043	482,137	6%	6%	12%
Dallas-Fort Worth-Arlington	7,007,212	7,688,739	8,437,621	10%	10%	20%
El Paso	842,955	879,520	912,738	4%	4%	8%
Houston-The Woodlands-Sugar Land	6,619,640	7,372,981	8,194,968	11%	11%	24%
Killeen-Temple	429,865	452,983	477,166	5%	5%	11%
Laredo	262,486	276,183	288,160	5%	4%	10%
Longview	284,532	288,399	291,685	1%	1%	3%
Lubbock	307,714	329,262	353,589	7%	7%	15%
McAllen-Edinburg-Mission	822,205	870,366	915,411	6%	5%	11%
Midland	164,112	193,408	230,339	18%	19%	40%
Odessa	158,753	184,841	216,711	16%	17%	37%
San Angelo	118,876	126,036	133,433	6%	6%	12%
San Antonio-New Braunfels	2,376,727	2,632,849	2,908,481	11%	10%	22%
Sherman-Denison	126,409	131,710	136,645	4%	4%	8%
Texarkana	92,594	92,570	92,270	0%	0%	0%
Tyler	222,690	235,143	246,977	6%	5%	11%
Victoria	99,379	105,461	111,542	6%	6%	12%
Waco	261,105	269,669	277,724	3%	3%	6%
Wichita Falls	151,130	151,269	150,625	0%	0%	0%
State of Texas*	27,326,193	29,677,668	32,204,920	9%	9%	20%

Source: Texas Demographic Center, 2018 population data.
https://demographics.texas.gov/Data/TPEPP/Projections/Tool?fid=7F1F04F9E541480F970C16FDA11DA860
*Total includes all counties and statistical areas

National Ambient Air Quality Standards

The EPA has set NAAQS for six principal pollutants. Periodically, the NAAQS are reviewed and may be revised. Primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The current NAAQS are listed in Table 3.

Table 3: National Ambient Air Quality Standards

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
Carbon monoxide	Primary	8 hours	9 ppm	Not to be exceeded more than once per year
Carbon monoxide	Primary	1 hour	35 ppm	Not to be exceeded more than once per year
Lead	Primary and secondary	Rolling 3-month average	0.15 µg/m^3	Not to be exceeded
Ozone	Primary and secondary	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Nitrogen dioxide	Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
Nitrogen dioxide	Primary and secondary	1 year	53 ppb	Annual mean
$PM_{2.5}$	Primary	1 year	12.0 µg/m^3	Annual mean, averaged over 3 years
$PM_{2.5}$	Secondary	1 year	15.0 µg/m^3	Annual mean, averaged over 3 years
$PM_{2.5}$	Primary and secondary	24 hours	35 µg/m^3	98th percentile, averaged over 3 years
PM_{10}	Primary and secondary	24 hours	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur dioxide	Primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations averaged over 3 years
Sulfur dioxide	Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter
PM_{10} – particulate matter of 10 micrometers or less in diameter
ppm – part per million
ppb – part per billion
µg/m^3 – microgram per cubic meter

Sensitive Populations

Under 40 CFR §58.10(d), the FYA must consider the ability of the monitoring network to support air quality characterization for areas with relatively high populations of susceptible individuals. No definition is provided for "susceptible individuals" nor is guidance provided on the term "relatively high" in 40 CFR §58. In 71 Federal Register 200, concerning the addition of the FYA requirement, several commenters noted that this requirement would be challenging to implement, and the EPA acknowledged the challenge in obtaining information regarding distribution of susceptible individuals in specific geographic areas. However, the TCEQ assessed the ability of the federal monitoring network to support air quality characterization by evaluating the network compliance with 40 CFR §58 and its appendices, as well as evaluating monitor placement.

The EPA is required to set health-based NAAQS for pollutants considered harmful to public health and the environment per the FCAA (40 CFR §50). The NAAQS are assessed every five years and are set at levels to protect public health within an adequate margin of safety. The general public, to which the standards are set to protect, includes sensitive members of the population such as children, the elderly, and those individuals with preexisting health conditions. The TCEQ federal ambient air quality network meets, and in many cases exceeds, the federal monitoring requirements and objectives specified in 40 CFR §58 and its appendices, as detailed in each FYA section by pollutant. As such, the number, type, and location of monitors in the TCEQ federal network is sufficient to characterize area air quality for use in evaluations to determine compliance with the NAAQS, for all members of the public, including susceptible individuals.

TCEQ federally supported monitors are generally sited in populated areas. Approximately 95% of the total Texas population is located in 16 Texas CBSAs with a minimum population of 250,000 persons and approximately 91% of TCEQ federally supported monitors, listed in Appendix A, are sited in these areas. Approximately 75% of the TCEQ federally supported monitors are located in CBSAs currently or previously designated nonattainment. The public, including susceptible individuals, are supported by the ambient air monitoring data from air pollutant monitors located in CBSAs with current or previous air quality concerns. In each FYA section, the TCEQ reviewed regional air quality plans for areas with current and prior nonattainment designations to ensure monitor placement and quantity are adequate to characterize air quality and show progress towards attainment.

Additionally, the TCEQ evaluates measurements of air toxics in ambient air collected from air monitoring sites that are located throughout the state. TCEQ toxicology personnel evaluate these measured chemical concentrations for potential to cause adverse health effects and odors. The TCEQ uses screening levels, termed Air Monitoring Comparison Values (AMCVs), that are set to protect human health and welfare, including for sensitive populations, to evaluate monitored concentrations of ambient pollutants. AMCVs are used by the TCEQ to determine if there is a potential health concern. Although this FYA focuses on federal ambient monitoring requirements, full Toxicology Division evaluations of ambient air toxic data for monitors that are operated in addition to these requirements are available online at https://www.tceq.texas.gov/toxicology/regmemo/AirMain.html.

Since AMCVs are screening levels, and not levels at which a health effect would be expected, when ambient concentrations are measured above the AMCVs, the TCEQ conducts a more in-depth review of the data and sampling conditions. If consistently elevated concentrations are observed, additional agency resources may be focused, 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. More information about the APWL can be found online at https://www.tceq.texas.gov/toxicology/apwl/apwl.html.

Monitoring Objectives

Ambient air monitoring networks must be designed to meet three basic monitoring objectives under 40 CFR §58, Appendix D, Section 1. The TCEQ air monitors described in this plan must continue to meet the objectives as summarized below. Objectives are not prioritized and are considered independently.

1. Provide air pollution data to the general public in a timely manner.
2. Provide data to support compliance with ambient air quality standards and emission strategy development.
3. Provide data to support air pollution studies.

Pollutants

Ozone

Characteristics

Ground-level O_3 is not emitted directly into the air but is created by chemical reactions between oxides of nitrogen (NO_x) and VOCs in the presence of sunlight, therefore, source-oriented monitors are not sited for this pollutant. 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 (mainly trees) also release VOCs that can contribute to ground-level O_3. Because it takes time for O_3 to form, a dispersed network across urban areas is necessary to fully evaluate contributing sources and regional O_3 levels.

Monitoring Requirements

State or Local Air Monitoring Stations (SLAMS) Requirements

Title 40 CFR §58, Appendix D, Section 4.1, requires O_3 monitoring in each MSA with a population of 350,000 or more persons. Monitoring is also required in MSAs with lower populations if the design value for that MSA is equal to or greater than 85% of the NAAQS. Monitoring requirements are outlined in Table 4. According to 2018 United States (U.S.) Census Bureau population estimates and 2016-2018 eight-hour O_3 design values, the TCEQ must operate a minimum of 27 O_3 monitors to meet SLAMS network requirements.

Table 4: Ozone Monitoring Requirements

MSA Population[1]	Most recent 3-year design value concentrations ≥85% of any O_3 NAAQS[2]	Most recent 3-year design value concentrations <85% of any O_3 NAAQS[3, 4]
>10,000,000	4	2
4,000,000 to 10,000,000	3	1
350,000 to <4,000,000	2	1
50,000 to <350,000	1	0

[1]Minimum monitoring requirements apply to the metropolitan statistical area (MSA).
[2]The ozone (O_3) National Ambient Air Quality Standards (NAAQS) levels are defined in 40 CFR §50.
[3] These minimum monitoring requirements apply in the absence of a design value.
[4]MSA must contain an urbanized area of 50,000 or more population.
≥ - greater than or equal to
< - less than
> - greater than
% - percent

NCore and PAMS Requirements

In addition to SLAMS O_3 requirements, 40 CFR §58, Appendix D, Sections 3 and 5, require O_3 monitoring at National Core Multipollutant Monitoring Stations (NCore) sites to meet NCore design criteria and at NCore sites in CBSAs with a population of 1,000,000 or more persons, to meet Photochemical Assessment Monitoring Stations (PAMS) requirements. The TCEQ meets combined NCore and PAMS requirements with O_3 monitors at the three NCore sites listed in Table 5.

Table 5: National Core Multipollutant Monitoring Stations

Core Based Statistical Area	Site Name	2018 Population Estimates*	PAMS
Dallas-Fort Worth-Arlington	Dallas Hinton	7,539,711	Yes
Houston-The Woodlands-Sugar Land	Houston Deer Park 2	6,997,384	Yes
El Paso	El Paso Chamizal	845,553	No

*United States Census Bureau population estimates as of July 1, 2018.
PAMS – Photochemical Assessment Monitoring Stations

Carbon Monoxide

Characteristics

CO is a colorless, odorless gas formed by the incomplete reaction of air with carbon-containing compounds. CO is primarily emitted from fossil fuel powered engines, including motor vehicles and non-road engines and vehicles (such as construction equipment and boats). Higher levels of CO generally occur in areas with heavy traffic congestion such as downtown areas, at border crossings, and near or on major highways. Other CO emission sources can include industrial processes, residential wood burning, residential trash burning, and natural sources, such as forest fires.

Monitoring Requirements

NCore Monitoring Requirements

Title 40 CFR §58, Appendix D, Section 3.0 requires CO monitoring at NCore sites. The EPA's Technical Assistance Document (TAD) for Precursor Gas Measurements in the NCore Multi-Pollutant Monitoring Network – Version 4 (September 2005) recommends

high-sensitivity CO monitors at the NCore sites. The TCEQ meets this technical recommendation with high-sensitivity CO monitors at the three NCore sites listed in Table 5.

Near-Road Monitoring Requirements

Title 40 CFR §58, Appendix D, Section 4.2 requires collocating one CO monitor with one required near-road NO_2 monitor in CBSAs with populations of 1,000,000 or more persons. The TCEQ meets this requirement with CO monitors at the following near-road sites.

- Dallas--Fort Worth-Arlington (DFW) CBSA: Fort Worth California Parkway North
- Houston-The Woodlands-Sugar Land (Houston) CBSA: Houston North Loop
- San Antonio-New Braunfels (San Antonio) CBSA: San Antonio Interstate 35
- Austin-Round Rock-Georgetown (Austin) CBSA: Austin North Interstate 35

Oxides of Nitrogen

Characteristics

The sum of nitric oxide (NO) and NO_2 is commonly called NO_x. NO_2 is regulated as a primary pollutant, but NO_x is also important as a contributor to O_3 and $PM_{2.5}$ formation. NO_x is most commonly emitted from on-road emissions sources such as cars, trucks, and buses as well as electric power plants and industrial combustion. For these reasons, NO_x monitors are sited to evaluate emission sources and regional concentrations across O_3 areas of interest.

Monitoring Requirements

Area-Wide Monitoring Requirements

Title 40 CFR §58, Appendix D, Section 4.3.3 requires one area-wide ambient air quality monitoring site in each CBSA with a population of 1,000,000 or more persons. The requirements stipulate that these sites be located in the areas with the highest expected NO_2 concentration that are also representative of a neighborhood or larger (urban) spatial scale. Title 40 CFR §58, Appendix D, Section 4.3.5 (3) and (4), define neighborhood scale monitoring as representative of ambient air concentrations in an area between 0.5 and 4.0 kilometers with relatively uniform land use. Urban scale monitoring is representative of ambient air concentrations over large portions of an urban area with dimensions between 4 and 50 kilometers.

Based on 2018 U.S. Census Bureau population estimates for Texas, area-wide neighborhood or urban scale NO_2 monitoring is required in four CBSAs. The NO_2 monitors at the following sites meet these area-wide requirements.

- DFW CBSA: Dallas Hinton
- Houston CBSA: Clinton
- San Antonio CBSA: San Antonio Northwest
- Austin CBSA: Austin Northwest

Regional Administrator Monitoring Requirements

Title 40 CFR §58, Appendix D, Section 4.3.4 states that the EPA Regional Administrators collaborate with the states to designate a minimum of 40 NO_2 monitoring stations nationwide that are positioned to protect susceptible and vulnerable populations. The TCEQ collaborated with the EPA to identify the four Texas monitoring sites listed below to meet this requirement.

- DFW CBSA: Arlington Municipal Airport
- Houston CBSA: Clinton
- El Paso CBSA: Ascarate Park Southeast (SE)
- Beaumont-Port Arthur (Beaumont) CBSA: Nederland High School

Near-Road Monitoring Requirements

Title 40 CFR §58, Appendix D, Section 4.3.2 requires one microscale near-road NO_2 monitor located near a major road with high annual average daily traffic counts in each CBSA with a population of 1,000,000 or more persons. An additional near-road monitor is required in each CBSA with a population of 2,500,000 or more persons. The current TCEQ near-road monitoring network meets requirements with the six near-road sites listed below. A second near-road monitoring site is recommended in the San Antonio CBSA due to a 2018 Census Bureau estimated population increase exceeding 2,500,000 or more persons

- DFW CBSA: Dallas LBJ Freeway and Fort Worth California Parkway North
- Houston CBSA: Houston Southwest Freeway and Houston North Loop
- San Antonio CBSA: San Antonio Interstate 35
- Austin CBSA: Austin North Interstate 35

NCore and PAMS Monitoring Requirements

The TCEQ meets NCore monitoring requirements listed in 40 CFR §58, Appendix D, Section 3(b) with NO and NO_y measured at the NCore sites listed in Table 5.

The EPA PAMS program revisions under the final rule published October 26, 2015, and listed in 40 CFR §58, Appendix D, Section 5, require state agencies to collect and report true NO_2, NO, and NO_y measurements at NCore sites in CBSAs with 1,000,000 or more persons. The TCEQ meets the PAMS network monitoring requirements with hourly averaged NO_2, NO, and NO_y measured at the Dallas Hinton and Houston Deer Park number (#) 2 sites.

Sulfur Dioxide

Characteristics

Based on Texas' EI data, the largest source of SO_2 emissions is fossil fuel combustion at power plants and other industrial facilities. SO_2 emissions also come from metal ore extraction and high-sulfur fuels burned in locomotives, large ships, and non-road equipment. SO_2 monitoring has historically been focused on populated areas near larger emission sources but now includes required monitoring around larger emission sources regardless of population.

Monitoring Requirements

Population Weighted Emissions Index Requirements

Title 40 CFR §58, Appendix D, Section 4.4.2, requires states to establish an SO_2 monitoring network based on the PWEI calculations. These indices are calculated by multiplying the CBSA population by the EI data for counties within that CBSA. The calculated values are divided by one million to obtain the CBSA PWEI. The PWEI monitoring requirements include the following.

- One monitor in CBSAs with a PWEI equal to or greater than 5,000, but less than 100,000.
- Two monitors in CBSAs with a PWEI equal to or greater than 100,000, but less than 1,000,000.
- Three monitors in CBSAs with a PWEI equal to or greater than 1,000,000.

The TCEQ used 2018 U.S. Census Bureau population estimates and 2017 NEI data with 2018 TCEQ point-source EI data to calculate the PWEIs and to determine the minimum monitoring requirements for each CBSA (assessment included in the 2020 AMNP). The TCEQ meets the PWEI requirements with six monitors as shown in Table 6.

Table 6: Population Weighted Emissions Index Monitoring Stations

Core Based Statistical Area	Site Name(s)	2020 Area PWEI*
Dallas-Fort Worth-Arlington	Kaufman	34,042
Houston-The Woodlands-Sugar Land	Clinton and Houston Croquet	347,812
San Antonio-New Braunfels	Calaveras Lake	77,195
Beaumont-Port Arthur	Port Arthur West	8,403
Longview	Longview	12,383

PWEI – population weighted emissions index
*PWEI evaluation from Texas Commission on Environmental Quality *2020 Annual Monitoring Network Plan*

Data Requirements Rule Requirements

The Data Requirements Rule (DRR) requires air agencies to characterize air quality around sources emitting 2,000 tons per year (tpy) or more of SO_2 not located in a previously designated nonattainment area. For air quality characterization in areas where applicable sources were identified for evaluation by monitoring, the TCEQ continues to meet DRR requirements with 11 SO_2 monitors located near 13 sources. Details for the TCEQ's SO_2 source evaluation, modeling, and monitoring recommendations are in the TCEQ 2017 AMNP.

NCore Requirements

Title 40 CFR §58, Appendix D, Section 3 requires states to monitor SO_2 at NCore sites. The TCEQ meets this requirement with three high-sensitivity SO_2 monitors at the NCore sites listed in Table 5.

Particulate Matter

Characteristics

$PM_{2.5}$ and PM_{10} are a complex mixture of particles and liquid droplets that can include acids, salts, organic chemicals, metal, dust, or soil. Both particulate matter fractions can be emitted from a variety of natural and anthropogenic sources. Most ambient $PM_{2.5}$ comes from long range transport and from atmospheric reactions that form $PM_{2.5}$ from gaseous emissions including SO_2, NO_x, and both anthropogenic and biogenic VOCs. Elevated particulate matter can impact air quality locally, such as when soil is disturbed on unpaved roads, or distant from the source, such as when smoke or dust is transported from out-of-state and international sources. Particulate matter monitoring is generally conducted over dispersed areas with an emphasis on monitoring in upwind locations to evaluate incoming particulate matter concentrations.

Particulate monitoring is performed using either discrete sample collection on a filter over 24 hours or continuous collection in one-hour increments. Although the PM_{10} NAAQS is set to be protective of exposures to particles between 2.5 and 10 micrometers in size ($PM_{10-2.5}$), regulatory ambient air monitors measure all particles less than 10 micrometers in size as PM_{10}. In compliance with existing rules, $PM_{10-2.5}$ is monitored at the NCore sites listed in Table 5.

PM_{10} Monitoring Requirements

The TCEQ PM_{10} network meets the area requirements of 40 CFR §58, Appendix D, Section 4.6, which specifies the number of PM_{10} monitors required in MSAs based on population and available measured concentrations. Monitoring requirements are listed in Table 7. Compliance with the PM_{10} standard is based on the number of measured exceedances of the 150 micrograms per cubic meter ($\mu g/m^3$) standard averaged over three years.

Table 7: Particulate Matter of 10 Micrometers or Less Minimum Monitoring Requirements

Population Category	High Concentration[1]	Medium Concentration[2]	Low Concentration[3]
>1,000,000	6-10	4-8	2-4
500,000 to 1,000,000	4-8	2-4	1-2
250,000 to 500,000	3-4	1-2	0-1
100,000 to 250,000	1-2	0-1	0

[1]High Concentration areas are those for which ambient PM_{10} data show ambient concentrations exceeding the PM_{10} National Ambient Air Quality Standards (NAAQS) by 20 percent or more.
[2]Medium Concentration areas are those for which ambient PM_{10} data show ambient concentrations exceeding 80 percent of the PM_{10} NAAQS.
[3]Low Concentration areas are those for which ambient PM_{10} data show ambient concentrations less than 80 percent of the PM_{10} NAAQS.
PM_{10} – particulate matter of 10 micrometers or less in diameter
> – greater than

$PM_{2.5}$ General and Continuous Monitoring Requirements

Title 40 CFR §58, Appendix D, Section 4.7 requires $PM_{2.5}$ monitoring in MSAs with populations of 500,000 or more persons and in MSAs with lower populations if measured $PM_{2.5}$ design values for an MSA equal or exceed 85% of the NAAQS. Monitoring requirements are outlined in Table 8. Under 40 CFR §58, Appendix D,

Section 4.7.2, the TCEQ must operate continuous $PM_{2.5}$ monitors equal to at least one-half the required number of SLAMS-required sites. At least one of these required continuous analyzers in each MSA must be collocated with one of the required FRM/FEM monitors unless the FEM monitor is itself a continuous FEM monitor. Additionally, 40 CFR §58, Appendix D, Section 4.7.3 requires each state to install and operate at least one $PM_{2.5}$ site to monitor for regional background and at least one $PM_{2.5}$ site to monitor regional transport. Appendix A lists monitors fulfilling the regional background and transport requirements.

Table 8: Particulate Matter of 2.5 Micrometers or Less Minimum Monitoring Requirements

MSA population	Most recent 3-year design value ≥85% of any $PM_{2.5}$ NAAQS	Most recent 3-year design value <85% of any $PM_{2.5}$ NAAQS
>1,000,000	3	2
500,000 to 1,000,000	2	1
50,000 to <500,000	1	0

< – less than
> – greater than
≥ – greater than or equal to
% - percent
MSA – metropolitan statistical area
NAAQS – National Ambient Air Quality Standards
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less in diameter

NCore Monitoring Requirements

Title 40 CFR §58, Appendix D, Section 3 requires $PM_{2.5}$ FRM mass, continuous $PM_{2.5}$ FEM mass, speciated $PM_{2.5}$, and $PM_{10\text{-}2.5}$ mass monitoring at all NCore sites. The TCEQ meets this requirement with $PM_{2.5}$ monitors at the three NCore sites listed in Table 5.

Near-Road $PM_{2.5}$ Monitoring Requirements

Title 40 CFR §58, Appendix D, Section 4.7.1(b)(2) requires collocating one FRM or FEM $PM_{2.5}$ monitor with one required near-road NO_2 monitor in CBSAs with populations of 1,000,000 or more persons. The TCEQ meets this requirement with $PM_{2.5}$ monitors at the near-road sites listed below.

- DFW CBSA: Fort Worth California Parkway North
- Houston CBSA: Houston North Loop
- San Antonio CBSA: San Antonio Interstate 35
- Austin CBSA: Austin North Interstate 35

Lead

Characteristics

Lead (Pb) is a point-source pollutant with concentrations dropping rapidly with distance from the source. Pb can be released directly into the air as suspended particles. Since the ban of Pb gasoline in on-road vehicles in the 1990s, no regional Pb air quality issues have been identified. Pb monitoring is only federally required near large point sources and airports reporting large Pb emissions.

Monitoring Requirements

The TCEQ Pb network meets 40 CFR §58, Appendix D, Section 4.5 monitoring requirements. This section requires state agencies to conduct ambient air Pb monitoring near Pb sources that have been shown or are expected to contribute to a maximum ambient air Pb concentration in excess of the standard. Title 40 CFR §58, Appendix D, Section 4.5(a) requires a minimum of one source-oriented ambient air Pb monitoring site to measure maximum concentrations near each non-airport facility emitting 0.50 tpy or more of Pb annually, based on either the most recent NEI data or annual EI data submitted to meet state reporting requirements. Pb monitoring is required at Frisco Eubanks, Frisco Stonebrook, and Terrell Temtex.

Pb Waivers

Under 40 CFR §58, Appendix D, Section 4.5(a)(ii), the EPA Regional Administrator may waive the requirement in 40 CFR §58, Appendix D, 4.5(a) for monitoring near specific Pb sources with sufficient demonstration that the Pb source will not contribute to a maximum concentration in ambient air greater than 50% of the NAAQS based on historical monitoring data, modeling, or other approved means. All approved waivers must be renewed every five years as part of the network assessment required under 40 CFR §58.10(d). Lead waiver renewals are provided in Appendix B.

Photochemical Assessment Pollutant Monitoring

Characteristics

The TCEQ Photochemical Assessment Monitoring Stations (PAMS) network is designed to meet requirements and support enhanced O_3 and O_3 precursor monitoring activities. The PAMS network includes monitoring in currently designated O_3 nonattainment areas in addition to areas with previous O_3 nonattainment designations that have not been formally redesignated to attainment.

Monitoring Requirements

Photochemical assessments for O_3 precursors include monitoring for VOCs and carbonyls, but with no federal ambient air quality standards. Monitoring objectives for photochemical assessments include creating a representative VOC and carbonyl ambient air database useful for photochemical grid modeling, developing emission control strategies, and furthering the understanding of pollution transport mechanisms to aid in reaching attainment designations.

Title 40 CFR §58, Appendix D, Section 5 requires state agencies to collect and report hourly averaged speciated VOCs and three eight-hour averaged carbonyl samples on a one-in-three day schedule during June, July, and August at NCore sites located in CBSAs with a population of 1,000,000 or more persons as part of the PAMS network requirements. The TCEQ meets the PAMS network monitoring requirements with VOCs by autoGC and carbonyl monitoring at the Dallas Hinton and Houston Deer Park #2 sites. The TCEQ performs additional VOC and carbonyl monitoring, in support of the PAMS enhanced monitoring plan, as listed in Appendix A.

The TCEQ collects ambient VOC data in two ways: discrete canister samples and near-real-time automated gas chromatography (autoGC) samples. The target VOC and carbonyl compounds are listed in Table 9.

Table 9: TCEQ Target Volatile Organic Compounds and Carbonyl Compounds

Canister Volatile Organic Compound	Automated Gas Chromatograph Volatile Organic Compound	Carbonyl Compound
1,1,2,2-tetrachloroethane	1,2,3-trimethylbenzene	2,5-dimethylbenzaldehyde
1,1,2-trichloroethane	1,2,4-trimethylbenzene	acetaldehyde
1,1-dichloroethane	1,3,5-trimethylbenzene	acetone
1,1-dichloroethylene	1,3-butadiene	acrolein - unverified
1,2,3-trimethylbenzene	1-butene	benzaldehyde
1,2,4-trimethylbenzene	1-pentene	butyraldehyde
1,2-dichloropropane	2,2,4-trimethylpentane	crotonaldehyde
1,3,5-trimethylbenzene	2,2-dimethylbutane	formaldehyde
1,3-butadiene	2,3,4-trimethylpentane	heptanal
1-butene	2,3-dimethylpentane	hexanaldehyde
1-hexene and 2-methyl-1-pentene	2,4-dimethylpentane	isovaleraldehyde
1-pentene	2-methylheptane	m- and p-tolualdehyde
2,2,4-trimethylpentane	2-methylhexane	methacrolein
2,2-dimethylbutane	3-methylheptane	methyl ethyl ketone
2,3,4-trimethylpentane	3-methylhexane	o-tolualdehyde
2,3-dimethylbutane	acetylene	propionaldehyde
2,3-dimethylpentane	benzene	valeraldehyde
2,4-dimethylpentane	c-2-butene	
2-chloropentane	c-2-pentene	
2-methyl-2-butene	cyclohexane	
2-methylheptane	cyclopentane	
2-methylhexane	ethane	
2-methylpentane	ethylbenzene	
3-methyl-1-butene	ethylene	
3-methylheptane	isobutane	
3-methylhexane	isopentane	
3-methylpentane	isoprene	
4-methyl-1-pentene	isopropylbenzene - cumene	
acetylene	methylcyclohexane	
benzene	methylcyclopentane	
bromomethane	n-butane	
carbon tetrachloride	n-decane	
chlorobenzene	n-heptane	
chloroform	n-hexane	
chloromethane	n-nonane	
cis-1,3-dichloropropene	n-octane	
cis-2-butene	n-pentane	
cis-2-hexene	n-propylbenzene	
cis-2-pentene	o-xylene	
cyclohexane	p-xylene and m-xylene	

Canister Volatile Organic Compound	Automated Gas Chromatograph Volatile Organic Compound	Carbonyl Compound
cyclopentane	propane	
cyclopentene	propylene	
dichlorodifluoromethane	styrene	
dichloromethane	t-2-butene	
ethane	t-2-pentene	
ethylbenzene	toluene	
ethylene		
ethylene dibromide		
ethylene dichloride		
isobutane		
isopentane		
isoprene		
isopropylbenzene		
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-xylene and m-xylene		
p-diethylbenzene		
p-ethyltoluene		
propane		
propylene		
styrene		
tetrachloroethylene		
toluene		
trans-1,3-dichloropropene		
trans-2-butene		
trans-2-hexene		
trans-2-pentene		

Canister Volatile Organic Compound	Automated Gas Chromatograph Volatile Organic Compound	Carbonyl Compound
trichloroethylene		
trichlorofluoromethane		
vinyl chloride		

The VOC monitoring network is supplemented by state- and industry-initiated monitoring dispersed throughout Texas, although a review of these monitors and the monitor placement is outside the scope of this assessment. More information about these samplers is available online at https://www17.tceq.texas.gov/tamis/index.cfm?fuseaction=home.welcome.

Coastal Area Evaluation

(Beaumont-Port Arthur, Corpus Christi, Houston-The Woodlands-Sugar Land, and Victoria Areas)

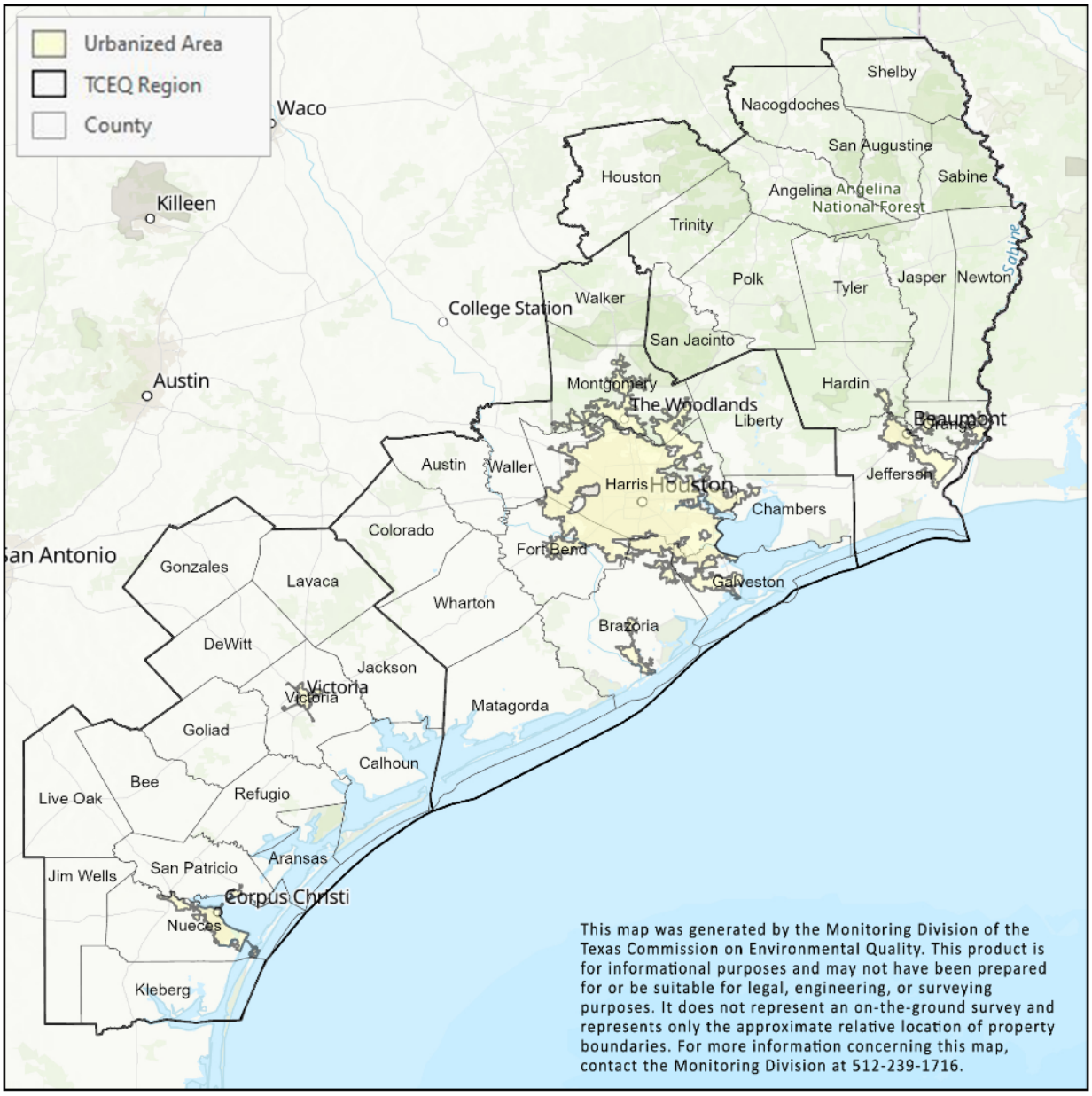


Figure 2: Coastal Area Counties and Urban Areas

Coastal Area Characteristics and Background

Wind Patterns

Figure 2 illustrates the counties included in the Coastal area evaluation. Figure 3, Figure 4, and Figure 5 illustrate typical coastal area annual average wind speed and direction wind roses from local airport meteorological sensors averaged from 2014 to 2018. Figure 3 wind roses were derived from Houston Intercontinental Airport and Scholes International Airport at Galveston. Figure 4 wind roses were derived from Beaumont Municipal Airport and Orange County Airport. Figure 5 wind roses were derived from Corpus Christi Naval Air Station, Corpus Christi International, and Victoria Regional Airport. Wind data indicate the dominant flow is from the south-southeast from the Texas Gulf Coast to the north-northwest. Winds can originate from the North American continent or in the Caribbean Sea or Atlantic Ocean. The coastal area is susceptible to transported pollution due to its location, dominant wind patterns, and flat terrain.

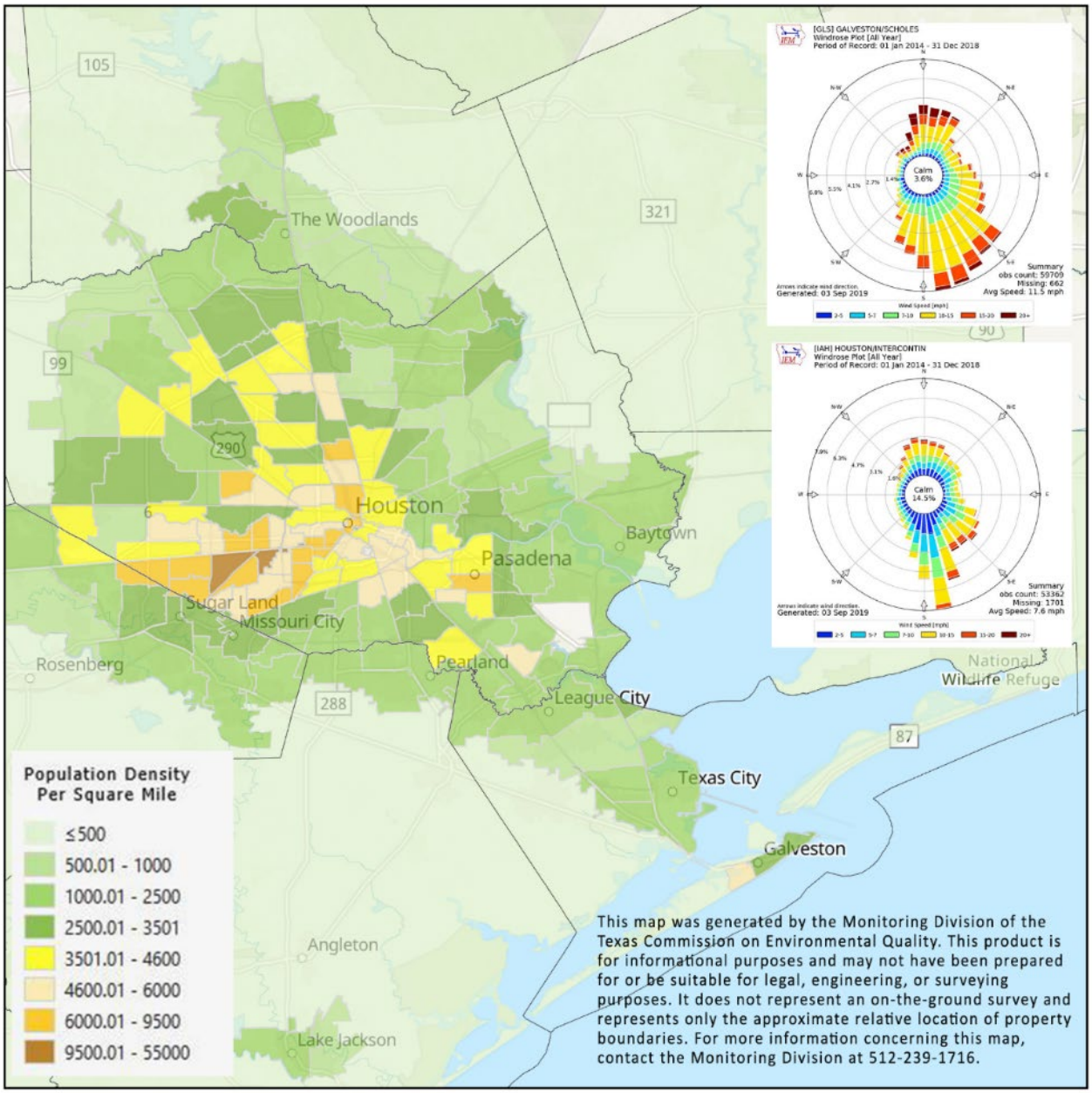


Figure 3: Houston Area Population Density and Wind Roses

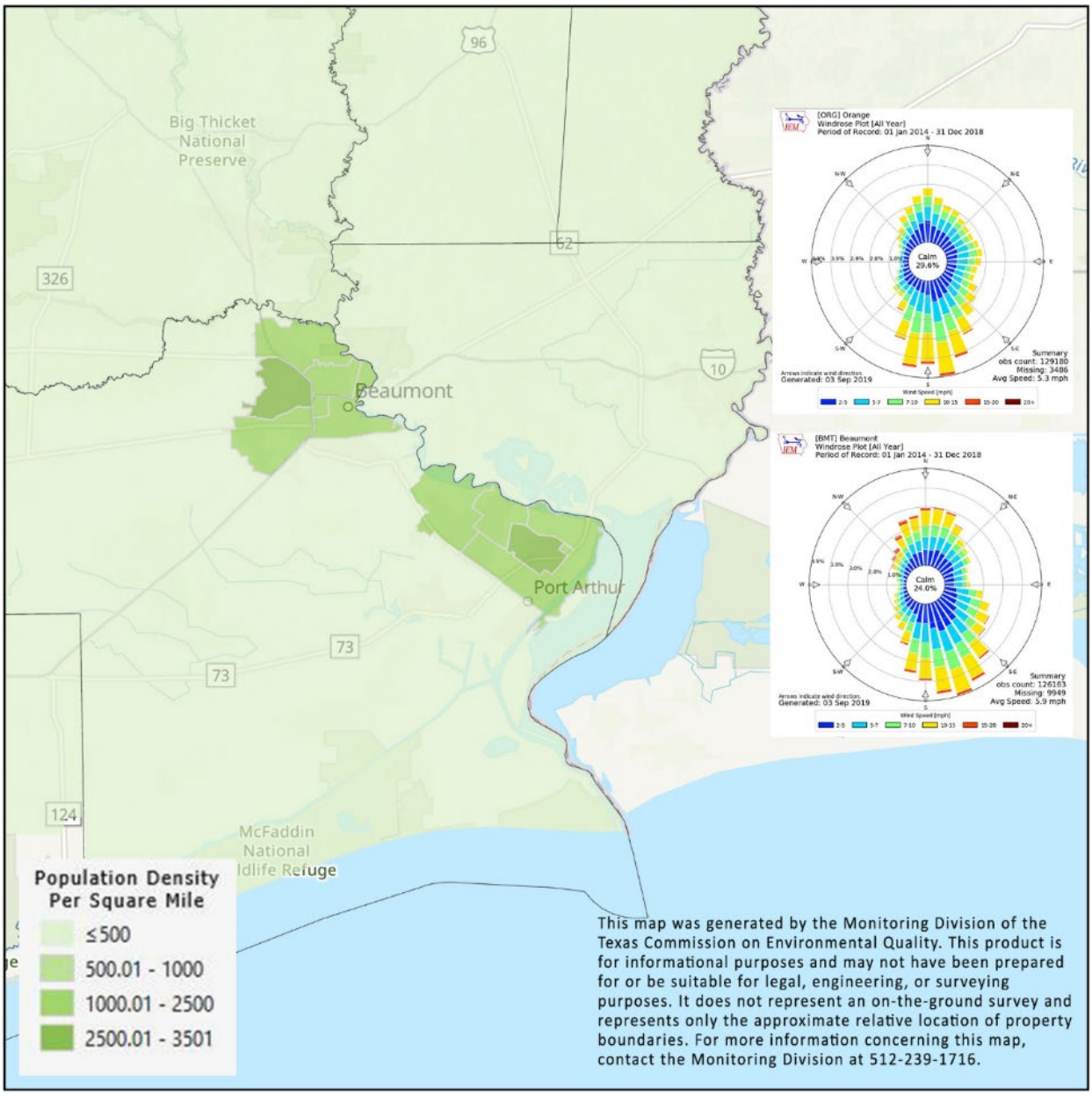


Figure 4: Beaumont Area Population Density and Wind Roses

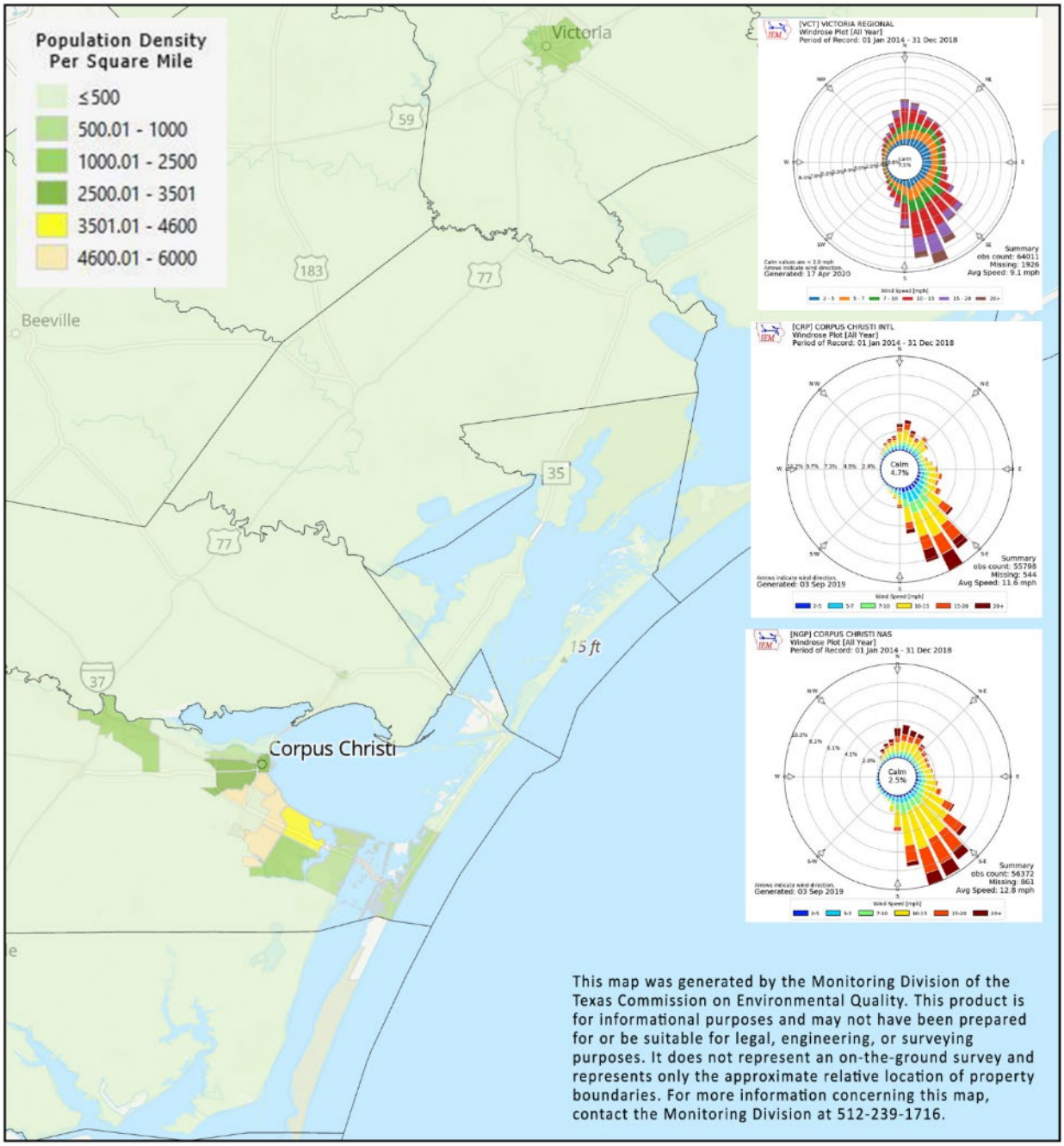


Figure 5: Corpus Christi and Victoria Areas Population Density and Wind Roses

Population and Monitoring Requirements

The Texas Coastal area has four major MSAs that include multiple counties. Monitoring is also conducted in one micropolitan statistical area.

- The Houston-The Woodlands-Sugar Land (Houston) MSA includes Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties

- The Beaumont-Port Arthur (Beaumont) MSA includes Hardin, Jefferson, Newton, and Orange Counties
- The Corpus Christi MSA includes Aransas, Nueces, and San Patricio Counties
- The Victoria MSA includes Goliad and Victoria Counties
- The Kingsville micropolitan statistical area includes Kleberg County

The Texas Demographics Center projects the combined population of the four Texas Coastal area MSAs will exceed 8.3 million persons in 2020. The 2025 projection estimates a 10% population increase from 2020 in the Texas Coastal area with the largest growth at 11% in the Houston area. Figure 3, Figure 4, and Figure 5 illustrate the population densities across the Texas Coastal urban areas based on actual 2010 U.S. Census Bureau data. Population density is illustrated by square mile for each area zip code.

Houston MSA minimum monitoring network design requirements dictated by the latest available census population estimates under 40 CFR §58, Appendix D, include the following.

- four O_3 monitors
- two CO monitors
- five NO_2 monitors
- one NO/NO_y monitor
- three SO_2 monitors
- eight $PM_{2.5}$ monitors
- between two and four PM_{10} monitors

The Beaumont-Port Arthur MSA is required to have the following.

- two O_3 monitors
- one NO_2 monitor
- zero to one PM_{10} monitor
- three SO_2 monitors

The Corpus Christi MSA is required to have the following.

- two O_3 monitors
- zero to one PM_{10} monitor

The Victoria MSA is required to have one O_3 monitor.

The TCEQ evaluated population projection data illustrated in Table 2 against Texas Coastal area minimum monitoring design requirements partially based on MSA population. No Texas Coastal MSA monitoring requirements would increase based on the projected population assessment. The TCEQ meets and exceeds monitoring requirements with the monitors illustrated in Figure 6, Figure 7, and Figure 8.

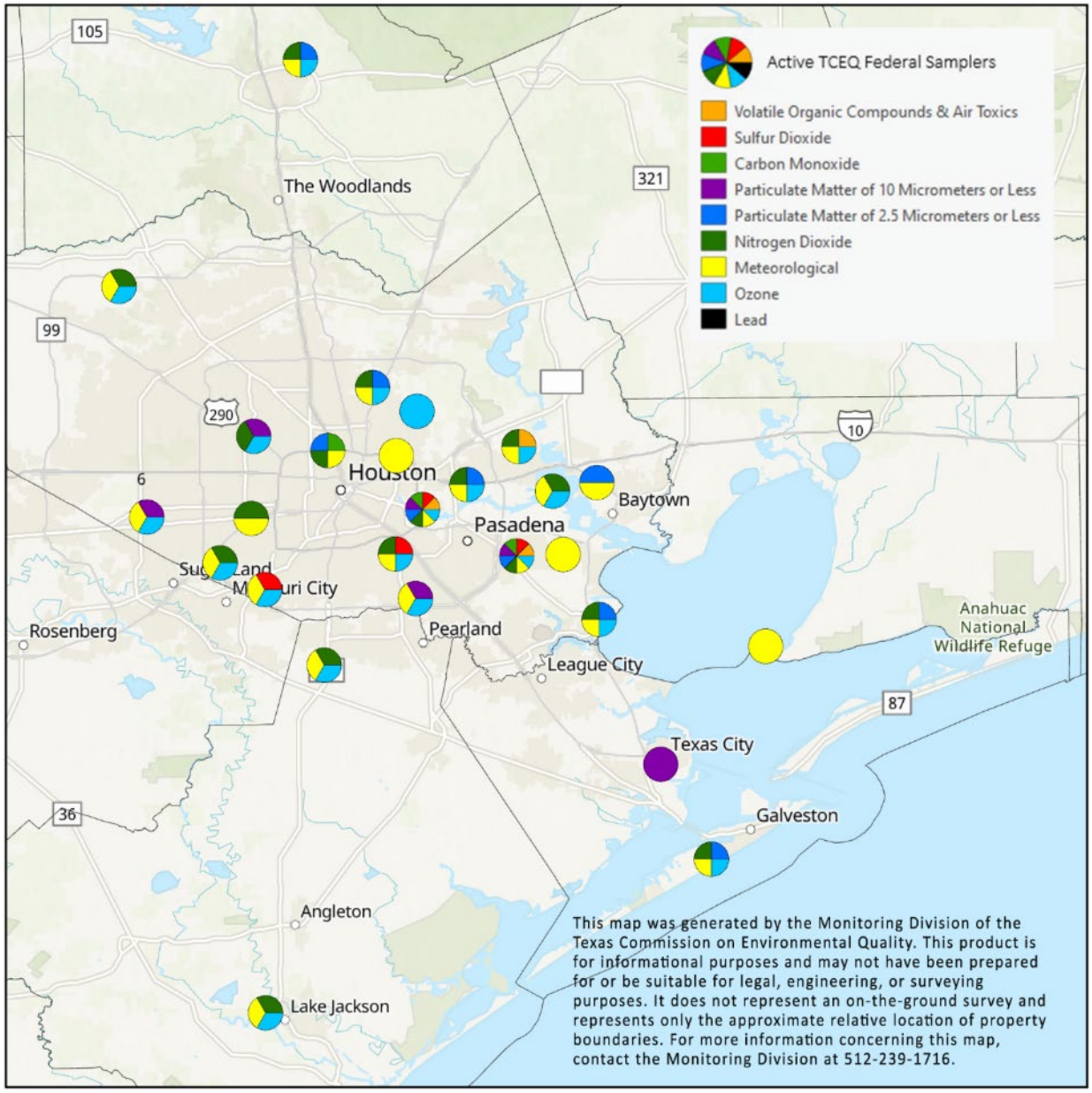


Figure 6: Houston Area Active Sites and Monitors

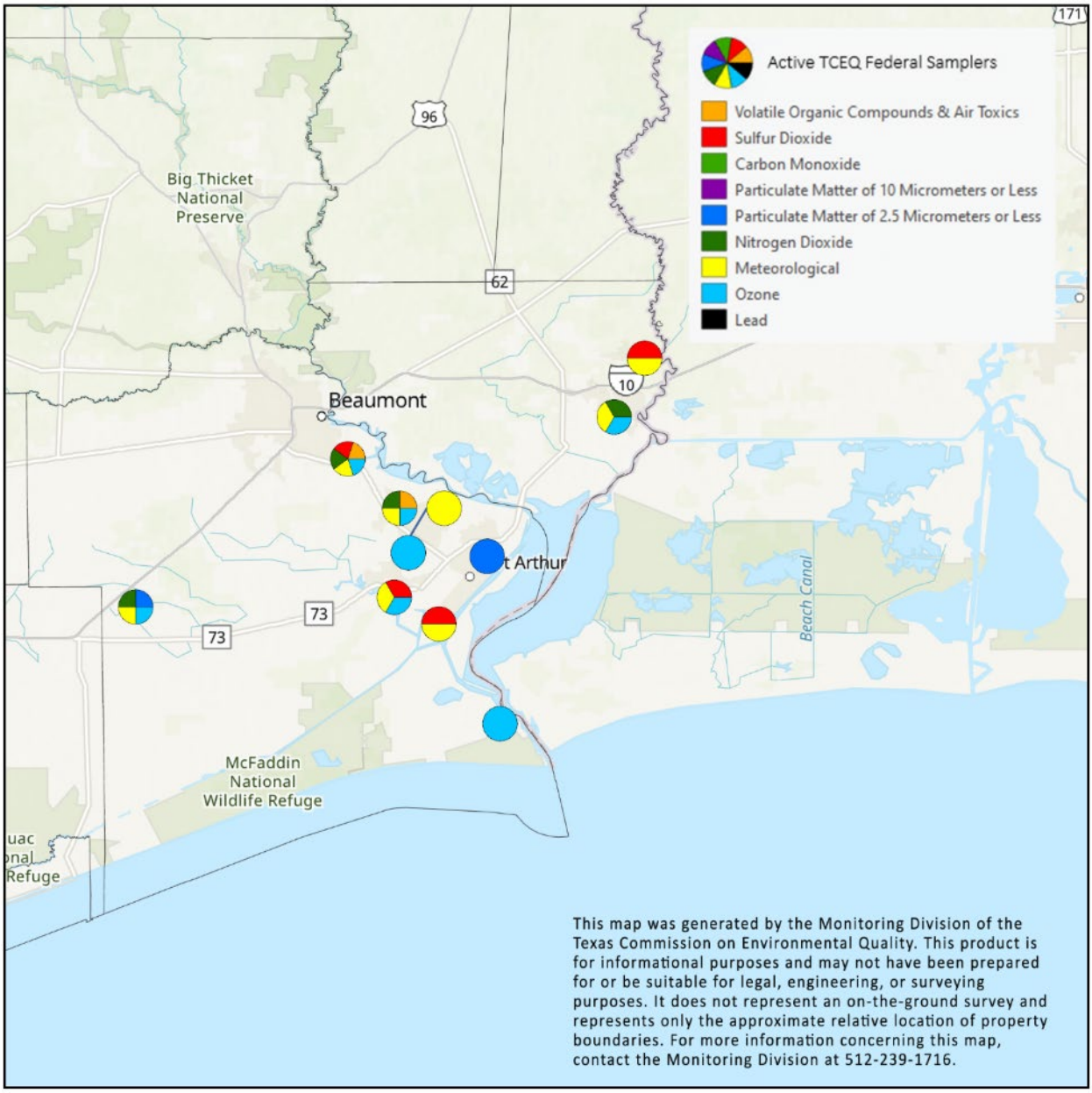


Figure 7: Beaumont Area Active Sites and Monitors

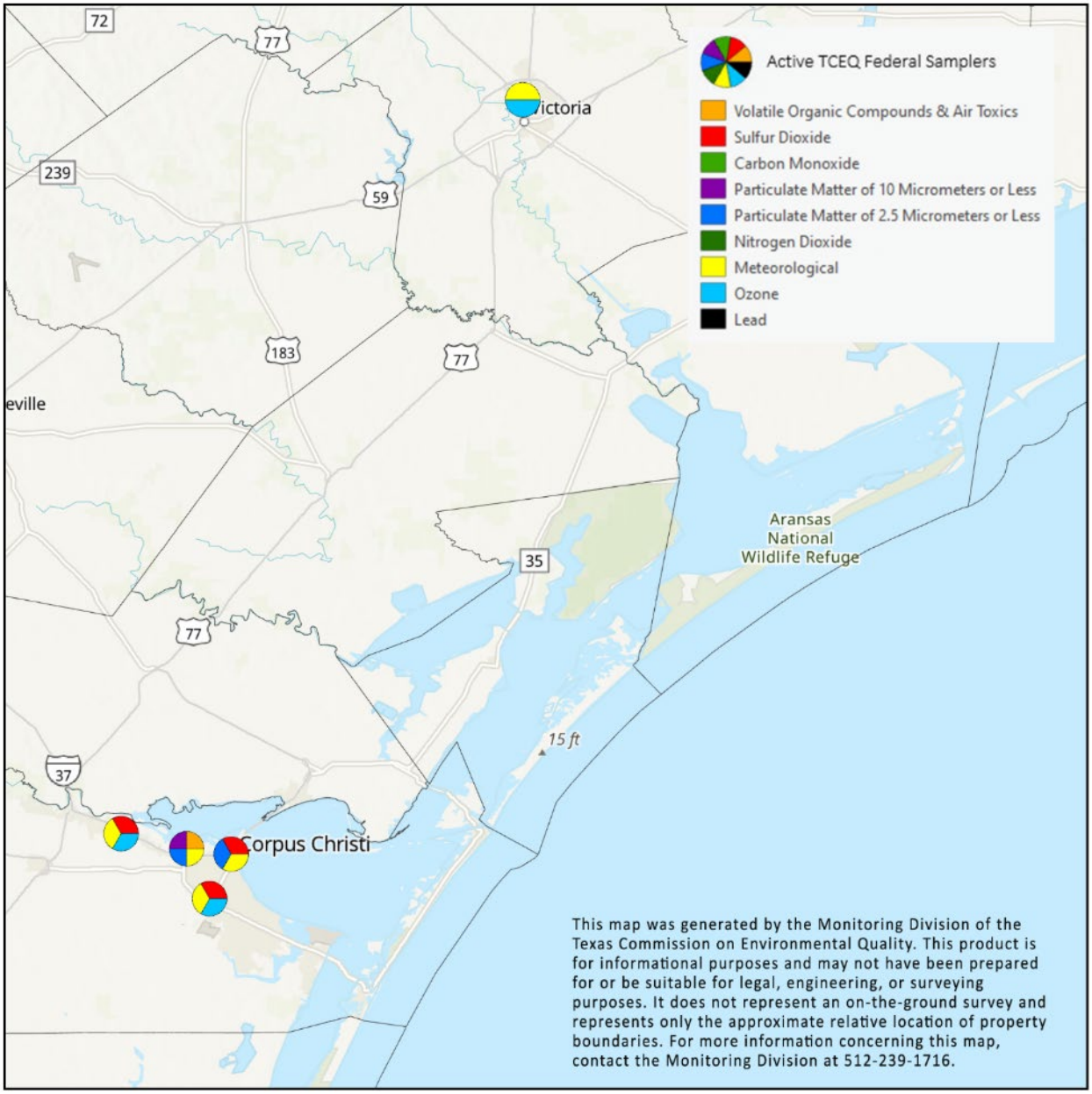


Figure 8: Corpus Christi and Victoria Areas Active Sites and Monitors

Point Sources and Area-Wide Emissions

Anthropogenic Sources

Data from EI source categories show the following for the Texas Coastal area:

- The majority of CO is emitted from on-road and non-road mobile sources.
- NO_x emissions are predominately from point and on-road mobile sources for the Beaumont area, on-road and non-road mobile sources for the Houston area, and point and area sources for the Corpus Christi area.
- Area sources account for the majority of VOC, $PM_{2.5}$, and PM_{10} emissions.

- Point sources are the primary contributors of SO_2 emissions.
- Non-road mobile sources contribute the majority of the total Pb emissions in the Houston and Corpus Christi areas, while point sources contribute the majority in the Beaumont area.

EI source totals by pollutant by area are listed in Table 10. This information, in conjunction with monitoring objectives and regulatory requirements, is used to identify and prioritize areas of interest.

Table 10: 2017 Coastal Area Emissions Inventory in Tons Per Year

Area*	Source	VOC	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
R10-Beaumont	Point	15,015	22,700	20,132	4,726	3,526	20,909	1.55
R10-Beaumont	Area	40,810	10,102	20,234	163,899	19,374	178	0
R10-Beaumont	On-Road Mobile	3,461	10,695	40,039	698	361	48	0
R10-Beaumont	Non-Road Mobile	3,481	7,700	27,342	373	353	114	0.57
R12-Houston	Point	28,985	35,684	33,648	10,181	8,622	49,207	0.92
R12-Houston	Area	112,344	14,034	37,523	294,962	37,103	885	0
R12-Houston	On-Road Mobile	21,619	45,691	266,044	4,202	1,598	431	0
R12-Houston	Non-Road Mobile	12,854	37,287	155,779	1,779	1,683	1,032	2.90
R14-Corpus Christi	Point	9,750	19,237	13,689	2,964	2,110	14,945	0.16
R14-Corpus Christi	Area	62,847	16,275	15,150	110,860	13,761	685	0
R14-Corpus Christi	On-Road Mobile	3,260	10,576	41,560	778	387	55	0
R14-Corpus Christi	Non-Road Mobile	5,147	13,235	34,325	614	588	218	0.47

*Appendix D details the counties included for each area.
CO – carbon monoxide
NO_x – oxides of nitrogen
PM – particulate matter
R – TCEQ Region
SO_2 – sulfur dioxide
VOC – volatile organic compounds

Natural Sources

The Texas Coastal area has historically been affected by elevated $PM_{2.5}$ concentrations from long-range transport and wind flow patterns, as supported by speciation data, satellite imagery and back trajectories. Smoke from Mexico and Central America agricultural burning impacts the Texas Coastal area several times throughout the year, primarily in the spring. Dust from the Sahara Desert typically impacts the Texas Coastal area three to six times each summer. Daily average $PM_{2.5}$ concentrations can reach 35-40 µg/m^3 during these events. Smoke is generally associated with abnormally high organic carbon concentrations. Smoke from agricultural burning in Mexico affects the Texas Coastal area mainly from April to early June each year when the winds bring

in air from eastern Mexico and Central America. Controlled burns, haze, and smoke accumulated from wildfires in the United States and Canada (also known as continental haze) are most common from May through October and often include high O_3 background levels. Long-range transport from other events also impact the Texas Coastal area, including wildfires and dust from storms in the West Texas-New Mexico-Northern Mexico area. More detailed information about these natural events is available in the TCEQ's Exceptional Event Flag Demonstrations web page https://www.tceq.texas.gov/airquality/monops/pm_flags.html.

Regional Air Quality

Regional air quality history and current status were evaluated to determine monitoring needs, including the continued need for monitoring during maintenance periods after an area has meet all air quality standards.

Criteria Pollutants

As of January 1, 2020, the Corpus Christi, Victoria, and Beaumont-Port Arthur (BPA) areas are designated attainment/unclassifiable for all current NAAQS. The Houston-Galveston-Brazoria (HGB) area, which includes Harris, Galveston, Brazoria, Chambers, Fort Bend, Liberty, Montgomery, and Waller Counties, is designated as serious nonattainment for the 2008 eight-hour O_3 NAAQS. The same HGB area counties, except Liberty and Waller Counties, are designated as marginal nonattainment for the 2015 eight-hour O_3 NAAQS.

In June 2010, the primary SO_2 NAAQS was revised to a one-hour standard of 75 parts per billion (ppb). Initial designations were made in Round 1 in July 2013 and no areas in Texas were designated at that time. A March 2015 consent decree between the Sierra Club and the EPA set deadlines for the EPA to complete designations for the one-hour SO_2 NAAQS in three additional rounds. All coastal region counties, with the exception of Jefferson and Orange Counties, were designated as attainment/unclassifiable for the 2010 primary SO_2 NAAQS in Rounds 2 and 3 of designations. The EPA will designate Jefferson and Orange County, located in the BPA area, in Round 4 by the end of 2020.

Current Nonattainment Designations

2008 Eight-Hour Ozone

Effective July 20, 2012, the EPA designated an eight-county HGB area (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties) as marginal nonattainment for the 2008 eight-hour O_3 NAAQS. Effective December 14, 2016, the EPA reclassified the HGB nonattainment area from marginal to moderate. Effective September 23, 2019, the EPA reclassified the HGB nonattainment area from moderate to serious. Under the serious classification, the HGB area is required to attain the 2008 eight-hour O_3 standard by the end of 2020 to meet an attainment date of July 20, 2021.

2015 Eight-Hour Ozone

In June 2018, the EPA designated six counties in the HGB area (Brazoria, Chambers, Fort Bend, Galveston, Harris, and Montgomery Counties) as marginal nonattainment for the 2015 eight-hour O_3 NAAQS, effective August 3, 2018. Under the marginal

classification, the HGB area is required to attain the 2015 eight-hour O_3 standard by the end of 2020 to meet an August 3, 2021, attainment date.

Prior Nonattainment Designations

Revoked 1979 One-Hour Ozone

Houston-Galveston-Brazoria Area

In 1991, the EPA designated an eight-county HGB area, consisting of Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties, as nonattainment for the one-hour O_3 NAAQS with a severe-17 classification in accordance with the 1990 FCAA Amendments. The HGB area was given an attainment date of November 15, 2007. The EPA revoked the one-hour O_3 NAAQS, effective June 15, 2005, however the HGB area had not yet attained the standard at the time it was revoked. The HGB area demonstrated attainment of the one-hour O_3 standard based on 2011 through 2013 monitoring data. On December 12, 2018, the commission adopted a redesignation request and maintenance plan State Implementation Plan (SIP) revision that requests that the EPA formally redesignate the HGB area to attainment for the revoked one-hour O_3 NAAQS and provides a maintenance plan that will ensure the area continues to meet the standard through 2032. On February 14, 2020, the EPA published final approval of the SIP revision and determined that the HGB area has met redesignation criteria and is continuing to attain the one-hour O_3 NAAQS. For more information, visit the HGB: Ozone History webpage (https://www.tceq.texas.gov/airquality/sip/hgb/hgb-ozone-history).

Beaumont-Port Arthur Area

In 1991, the EPA designated the BPA area, which includes Jefferson, Orange, and Hardin Counties, as a serious nonattainment area under the one-hour O_3 NAAQS. The one-hour standard was replaced with the more stringent eight-hour standard in 1997 and was officially revoked in 2005. The BPA area has been attaining the one-hour O_3 standard since 2007. The EPA finalized a determination of attainment for the BPA area for the one-hour O_3 standard in October 2010. Though the BPA area was never formally redesignated to attainment for the revoked one-hour O_3 NAAQS, the maintenance plan for the 1997 eight-hour O_3 NAAQS effectively acted as a maintenance plan for the one-hour O_3 NAAQS. For more information, visit the BPA: Ozone History webpage (https://www.tceq.texas.gov/airquality/sip/bpa/bpa-ozone-history).

Revoked 1997 Eight-Hour Ozone

Houston-Galveston-Brazoria Area

In 2004, the eight-county HGB area was designated as moderate nonattainment under the 1997 eight-hour O_3 NAAQS. In 2008, the EPA approved the Governor's request to voluntarily reclassify the area from a moderate to a severe nonattainment area. The 1997 eight-hour O_3 standard was revoked in April 2015 and the EPA published a final determination of attainment for the 1997 eight-hour O_3 NAAQS for the HGB area in December 2015.

On December 12, 2018, the commission adopted a redesignation request and maintenance plan SIP revision that requests that the EPA formally redesignate the HGB area to attainment for the revoked 1997 eight-hour O_3 NAAQS and provides a maintenance plan that will ensure the area continues to meet the standard through

2032. On February 14, 2020, the EPA published final approval of the SIP revision and determined that the HGB area has met redesignation criteria and is continuing to attain the 1997 eight-hour O_3 NAAQS. For more information, visit the HGB: Ozone History webpage (https://www.tceq.texas.gov/airquality/sip/hgb/hgb-ozone-history).

Beaumont-Port Arthur Area

In 2004, the EPA designated the BPA area a marginal nonattainment area under the 1997 eight-hour O_3 NAAQS. The area was reclassified in 2008 to moderate because it failed to meet its attainment deadline. The 2007 design value showed attainment of the 1997 eight-hour O_3 NAAQS and, in 2010, the EPA approved the TCEQ's request to redesignate the area attainment (maintenance). The area was redesignated to attainment effective November 19, 2010. On February 6, 2019, the TCEQ submitted the BPA area's second 10-year maintenance plan for the 1997 eight-hour O_3 NAAQS to the EPA. For more information, visit the BPA: Ozone History webpage (https://www.tceq.texas.gov/airquality/sip/bpa/bpa-ozone-history).

Coastal Monitoring Network Evaluation

Ozone

The O_3 network in the Texas Coastal area fulfills SLAMS requirements for population and O_3 design values, and NCore and PAMS requirements. Figure 6, Figure 7, and Figure 8 show the area active O_3 monitors at sites with a light blue section. Appendix A lists active and recently decommissioned O_3 monitors, locations, monitoring objectives, and associated spatial scales.

Houston Area

Network History and Current Status

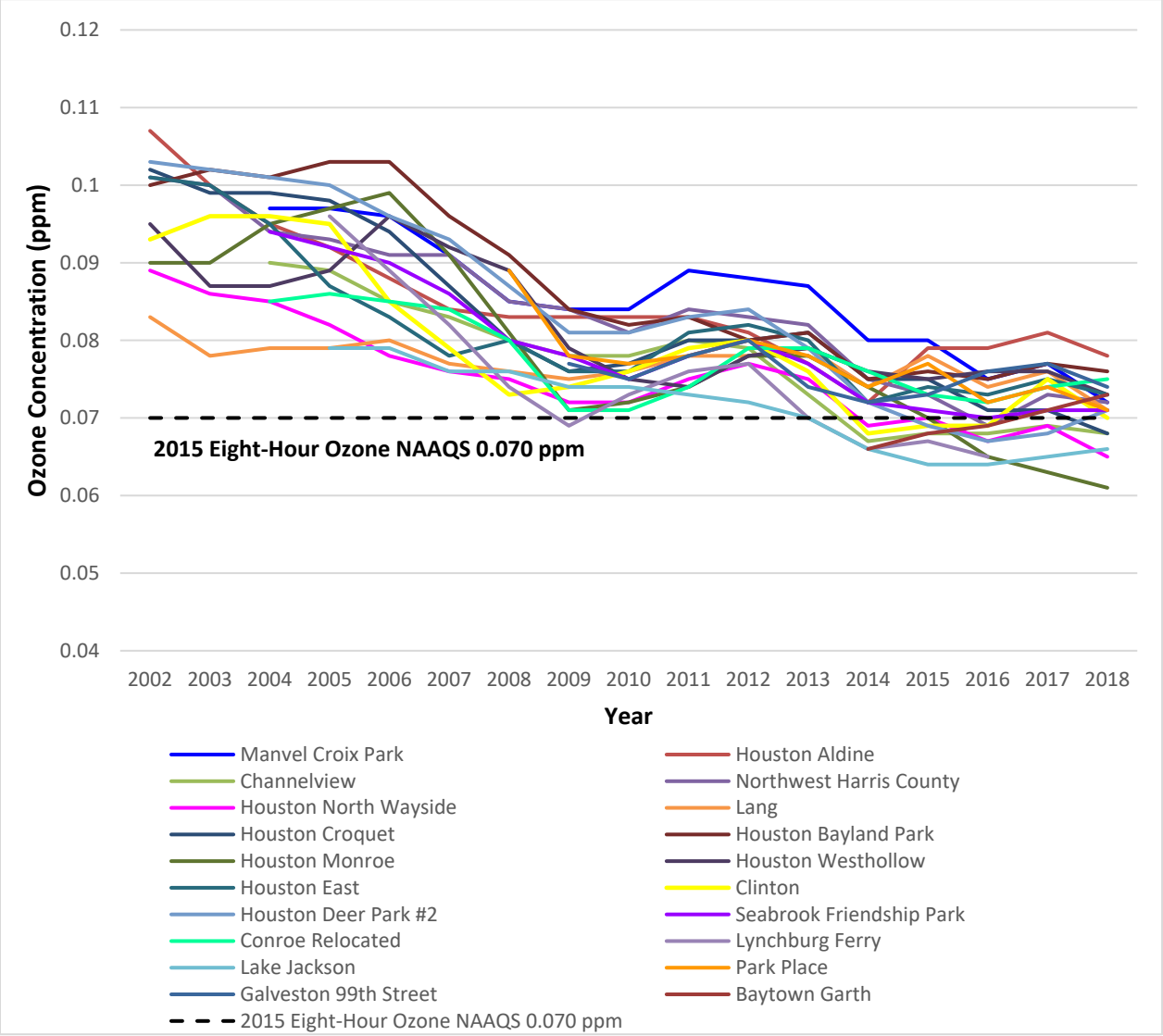
Houston area O_3 monitoring began in the early 1970s with deployment of the Clinton, Houston East, and Houston Aldine monitors. Through the 1990s, the O_3 monitoring network expanded within the urban core and to the more populated suburban areas outside of Houston to meet evolving federal monitoring requirements and to assist in understanding the area's photochemical characteristics. Houston area O_3 monitors provide near real-time data to the public and allow for O_3 trends assessment.

Since the 2015 FYA, one Houston area O_3 network change occurred. A special purpose monitor is expected to be operational soon at the new Houston Harvard Street site to improve central Houston coverage and provide data to support trend analysis and modeling. Since there are no trends or design values for this monitor, it will be assessed during the next FYA.

As of January 1, 2020, federal standards require a minimum of four area O_3 monitors. The TCEQ exceeds requirements with 20 O_3 monitors. While the number of O_3 monitors exceeds area federal requirements, the spatial distribution of the network provides valuable data for evaluating the area.

Design Values and Trends

Houston area eight-hour O_3 design values continue to decline. Figure 9 shows the Houston area O_3 design value trends from 2002 through 2018 compared with the 2015 eight-hour O_3 NAAQS of 0.070 ppm.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 9: Eight-Hour Ozone Design Value Trends in the Houston Area, 2002-2018

Network Evaluation

Table 11 shows how each O_3 monitor in the Houston area was evaluated using the scoring system described in the Evaluation Methods section. The Houston Deer Park #2 monitor satisfies the requirements for O_3 monitoring at an NCore and at a PAMS site as well as supporting minimum monitoring requirements, while Channelview, Houston Aldine, and Houston Bayland Park also support minimum monitoring requirements. Channelview, Clinton, Conroe Relocated, Galveston 99th Street, Houston Aldine, and Northwest Harris County monitors support the PAMS network. The remaining area O_3

monitors are critical due to current design values and the provided spatial coverage. Based on these scores and the current spatial coverage, no changes to the Houston area O_3 network are recommended at this time.

Table 11: Houston Area Ozone Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value*	Total Monitor Value	Assess-ment Value
Baytown Garth	1	4	3	2	1	11	critical
Channelview	4	4	1	4	1	14	critical
Clinton	1	4	1	4	1	11	critical
Conroe Relocated	1	4	1	4	1	11	critical
Galveston 99th Street	1	4	1	3	1	10	critical
Houston Aldine	4	4	1	4	1	14	critical
Houston Bayland Park	4	4	1	4	1	14	critical
Houston Croquet	1	4	1	4	1	11	critical
Houston Deer Park 2	4	4	1	4	1	14	critical
Houston East	1	4	1	4	1	11	critical
Houston Monroe	1	4	1	4	1	11	critical
Houston North Wayside	1	4	1	4	1	11	critical
Houston Westhollow	1	4	1	4	1	11	critical
Lake Jackson	1	4	1	4	1	11	critical
Lang	1	4	1	4	1	11	critical
Lynchburg Ferry	1	4	1	4	1	11	critical
Manvel Croix Park	1	4	1	4	1	11	critical
Northwest Harris County	1	4	1	4	1	11	critical
Park Place	1	4	1	3	1	10	critical
Seabrook Friendship Park	1	4	1	4	1	11	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Beaumont Area

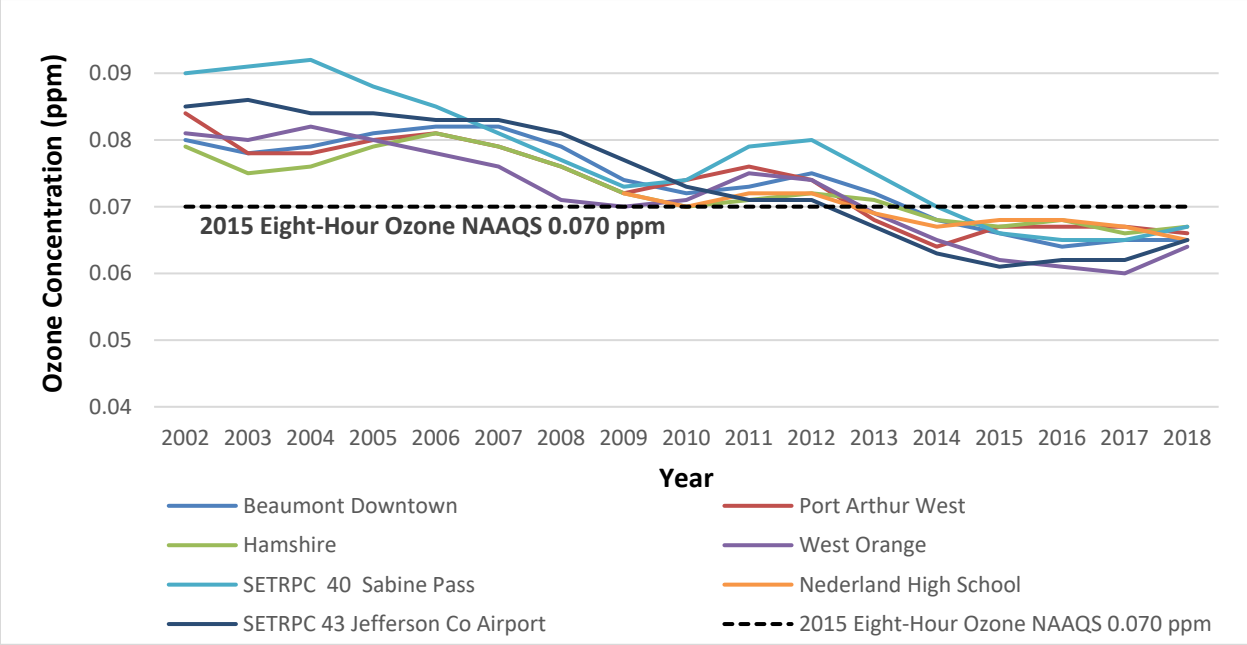
Network History and Current Status

Like Houston, Beaumont area O_3 monitoring also began in the early 1970s and increased to meet revised federal standards and to provide data for evaluating maximum O_3 precursor emissions, maximum O_3 concentrations, regional transport, and background concentrations. Beaumont area O_3 monitors provide near real-time data to the public and allow for O_3 trends assessment. Since the 2015 FYA, the TCEQ has made no changes to the O_3 monitoring network in the Beaumont area.

As of January 1, 2020, federal standards require two monitors in the Beaumont area based on population and design value. The TCEQ exceeds requirements with seven monitors, four located within the urban core in publicly frequented areas and three sited to measure background concentrations and O_3 transported from other urban areas. While the number of O_3 monitors exceeds area federal requirements, the spatial distribution of the network provides valuable data for evaluating background concentrations and the impact of regional transport.

Design Values and Trends

The Beaumont area eight-hour O_3 design values have declined with design values below the 2015 eight-hour O_3 NAAQS of 0.070 ppm. Given coastal predominant wind patterns from the south, design values at the Southeast Texas Regional Planning Commission (SETRPC) 40 Sabine Pass site, located along the coastline, suggest that high background levels, wind flow reversals, and lower air mixing heights contribute to area O_3 concentrations. Figure 10 shows the O_3 design value trends in the Beaumont area from 2002 through 2018.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 10: Eight-Hour Ozone Design Value Trends in the Beaumont Area, 2002-2018

Network Evaluation

Table 12 shows how each Beaumont area O_3 monitor was evaluated using the scoring system described in the Evaluation Methods section. The Nederland High School, Beaumont Downtown, and SETRPC 40 Sabine Pass sites support the PAMS network, while the Nederland High School and Hamshire sites fulfill minimum O_3 monitoring requirements based on area population and design values. The remaining area O_3 monitors are critical due to current design values. Based on these scores and the current spatial coverage, no changes to the Beaumont area O_3 network are recommended at this time.

Table 12: Beaumont Area Ozone Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent	Data Trend	Historic Value	Source Impact Value*	Total Monitor Value	Assess-ment Value
Beaumont Downtown	1	4	1	4	1	11	critical
Hamshire	4	4	1	4	1	14	critical
Nederland High School	4	4	1	3	1	13	critical
Port Arthur West	1	4	1	2	1	9	critical
SETRPC 40 Sabine Pass	1	4	1	4	1	11	critical
SETRPC 43 Jefferson Co Airport	1	4	1	4	1	11	critical
West Orange	1	4	1	4	1	11	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Corpus Christi and Victoria

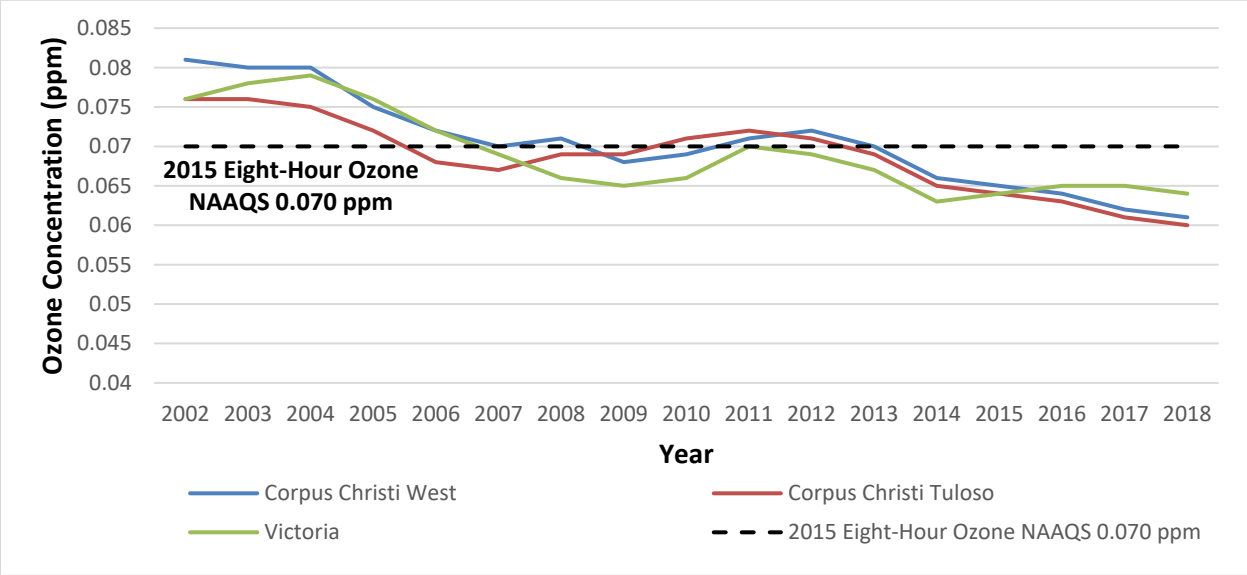
Network History and Current Status

As in other coastal cities, Corpus Christi O_3 monitoring began in the early 1970s to assess the influence of O_3 precursor emissions from industrial sources on O_3 formation in the area and to evaluate populated area concentrations. In the late 1980s, an O_3 monitor was added in Victoria to evaluate ambient O_3 concentrations likely affected by industrial source precursor emissions. Area O_3 monitors provide near real-time data to the public and allow for O_3 trends assessment. Since the 2015 FYA, the TCEQ has made no changes to the O_3 monitoring networks in Corpus Christi or Victoria.

As of January 1, 2020, three regulatory O_3 monitors are required in the Corpus Christi area, including Victoria, based on population and O_3 design values. The TCEQ has two sites in Corpus Christi providing ambient concentration data in publicly frequented areas likely impacted by maximum O_3 concentrations and one in Victoria, representative of background or transported O_3.

Design Values and Trends

Consistent with the rest of the Texas Coastal area, eight-hour O_3 design value trends continue to decline in Corpus Christi and Victoria and remain below the 2015 eight-hour O_3 NAAQS as shown in Figure 11. Sites in Corpus Christi are reporting near background O_3 levels (the amount of O_3 due to distant sources or natural processes) and show similar design values. Victoria O_3 levels have continually decreased from nonattainment levels of 0.081 ppm in 2000 to 0.064 ppm in 2018.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 11: Eight-Hour Ozone Design Value Trends in the Corpus Christi and Victoria Areas, 2002-2018

Network Evaluation

Table 13 shows how each Corpus Christi and Victoria area O_3 monitor was evaluated using the scoring system described in the Evaluation Methods section. The Corpus Christi and Victoria O_3 monitors meet regulatory requirements based on area population and design value and were given an automatic "critical" Assessment Value. The monitor locations and spatial coverage, the different monitoring objectives, and historical O_3 trends data make each monitor valuable. Based on these scores, no changes to the area O_3 network are recommended at this time.

Table 13: Corpus Christi and Victoria Ozone Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Corpus Christi Tuloso	4	4	1	4	1	14	critical
Corpus Christi West	4	4	1	4	1	14	critical
Victoria	4	4	1	4	1	14	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Carbon Monoxide

The CO network in the Texas Coastal area includes ambient CO and high-sensitivity CO monitors that fulfill requirements for NCore and near-road programs in the Houston area. The PAMS CO monitoring requirement was removed in 2015. CO monitoring is not required or performed in Beaumont, Corpus Christi, or Victoria. Figure 6 shows the area active CO monitors at sites with a light green section. Appendix A lists active and recently decommissioned CO monitors, locations, monitoring objectives, and associated spatial scales.

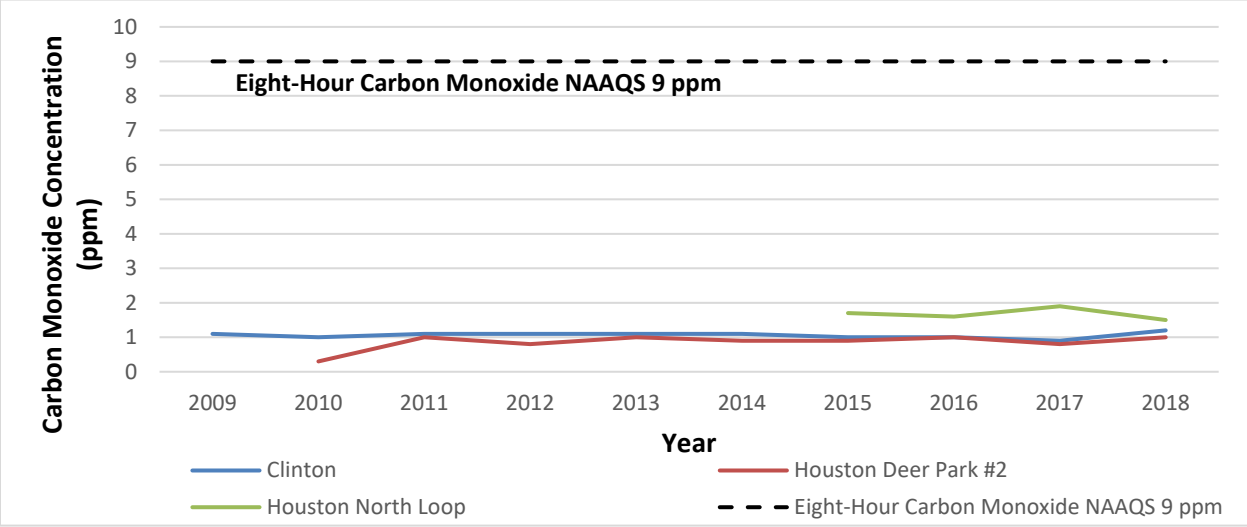
Houston Area

Network History and Current Status

Houston area CO monitoring began in the late 1970s with the deployment of the Clinton monitor. The network expanded in 2010 with a high sensitivity CO monitor at Houston Deer Park #2 to fulfill PAMS and NCore requirements. A CO monitor was deployed at the Houston North Loop site in April 2015 to fulfill the near-road CO monitoring requirement. Since the 2015 FYA, no Houston area CO network changes have occurred. As of January 1, 2020, federal standards require a minimum of two area CO monitors for NCore and near-road requirements. Currently, CO is monitored at three sites.

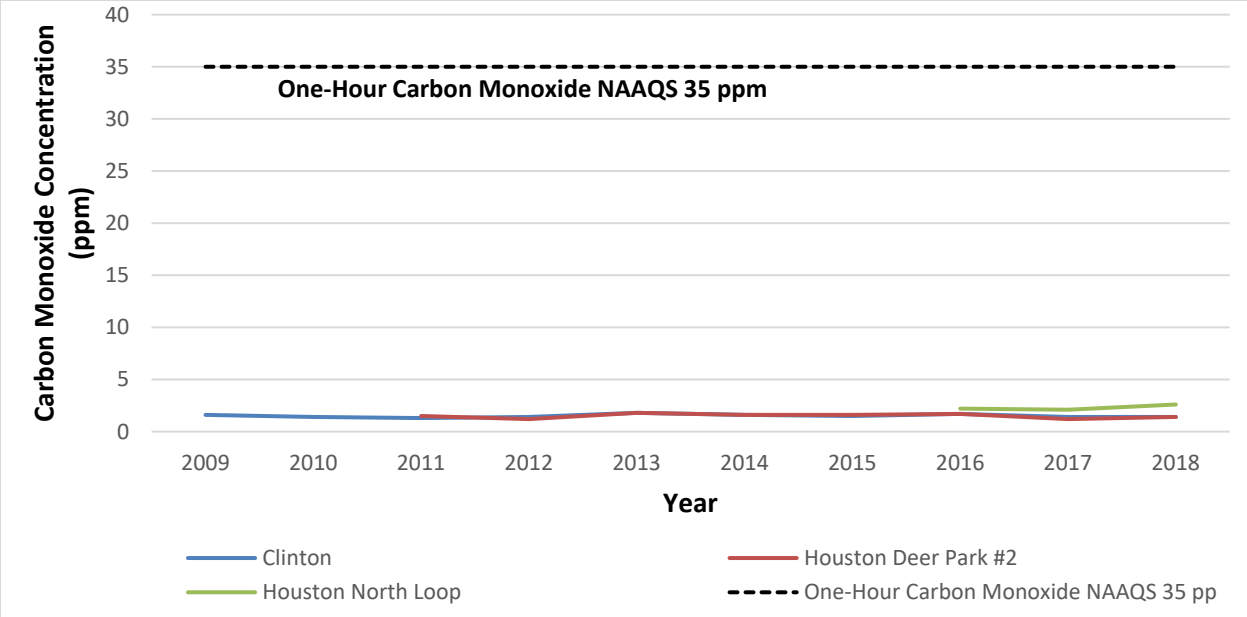
Design Values and Trends

Houston area CO design values remain below 10% of the one-hour NAAQS of 35 ppm and below 20% of the eight-hour NAAQS of 9 ppm, as shown in Figure 12 and Figure 13.



- number
NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 12: Eight-Hour Carbon Monoxide Design Value Trends in the Houston Area, 2009-2018



- number
NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 13: One-Hour Carbon Monoxide Design Value Trends in the Houston Area, 2009-2018

Network Evaluation

Table 14 shows how each CO monitor in the Houston area was evaluated using the scoring system described in the Evaluation Methods section. The Houston Deer Park #2 monitor satisfies the requirement for monitoring CO at an NCore site while the Houston North Loop monitor satisfies the Houston area near-road requirement. The remaining Clinton CO monitor provides data useful in evaluating wildfire impacts for O_3 exceptional events. No changes in the Houston area CO network are recommended at this time.

Table 14: Houston Area Carbon Monoxide Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Houston North Loop	4	1	2	1	3	11	critical
Clinton**	1	1	2	4	1	9	medium
Houston Deer Park 2**	4	1	2	2	1	10	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic high assessment value.
** - high-sensitivity CO monitor
NAAQS – National Ambient Air Quality Standards

Beaumont Area

Network History, Trends, and Network Evaluation

Beaumont area CO monitoring began in 2006 to monitor CO as a PAMS network O_3 precursor. The Nederland High School CO monitor, no longer required for PAMS, was decommissioned in 2018. As of January 1, 2020, no CO monitoring requirements apply in the Beaumont area and no CO monitors are located there. No Beaumont area network changes are recommended at this time due to the improved Beaumont O_3 concentrations and historic CO design values well below both the one-hour and eight-hour CO NAAQS.

Oxides of Nitrogen

The NO_x network in the Texas Coastal area includes NO, NO_x, NO_2, and NO_y monitoring and is designed to meet area-wide, Regional Administrator 40 (RA-40), near-road, PAMS, and NCore monitoring requirements. NO_x monitoring is not required or performed in the Corpus Christi or Victoria areas. Figure 6 and Figure 7 show the area active NO_x, NO_2, and NO_y monitors at sites with a dark green section. Appendix A lists active and recently decommissioned NO_x, NO_2, and NO_y monitors, locations, monitoring objectives, and associated spatial scales.

Houston Area

Network History and Current Status

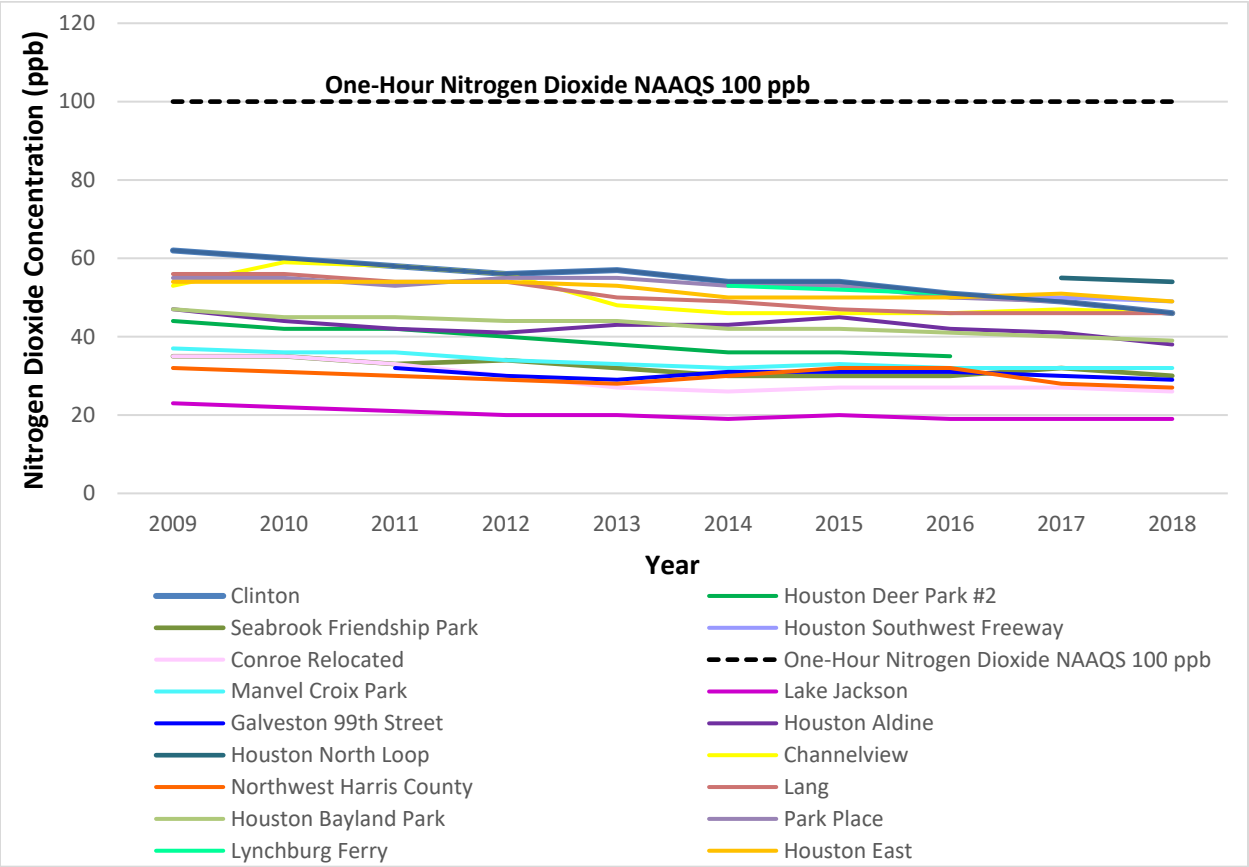
Houston area NO_x monitoring began in the mid-1980s with monitor deployments to Channelview, Deer Park, Seabrook, and Texas City. Significant expansion of the NO_x monitoring network occurred in the late 1990s and early 2000s in response to new federal PAMS requirements and the need to improve understanding of O_3 formation and O_3 precursor transport in the HGB O_3 nonattainment area. In 2000, a NO_y monitor was deployed to Houston Aldine for PAMS and in late 2010 at Houston Deer Park #2 to meet NCore requirements. The distribution of the NO_x monitoring network in the Houston area provides valuable information to evaluate the effectiveness of NO_x control strategies, to assist in photochemical model performance in predicting O_3 formation and providing information on the spatial and diurnal variability of O_3 precursor emissions.

Since the last FYA, two Houston area network changes occurred. A special purpose monitor is expected to be operational soon at the new Houston Harvard Street site to improve central Houston coverage and to provide data to support trend analysis and modeling. Since there are no trends or design values for this monitor, it will be assessed during the next FYA. Also, a true NO_2 analyzer (NO_2 [direct]) was added to the Houston Deer Park #2 site in May 2019 to meet PAMS network requirements, and the NO_X monitor was decommissioned.

As of January 1, 2020, federal standards require a minimum of five NO_X or NO_2 (direct) and one NO_y monitors to satisfy area-wide, RA-40, near-road, PAMS, and NCore monitoring requirements. The TCEQ exceeds requirements with 19 total NO_X, NO_2 (direct), and NO_y (two) monitors. Monitoring objectives related to these federal requirements include collecting ambient data in populated areas, measuring maximum O_3 precursor emissions impacts, characterizing upwind and background concentrations, and characterizing downwind transport of O_3 precursors.

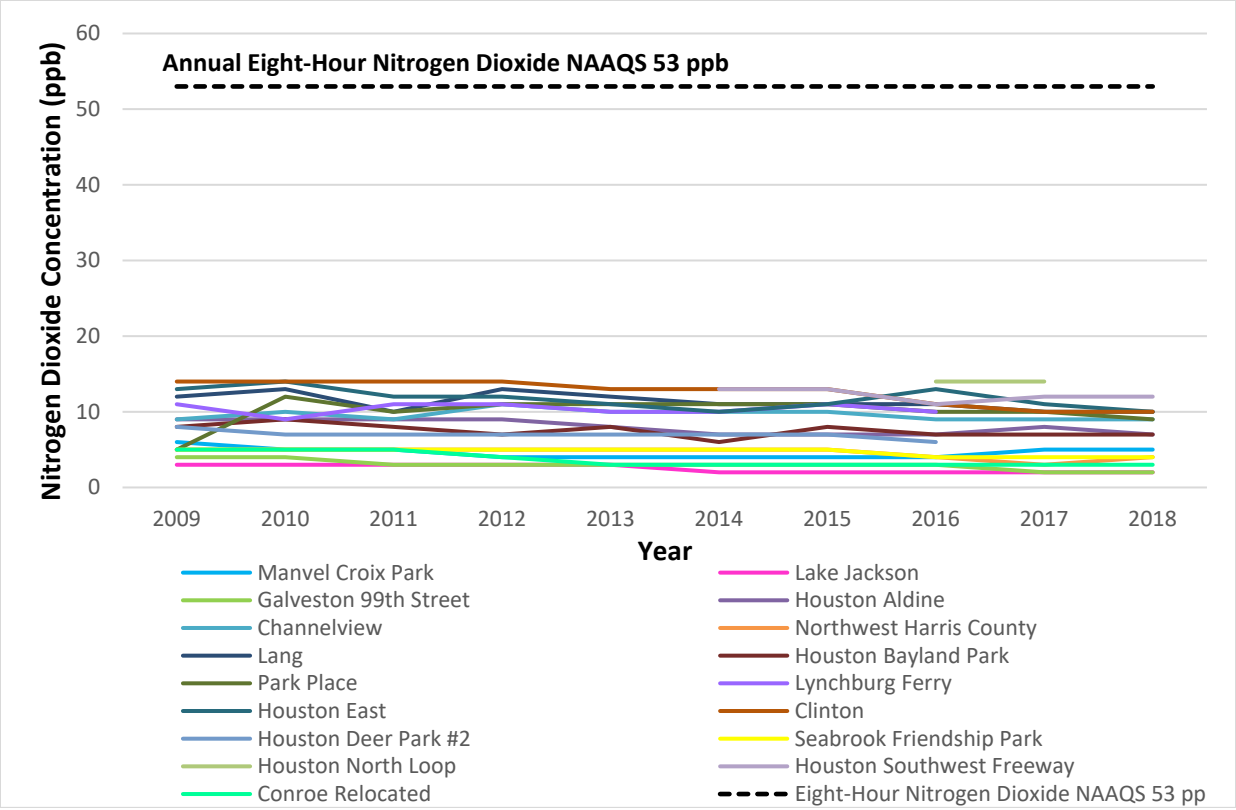
Design Values and Trends

Houston area one-hour NO_2 design values continue to decline and annual NO_2 concentrations have been stable over the past ten years. All Houston area monitors remain well below the one-hour and annual NO_2 NAAQS. Figure 14 and Figure 15 show the design value trends in the Houston area from 2009 to 2018.



ppb – parts per billion
NAAQS - National Ambient Air Quality Standards

Figure 14: Houston Area One-Hour Nitrogen Dioxide Design Value Trends, 2009–2018



ppb – parts per billion
NAAQS - National Ambient Air Quality Standards

Figure 15: Houston Area Annual Nitrogen Dioxide Design Value Trends, 2009–2018

Network Evaluation

Table 15 shows how each NO_x, NO_2, or NO_y monitor in the Houston area was evaluated using the scoring system described in the Evaluation Methods section. The Houston Deer Park #2 monitor satisfies the requirement for NO_2 (direct) monitoring at an NCore and PAMS site, the Clinton NO_x monitor data satisfies the area-wide and RA-40 requirements, and the Houston Southwest Freeway and Houston North Loop monitors satisfy near-road requirements. The Houston Deer Park #2 NO_y monitor satisfies the requirement at an NCore and PAMS site. The remaining area NO_x and NO_y monitors are of value to evaluate the effectiveness of area NO_x control strategies. Based on these scores and the data usage, no changes to the Houston area NO_x network are recommended at this time. Monitors with low Assessment Value may be considered for decommission in the 2021 AMNP.

Table 15: Houston Area Oxides of Nitrogen Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Channelview	1	1	2	2	2	8	low
Clinton	4	1	2	4	2	13	critical

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Conroe Relocated	1	1	1	4	2	9	medium
Galveston 99th Street	1	1	1	3	2	8	low
Houston Aldine	1	1	2	4	2	10	medium
Houston Aldine***	1	NA	NA	4	2	7	medium
Houston Bayland Park	1	1	2	4	2	10	medium
Houston East	1	1	2	4	2	10	medium
Houston North Loop	4	1	3	1	3	12	critical
Houston Southwest Freeway	4	1	2	1	3	11	critical
Lake Jackson	1	1	2	4	2	10	medium
Lang	1	1	1	4	2	9	medium
Lynchburg Ferry	1	1	3	4	2	11	medium
Manvel Croix Park	1	1	2	3	2	9	medium
Northwest Harris County	1	1	2	3	2	9	medium
Park Place	1	1	2	3	2	9	medium
Seabrook Friendship Park	1	1	1	4	1	8	low
Houston Deer Park #2**	4	1	1	4	2	12	critical
Houston Deer Park #2***	4	NA	NA	3	2	9	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NA – Not applicable
**NO_2 (direct) monitor
***NO_y – total reactive nitrogen compounds
NO_y monitors provide nitrogen oxide data
NAAQS – National Ambient Air Quality Standards

Beaumont Area

Network History and Current Status

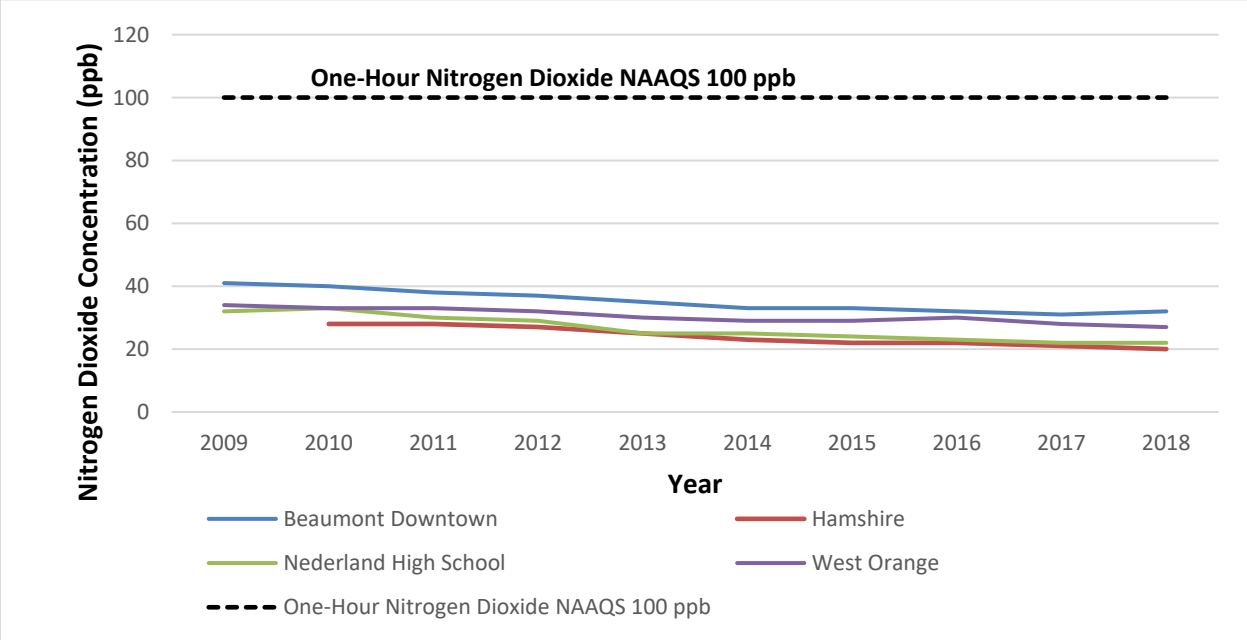
Beaumont area NO_x monitoring began in the early 1980's with a monitor deployment to Beaumont Downtown. The NO_x monitoring network was expanded to West Orange,

Hamshire, and Nederland High School in the late 1990s and early 2000s in response to new federal PAMS requirements and the need to improve the agency's understanding of O_3 formation and O_3 precursor transport in the Beaumont area. Since the 2015 FYA, no Beaumont area network changes occurred.

As of January 1, 2020, the TCEQ was federally required to locate one Beaumont area NO_X monitor to satisfy RA-40 requirements. The TCEQ exceeds requirements with four Beaumont area NO_X monitors. The distribution of the NO_x monitoring network in the Houston area provides valuable information to evaluate the effectiveness of NO_x control strategies, to assist in photochemical model performance in predicting O_3 formation and providing information on the spatial and diurnal variability of O_3 precursor emissions.

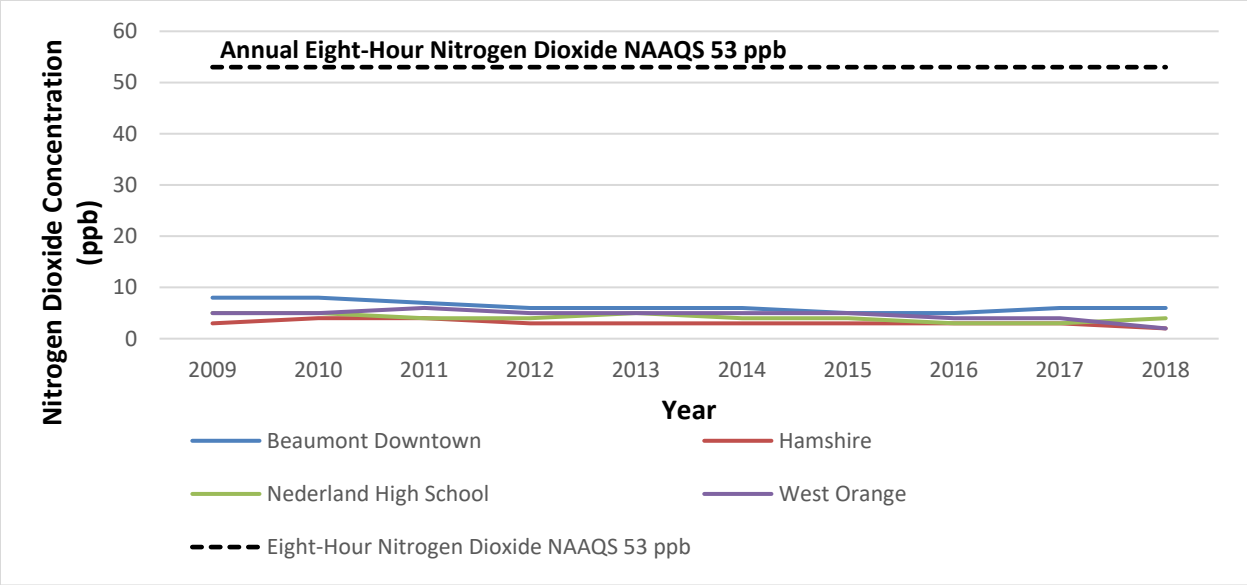
Design Values and Trends

One-hour NO_2 design values and annual NO_2 concentrations in the Beaumont area have shown a slightly declining trend since 2009. Figure 16 and Figure 17 show the design value trends in the Beaumont area from 2009 through 2018. All Beaumont monitors have remained well below the one-hour and annual NAAQS.



ppb – parts per billion
NAAQS - National Ambient Air Quality Standards

Figure 16: Beaumont-Port Arthur Area One-Hour Nitrogen Dioxide Design Value Trends, 2009–2018



ppb – parts per billion
NAAQS - National Ambient Air Quality Standards

Figure 17: Beaumont-Port Arthur Area Annual Nitrogen Dioxide Design Value Trends, 2009–2018

Network Evaluation

Table 16 shows how each NO_x monitor in the Beaumont area was evaluated using the scoring system described in the Evaluation Methods section. The Nederland High School monitor satisfies the RA-40 requirement, and the remaining monitors provide data necessary to improve the agency's understanding of O_3 formation and O_3 precursor transport in the Beaumont O_3 maintenance area. Based on these scores and the data usage, no changes to the Beaumont area NO_x network are recommended at this time.

Table 16: Beaumont Area Oxides of Nitrogen Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Beaumont Downtown	1	1	1	4	2	9	medium
Hamshire	1	1	1	4	2	9	medium
Nederland High School	4	1	1	3	2	11	critical
West Orange	1	1	1	4	2	9	medium

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Sulfur Dioxide

The SO_2 network in the Texas Coastal area fulfill NCore, PWEI, and 2015 Data Requirements Rule requirements. Figure 6, Figure 7, and Figure 8 show the area SO_2 monitors at sites with a red section. SO_2 monitoring is not required or performed in the Victoria area. Appendix A lists active and recently decommissioned SO_2 monitors, locations, monitoring objectives, and associated spatial scales.

Houston Area

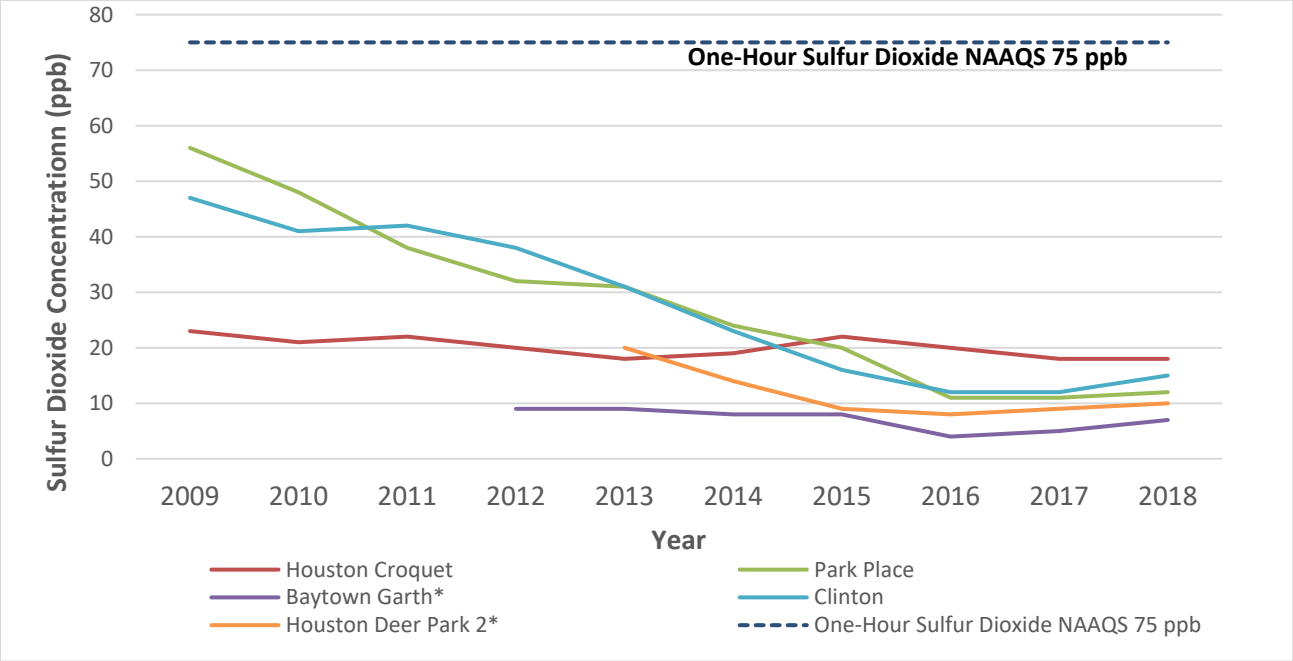
Network History and Current Status

Houston area SO_2 monitoring began in 1982 with the deployment of the Clinton monitor, located at the edge of a neighborhood and near the ship channel. In the early 2000s, the monitoring network expanded in the Houston area with the deployment of Houston Croquet and Park Place. In late 2010, a high sensitivity SO_2 monitor was deployed at the Houston Deer Park # 2 site to fulfill NCore SO_2 monitoring requirements

Since the last FYA, three Houston area SO_2 network changes occurred. The Houston Monroe, Houston North Wayside, and Seabrook Friendship Park SO_2 monitors were decommissioned in late 2017. These monitors were not federally required and maintained historic design values trending downward from 30% to 5% of the one-hour SO_2 NAAQS from 2010 to 2016. In the 2020 AMNP, the TCEQ recommended decommissioning the Baytown Garth SO_2 monitor. Data trends from this monitor are among the lowest in the area with a design value of 6 ppb, 8% of the one-hour SO_2 NAAQS. This recommendation is pending EPA concurrence. As of January 1, 2020, federal standards require a minimum of three area SO_2 monitors related to NCore and PWEI. The TCEQ exceeds requirements with five federal SO_2 monitors.

Design Values and Trends

Houston area SO_2 design values have continued to decline since 2000 and remain less than 50% of the 2010 one-hour SO_2 NAAQS of 75 ppb. The lowest trending concentrations occurred at the Baytown Garth, Houston Deer Park #2, and Park Place monitors. Figure 18 shows the SO_2 design value trends in the Houston area from 2009 through 2018.



*incomplete design value data
ppb – parts per billion
NAAQS – National Ambient Air Quality Standard

Figure 18: Houston Area One-Hour Sulfur Dioxide Design Value Trends, 2009-2018

Network Evaluation

Table 17 shows how each SO_2 monitor in the Houston area was evaluated using the scoring system described in the Evaluation Methods section. The Houston Deer Park #2 high-sensitivity SO_2 monitor satisfies the requirement for NCore while the Clinton and Houston Croquet sites satisfy the PWEI area requirements. In the 2020 AMNP, the TCEQ recommended decommissioning the Baytown Garth SO_2 monitor due to low data trends and current area spatial coverage. This recommendation is pending EPA concurrence. Monitors with low Assessment Value may be considered for decommission in the 2021 AMNP.

Table 17: Houston Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Baytown Garth	1	1	1	2	2	7	low
Clinton	4	1	1	4	2	12	critical
Houston Croquet	4	1	1	4	2	12	critical
Park Place	1	1	1	3	2	8	low
Houston Deer Park 2**	4	1	1	1	2	9	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**SO_2 high sensitivity monitor
NAAQS – National Ambient Air Quality Standard

Beaumont Area

Network History and Current Status

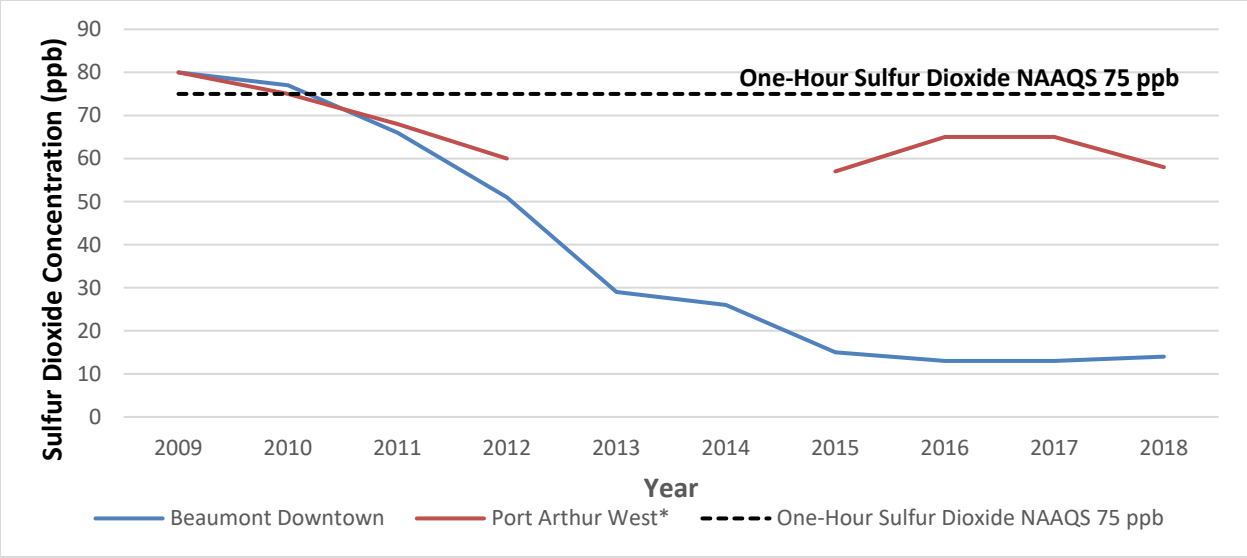
Beaumont area SO_2 monitoring began in 1980 with the deployment of the Beaumont Downtown monitor, located just east of Lamar University in an area of high population density. In 1997, a source-oriented monitor was added at the Port Arthur West site. In 2012, the Port Arthur West site was temporarily decommissioned for five months for relocation due to the sale of the property. The site was re-established less than one mile away, and due to the proximity of the two sites, the site name and AQS number remained the same. Port Arthur West SO_2 monitor design values, which require three consecutive years of data, were affected for 2013 and 2014 due to data loss from the 2012 relocation.

Since the 2015 FYA, three Beaumont area SO_2 network changes occurred to fulfill SO_2 DRR requirements. New source oriented SO_2 monitoring sites were added at Port Arthur 7th Street and Orange 1st Street in late 2016. Data from these monitors for calendar years 2017, 2018, and 2019 will be used to determine compliance with the 2010 one-hour SO_2 NAAQS. The TCEQ temporarily relocated the Port Arthur 7th Street monitor to Port Arthur West 7th Street at the property owners request in July 2019 and moved it permanently to Port Arthur West 7th Gate 2 on December 13, 2019.

As of January 1, 2020, federal standards required a minimum of three area SO_2 monitors related to SO_2 DRR and PWEI. The TCEQ exceeds area federal requirements with four SO_2 monitors.

Design Values and Trends

Beaumont area SO_2 design values show an overall trend decline since 2009 and remain less than the 2010 one-hour SO_2 NAAQS of 75 ppb. The Port Arthur West SO_2 monitor measured increases from 2013 to 2016 but has otherwise shown a declining trend. Figure 19 shows the SO_2 design value trends in the Beaumont area from 2009 to 2018. The Port Arthur West 7th Gate 2 and Orange 1st Street SO_2 monitors completed three-years of data required for design value calculation in 2019. These data are pending EPA review and final publication. These monitors will be assessed for the NAAQS Value and Data Trend metrics during the next FYA. Table 18 shows the annual one-hour SO_2 99th percentile concentrations for these two sites.



*incomplete design value data due to 2012 site relocation
ppb – parts per billion
NAAQS – National Ambient Air Quality Standard

Figure 19: Beaumont Area One-Hour Sulfur Dioxide Design Value Trends, 2009-2018

Table 18: Beaumont Area Source-Oriented Sulfur Dioxide 99th Percentile Concentration Trends

Site Name	2017	2018	2019
Port Arthur West 7th Gate 2	86	61	28
Orange 1St Street	80	84	62

Results provided in parts per billion

Network Evaluation

Table 19 shows how each SO_2 monitor in the Beaumont area was evaluated using the scoring system described in the Evaluation Methods section. The Port Arthur West monitor satisfies the PWEI area requirement and is considered of critical value. The DRR source-oriented monitors at Port Arthur West 7th Gate 2 and Orange 1st Street are required to meet SO_2 DRR designations. The remaining SO_2 monitor at Beaumont Downtown is sited to measure ambient SO_2 levels in populated areas surrounding industrial facilities and continues to meet its monitoring objective. No changes to the Beaumont area SO_2 network are recommended at this time.

Table 19: Beaumont Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Beaumont Downtown	1	1	1	4	2	9	medium
Orange 1st Street	4	NA	NA	1	4	9	critical
Port Arthur West	4	3	3	3	3	16	critical

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Port Arthur West 7th Gate 2	4	NA	NA	1	4	9	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NA – Not applicable
NAAQS – National Ambient Air Quality Standard
SO_2 – sulfur dioxide

Corpus Christi Area

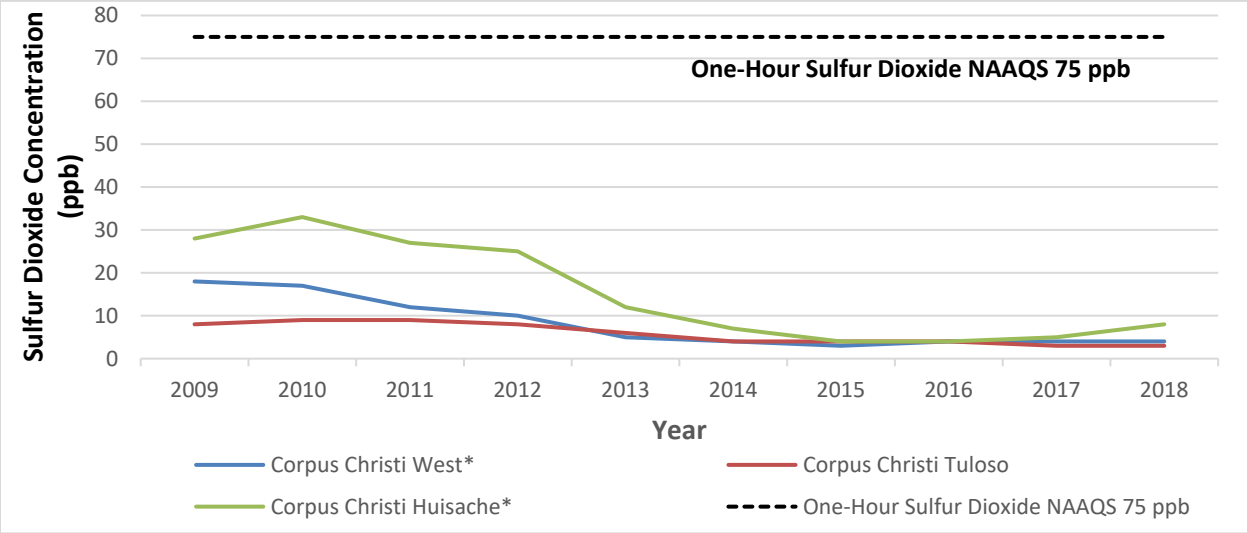
Network History and Current Status

Corpus Christi area SO_2 monitoring began in the late 1990s at three sites, Corpus Christi Tuloso, Corpus Christi West, and Corpus Christi Huisache. The Corpus Christi Huisache site is located close to the heavily industrialized Corpus Christi ship channel area. The Corpus Christi Tuloso and Corpus Christi West sites are both located in more suburban areas and sited to monitor ambient concentrations near populated areas to the west and south of Corpus Christi. No additional monitors have been added since the 2015 FYA.

As of January 1, 2020, no federal requirements for SO_2 monitoring in the Corpus Christi area exist. The TCEQ exceeds requirements with three SO_2 monitors.

Design Values and Trends

The Corpus Christi area SO_2 design values have declined with values less than 50% of the 2010 one-hour SO_2 NAAQS of 75 ppb since 2009. Figure 20 shows the SO_2 design value trends in the Corpus Christi area from 2009 to 2018.



* - incomplete design value data
ppb – parts per billion
NAAQS – National Ambient Air Quality Standard

Figure 20: Corpus Christi Area One-Hour Sulfur Dioxide Design Value Trends, 2009-2018

Network Evaluation

Table 20 shows how each SO_2 monitor in the Corpus Christi area was evaluated using the scoring system described in the Evaluation Methods section. The Corpus Christi area SO_2 network exceeds federal monitoring requirements and satisfies established monitoring objectives. While beyond minimum federal monitoring requirements, the three Corpus Christi SO_2 monitors are sited near residential areas and have historically provided useful information relevant to ambient SO_2 concentrations. The Corpus Christi Huisache site is located just south of the ship channel and north of a neighborhood and has historically monitored the area's highest SO_2 concentrations. The Corpus Christi West and Corpus Christi Tuloso monitors trend similar design values and may be redundant. Area low design value monitors may be considered for decommission in the 2021 AMNP.

Table 20: Corpus Christi Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Corpus Christi Huisache	1	1	1	4	3	10	medium
Corpus Christi Tuloso	1	1	1	4	1	8	low
Corpus Christi West	1	1	1	4	1	8	low

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standard

Particulate Matter of 2.5 Micrometers or Less

The $PM_{2.5}$ network in the Texas Coastal area fulfills SLAMS, NCore, and near-road requirements using a combination of non-continuous FRM, continuous FEM, and non-NAAQS comparable monitors. Non-NAAQS comparable data were not evaluated for trends against NAAQS criteria. $PM_{2.5}$ monitoring is not required or performed in the Victoria area. Figure 6, Figure 7, and Figure 8 show the area $PM_{2.5}$ monitors at sites with a dark blue section and the $PM_{2.5}$ speciation monitors with an orange section (as air toxics). Appendix A lists active and recently decommissioned $PM_{2.5}$ monitors, locations, monitoring objectives, and associated spatial scales.

Houston Area

Network History and Current Status

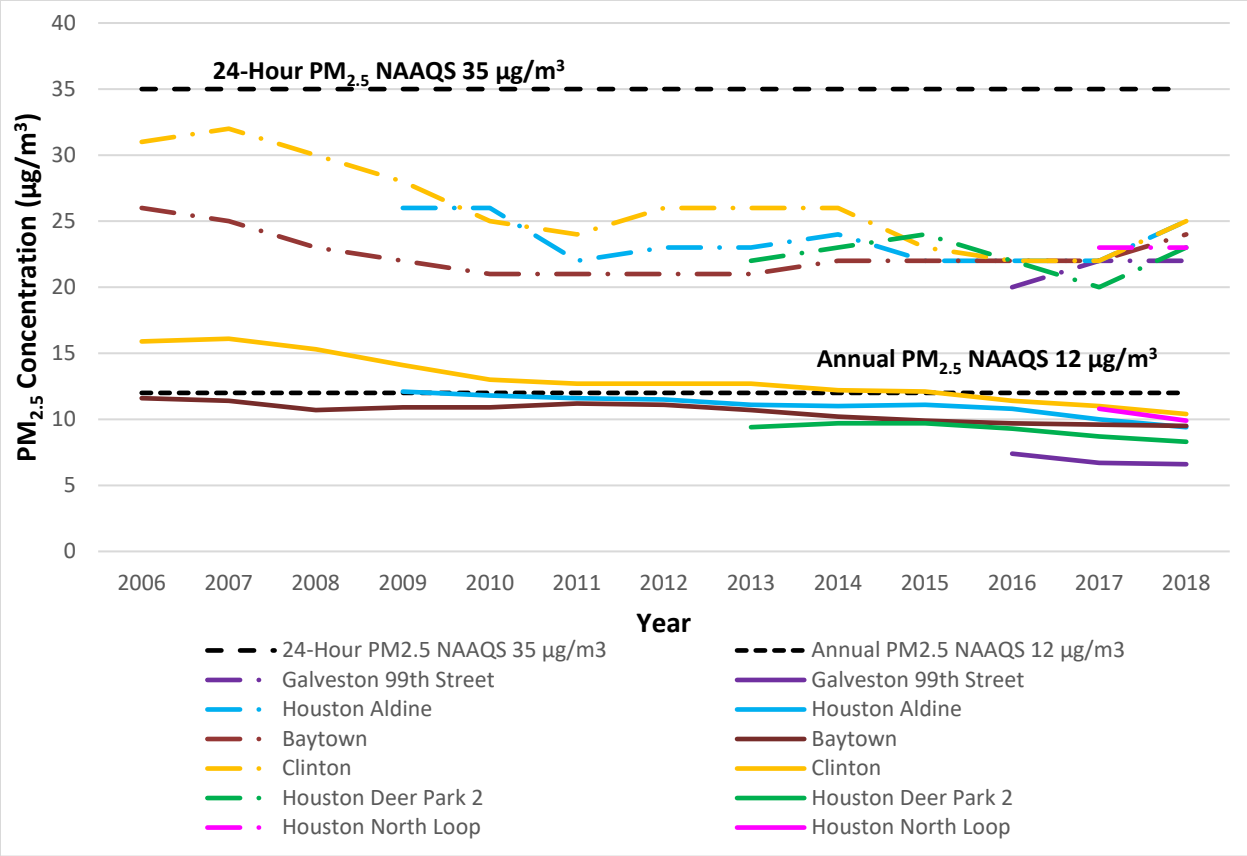
Houston area $PM_{2.5}$ monitoring began in the late 1990s and early 2000s with the deployment of Clinton and Houston Deer Park #2 monitors. Through the 2000s the $PM_{2.5}$ network expanded with a variety of $PM_{2.5}$ equipment distributed on a north-south line with a monitor located on the coast, multiple monitors scattered through the urban core, and a downwind monitor located north of Houston. Since the 2015 FYA, several changes occurred. Non-continuous $PM_{2.5}$ FRM monitors were upgraded to FEM continuous monitors at Baytown, Galveston 99th Street, and Houston Aldine and a non-NAAQS comparable monitor was upgraded to a $PM_{2.5}$ FEM continuous monitor at Houston East in 2017. The non-NAAQS comparable monitor at Houston Deer Park #2 was discontinued on December 6, 2019, and the Houston Aldine speciation was

discontinued on December 18, 2019, and is expected to be relocated soon to Clinton. A non-NAAQS comparable $PM_{2.5}$ monitor is expected to be operational soon at Houston North Wayside. The Clinton $PM_{2.5}$ speciation monitor and the Houston North Wayside monitor will be assessed during the next FYA. In the 2020 AMNP, the TCEQ recommended deploying a $PM_{2.5}$ FEM continuous monitor to Houston Westhollow that will provide improved spatial coverage for west Houston. This recommendation is pending EPA concurrence.

As of January 1, 2020, federal standards require a minimum of eight $PM_{2.5}$ monitors. The TCEQ exceeds requirements with 13 $PM_{2.5}$ monitors to measure ambient $PM_{2.5}$ concentration data through gravimetric, speciation, and continuous measurements to determine maximum concentrations, concentrations in areas of high population density, and background and transport concentrations.

Design Values and Trends

The Houston area $PM_{2.5}$ annual and 24-hour $PM_{2.5}$ design values continue to decline. Figure 21 shows the annual mean and 24-hour 98th percentile $PM_{2.5}$ design value trends in the Houston area from 2006 through 2018. Data indicate that measured concentrations have consistently remained below the 24-hour $PM_{2.5}$ NAAQS of 35 µg/m^3 since 2006. In addition, annual mean $PM_{2.5}$ concentrations have exhibited a decrease over this same time period with design values from all regulatory monitors remaining below the 12 µg/m^3 annual NAAQS since 2015. The new Houston East $PM_{2.5}$ FEM monitor has not obtained a three-year design value; therefore, this monitor will not be assessed with the NAAQS Value Percent and Data Trend metrics in this FYA. The Houston East $PM_{2.5}$ FEM monitor yearly data trends are provided in Table 21. The Clinton, Conroe Relocated, and Seabrook Friendship Park $PM_{2.5}$ monitors are non-NAAQS comparable; therefore, these monitors will not be assessed with the NAAQS Value Percent and Data Trend metrics.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less

Figure 21: Houston Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2006-2018

Table 21: Houston Area Particulate Matter of 2.5 Micrometers or Less 98th Percentile of 24-Hour Averages and Annual Mean Concentrations

Site Name	24-Hour			Annual		
	2017	2018	2019	2017	2018	2019
Houston East	26*	24	20	10.6*	11.0	9.9

*Values for a partial year do not meet completeness criteria
Results provided in micrograms per cubic meter

Network Evaluation

Table 22 shows how each $PM_{2.5}$ monitor in the Houston area was evaluated using the scoring system described in the Evaluation Methods section. The Houston Deer Park #2 $PM_{2.5}$ monitors satisfy the $PM_{2.5}$ NCore requirements. Clinton, Baytown, and Houston Aldine $PM_{2.5}$ FEM and FRM monitors satisfy $PM_{2.5}$ SLAMS requirements. The Houston North Loop monitor satisfies $PM_{2.5}$ near-road requirements. The remaining area $PM_{2.5}$ monitors are of medium value due to current design values, spatial coverage, or the unique information provided regarding background and transported particulate

concentrations. Based on these scores, no further changes to the Houston area $PM_{2.5}$ network are recommended at this time.

Table 22: Houston Area Particulate Matter of 2.5 Micrometers or Less Network Evaluation

Site Name	Sampler Type	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Baytown	$PM_{2.5}$ FEM	4	3	1	4	2	14	critical
Clinton	$PM_{2.5}$ FRM	4	4	1	4	2	15	critical
Clinton	$PM_{2.5}$ (TEOM)	1	NA	NA	4	2	7	medium
Conroe Relocated	$PM_{2.5}$ (TEOM)	1	NA	NA	4	2	7	medium
Galveston 99th Street	$PM_{2.5}$ FEM	1	2**	1	3	2	9	medium
Houston Aldine	$PM_{2.5}$ FEM	4	3**	1	4	2	14	critical
Houston Deer Park 2	$PM_{2.5}$ FEM	4	2	1	2	2	11	critical
Houston Deer Park 2	$PM_{2.5}$ FRM	4	2	1	2	2	11	critical
Houston Deer Park 2	$PM_{2.5}$ (Speciation)	4	NA	NA	4	2	10	critical
Houston Deer Park 2	$PM_{10\text{-}2.5}$	4	NA	NA	2	2	8	critical
Houston East***	$PM_{2.5}$ FEM	1	NA	NA	4	2	7	medium
Houston North Loop	$PM_{2.5}$ FRM	4	3	1	1	3	11	critical
Seabrook Friendship Park	$PM_{2.5}$ (TEOM)	1	NA	NA	4	2	7	medium

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**NAAQS Value Percent based on incomplete design value due to data loss or new monitor
***Historical Value based on all years of site $PM_{2.5}$ monitoring
NAAQS – National Ambient Air Quality Standards
NA – not applicable
FEM – federal equivalent method
FRM – federal reference method
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less
$PM_{10\text{-}2.5}$ – coarse particulate matter
TEOM – tapered element oscillating microbalance, non-NAAQS comparable

Beaumont Area

Network History and Current Status

Beaumont area $PM_{2.5}$ monitoring began in the early 2000s with the deployment of the Hamshire, Port Arthur Memorial School, and SETRPC 42 Mauriceville monitors. Since

the 2015 FYA, all three non-NAAQSs comparable monitors were upgraded to $PM_{2.5}$ FEM monitors in 2017.

As of January 1, 2020, there are no Beaumont area $PM_{2.5}$ federal monitoring requirements, however, the three current monitors provide valuable data related to background $PM_{2.5}$ concentrations and concentrations in populated areas.

Design Values and Trends

The Beaumont area $PM_{2.5}$ FEM monitors have not obtained a three-year design value; therefore, these monitors will not be assessed with the NAAQS Value Percent and Data Trend metrics in this FYA. The $PM_{2.5}$ FEM monitors yearly data trends are provided in Table 23. $PM_{2.5}$ data at all three monitors show concentrations in compliance with the NAAQS.

Table 23: Beaumont Area Particulate Matter of 2.5 Micrometers or Less 98th Percentile of 24-Hour Averages and Annual Mean Concentrations

Site Name	24-Hour			Annual		
	2017	2018	2019	2017	2018	2019
Hamshire	23*	23	17	8.1*	9.0	8.3
Port Arthur Memorial School	20*	25	19	9.9*	10.2	8.5
SETRPC 42 Mauriceville	24*	26	16	10.2*	10.5	8.2

*Values for a partial year do not meet completeness criteria
Results provided in micrograms per cubic meter

Network Evaluation

Table 24 shows how each $PM_{2.5}$ monitor in the Beaumont area was evaluated using the scoring system described in the Evaluation Methods section. No federal $PM_{2.5}$ monitoring requirements apply to the Beaumont area. The three Beaumont area $PM_{2.5}$ monitors are required to remain until an official design value is obtained. In addition, these monitors provide valuable spatial coverage and unique data about inter- and intra-regional transport of $PM_{2.5}$, making these monitors of value. No changes to the Beaumont area $PM_{2.5}$ network are recommended at this time but future evaluation of these monitors will occur once design values are determined.

Table 24: Beaumont Area Particulate Matter of 2.5 Micrometers or Less Network Evaluation

Site Name	Sampler Type	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Hamshire**	$PM_{2.5}$ FEM	1	NA	NA	4	2	7	medium
Port Arthur Memorial School***	$PM_{2.5}$ FEM	1	NA	NA	4	2	7	medium
SETRPC 42 Mauriceville**	$PM_{2.5}$ FEM	1	NA	NA	4	2	7	medium

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**Historical Value based on all years of site $PM_{2.5}$ monitoring
NA – Not applicable
NAAQS – National Ambient Air Quality Standards
FEM – federal equivalent method
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less

Corpus Christi Area

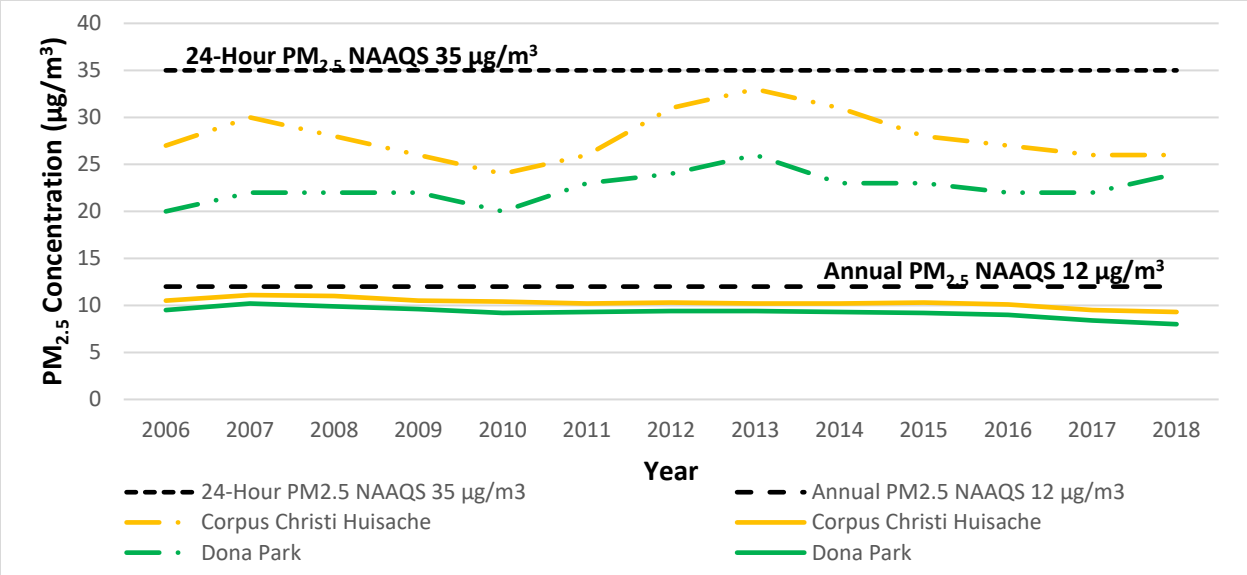
Network History and Current Status

Corpus Christi area $PM_{2.5}$ monitoring began in the early 2000s with the deployment of the Corpus Christi Huisache, Dona Park, and National Seashore monitors. The monitoring network expanded to include speciation at Dona Park. The Corpus Christi Huisache and Dona Park monitors are located in populated areas in proximity to the heavily industrialized Corpus Christi ship channel area. Since the 2015 FYA, the Corpus Christi Huisache non-continuous $PM_{2.5}$ FRM monitor was upgraded to a FEM continuous monitor and the National Seashore non-NAAQS comparable monitor was upgraded to a $PM_{2.5}$ FEM in 2018.

As of January 1, 2020, the TCEQ was not federally required to have Corpus Christi area $PM_{2.5}$ monitors. The TCEQ exceeds requirements with four $PM_{2.5}$ monitors measuring ambient $PM_{2.5}$ concentration data through gravimetric, speciation, and continuous measurements to determine maximum concentrations, concentrations in areas of high population density, and background and transport concentrations.

Design Values and Trends

Design values in the Corpus Christi area have consistently remained below the 24-hour and annual $PM_{2.5}$ NAAQS. The Corpus Christi area 24-hour $PM_{2.5}$ design values continue to decline since 2013 and the $PM_{2.5}$ annual design values remain stable, with a slight decreasing trend starting in 2016. Figure 22 shows the annual mean and 24-hour 98th percentile $PM_{2.5}$ design value trends in the Corpus Christi area from 2006 through 2018. The National Seashore $PM_{2.5}$ FEM monitor has not obtained a three-year design value; therefore, this monitor will not be assessed with the NAAQS Value Percent and Data Trend metrics in this FYA. Yearly data trends for this monitor are provided in Table 25. $PM_{2.5}$ data for this monitor show concentrations in compliance with the NAAQS.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less

Figure 22: Corpus Christi Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2006-2018

Table 25: Corpus Christi Area Particulate Matter of 2.5 Micrometers or Less 98th Percentile of 24-Hour Averages and Annual Mean Concentrations

Site Name	24-Hour		Annual	
	2018	2019	2018	2019
National Seashore	35*	18*	11.8*	8.2*

*Values not meeting completeness criteria due to data loss or a new monitor
Results provided in micrograms per cubic meter

Network Evaluation

Table 26 shows how each $PM_{2.5}$ monitor in the Corpus Christi area was evaluated using the scoring system described in the Evaluation Methods section. No federal $PM_{2.5}$ monitoring requirements apply to the Corpus Christi area. The monitors provide spatial coverage and valuable data to assess both local source and transported particulate concentrations. The Corpus Christi Huisache site, located in proximity to the urban core, industrial sources along the ship channel, and urban neighborhoods, is situated to provide $PM_{2.5}$ concentration data in an area of high population density. The FRM, speciation monitor, and continuous monitor located at the Dona Park site are also sited near an urban neighborhood but downwind of industrial sources along the ship channel and provide data to assess $PM_{2.5}$ concentrations in a populated area. The National Seashore monitor, located on Padre Island to the southeast of the Corpus Christi city center, provides information about background $PM_{2.5}$ levels coming into Corpus Christi off the Gulf of Mexico. Based on the scores, no changes to the Corpus Christi area $PM_{2.5}$ network are recommended at this time.

Table 26: Corpus Christi Area Particulate Matter of 2.5 Micrometers or Less Network Evaluation

Site Name	Sampler Type	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Corpus Christi Huisache	$PM_{2.5}$ FEM	1	3	1	4	2	11	medium
National Seashore***	$PM_{2.5}$ FEM	1	NA	NA	4	1	6	medium
Dona Park	$PM_{2.5}$ (Speciation)	1	NA	NA	4	2	7	medium
Dona Park	$PM_{2.5}$ (TEOM)	1	NA	NA	4	2	7	medium
Dona Park	$PM_{2.5}$ FRM	1	2**	1	4	2	10	medium

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**NAAQS Value Percent based on incomplete design value due to data loss or new monitor
***Historical Value based on all years of site $PM_{2.5}$ monitoring
FEM – federal equivalent method
FRM – federal reference method
NA – not applicable
NAAQS – National Ambient Air Quality Standards
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less
$PM_{10\text{-}2.5}$ – coarse particulate matter
TEOM – tapered element oscillating microbalance, non-NAAQS comparable

Particulate Matter of 10 Micrometers or Less

The PM_{10} network in the Texas Coastal area fulfills SLAMS requirements based on MSA populations and area concentrations. Figure 6 and Figure 8 show the area PM_{10} monitors at sites with a purple section. PM_{10} monitoring is not required or performed in the Beaumont or Victoria areas. Appendix A lists active and recently decommissioned PM_{10} monitors, locations, monitoring objectives, and associated spatial scales.

Houston Area

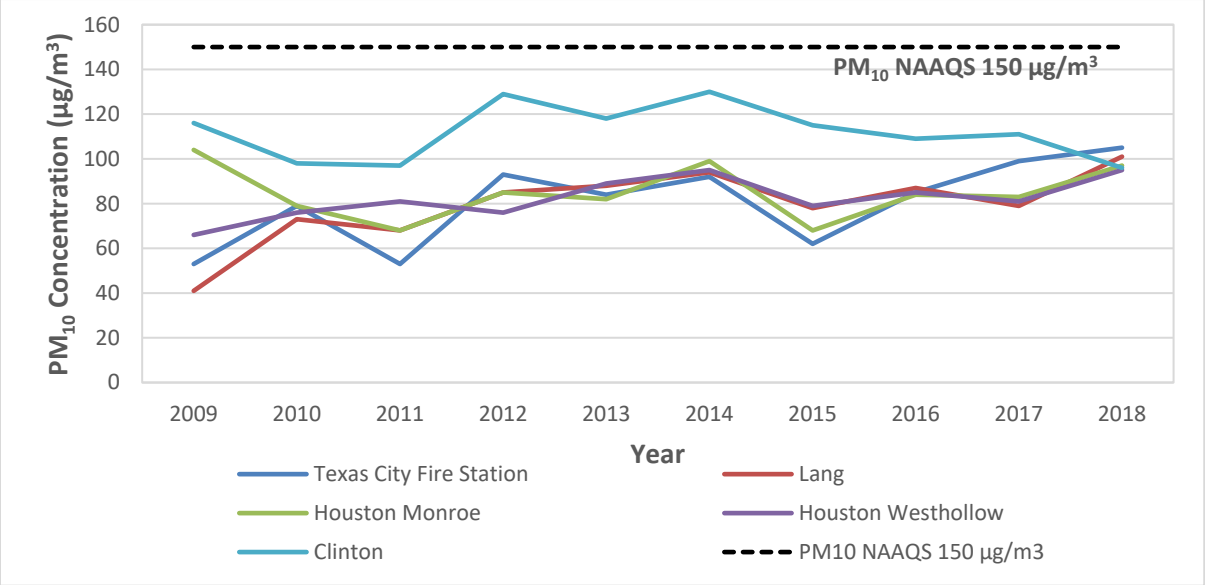
Network History and Current Status

PM_{10} monitoring in the Houston area began in the late 1980s with deployment of the Houston Monroe and Texas City Fire Station monitors. Through the late 1990s, the PM_{10} monitoring network expanded in the urban core and along the ship channel at Houston Westhollow, Clinton, and Lang. The PM_{10} network measures concentrations near populated areas and characterizes regional air quality. Since the 2015 FYA, four Houston area PM_{10} network changes occurred. The PM_{10} monitors at Pasadena Houston Light and Power (HL&P), Houston Aldine, and Houston Deer Park #2 (including speciation) were decommissioned due to declining PM_{10} trends. A PM_{10} FEM continuous monitor is expected to be operational soon at Houston North Wayside and will be assessed during the next FYA. In the 2020 AMNP, the TCEQ recommended replacing the Houston Westhollow PM_{10} filter-based monitor with a $PM_{2.5}$ FEM continuous monitor. This recommendation is pending EPA concurrence.

As of January 1, 2020, federal standards require a minimum of two to four area PM_{10} monitors in the Houston area. Currently, PM_{10} is monitored at five sites to measure population exposure and highest concentrations.

Design Values and Trends

Compliance with the 24-hour PM_{10} standard is based on the number of measured exceedances of the 150 µg/m³ standard averaged over three years. No exceedances at any Houston area sites have been recorded since the last FYA. Figure 23 provides maximum daily PM_{10} concentration trends from 2009 to 2018.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
PM_{10} – particulate matter of 10 micrometers or less

Figure 23: Houston Area Particulate Matter of 10 Micrometers or Less Maximum Concentration Trends, 2009-2018

Network Evaluation

Table 27 shows how each PM_{10} monitor in the Houston area was evaluated using the scoring system described in the Evaluation Methods section. No sites in the Houston area exceeded the PM_{10} NAAQS in this assessment. The Clinton and Lang PM_{10} monitors satisfy SLAMS requirements. Based on the scores and the 2020 AMNP recommendations, no further changes to the Houston area PM_{10} network are recommended at this time.

Table 27: Houston Area Particulate Matter of 10 Micrometers or Less Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Clinton	4	2	1	4	3	14	critical
Houston Monroe	1	2	1	4	2	10	medium

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Houston Westhollow	1	2	1	4	2	10	medium
Lang	4	2	1	4	2	13	critical
Texas City Fire Station	1	2	1	4	2	10	medium

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Corpus Christi Area

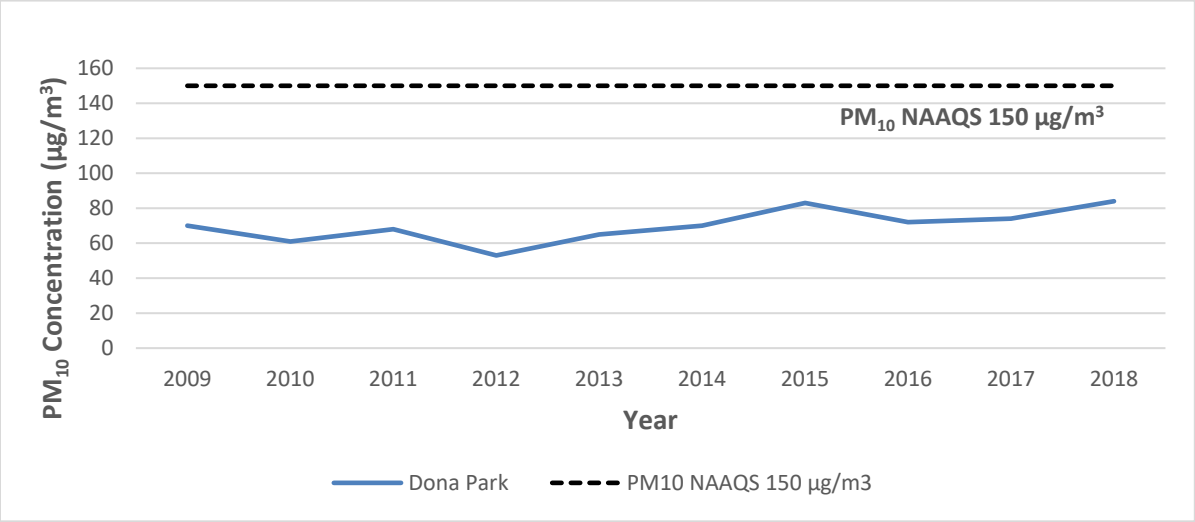
Network History and Current Status

PM_{10} monitoring in the Corpus Christi area began in the early 2000s with the deployment of the Dona Park monitor, located in a populated area close to the Corpus Christi ship channel. Since the 2015 FYA, no changes have occurred to the PM_{10} network in this area.

As of January 1, 2020, federal standards require between zero and one Corpus Christi area PM_{10} monitor. Currently, PM_{10} is monitored at one site to assess population exposure.

Design Values and Trends

Compliance with the 24-hour PM_{10} standard is based on the number of measured exceedances of the 150 µg/m³ standard averaged over three years. No exceedances at the Corpus Christi area site have been recorded since the 2015 FYA. Figure 24 provides maximum daily PM_{10} concentration trends from 2009 to 2018.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
PM_{10} – particulate matter of 10 micrometers or less

Figure 24: Corpus Christi Area Particulate Matter of 10 Micrometers or Less Maximum Concentration Trends, 2009-2018

Network Evaluation

Table 28 shows how the PM_{10} monitor in the Corpus Christi area was evaluated using the scoring system described in the Evaluation Methods section. Zero to one PM_{10} monitor is required in the Corpus Christi area. The Dona Park PM_{10} monitor is located near an urban neighborhood downwind of industrial point sources along the ship channel and provides relevant data to assess PM_{10} concentrations in a populated area. No changes in the Corpus Christi area PM_{10} network are recommended at this time.

Table 28: Corpus Christi Area Particulate Matter of 10 Micrometers or Less Network Evaluation

Site Name	Regulatory Value	NAAQS Value Percent	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Dona Park	1	2	4	4	2	13	high

NAAQS – National Ambient Air Quality Standards
NA – not applicable

Lead

Network History and Current Status

The TCEQ Pb network is designed to meet source-oriented SLAMS monitoring requirements to measure maximum Pb concentrations near point sources emitting 0.50 tpy or more of Pb. There is no source-oriented Pb monitoring required in the Texas Coastal area. Pb monitoring was required at the Houston area NCore site, Houston Deer Park #2, however, the requirement was eliminated in the EPA's final rule published in the Federal Register on March 28, 2016, Revisions to the *Ambient Monitoring Quality Assurance and Other Requirements; Final Rule*. Since the 2015 FYA, the Houston Deer Park #2 Pb monitor was decommissioned. Appendix A lists active and recently decommissioned Pb monitors, locations, monitoring objectives, and spatial scale.

Photochemical Assessment Monitoring

The VOC and carbonyl network in the Texas Coastal area fulfills requirements for and supports PAMS. Figure 6 and Figure 7 show the area VOC monitors at sites with an orange section. Sites with active carbonyl monitoring listed in Table 29 coincide with VOC monitoring and are not differentiated on the map. Federal photochemical assessments for VOCs and carbonyls are not required or performed in the Corpus Christi or Victoria area. Appendix A lists active and recently decommissioned VOC and carbonyl monitors, locations, monitoring objectives, and associated spatial scales.

Houston Area

Network History and Current Status

Houston area VOC monitoring began in the early 1990s with canister sampling and expanded with autoGC deployments to assist in understanding the area's photochemical characteristics. In 1995, 1997, and 2001, autoGCs were added to the Clinton, Houston Deer Park #2, and Channelview sites to further evaluate O_3

precursors in populated areas. The Houston Deer Park #2 and Clinton carbonyl monitors were deployed in 1996 and 1998 to further study O_3 precursors not captured in VOC monitoring. No changes to the network have occurred since the 2015 FYA.

As of January 1, 2020, federal standards require a minimum of one autoGC and one carbonyl sampler related to PAMS. The TCEQ exceeds requirements with three autoGCs and two carbonyl samplers.

Design Values and Trends

Design values and associated trends are not applicable to VOCs and carbonyl monitoring. Monitoring objectives for photochemical assessment monitoring of O_3 precursors include creating a representative VOC and carbonyl ambient air database useful in photochemical grid modeling, developing emission control strategies, and furthering the understanding of pollution transport mechanisms to aid in reaching attainment designations.

Network Evaluation

Table 29 shows how each VOC and carbonyl monitor in the Houston area was evaluated using the scoring system described in the Evaluation Methods section. The Houston Deer Park #2 autoGC and carbonyl monitors satisfy PAMS requirements. The remaining area autoGCs and carbonyl monitor are of high value supporting the PAMS network. Monitors are located in areas of dense population and are meeting the original monitoring objectives. Based on these scores, no changes to the Houston area network are recommended at this time.

Table 29: Houston Area Photochemical Assessment Network Evaluation

Site Name	Sampler Type	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Channelview	VOC (AutoGC)	1	NA	NA	4	2	7	medium
Clinton	Carbonyl	1	NA	NA	4	2	7	medium
Clinton	VOC (AutoGC)	1	NA	NA	4	2	7	medium
Houston Deer Park 2	Carbonyl	4	NA	NA	4	2	10	critical
Houston Deer Park 2	VOC (AutoGC)	4	NA	NA	4	2	10	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
autoGC – automated gas chromatograph
NA – not applicable
NAAQS – National Ambient Air Quality Standards
VOC – volatile organic compound

Beaumont Area

Network History and Current Status

Beaumont area VOC monitoring began in the early 1990s with canister sampling at Beaumont Downtown and expanded with autoGC deployments to Beaumont Downtown and Nederland High School in 2006 to assist in understanding the area's photochemical characteristics. Carbonyl monitoring is not required or performed in the Beaumont area. No changes to the network have occurred since the 2015 FYA.

As of January 1, 2020, federal standards do not require VOC or carbonyl monitoring in the Beaumont area. The TCEQ exceeds requirements with two autoGCs supporting PAMS.

Design Values and Trends

Design values and associated trends are not applicable to VOC monitoring. Monitoring objectives for photochemical assessment monitoring of O_3 precursors include creating a representative VOC ambient air database useful in photochemical grid modeling, developing emission control strategies, and furthering the understanding of pollution transport mechanisms to aid in reaching attainment designations.

Network Evaluation

Table 30 shows how each VOC monitor in the Beaumont area was evaluated using the scoring system described in the Evaluation Methods section. The Beaumont Downtown and Nederland High School autoGC monitors support the PAMS network. Monitors are located in areas of dense population and are meeting the original monitoring objectives. Based on these scores, no changes to the Beaumont area network are recommended at this time.

Table 30: Beaumont Area Photochemical Assessment Network Evaluation

Site Name	Sampler Type	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Beaumont Downtown	VOC (AutoGC)	1	NA	NA	3	2	6	medium
Nederland High School	VOC (AutoGC)	1	NA	NA	3	2	6	medium

*Regulatory Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
autoGC – automated gas chromatograph
NA – not applicable
NAAQS – National Ambient Air Quality Standards
VOC – volatile organic compound

Central Texas Area Evaluation

(Austin-Round Rock-Georgetown, College Station-Bryan, Killeen-Temple, San Antonio-New Braunfels, and Waco Areas)

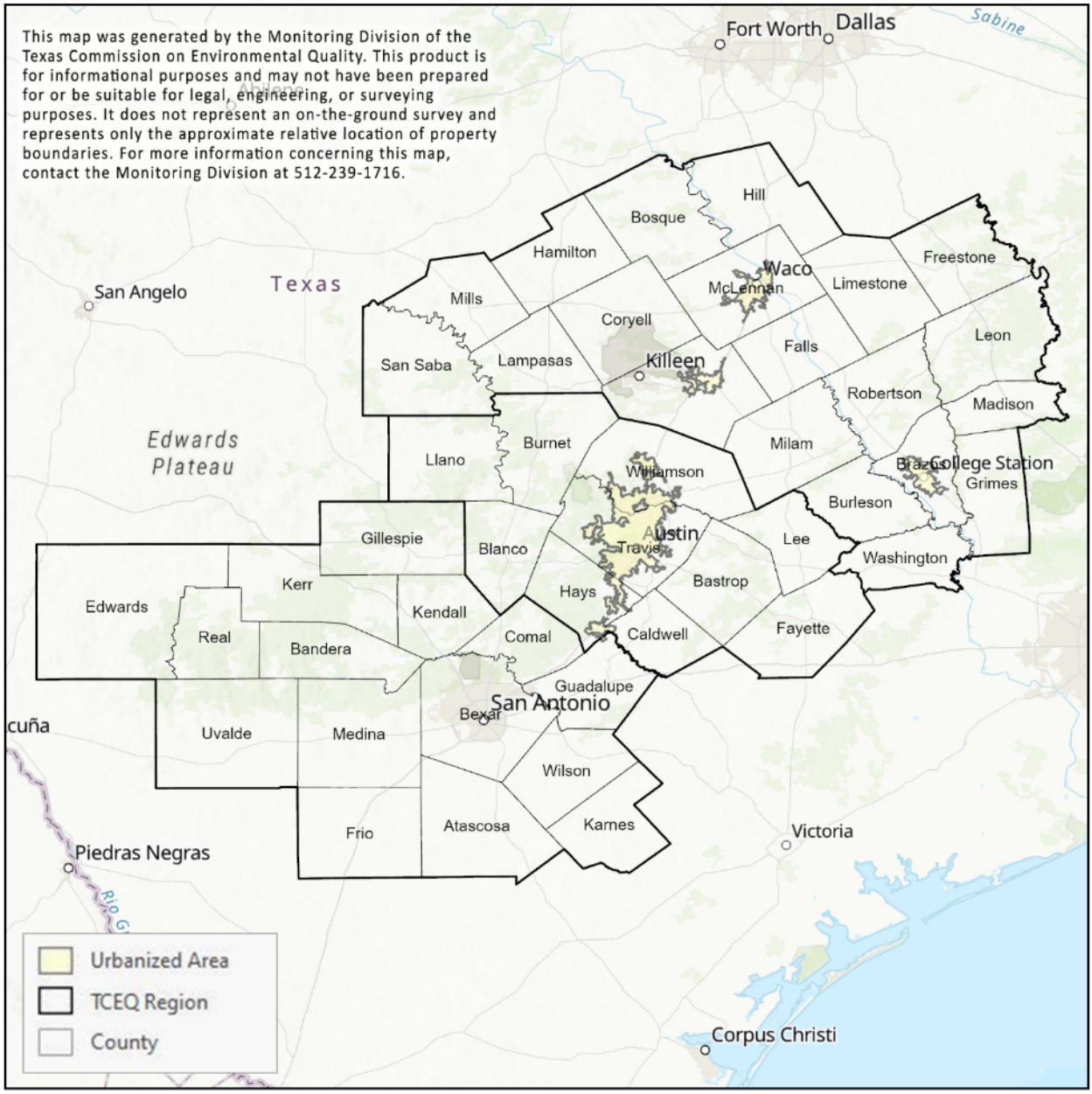


Figure 25: Central Texas Area Counties and Urban Areas

Central Texas Area Characteristics and Background

Wind Patterns

Figure 25 illustrates the counties included in the Central Texas area evaluation. Figure 26 and Figure 27 illustrate typical Central Texas area annual average wind speed and direction wind roses from local airport meteorological sensors averaged from 2014 to 2018. Figure 26 wind roses were derived from Killeen-Fort Hood Robert Gray Army Airfield Airport, Waco Regional Airport, and Austin Bergstrom International Airport. Figure 27 wind roses were derived from New Braunfels Stinson Municipal Airport and San Antonio International Airport. Wind data indicate the dominant flow is from the south and south-southeast from the Texas Gulf Coast to the north and north-northwest. Winds can originate from the North American continent or in the Caribbean Sea or Atlantic Ocean. The Central Texas area is susceptible to transported pollution due to its location, dominant wind patterns, and flat terrain.

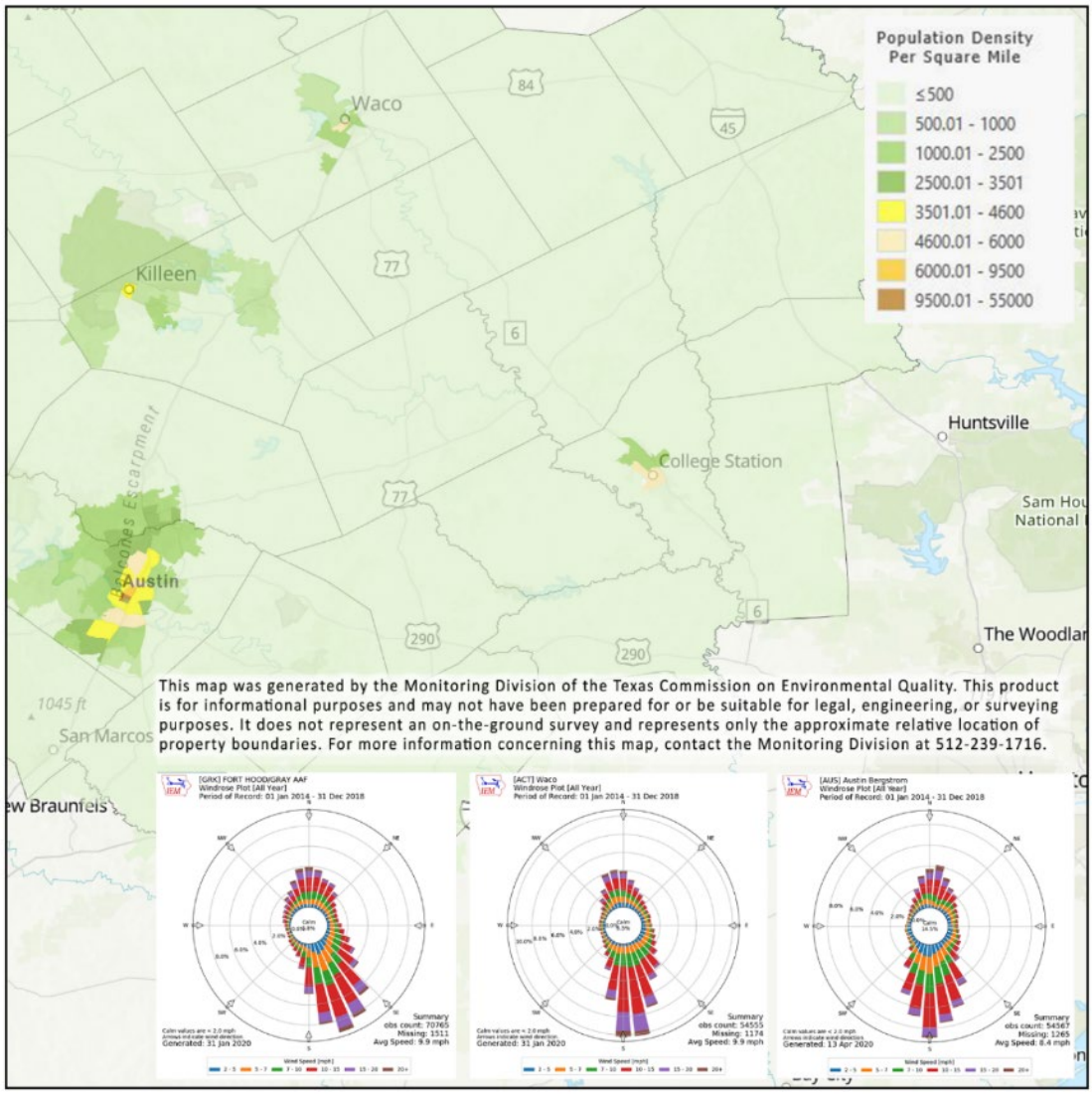


Figure 26: Austin-Round Rock-Georgetown, College Station-Bryan, Killeen-Temple, and Waco Area Population Density and Wind Roses

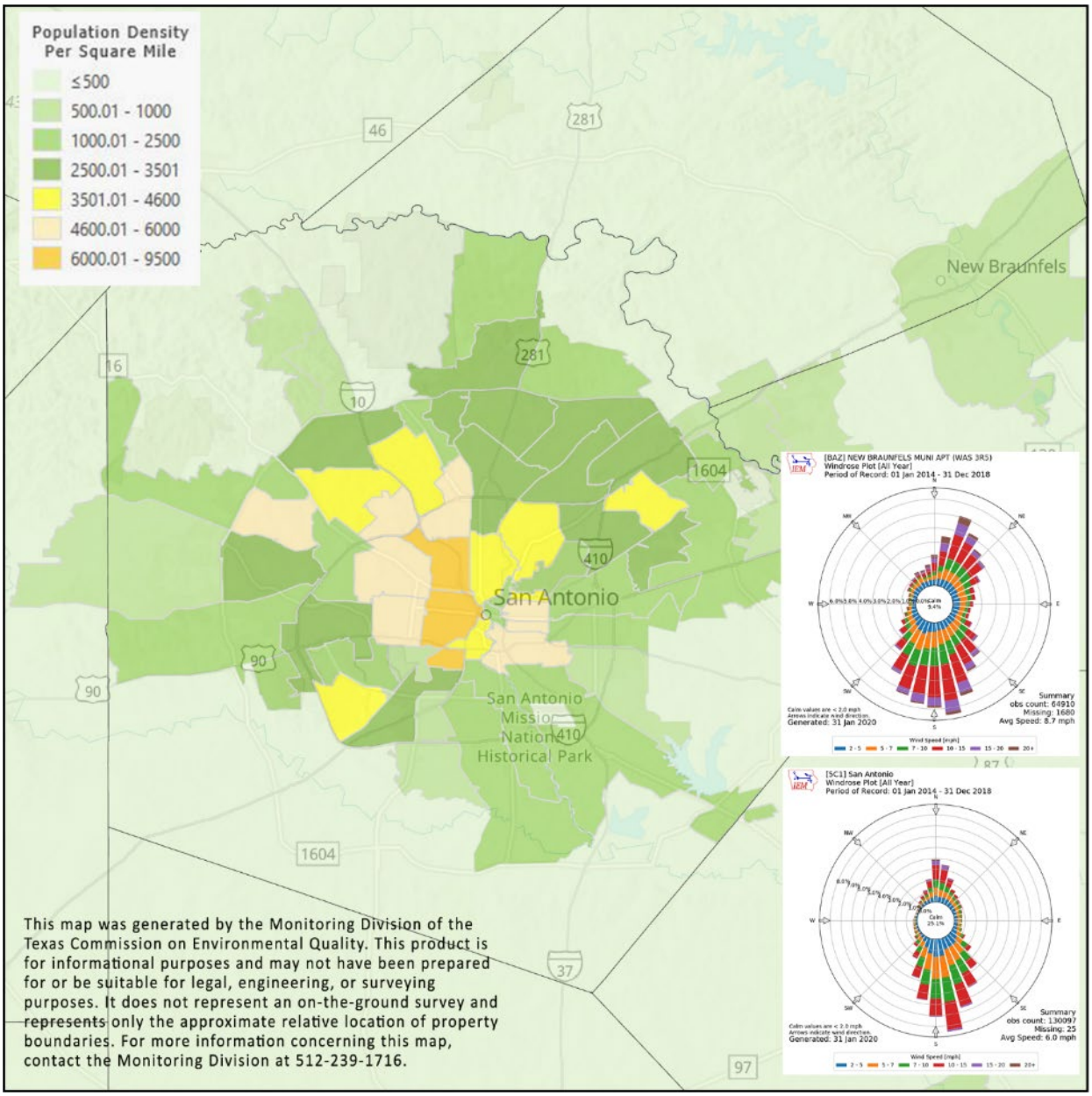


Figure 27: San Antonio-New Braunfels Area Population Density and Wind Roses

Population and Monitoring Requirements

The Central Texas area has five major MSAs that include multiple counties. Monitoring is also conducted in Freestone and Karnes counties which are not included in metropolitan or micropolitan statistical areas.

- The Austin-Round Rock-Georgetown (Austin) MSA includes Bastrop, Caldwell, Hays, Travis, and Williamson Counties
- The College Station-Bryan (College Station) MSA includes Brazos, Burleson, and Robertson Counties
- The Killeen-Temple (Killeen) MSA includes Bell, Coryell, and Lampasas Counties

- The San Antonio-New Braunfels (San Antonio) MSA includes Atascosa, Bandera, Bexar, Comal, Guadalupe, Kendall, Medina, and Wilson Counties
- The Waco MSA includes Falls and McLennan Counties

The Texas Demographics Center projects the combined population of the five Central Texas area MSAs will exceed 5.8 million persons in 2020. The 2025 projection estimates an 11% population increase from 2020 in the Central Texas area with the largest growth at 13% in the Austin MSA. Figure 26 and Figure 27 illustrate the population densities across the Central Texas urban areas based on actual 2010 U.S. Census Bureau data. Population density is illustrated by square mile for each area zip code.

The Austin MSA minimum monitoring network design requirements dictated by the latest available census population estimates under 40 CFR §58, Appendix D, include the following.

- two NO_2 monitors
- two O_3 monitors
- one CO monitor
- between two and four PM_{10} monitors
- two $PM_{2.5}$ monitors

The College Station MSA is required to have the following.

- one SO_2 monitor
- zero to one PM_{10} monitor

The Killeen MSA is required to have the following.

- two O_3 monitors
- zero to one PM_{10} monitor

The San Antonio MSA is required to have the following.

- three NO_2 monitors
- two SO_2 monitors
- two O_3 monitors
- one CO monitor
- between two to four PM_{10} monitors
- three $PM_{2.5}$ monitors

The Waco MSA is required to have the following.

- one O_3 monitor
- zero to one PM_{10} monitor

Freestone and Karnes Counties have zero requirements.

The TCEQ evaluated population projection data illustrated in Table 2 against Central Texas area minimum monitoring design requirements partially based on MSA population. No Central Texas MSA monitoring requirements would increase based on the projected population assessment with two exceptions. The Austin MSA may require one SO_2 PWEI monitor by the end of the next five-year period; however, an existing SO_2 monitor at Austin Northwest would fulfill this potential future requirement. The Austin MSA may also require an additional near-road NO_x monitoring site if the population exceeds 2,500,000 before the end of the next five-year period. The TCEQ

meets and exceeds monitoring requirements with the monitors illustrated in Figure 28 and Figure 29.

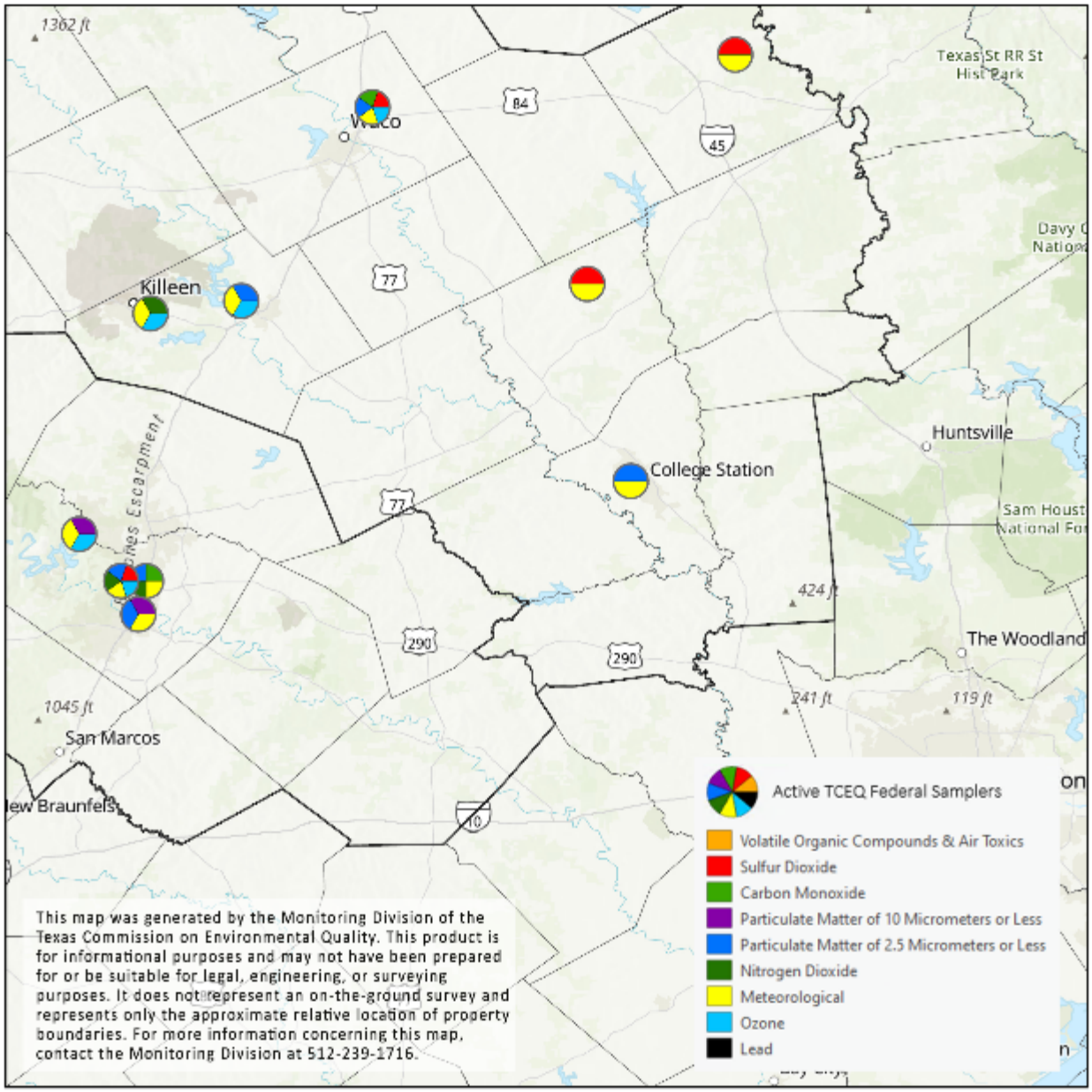


Figure 28: Austin, College Station, Killeen, and Waco Area Active Sites and Monitors

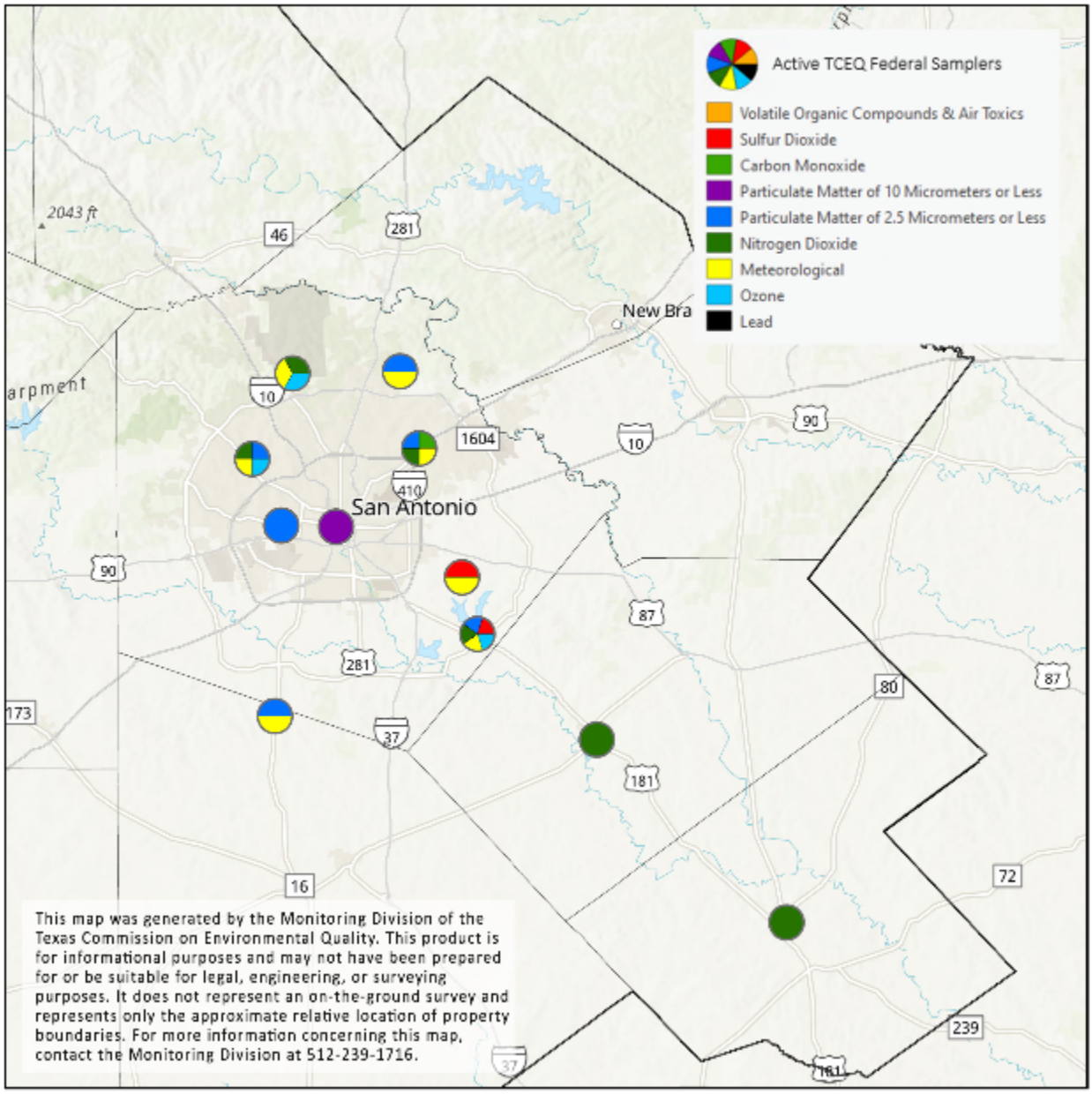


Figure 29: San Antonio Area Active Sites and Monitors

Point Sources and Area-Wide Emissions

Anthropogenic Sources

Data from EI source categories show the following for the Central Texas area:

- The majority of CO is emitted from on-road mobile sources in the Austin and San Antonio areas and from on-road mobile and point sources in the Waco area.
- NO_x emissions are predominately from on-road mobile and point sources in Waco and San Antonio and from on-road mobile in Austin.
- Area sources account for the majority of VOCs, $PM_{2.5}$, and PM_{10} emissions.

- Point sources are the primary contributors of SO_2 emissions for the Austin, San Antonio, and Waco areas.
- Non-road mobile sources contribute the majority of the total Pb emissions.

EI source totals by pollutant by area are listed in Table 31. This information, in conjunction with monitoring objectives and regulatory requirements, is used to identify and prioritize areas of interest.

Table 31: 2017 Central Texas Area Emissions Inventory in Tons Per Year

Area	Source	VOC	NO_x	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
R9-Waco	Point	1,707	29,938	61,875	7,485	5,749	94,267	0.96
R9-Waco	Area	39,536	10,119	13,516	198,582	22,985	285	0.00
R9-Waco	On-Road Mobile	5,606	18,460	65,355	1,151	598	82	0.00
R9-Waco	Non-Road Mobile	3,319	13,297	29,661	791	759	50	1.05
R11-Austin	Point	1,140	12,372	11,761	1,827	1,351	3,116	0.65
R11-Austin	Area	32,447	5,344	9,912	175,419	20,311	261	0.00
R11-Austin	On-Road Mobile	6,988	14,859	86,775	1,212	493	121	0.00
R11-Austin	Non-Road Mobile	4,136	7,677	41,735	555	526	97	1.15
R13-San Antonio	Point	5,837	20,394	14,206	2,005	1,268	22,836	0.35
R13-San Antonio	Area	74,482	16,763	22,570	182,332	21,215	2,342	0.00
R13-San Antonio	On-Road Mobile	9,782	21,297	113,656	1,516	636	140	0.00
R13-San Antonio	Non-Road Mobile	5,982	8,873	52,503	715	677	89	1.46

*Appendix D details the counties included for each area.
CO – carbon monoxide
NO_x – oxides of nitrogen
PM – particulate matter
R – TCEQ Region
SO_2 – sulfur dioxide
VOC – volatile organic compounds

Point-Source Emissions Lead Waiver Request

Under 40 CFR §58, Appendix D, Section 4.5(a)(ii), the EPA Regional Administrator may waive the requirement in 40 CFR §58, Appendix D, 4.5(a) for monitoring near specific Pb sources with sufficient demonstration that the Pb source will not contribute to a maximum concentration in ambient air greater than 50% of the NAAQS based on historical monitoring data, modeling, or other means. In 2015, the TCEQ submitted Pb waivers for source-oriented monitoring and the EPA Region 6 granted each request.

The waivers are no longer required due to a decrease in source emissions below the 0.50 tpy threshold with one exception. The request to renew the Pb waiver for the Lower Colorado River Authority Sam Seymour Fayette Power Plant in Fayette County is included in Appendix B. The modeling analysis included in this appendix was conducted to provide the demonstration needed to request a waiver from the source-oriented Pb monitoring requirement.

Natural Sources

The Central Texas area is impacted by the same seasonal pollutant transport that impacts the North and Coastal areas. Smoke events, which can impact both $PM_{2.5}$ concentrations and O_3 formation, are typically noted in the summer months. Accumulated smoke and haze from the eastern United States arrives in late spring through early fall, while smoke from agricultural burning in Mexico and Central Texas America arrives in April and May. In addition, $PM_{2.5}$ concentrations can be elevated from June to August and during the spring months typically from African dust and dust storms in the western Great Plains and northern Mexico, respectively.

Regional Air Quality

Criteria Pollutants

As of January 1, 2020, the Austin-Round Rock and Waco areas in Central Texas are designated as attainment/unclassifiable for all current NAAQS. The San Antonio area is designated attainment/unclassifiable for the 2008 eight-hour ozone NAAQS of 0.075 ppm and, with the exception of Bexar County, designated attainment/unclassifiable for the 2015 eight-hour ozone NAAQS. Bexar County is designated as a marginal nonattainment area for the 2015 eight-hour ozone NAAQS of 0.070 ppm. Recent and historical design values for each of the criteria pollutants are provided in the Monitoring Network section below.

In June 2010, the primary SO_2 NAAQS was revised to a one-hour standard of 75 ppb. Initial designations were made in Round 1 in July 2013 and no areas in Texas were designated at that time. A March 2015 consent decree between the Sierra Club and the EPA set deadlines for the EPA to complete designations for the one-hour SO_2 NAAQS in three additional rounds. In Round 2, Milam County was designated unclassifiable and a portion of Freestone County was designated nonattainment as part of the Freestone-Anderson nonattainment area. On August 22, 2019, the EPA proposed to revise the designation for the Freestone-Anderson area from nonattainment to unclassifiable. All other Central Texas region counties, with the exception of Bexar County, were designated as attainment/unclassifiable for the 2010 primary SO_2 NAAQS in Rounds 2 and 3 of designations. The EPA will designate Bexar County in Round 4 by the end of 2020.

Current Nonattainment Designations

2015 Eight-Hour Ozone

In 2018, the EPA designated Bexar County in the San Antonio area as marginal nonattainment for the 2015 eight-hour ozone NAAQS, effective September 24, 2018. Under a marginal classification, Bexar County is required to attain the 2015 eight-hour

ozone standard by the end of 2020 to meet a September 24, 2021, attainment date. On January 15, 2020, the commission approved proposal of a Federal Clean Air Act §179B demonstration SIP revision that would demonstrate that the Bexar County marginal nonattainment area would attain the 2015 eight-hour O_3 NAAQS by the attainment deadline "but for" anthropogenic emissions from outside the United States. The SIP revision is scheduled for adoption by the commission on July 1, 2020.

2010 One-Hour Sulfur Dioxide

Effective January 12, 2017, the EPA designated a portion of Freestone County as nonattainment for the 2010 one-hour SO_2 NAAQS as part of the Freestone-Anderson nonattainment area. On August 22, 2019, the EPA proposed an error correction of the Freestone-Anderson area designation for the 2010 one-hour SO_2 primary NAAQS to revise the nonattainment designation to an unclassifiable designation.

Central Texas Monitoring Network Evaluation

Ozone

The O_3 network in the Central Texas area fulfills SLAMS requirements based on population and O_3 design values. Figure 28 and Figure 29 show the area active O_3 monitors at sites with a light blue section. Ozone monitoring is not required or performed in the College Station area. Appendix A lists active and recently decommissioned O_3 monitors, locations, monitoring objectives, and associated spatial scales.

Central Texas Area

Network History and Current Status

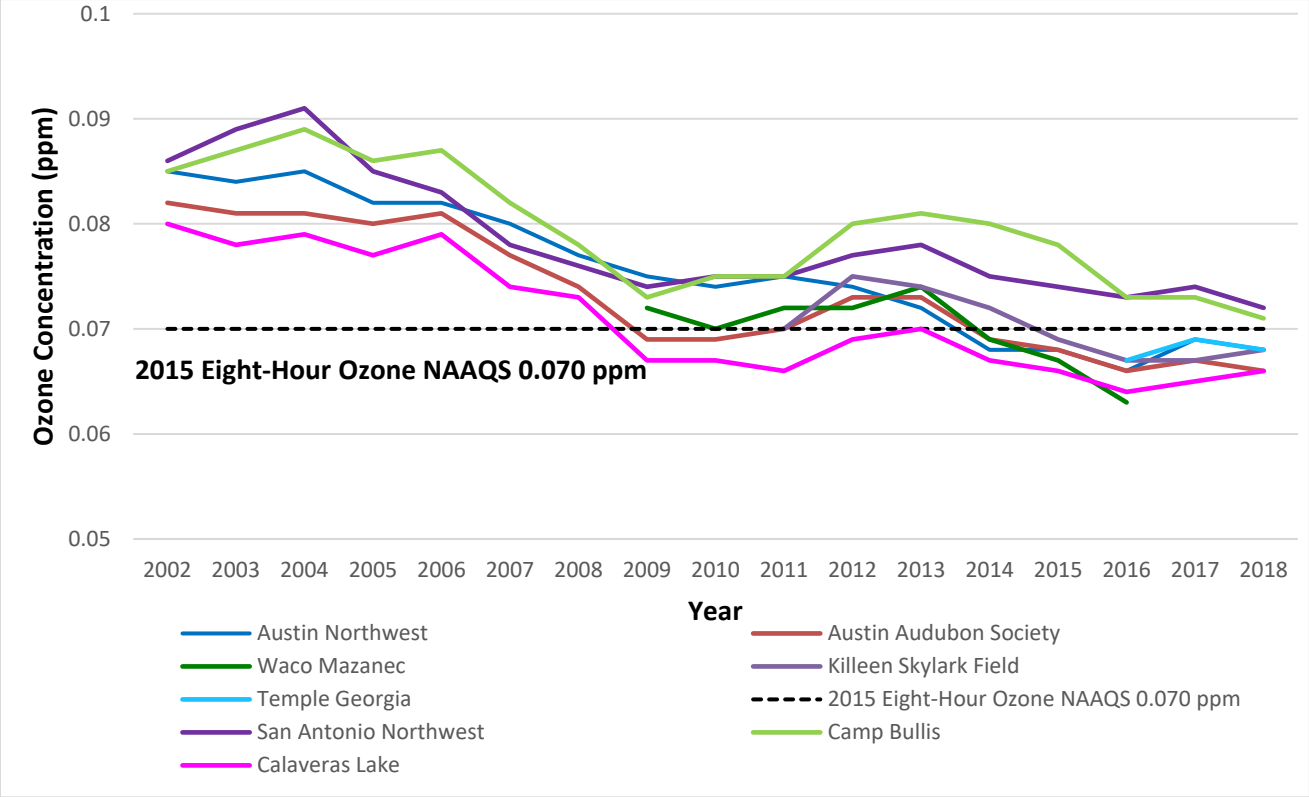
Central Texas area O_3 monitoring began in the late 1970s and early 1980s with deployment of the Austin Northwest and San Antonio Northwest monitors. In the late 1990s, the O_3 monitoring network expanded to Austin Audubon, Calaveras Lake, and Camp Bullis to meet evolving federal monitoring requirements. In 2007, 2009, and 2013, the O_3 network expanded to urban areas along the Interstate 35 corridor to Waco Mazanec, Killeen Skylark Field, and Temple Georgia. Central Texas area O_3 monitors provide near real-time data to the public measuring maximum concentrations in populated areas and measuring concentrations upwind of urban areas to evaluate regional transport. Since the 2015 FYA, one Central Texas area O_3 network change occurred. The Austin Northwest O_3 monitor was temporarily shut down on February 18, 2020, due to construction at the site; the site will be permanently relocated approximately 0.10 miles to Austin North Hills Drive and will be operational soon.

As of January 1, 2020, federal standards require a minimum of seven Central Texas area O_3 monitors. The TCEQ meets area requirements, and exceeds requirements in San Antonio, with a total of eight Central Texas area O_3 monitors. The spatial distribution of the network provides valuable data for evaluating the area.

Design Values and Trends

Central Texas area eight-hour O_3 design values continue to decline. Figure 30 shows the Central Texas area O_3 design value trends from 2002 through 2018 compared with

the 2015 eight-hour O_3 NAAQS of 0.070 ppm. Design values from the Waco Mazanec O_3 monitor were affected for 2017 and 2018 due to data quality concerns.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 30: Eight-Hour Ozone Design Value Trends in the Central Texas Area, 2002-2018

Network Evaluation

Table 32 shows how each O_3 monitor in the Central Texas area was evaluated using the scoring system described in the Evaluation Methods section. The Austin Northwest, Austin Audubon Society, Camp Bullis, Killeen Skylark Field, San Antonio Northwest, Temple Georgia, and Waco Mazanec monitors in Central Texas satisfy SLAMS requirements. The remaining area monitor at Calaveras Lake is critical due to current design values and the provided spatial coverage. Based on these scores and the current spatial coverage, no changes to the Central Texas area O_3 network are recommended at this time.

Table 32: Central Texas Area Ozone Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value*	Total Monitor Value	Assess-ment Value
Austin Northwest	4	4	1	4	1	14	critical
Austin Audubon Society	4	4	1	4	1	14	critical
Calaveras Lake	1	4	1	4	1	11	critical
Camp Bullis	4	4	1	4	1	14	critical
Killeen Skylark Field	4	4	1	3	1	13	critical
San Antonio Northwest	4	4	1	4	1	14	critical
Temple Georgia	4	4	3	2	1	14	critical
Waco Mazanec	4	4	1	3	1	13	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS Value Percent and Data Trend values assessed based on available data.
NAAQS – National Ambient Air Quality Standards

Carbon Monoxide

The CO network in the Central Texas area includes ambient CO monitors and fulfills near-road requirements in the Austin and San Antonio areas. CO monitoring is not required or performed in the Killeen or College Station areas. Figure 28 and Figure 29 show the area active CO monitors at sites with a light green section. Appendix A lists active and recently decommissioned CO monitors, locations, monitoring objectives, and associated spatial scales.

Central Texas Area

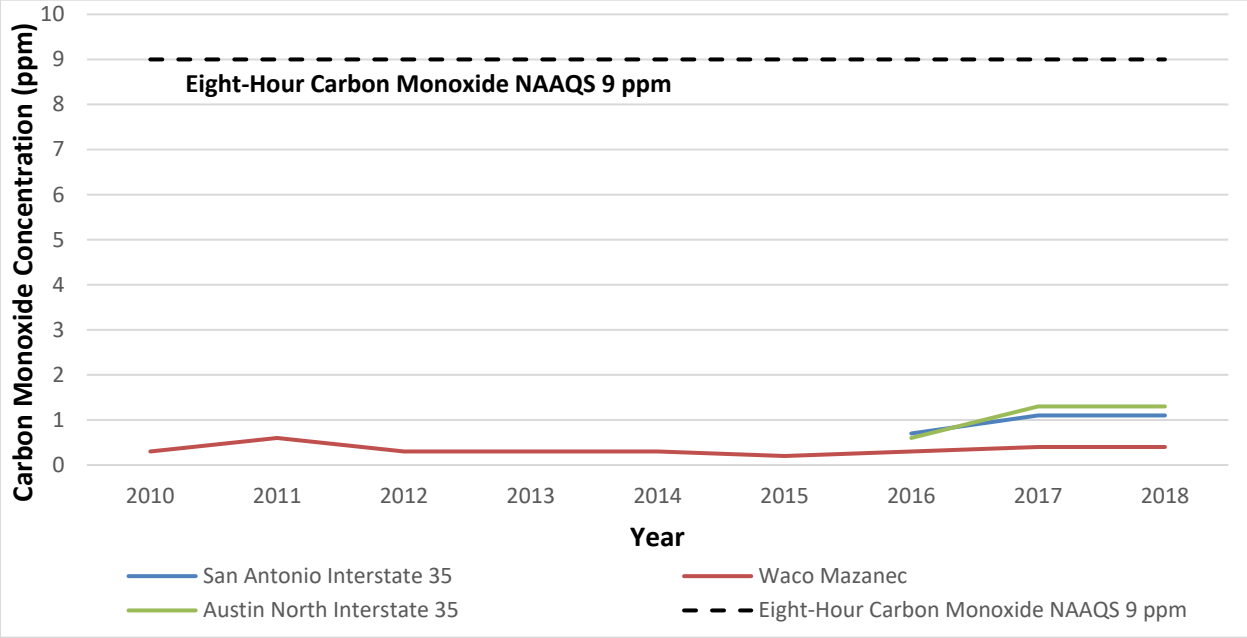
Network History and Current Status

Central Texas area CO monitoring began in the late 1970s in Austin and San Antonio; monitoring decreased in the early 2000s as CO regulations changed and concentrations declined, and monitors were decommissioned. In 2007, CO monitoring began at Waco Mazanec. Since the 2015 FYA, two Central Texas area CO network changes occurred. A CO monitor was added at the Austin North Interstate 35 site and San Antonio Interstate 35 site in December 2016 to fulfil the near-road CO monitoring requirement.

As of January 1, 2020, federal standards require a minimum of two area CO monitors fulfilling near-road requirements. Currently, CO is monitored at three sites.

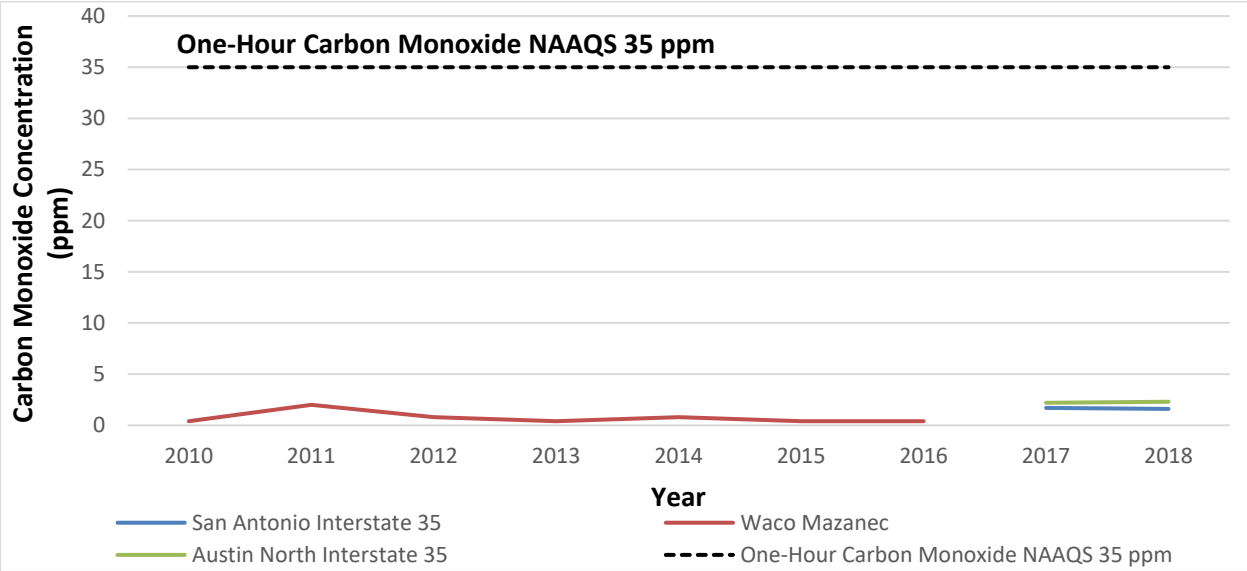
Design Values and Trends

Central Texas area CO design values remain below 7% of the one-hour NAAQS of 35 ppm and below 14% of the eight-hour NAAQS of 9 ppm, as shown in Figure 31 and Figure 32. Eight-Hour CO design values from the Waco Mazanec CO monitor were affected for 2017 and 2018 due to data quality concerns.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 31: Eight-Hour Carbon Monoxide Design Value Trends in the Central Texas Area, 2010-2018



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 32: One-Hour Carbon Monoxide Design Value Trends in the Central Texas Area, 2010-2018

Network Evaluation

Table 33 shows how each CO monitor in the Central Texas area was evaluated using the scoring system described in the Evaluation Methods section. The Austin North Interstate 35 and San Antonio Interstate 35 monitors satisfy the near-road CO monitoring requirement. The remaining Waco Mazanec monitor is useful for evaluating background concentrations. No changes in the Central Texas area CO network are recommended at this time.

Table 33: Central Texas Area Carbon Monoxide Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value*	Total Monitor Value	Assessment Value
Austin North Interstate 35	4	1	2	1	3	11	critical
San Antonio Interstate 35	4	1	2	1	3	11	critical
Waco Mazanec	1	1	2	3	2	9	medium

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic high assessment value.
NAAQS Value Percent and Data Trend values assessed based on available data.
NAAQS – National Ambient Air Quality Standards

Oxides of Nitrogen

The NO_x network in the Central Texas area includes NO_x, NO_2, and NO monitoring and is designed to meet area-wide and near-road monitoring requirements. Figure 28 and Figure 29 show the area active NO_x monitors at sites with a dark green section. Appendix A lists active and recently decommissioned NO_x monitors, locations, monitoring objectives, and associated spatial scales.

Central Texas Area

Network History and Current Status

Central Texas area NO_x monitoring began in the late 1990s with a NO_x monitor deployment to Calaveras Lake. In 2007, a NO_x monitor was deployed to Waco Mazanec. In 2012, NO_x monitors were deployed to Austin Northwest and San Antonio Northwest to fulfill new area-wide NO_x requirements. In early 2014, NO_x monitors were deployed at Austin North Interstate 35 and San Antonio Interstate 35 to fulfill near-road requirements.

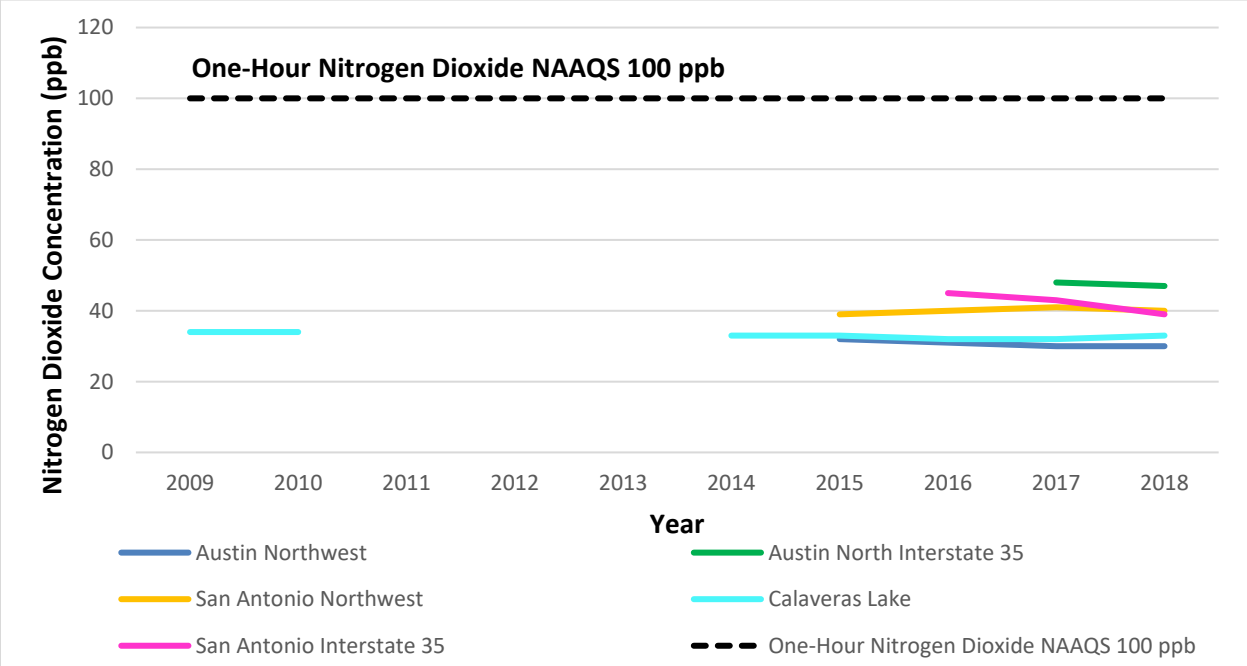
Since the last FYA, several Central Texas area network changes occurred. The Waco Mazanec NO_x monitor was decommissioned in December 2017 and relocated to Killeen Skylark Field in April 2018. Effective January 2020, the state-initiative NO_x monitors at Camp Bullis, Floresville Hospital Boulevard, and Karnes County were redesignated as special purpose monitors to evaluate regional data and trends. Since there are no design values for these monitors, they will be assessed during the next FYA. The Austin Northwest NO_x monitor was temporarily shut down on February 18, 2020, due to construction at the site; the site will be permanently relocated approximately 0.10 miles to Austin North Hills Drive and will be operational soon.

In the 2020 AMNP, the TCEQ recommended deploying a second near-road monitoring station in the San Antonio MSA to meet the near-road requirement in CBSAs with 2,500,000 or more persons based on the latest available census figures. The TCEQ will explore possible new sites and propose a viable location adjacent to the highest possible ranked road segment in 2020 and deploy the site in 2021.

As of January 1, 2020, federal standards require a minimum of five NO_X monitors to satisfy area-wide and near-road monitoring requirements. The TCEQ exceeds requirements with nine NO_x monitors. Monitoring objectives related to these federal requirements include collecting ambient data in populated areas, measuring maximum O_3 precursor emissions impacts, characterizing upwind and background concentrations, and characterizing downwind transport of O_3 precursors.

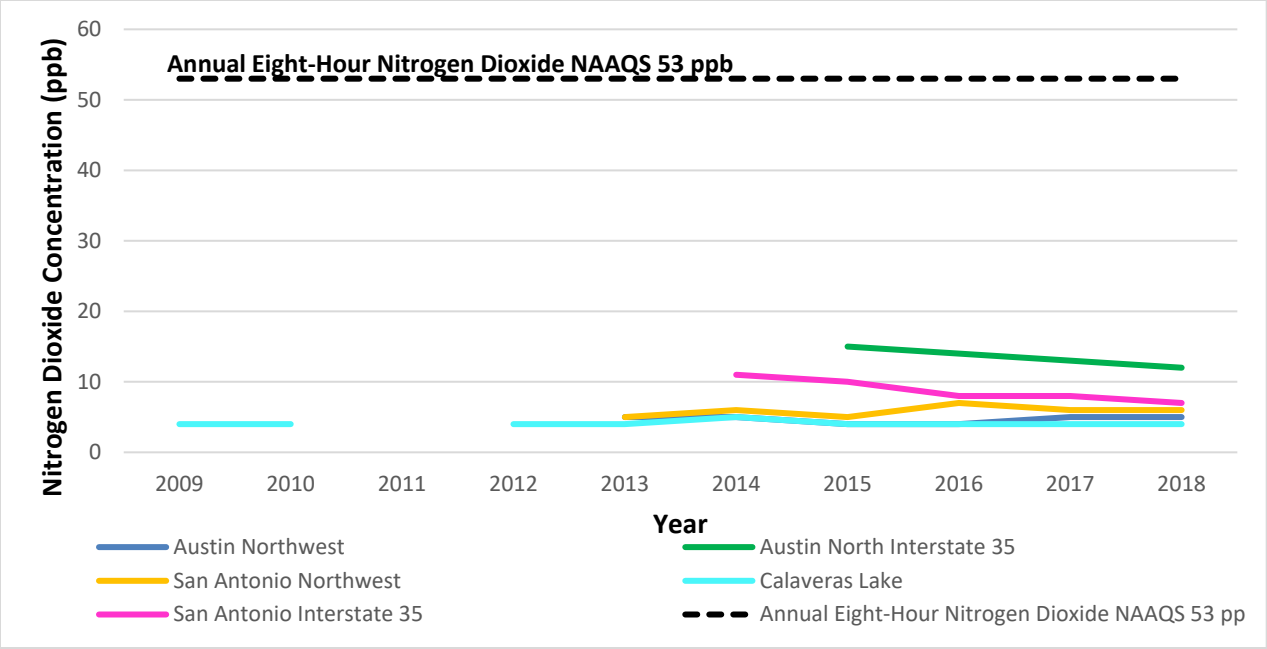
Design Values and Trends

Central Texas area one-hour NO_2 and annual NO_2 concentrations have been stable with some declining trends over the past ten years. All Central Texas area monitors remain well below the one-hour and annual NO_2 NAAQS. Figure 33 and Figure 34 show the design value trends in the Central Texas area from 2009 to 2018. Data loss at the Calaveras Lake site affected NO_2 design values for 2011-2013. The Killeen Skylark Field NO_x monitor, deployed in 2018, has not yet obtained three complete years of data for design value calculations; therefore, this monitor will not be assessed with the NAAQS Value Percent and Data Trend metrics in this FYA.



ppb – parts per billion
NAAQS - National Ambient Air Quality Standards

Figure 33: Central Texas Area One-Hour Nitrogen Dioxide Design Value Trends, 2009–2018



ppb – parts per billion
NAAQS - National Ambient Air Quality Standards

Figure 34: Central Texas Area Annual Nitrogen Dioxide Design Value Trends, 2009–2018

Network Evaluation

Table 34 shows how each NO_x monitor in the Central Texas area was evaluated using the scoring system described in the Evaluation Methods section. The San Antonio Northwest and Austin Northwest monitors fulfill area-wide requirements. The Austin North Interstate 35 and the San Antonio Interstate 35 NO_x monitors fulfil near-road requirements. The remaining area NO_x monitors provide data to evaluate O_3 precursor trends and background concentrations. Based on these scores and the 2020 AMNP recommendations, no further changes to the Central Texas area NO_x network are recommended at this time.

Table 34: Central Texas Area Oxides of Nitrogen Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Austin Northwest	4	1	1	2	2	10	critical
Austin North Interstate 35	4	1	2	2	3	12	critical
Calaveras Lake	1	1	2	4	2	10	medium
Killeen Skylark Field	1	NA	NA	1	2	4	low

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
San Antonio Northwest	4	1	2	2	2	11	critical
San Antonio Interstate 35	4	1	1	2	3	11	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards
NA – not applicable

Sulfur Dioxide

The SO_2 network in the Central Texas area fulfills PWEI and 2015 Data Requirements Rule requirements. Figure 28 and Figure 29 show the area SO_2 monitors at sites with a red section. SO_2 monitoring is not required or performed in the Temple-Killeen area. Appendix A lists active and recently decommissioned SO_2 monitors, locations, monitoring objectives, and associated spatial scales.

Central Texas Area

Network History and Current Status

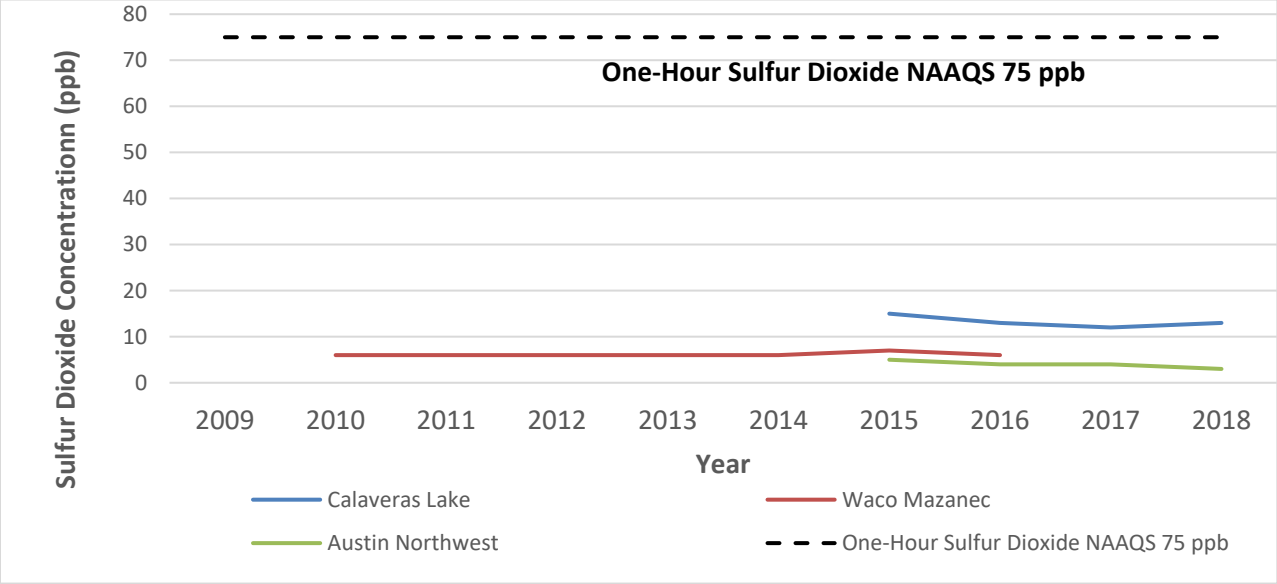
Central Texas area SO_2 monitoring began in 2007 with the deployment of the Waco Mazanec monitor, located in a rural area northeast of Waco, established to measure background concentrations coming into the area. In late 2012, the Central Texas area monitoring network expanded with the deployment of SO_2 monitors at the Calaveras Lake site, to fulfill PWEI requirements, and the Austin Northwest site, to measure SO_2 concentrations in a highly populated area.

Since the last FYA, several Central Texas area SO_2 network changes occurred. New source-oriented SO_2 monitoring sites were added at the Rockdale John D. Harper Road, San Antonio Gardner Road and Franklin Oak Grove sites in late 2016. Data from these monitors for calendar years 2017, 2018, and 2019 will be used to determine compliance with the 2010 one-hour SO_2 NAAQS. In late 2017, a source-oriented SO_2 monitor was deployed at the Fairfield FM 2570 Ward Ranch site to characterize air quality in the portion of Freestone County designated nonattainment. After EPA review and concurrence, the Rockdale John D. Harper Road site was shut down on June 5, 2020, due to sale of the property. The site SO_2 monitor completed three-years of data required for design value calculation in 2019. The calculated design value was less than 50% of the 2010 one-hour SO_2 NAAQS and the DRR facility was shut down in 2018. The Austin Northwest SO_2 monitor was temporarily shut down on February 18, 2020, due to construction at the site; the site will be permanently relocated approximately 0.10 miles to Austin North Hills Drive and will be operational soon.

As of January 1, 2020, federal standards require a minimum of three area SO_2 monitors related to DRR and PWEI requirements. The TCEQ exceeds requirements with six federal SO_2 monitors.

Design Values and Trends

Central Texas area SO_2 design values are stable and remain less than 20% of the 2010 one-hour SO_2 NAAQS of 75 ppb. Figure 35 shows the SO_2 design value trends in the Central Texas area from 2010 through 2018. Design values from the Waco Mazanec SO_2 monitor were affected for 2017 and 2018 due to data quality concerns. The San Antonio Gardner Road and Franklin Oak Grove SO_2 monitors completed three-years of data required for design value calculation in 2019. These data are pending EPA review and final publication. Additionally, the Fairfield FM 2570 Ward Ranch SO_2 monitor, deployed in 2017, has not yet obtained three complete years of data for design value calculations. These monitors will be assessed for the NAAQS Value and Data Trend metrics during the next FYA. Table 35 shows the annual one-hour SO_2 99th percentile concentrations for these three sites.



ppb – parts per billion
NAAQS – National Ambient Air Quality Standard

Figure 35: Central Texas Area One-Hour Sulfur Dioxide Design Value Trends, 2010-2018

Table 35: Central Texas Area Source-Oriented Sulfur Dioxide 99th Percentile Concentration Trends

Site Name	2016	2017	2018	2019
Fairfield FM 2570 Ward Ranch	NA	78*	40	6
Franklin Oak Grove	15*	13	13	8
San Antonio Gardner Road	12*	29	32	4

Results provided in parts per billion
*Values for a partial year, due to a new monitor, do not meet completeness criteria
NA – not applicable

Network Evaluation

Table 36 shows how each SO_2 monitor in the Central Texas area was evaluated using the scoring system described in the Evaluation Methods section. The Calaveras Lake SO_2 monitor satisfies the PWEI area requirement and is considered of critical value. The DRR source-oriented monitors at Franklin Oak Grove and San Antonio Gardner Road are required to meet SO_2 DRR designations. The SO_2 monitor at Fairfield FM 2570 Ward Ranch supports air characterization in a nonattainment area. The Austin Northwest SO_2 monitor may be needed to fulfill future PWEI population-based requirements and the Waco Mazanec monitor provides background data. No changes to the Central Texas area SO_2 network are recommended at this time.

Table 36: Central Texas Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Austin Northwest	1	1	1	2	2	7	low
Calaveras Lake	4	1	1	2	2	10	critical
Fairfield FM 2570 Ward Ranch	1	NA	NA	1	4	6	medium
Franklin Oak Grove	4	NA	NA	1	4	9	critical
San Antonio Gardner Road	4	NA	NA	1	4	9	critical
Waco Mazanec	1	1	2	3	2	9	medium

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS Value Percent and Data Trend values assessed based on available data.
NAAQS – National Ambient Air Quality Standard
NA – not applicable

Particulate Matter of 2.5 Micrometers or Less

The $PM_{2.5}$ network in the Central Texas area fulfills SLAMS and near-road requirements using a combination of non-continuous FRM, continuous FEM, and non-NAAQS comparable monitors. Non-NAAQS comparable data were not evaluated for trends against NAAQS criteria. Figure 28 and Figure 29 show the area $PM_{2.5}$ monitors at sites with a dark blue section. Appendix A lists active and recently decommissioned $PM_{2.5}$ monitors, locations, monitoring objectives, and associated spatial scales.

Central Texas Area

Network History and Current Status

Central Texas area $PM_{2.5}$ monitoring began in the early 2000s with the deployment of $PM_{2.5}$ non-NAAQS comparable monitors to Austin Northwest, Austin Audubon Society, San Antonio Northwest, Palo Alto, and Old Highway 90. Through the late 2000s the $PM_{2.5}$ network expanded with a variety of $PM_{2.5}$ equipment predominantly located in the Austin and San Antonio urban areas to evaluate ambient $PM_{2.5}$ concentrations in populated areas. Additional $PM_{2.5}$ monitors deployed in Waco, Fayette County (east of

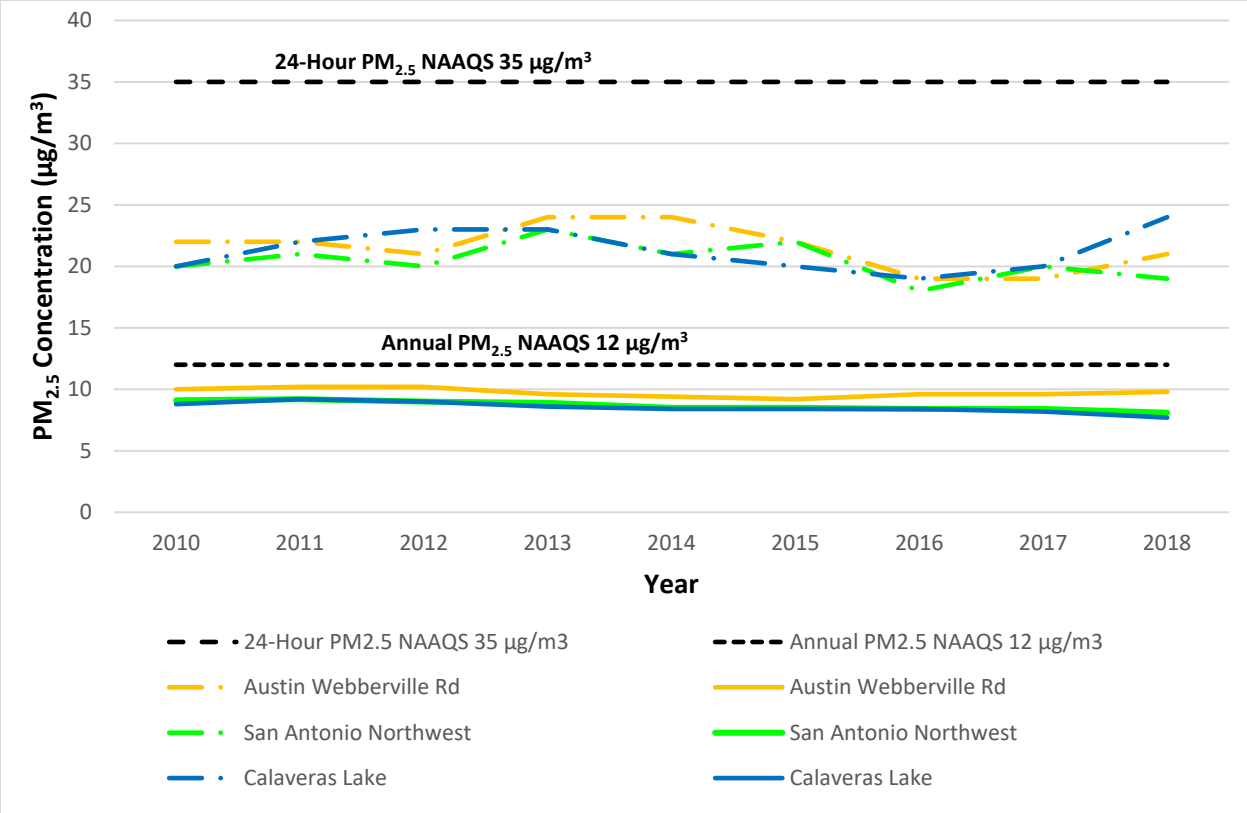
Austin), and Calaveras Lake (south of San Antonio) focused on regional transport of $PM_{2.5}$ into these downwind urban areas.

Since the 2015 FYA, numerous changes have occurred. In January 2017, $PM_{2.5}$ FRM monitors were deployed to the new Austin North Interstate 35 and San Antonio Interstate 35 sites to fulfill near-road monitoring requirements. Non-continuous $PM_{2.5}$ FRM monitors were upgraded to FEM continuous monitors at Austin Webberville Road, Austin North Interstate 35, San Antonio Northwest, Calaveras Lake, and San Antonio Interstate 35. The Fayette County $PM_{2.5}$ non-NAAQS comparable monitor was decommissioned in December 2018 and relocated to the new Bryan Finfeather Road site as a $PM_{2.5}$ FEM monitor in February 2020. The new Bryan Finfeather Road monitor will be evaluated in the next FYA. A $PM_{2.5}$ FEM monitor was deployed to the new Temple Georgia site in March 2019. The Palo Alto non-NAAQS comparable $PM_{2.5}$ monitor was relocated in May 2020 with a $PM_{2.5}$ FEM monitor to the new Von Ormy Highway 16 site in Atascosa County; the Palo Alto site was decommissioned on June 11, 2020. The new Von Ormy Highway 16 monitor will be evaluated in the next FYA. The Austin Northwest non-NAAQS comparable $PM_{2.5}$ monitor was temporarily shut down on February 18, 2020, due to construction at the site; the site will be permanently relocated approximately 0.10 miles to Austin North Hills Drive, with a $PM_{2.5}$ FEM monitor deployed, and will be operational soon.

As of January 1, 2020, federal standards require a minimum of five $PM_{2.5}$ monitors, including two near-road monitors, in the Central Texas area. The TCEQ exceeds requirements with 11 $PM_{2.5}$ monitors to measure ambient $PM_{2.5}$ concentration data through gravimetric and continuous measurements to determine maximum concentrations, concentrations in areas of high population density, and background and transport concentrations.

Design Values and Trends

The Central Texas area $PM_{2.5}$ annual design values are stable and 24-hour $PM_{2.5}$ design values are variable with a slight increase since 2016. Figure 36 shows the annual mean and 24-hour 98th percentile $PM_{2.5}$ design value trends in the Central Texas area from 2010 through 2018. Data indicate that measured concentrations have consistently remained below the 24-hour $PM_{2.5}$ NAAQS of 35 µg/m^3 and the 12 µg/m^3 annual NAAQS since the last assessment. The new Austin North Interstate 35, San Antonio Interstate 35, and Temple Georgia $PM_{2.5}$ monitors have not obtained a three-year design value; therefore, these monitors will not be assessed with the NAAQS Value Percent and Data Trend metrics in this FYA. These $PM_{2.5}$ FEM monitor yearly data trends are provided in Table 37. The Old Highway 90, Austin Northwest, and Waco Mazanec monitors are non-NAAQS comparable; therefore, these monitors will not be assessed with the NAAQS Value Percent and Data Trend metrics.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less

Figure 36: Central Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2010-2018

Table 37: Particulate Matter of 2.5 Micrometers or Less 98th Percentile of 24-Hour Averages and Annual Mean Concentrations

Site Name	24-Hour			Annual		
	2017	2018	2019	2017	2018	2019
Austin North Interstate 35	23	22	21	9.3	9.2	9.8
San Antonio Interstate 35	22	32*	21	8.9	7.9*	9.1
Temple Georgia	NA	NA	19*	NA	NA	8.3*

*Values for a partial year, due to a new monitor or data loss, do not meet completeness criteria
Results provided in micrograms per cubic meter

Network Evaluation

Table 38 shows how each $PM_{2.5}$ monitor in the Central Texas area was evaluated using the scoring system described in the Evaluation Methods section. The Austin Webberville Road, San Antonio Northwest, and Calaveras Lake $PM_{2.5}$ FEM monitors satisfy $PM_{2.5}$ SLAMS requirements. The Austin North Interstate 35 and San Antonio Interstate 35 monitors satisfy $PM_{2.5}$ near-road requirements. The remaining area $PM_{2.5}$ monitors provide unique information regarding spatial coverage and background and transport particulate concentrations. No changes to the Central Texas area $PM_{2.5}$ network are recommended at this time, but future evaluation of the monitors will occur once design values are determined.

Table 38: Central Texas Area Particulate Matter of 2.5 Micrometers or Less Network Evaluation

Site Name	Sampler Type	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Austin Webberville Road	$PM_{2.5}$ FEM	4	4	1	1	2	12	critical
Austin North Interstate 35	$PM_{2.5}$ FEM	4	NA	NA	1	3	8	critical
Austin Northwest	$PM_{2.5}$ (TEOM)	1	NA	NA	4	2	7	medium
Calaveras Lake	$PM_{2.5}$ FEM	4	2	1	4	2	13	critical
Old Highway 90	$PM_{2.5}$ (TEOM)	1	NA	NA	3	2	6	medium
San Antonio Interstate 35	$PM_{2.5}$ FEM	4	NA	NA	1	3	8	critical
San Antonio Northwest	$PM_{2.5}$ FEM	4	2	1	3	2	12	critical
Temple Georgia	$PM_{2.5}$ FEM	1	NA	NA	1	2	4	low
Waco Mazanec	$PM_{2.5}$ (TEOM)	1	NA	NA	3	2	6	medium

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards
NA – not applicable
FEM – federal equivalent method
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less
TEOM – tapered element oscillating microbalance, non-NAAQS comparable

Particulate Matter of 10 Micrometers or Less

The PM_{10} network in the Central Texas area fulfills SLAMS requirements based on MSA populations and area concentrations. PM_{10} monitoring is not required or performed in the College Station, Killeen, or Waco areas. Figure 28 and Figure 29 show the area PM_{10} monitors at sites with a purple section. Appendix A lists active and recently decommissioned PM_{10} monitors, locations, monitoring objectives, and associated spatial scales.

Central Texas Area

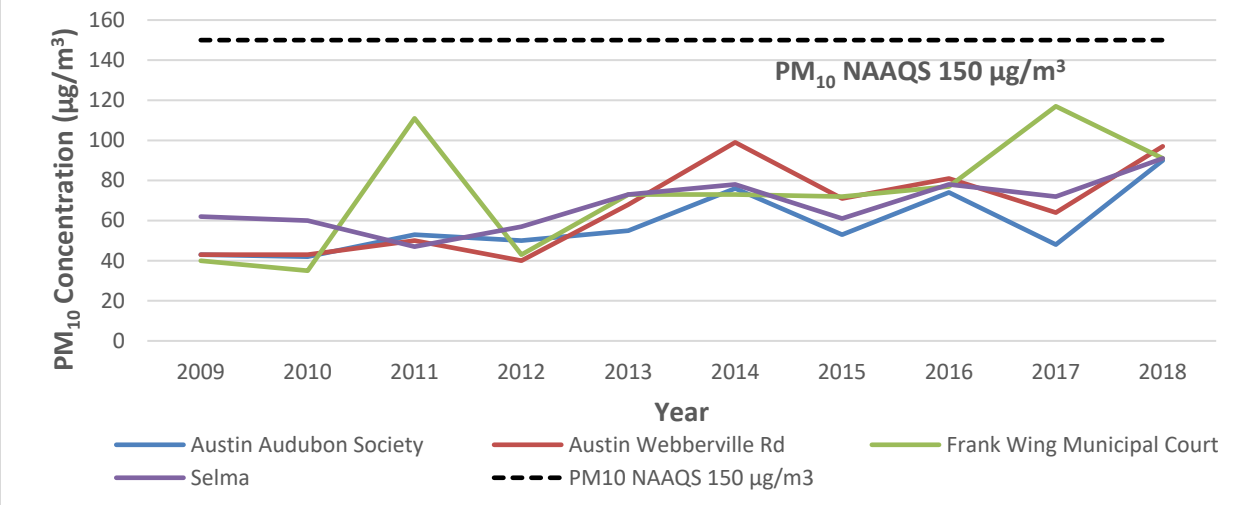
Network History and Current Status

PM_{10} monitoring in the Central Texas area began in 1999 with the deployment of the Austin Webberville Road site. In 2000, a PM_{10} monitor was deployed at Frank Wing Municipal Court in San Antonio. In 2008, PM_{10} monitors were deployed to the Austin Audubon Society site and Selma site to provide data upwind and downwind of the urban core in populated areas. Since the 2015 FYA, one Central Texas area PM_{10} network change occurred. In November 2019, the Selma site was relocated to San Antonio Bulverde Parkway to improve spatial coverage due to industry and population growth. This assessment evaluates the Selma data; the new San Antonio Bulverde Parkway site will be assessed in the next FYA.

As of January 1, 2020, federal standards require a minimum of four to eight area PM_{10} monitors in the Central Texas area. Currently, PM_{10} is monitored at four sites to measure population exposure and highest concentrations.

Design Values and Trends

Compliance with the 24-hour PM_{10} standard is based on the number of measured exceedances of the 150 µg/m³ standard averaged over three years. No exceedances at any Central Texas area site has been recorded since the last FYA. Figure 37 provides maximum daily PM_{10} concentration trends from 2009 to 2018.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
PM_{10} – particulate matter of 10 micrometers or less

Figure 37: Central Texas Area Particulate Matter of 10 Micrometers or Less Maximum Concentration Trends, 2009-2018

Network Evaluation

Table 39 shows how each PM_{10} monitor in the Central Texas area was evaluated using the scoring system described in the Evaluation Methods section. The Austin and San Antonio PM_{10} monitors satisfy SLAMS requirements. No changes to the Central Texas area PM_{10} network are recommended at this time.

Table 39: Central Texas Area Particulate Matter of 10 Micrometers or Less Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Austin Audubon Society	4	2	3	3	2	14	critical
Austin Webberville Road	4	2	3	4	2	15	critical
Frank Wing Municipal Court	4	2	3	4	2	15	critical
Selma (relocated in 2019)	4	2	3	3	2	14	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Far West Texas Area Evaluation

(El Paso Area)

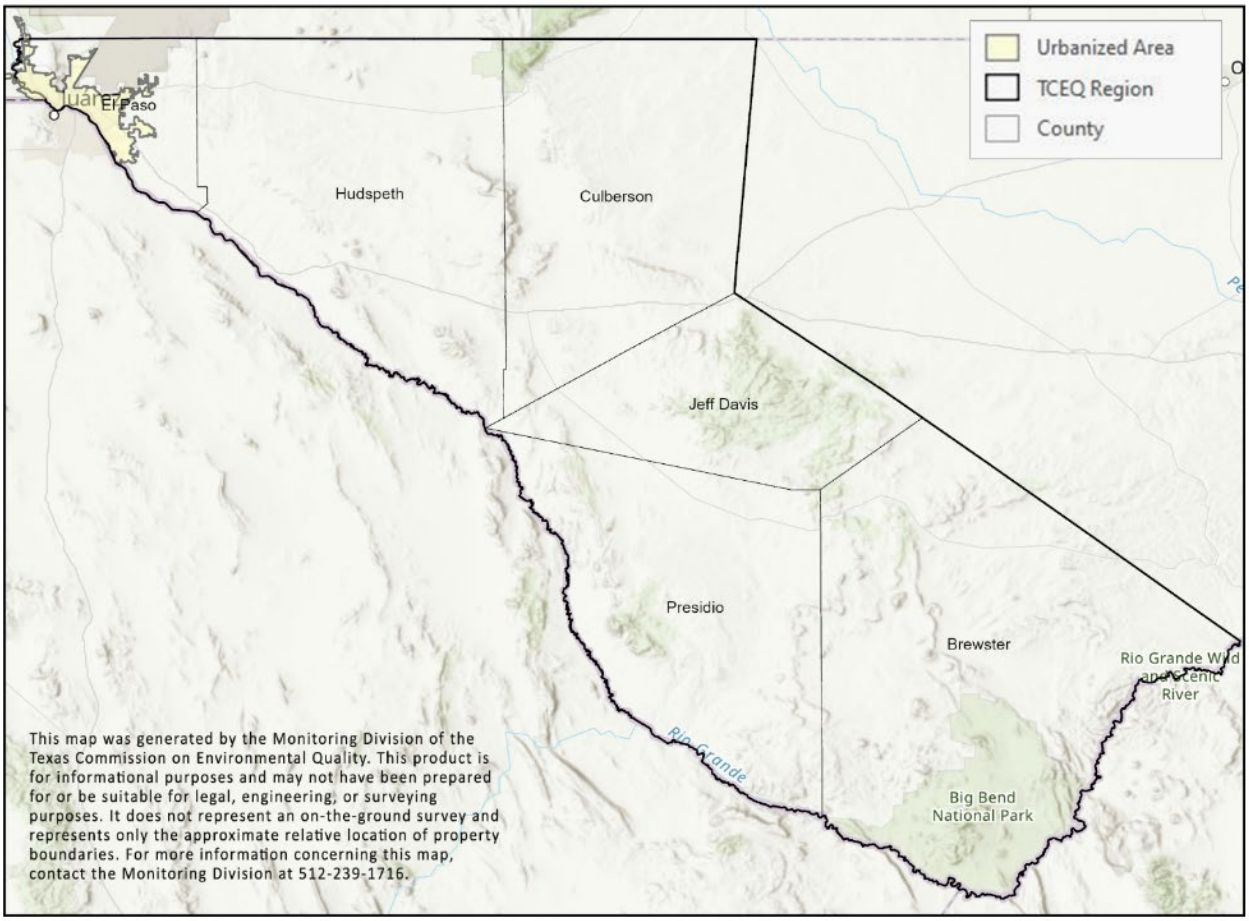


Figure 38: Far West Texas Area Counties and Urban Areas

Far West Texas Area Characteristics and Background

Wind Patterns

Figure 38 illustrates the counties included in the Far West Texas area evaluation. Figure 39 illustrates typical West Texas area annual average wind speed and direction wind roses from local airport meteorological sensors averaged from 2014 to 2018. Figure 39 wind roses were derived from El Paso International Airport and Alpine-Casparis Municipal Airport. Wind data indicate that wind direction in this area is variable with a predominate west to east flow due to channeling in the pass between the Franklin Mountains to the north and Juarez Mountains to the south; the funneling effects of the Franklin Mountains can cause high winds (Griffith et al. 2004). Areas closest to the international border are also impacted by the Rio Grande River basin (Griffith et al. 2004). Seasonally, wind flow can also vary from the north and south-east. Wind data in Brewster County from the Alpine-Casparis Municipal Airport indicate a south-southwest to north-northeast wind pattern.

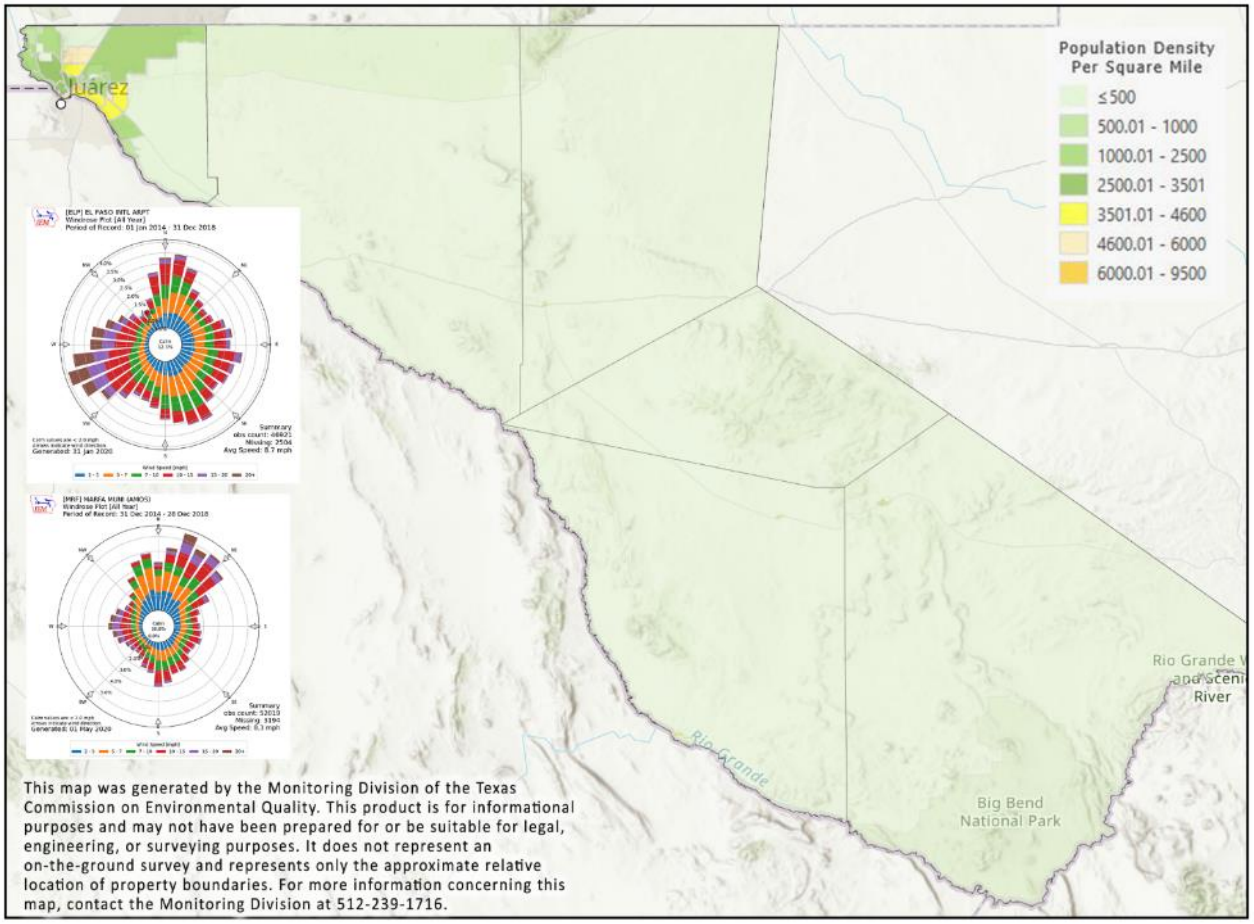


Figure 39: Far West Texas Area Population Density and Airport Wind Roses

Population

The Far West Texas area has one major MSA that includes two counties, El Paso and Hudspeth. Monitoring is also conducted in Brewster County which is not included in a metropolitan or micropolitan statistical area.

The Texas Demographics Center projects the population of the El Paso MSA will approach 880,000 persons in 2020. The 2025 projection estimates a 4% population increase from 2020 in the El Paso area. Figure 39 illustrates the population densities across the Far West Texas urban areas based on actual 2010 U.S. Census Bureau data. Population density is illustrated by square mile for each area zip code.

El Paso MSA minimum monitoring network design requirements dictated by the latest available census population estimates under 40 CFR §58, Appendix D, include the following.

- three O_3 monitors
- one CO monitor
- one NO_2 monitor
- one NO/NO_y monitor
- one SO_2 monitor
- five $PM_{2.5}$ monitors
- between two and four PM_{10} monitors

Brewster County has no requirements.

The TCEQ evaluated population projection data illustrated in Table 2 against El Paso area minimum monitoring design requirements partially based on MSA population. No El Paso MSA monitoring requirements would increase based on the projected population assessment. The TCEQ meets and exceeds monitoring requirements with the monitors illustrated in Figure 40 and Figure 41.

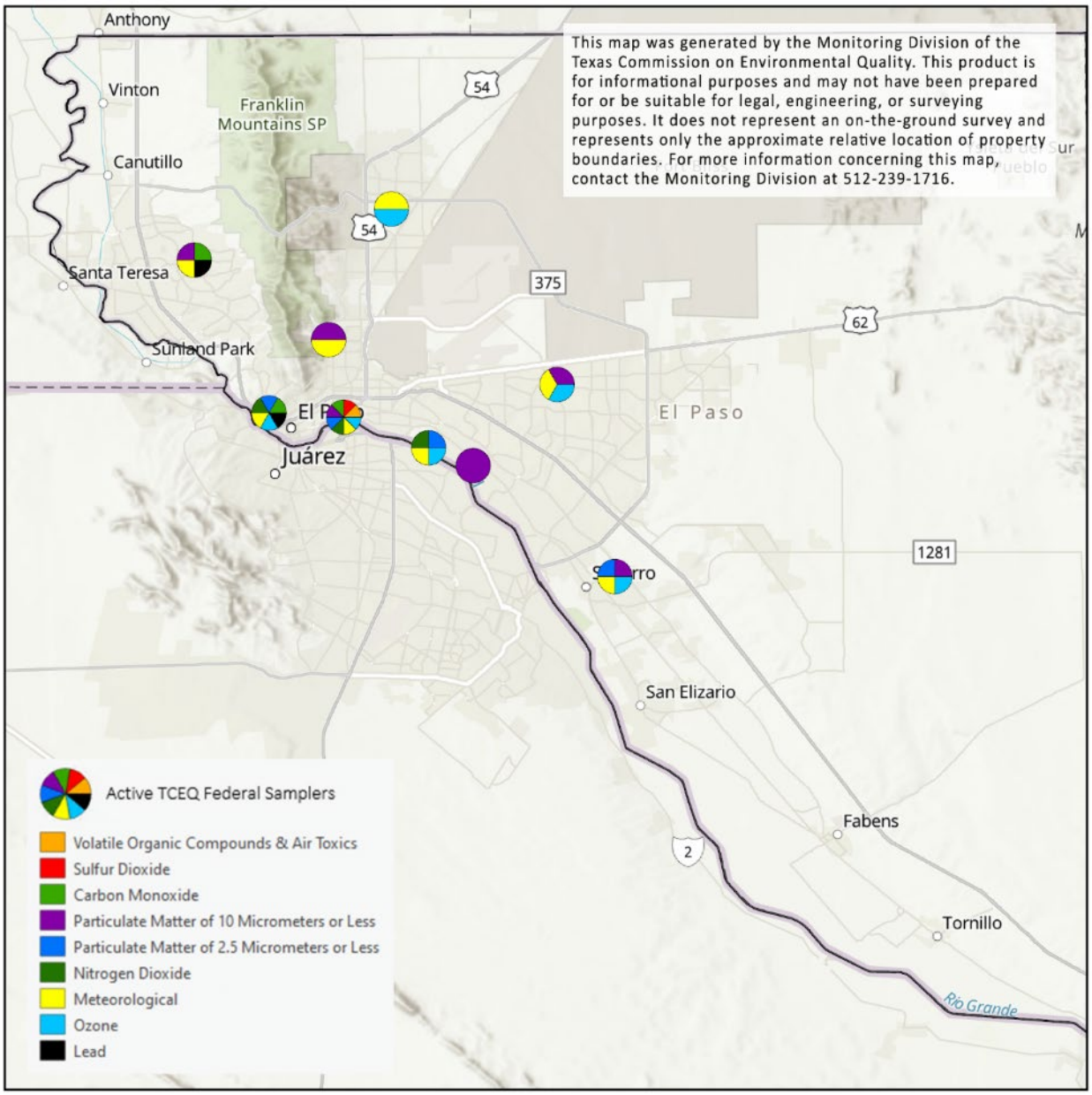


Figure 40: El Paso Area Active Sites and Monitors

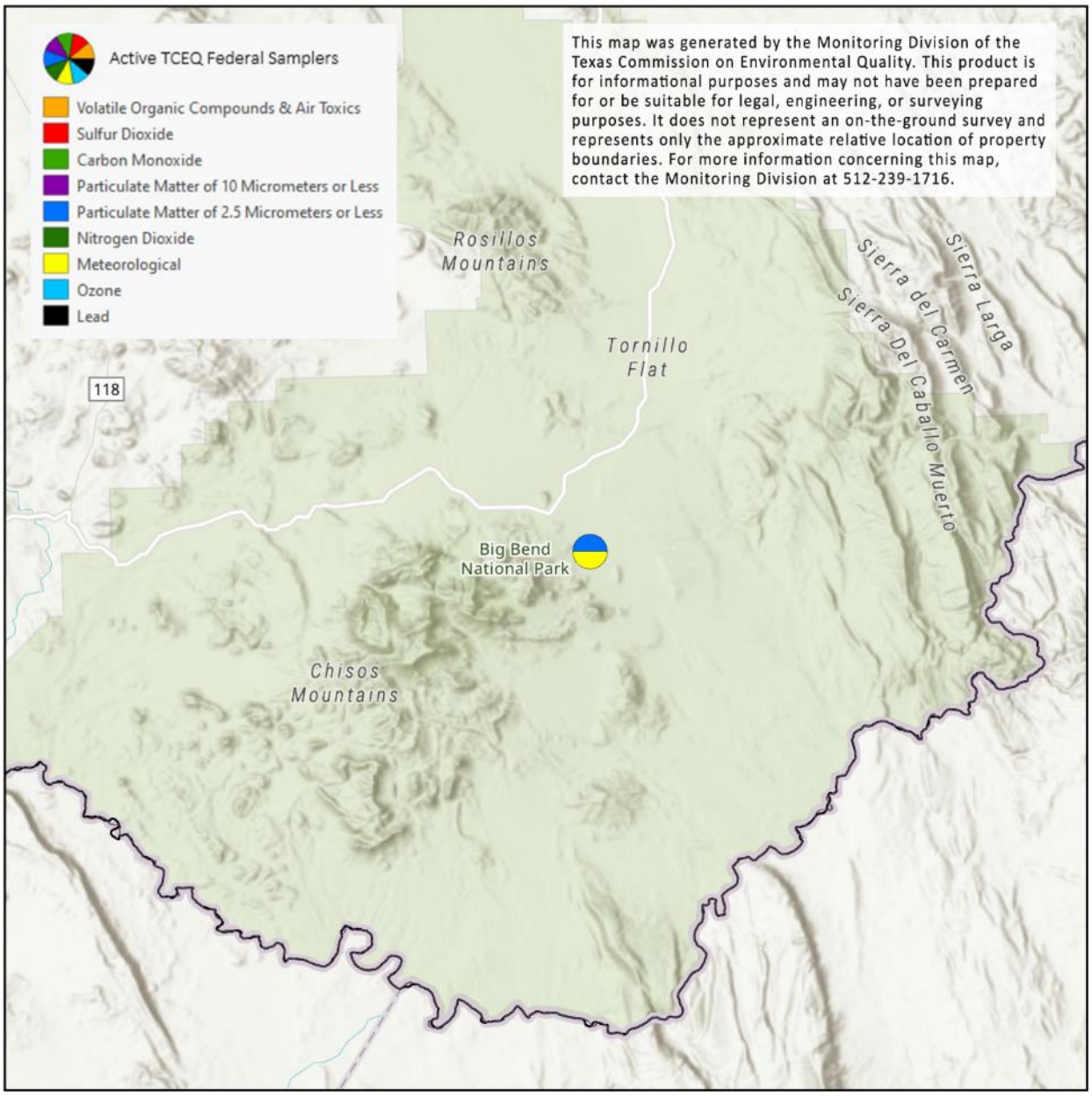


Figure 41: Brewster County Active Sites and Monitors

Point Sources and Area-Wide Emissions

Anthropogenic Sources

Data from EI source categories show the following for the Far West Texas area:

- The majority of CO is emitted from on-road mobile sources.
- NO_x emissions are predominately from on-road mobile and area sources.
- Area sources account for the majority of VOC, $PM_{2.5}$, PM_{10}, and SO_2 emissions.
- Non-road mobile sources contribute the majority of total Pb emissions.

EI source totals by pollutant by area are listed in Table 40. This information, in conjunction with monitoring objectives and regulatory requirements, is used to identify and prioritize areas of interest.

Table 40: 2017 Far West Texas Area Emissions Inventory in Tons Per Year

Area*	Source	VOC	NO_x	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
R6-El Paso	Point	954	4,443	2,227	336	225	294	0.06
R6-El Paso	Area	30,338	6,409	5,687	21,424	2,581	1,857	0.00
R6-El Paso	On-Road Mobile	3,547	10,313	37,537	612	300	42	0.00
R6-El Paso	Non-Road Mobile	1,178	5,044	15,304	244	234	38	0.32

*Appendix D details the counties included for each area.
CO – carbon monoxide
NO_x – oxides of nitrogen
PM – particulate matter
R – TCEQ Region
SO_2 – sulfur dioxide
VOC – volatile organic compounds

Natural Sources

Blowing dust generated by regional high wind events outside of the Far West Texas area has historically had a heavy impact on area $PM_{2.5}$ and PM_{10} levels. The overall dust storm frequency and intensity is highly dependent on weather conditions and soil moisture content, but daily average concentrations have reached as high as 70 $\mu g/m^3$ for $PM_{2.5}$ and 300 $\mu g/m^3$ for PM_{10}. These dust storms are most commonly caused by regional high winds associated with large low-pressure systems.

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.

Less frequently, regional blowing dust can be transported into the Far West Texas 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 measurements in the Far West Texas 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 other smoke and haze transport events affect $PM_{2.5}$ levels more than PM_{10} levels because of the inherent particle sizes but are less frequent overall.

Regional Air Quality

Criteria Pollutants

As of January 1, 2020, the Far West Texas geographical area is designated attainment/unclassifiable for all current NAAQS, except the City of El Paso, which is designated as moderate nonattainment for the 1987 24-hour PM_{10} NAAQS of 150 $\mu g/m^3$, not to be exceeded more than once every three years.

Current Nonattainment Designations

Particulate Matter

The City of El Paso was designated moderate nonattainment for the 1987 24-hour PM_{10} NAAQS upon enactment of the 1990 FCAA amendments. In November 1991, Texas adopted a PM_{10} attainment demonstration for El Paso, which contained 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, 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.

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. On December 14, 2015, the EPA published approval of this SIP revision. For more information visit the El Paso: Particulate Matter History webpage at (https://www.tceq.texas.gov/airquality/sip/elp/elp-particulate-matter-history).

Prior Nonattainment Designations

Carbon Monoxide

A portion of El Paso County was designated moderate nonattainment for the 1971 eight-hour CO NAAQS of 9 ppm upon enactment of the 1990 FCAA amendments. The EPA redesignated the El Paso area to attainment effective October 3, 2008. On September 7, 2016, the TCEQ adopted a limited maintenance plan SIP revision to address the FCAA requirement to demonstrate that the area will maintain the CO standard for a second 10-year period following the end of the first 10-year maintenance period. On September 8, 2017, the EPA published final approval of the CO limited maintenance plan SIP revision.

Revoked 1979 One-Hour Ozone

In 1991, the EPA designated El Paso County as a serious nonattainment area for the one-hour O_3 NAAQS of 0.124 ppm, in accordance with the 1990 FCAA Amendments. The El Paso nonattainment area was given an attainment date of November 15, 1999. In September 1994, Texas adopted a SIP revision for the El Paso nonattainment area to show attainment of the one-hour O_3 standard by the attainment date but for emissions

from Mexico. The EPA approved the SIP revision in June 2004 in accordance with FCAA, §179B.

In 1997, the one-hour O_3 standard was replaced by an eight-hour standard of 0.084 ppm. The EPA revoked the one-hour O_3 NAAQS effective June 15, 2005. In 2009, the EPA approved an FCAA, §110(a)(1) maintenance plan SIP revision for the El Paso area for the 1997 eight-hour O_3 NAAQS. On October 20, 2010, the EPA published a final rule determining that the approval of the maintenance plan for the 1997 eight-hour O_3 NAAQS removed the requirement for continued application of the one-hour O_3 NAAQS anti-backsliding measures. For more information, visit the El Paso: Ozone History webpage (https://www.tceq.texas.gov/airquality/sip/elp/elp-ozone-history).

Revoked 1997 Eight-Hour Ozone

In April 2004, the EPA designated El Paso County unclassifiable/attainment for the 1997 eight-hour O_3 NAAQS of 0.084 ppm. The EPA's Phase I Implementation Rule for the eight-hour O_3 standard required the area to submit an FCAA, §110(a)(1) maintenance plan. The TCEQ submitted this maintenance plan to the EPA on January 20, 2006. The EPA approved the FCAA, §110(a)(1) maintenance plan SIP revision for the El Paso area effective March 16, 2009.

Far West Texas Monitoring Network Evaluation

Ozone

The O_3 network in the Far West Texas area fulfills SLAMS requirements, based on population and O_3 design values, and NCore requirements. Figure 40 shows the area active O_3 monitors at sites with a light blue section. Appendix A lists active and recently decommissioned O_3 monitors, locations, monitoring objectives, and associated spatial scales.

El Paso Area

Network History and Current Status

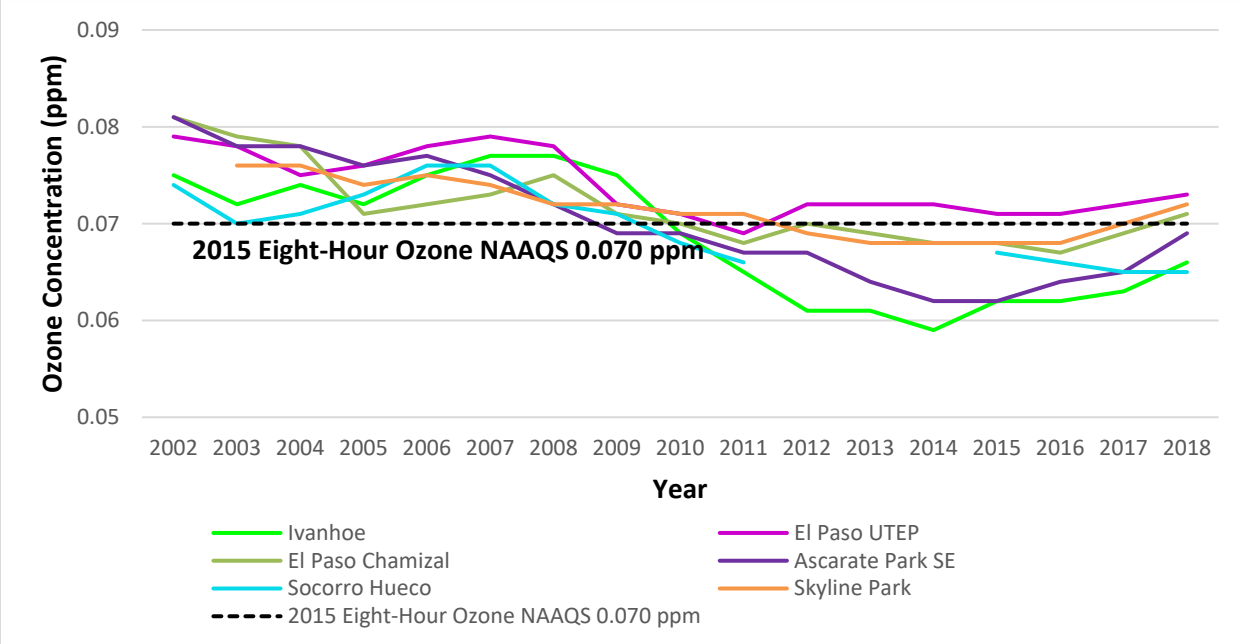
El Paso area O_3 monitoring began in the late 1970s to early 1980s with deployment of the El Paso East [now Ascarate Park Southeast (SE)] and El Paso University of Texas at El Paso (UTEP) monitors in central El Paso along the international border to evaluate ambient concentrations in populated areas likely impacted by maximum O_3 precursor concentrations. The El Paso Chamizal, Socorro Hueco, and Ivanhoe O_3 monitors were added in the 1990s to provide data on background concentrations in populated areas further removed from the city. In the early 2000s, the O_3 monitoring network expanded to Skyline Park to improve spatial coverage in the populated areas to the north and east of the city core. In 2012, the Socorro Hueco site was relocated maintaining the same name and identification numbers. Since the 2015 FYA, no El Paso area O_3 network changes have occurred.

As of January 1, 2020, federal standards require a minimum of three area O_3 monitors. The TCEQ exceeds requirements with six O_3 monitors. While the number of O_3 monitors exceeds area federal requirements, additional O_3 monitoring supports enhanced O_3 monitoring efforts due to El Paso's prior designation as an O_3 nonattainment area. Monitoring objectives related to these federal requirements

include ambient data collection in areas frequented by the public, maximum O_3 concentrations, and upwind and/or downwind concentrations.

Design Values and Trends

El Paso area eight-hour O_3 design values have declined over the last ten years, however, some monitors show a slight increase since 2014. The Socorro Hueco design value was affected for 2012 to 2014 due to the relocation. Figure 42 shows the El Paso area O_3 design value trends from 2002 through 2018 compared with the 2015 eight-hour O_3 NAAQS of 0.070 ppm.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 42: Eight-Hour Ozone Design Value Trends in the El Paso Area, 2002-2018

Network Evaluation

Table 41 shows how each O_3 monitor in the El Paso area was evaluated using the scoring system described in the Evaluation Methods section. The El Paso Chamizal monitor satisfies the requirements for O_3 monitoring at an NCore site, while El Paso UTEP and Skyline Park support minimum monitoring requirements. Ascarate Park SE, Ivanhoe, and Socorro Hueco monitors support area enhanced O_3 monitoring. These monitors are critical due to current design values and the provided spatial coverage. Based on these scores and the current spatial coverage, no changes to the El Paso area O_3 network are recommended at this time.

Table 41: El Paso Area Ozone Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value*	Total Monitor Value	Assess-ment Value
Ascarate Park Southeast (SE)	1	4	1	4	1	11	critical
El Paso Chamizal	4	4	1	4	1	14	critical

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value*	Total Monitor Value	Assess-ment Value
El Paso UTEP	4	4	1	4	1	14	critical
Ivanhoe	1	4	1	4	1	11	critical
Skyline Park	4	4	2	4	1	15	critical
Socorro Hueco	1	4	1	4	1	11	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards
UTEP – University of Texas at El Paso

Carbon Monoxide

The CO network in the Far West Texas area fulfills NCore requirements and includes ambient CO and high-sensitivity CO monitors. The PAMS CO monitoring requirement was removed in 2015. Figure 40 shows the area active CO monitors at sites with a light green section. Appendix A lists active and recently decommissioned CO monitors, locations, monitoring objectives, and associated spatial scales.

El Paso Area

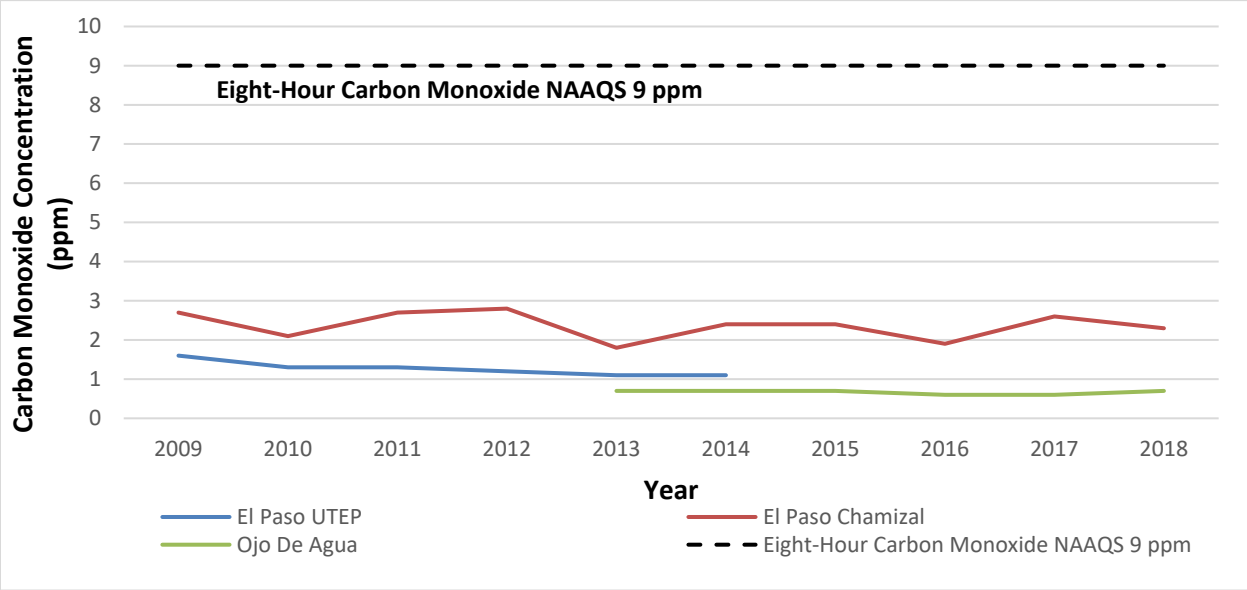
Network History

El Paso area CO monitoring began in the late 1990s and early 2000s with the deployment of CO monitors at Ascarate Park SE, El Paso UTEP, El Paso Chamizal, El Paso Sun Metro, Ivanhoe, Socorro Hueco, Skyline Park, and Tillman supporting the El Paso area's previous CO nonattainment designation. In 2010, the El Paso Chamizal CO monitor was upgraded to a high sensitivity CO monitor to support the NCore network. Several CO monitors were decommissioned because of low historical value (design values well below both the one-hour and eight-hour CO NAAQS), including the Socorro Hueco and El Paso Sun Metro CO monitors in 2012, the Ivanhoe CO monitor in 2013, and the Skyline Park and El Paso UTEP CO monitors in 2014. The Tillman CO monitor was relocated to the Ojo De Agua site in 2013 due to the sale of the property.

Since the 2015 FYA, two El Paso area CO network changes have occurred. The CO monitor at Ascarate Park SE was decommissioned in December 2017 due to low historical design values. A CO monitor was re-deployed at the El Paso UTEP site in January 2018 to aid in evaluating wildfire exceptional events and providing O_3 precursor data. As of January 1, 2020, federal standards require a minimum of one area CO monitor. Currently, CO is monitored at three sites.

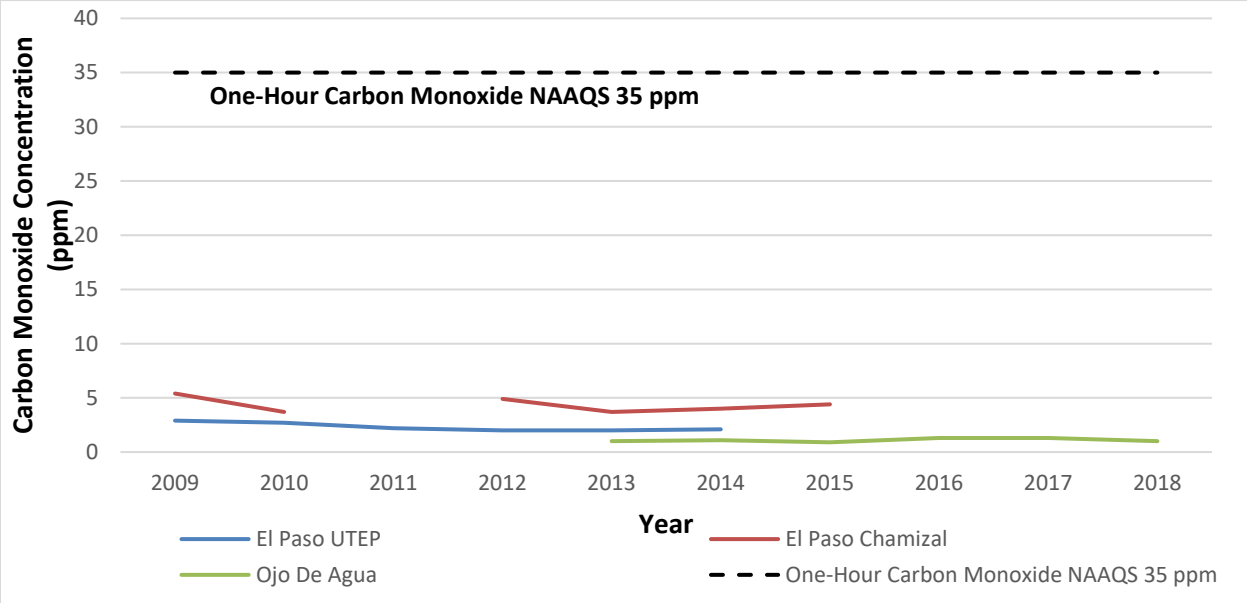
Design Values and Trends

El Paso area CO design values remain below 15% of the one-hour NAAQS of 35 ppm and below 30% of the eight-hour NAAQS of 9 ppm, as shown in Figure 43 and Figure 44. The El Paso UTEP CO monitor, re-deployed in 2018, has only one complete design value, therefore this datum is not included in Figure 43 and Figure 44. The El Paso Chamizal site had data loss in 2009-2011, 2016, and 2017 affecting the design values.



UTEP – University of Texas at El Pas
NAAQS – National Ambient Air Quality Standard
ppm – part per million
single year design value shown as a point

Figure 43: Eight-Hour Carbon Monoxide Design Value Trends in the El Paso Area, 2009-2018



UTEP – University of Texas at El Paso
NAAQS – National Ambient Air Quality Standard
ppm – part per million
single year design value shown as a point

Figure 44: One-Hour Carbon Monoxide Design Value Trends in the El Paso Area, 2009-2018

Network Evaluation

Table 42 shows how each CO monitor in the El Paso area was evaluated using the scoring system described in the Evaluation Methods section. The El Paso Chamizal monitor satisfies the NCore CO monitoring requirement. The remaining CO monitors provide data useful in evaluating wildfire impacts to O_3 exceptional events. Based on these scores and the current spatial coverage, no changes to the El Paso area CO network are recommended at this time

Table 42: El Paso Area Carbon Monoxide Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
El Paso Chamizal**	4	1	2	4	1	12	critical
El Paso UTEP	1	1	2	1	1	6	low
Ojo De Agua	1	1	2	2	1	7	low

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic high assessment value.
** - high-sensitivity CO monitor
NAAQS Value Percent and Data Trend value assessed based on available data.
NAAQS – National Ambient Air Quality Standards
UTEP – University of Texas at El Paso

Oxides of Nitrogen

The NO_x network in the El Paso area includes NO, NO_x, NO_2, and NO_y monitoring and is designed to fulfill RA-40 and NCore monitoring requirements. Figure 40 shows the area active NO_x, NO_2, and NO_y monitors at sites with a dark green section. Appendix A lists active and recently decommissioned NO_x and NO_y monitors, locations, monitoring objectives, and associated spatial scales.

El Paso Area

Network History and Current Status

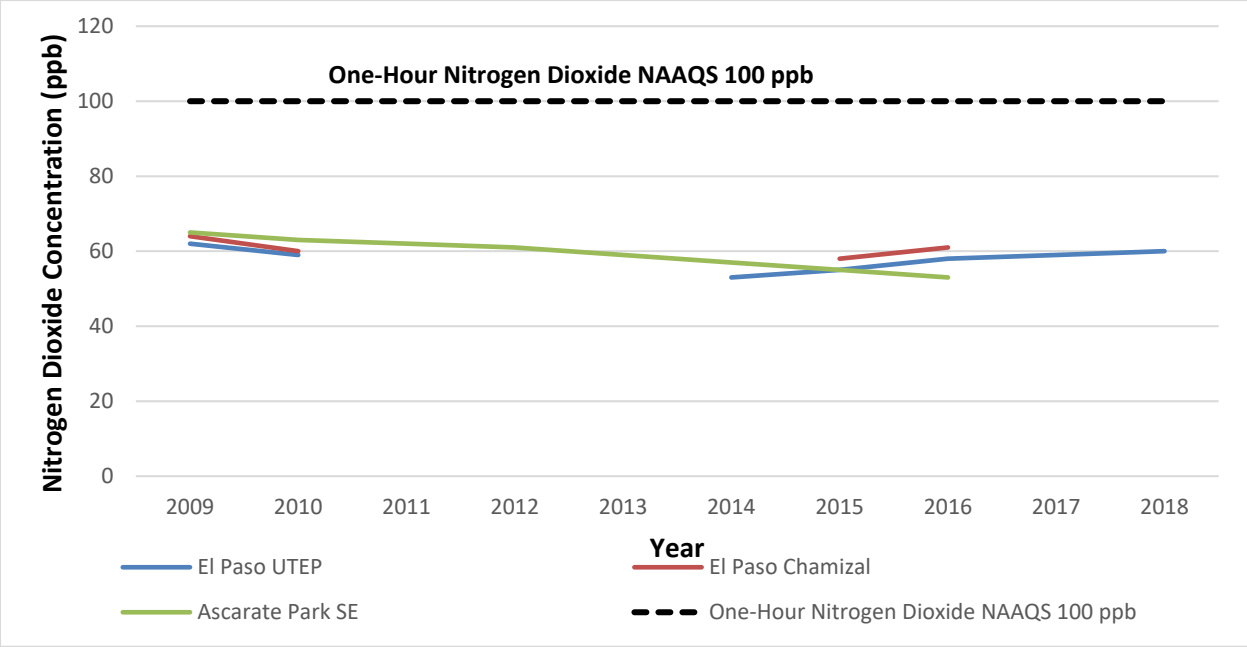
El Paso area NO_x monitoring began in the late 1990s with monitor deployments to Ascarate Park SE, El Paso Chamizal, and El Paso UTEP. In 2010, a NO_y monitor was deployed to El Paso Chamizal to meet NCore requirements. Since the last FYA, no El Paso area network changes have occurred.

As of January 1, 2020, federal standards require a minimum of one NO_X and one NO_y monitor to fulfill RA-40 and NCore monitoring requirements. The TCEQ exceeds the NO_x requirements with three monitors and meets the NO_y requirement with one monitor. Monitoring objectives related to these federal requirements include collecting ambient data in populated areas and measuring maximum O_3 precursor emissions impacts.

Design Values and Trends

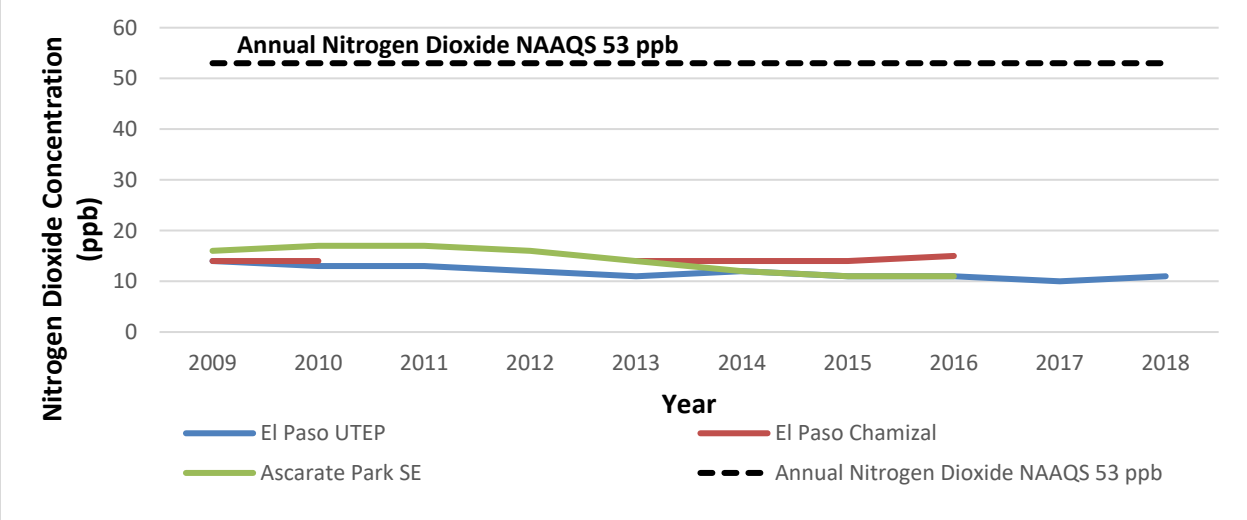
El Paso area one-hour and annual NO_2 design values have been stable over the past ten years. All El Paso monitors remain well below the one-hour and annual NO_2 NAAQS.

Data loss issues related to equipment affected several design values. Figure 45 and Figure 46 show the design value trends in the El Paso area from 2009 to 2018.



ppb – parts per billion
NAAQS - National Ambient Air Quality Standards
UTEP – University of Texas at El Paso

Figure 45: El Paso Area One-Hour Nitrogen Dioxide Design Value Trends, 2009–2018



ppb – parts per billion
NAAQS - National Ambient Air Quality Standards
UTEP – University of Texas at El Paso

Figure 46: El Paso Area Annual Nitrogen Dioxide Design Value Trends, 2009–2018

Network Evaluation

Table 43 shows how each NO_x, NO_2. or NO_y monitor in the El Paso area was evaluated using the scoring system described in the Evaluation Methods section. The Ascarate Park SE NO_x monitor data satisfies the RA-40 requirements and the El Paso Chamizal

NO_y monitor satisfies the NCore requirements. The remaining area NO_x monitors are of value to provide O_3 precursor data. Based on these scores and the data usage, no changes to the El Paso area NO_x network are recommended at this time.

Table 43: El Paso Area Oxides of Nitrogen Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Ascarate Park Southeast (SE)	4	2	1	4	2	13	critical
El Paso Chamizal	1	2	2	4	2	11	medium
El Paso Chamizal**	4	NA	NA	2	2	8	critical
El Paso UTEP	1	2	1	4	2	10	medium

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**NO_y – total reactive nitrogen compounds
NAAQS Value Percent and Data Trend values assessed based on available data.
NA – Not applicable
NAAQS – National Ambient Air Quality Standards
UTEP – University of Texas at El Paso

Sulfur Dioxide

The SO_2 network in the El Paso area fulfills NCore requirements. Figure 40 shows the area SO_2 monitors at sites with a red section. Appendix A lists active and recently decommissioned SO_2 monitors, locations, monitoring objectives, and associated spatial scales.

El Paso Area

Network History and Current Status

El Paso area SO_2 monitoring began in the late 1990s and early 2000s with the deployment of the El Paso UTEP and Skyline Park monitors. In late 2010, a high sensitivity SO_2 monitor was deployed at the El Paso Chamizal site to fulfill NCore SO_2 monitoring requirements. Since the last FYA, two El Paso area SO_2 network changes have occurred. The El Paso UTEP and Skyline Park SO_2 monitors were decommissioned in December 2017. These monitors were not federally required and maintained historic design values trending downward from 12% to 3% of the 2010 one-hour SO_2 NAAQS.

As of January 1, 2020, federal standards require a minimum of one area SO_2 monitor. The TCEQ meets requirements with one SO_2 monitor.

Design Values and Trends

El Paso area SO_2 design values have continued to decline since 2000 and the El Paso Chamizal SO_2 data remain less than 10% of the 2010 one-hour SO_2 NAAQS of 75 ppb. El Paso Chamizal design values were affected for 2016-2018 due to data loss; therefore this monitor will be assessed for the NAAQS Value and Data Trend metrics during the next FYA. Table 44 shows the annual SO_2 99th percentile one-hour maximum concentration trends in the El Paso area from 2013 through 2019.

Table 44: El Paso Area Sulfur Dioxide 99th Percentile Concentration Trends

Site Name	2013	2014	2015	2016	2017	2018	2019
El Paso Chamizal	8	9	9	16*	10*	16*	8*

Results provided in parts per billion
*Values for a partial year, due to data loss, do not meet completeness criteria

Network Evaluation

Table 45 shows how the SO_2 monitor in the El Paso area was evaluated using the scoring system described in the Evaluation Methods section. The El Paso Chamizal high-sensitivity SO_2 monitor satisfies NCore requirements.

Table 45: El Paso Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
El Paso Chamizal**	4	NA	NA	2	1	7	critical

*Regulatory Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**SO_2 high sensitivity monitor
NAAQS – National Ambient Air Quality Standard

Particulate Matter of 2.5 Micrometers or Less

The $PM_{2.5}$ network in the Far West Texas area fulfills SLAMS and NCore requirements using a combination of non-continuous FRM, continuous FEM, and non-NAAQS comparable monitors. Non-NAAQS comparable data were not evaluated for trends against NAAQS criteria. Figure 40 and Figure 41 show the area $PM_{2.5}$ monitors at sites with a dark blue section and the $PM_{2.5}$ speciation monitors with an orange section (as air toxics). Appendix A lists active and recently decommissioned $PM_{2.5}$ monitors, locations, monitoring objectives, and associated spatial scales.

Far West Texas Area

Network History and Current Status

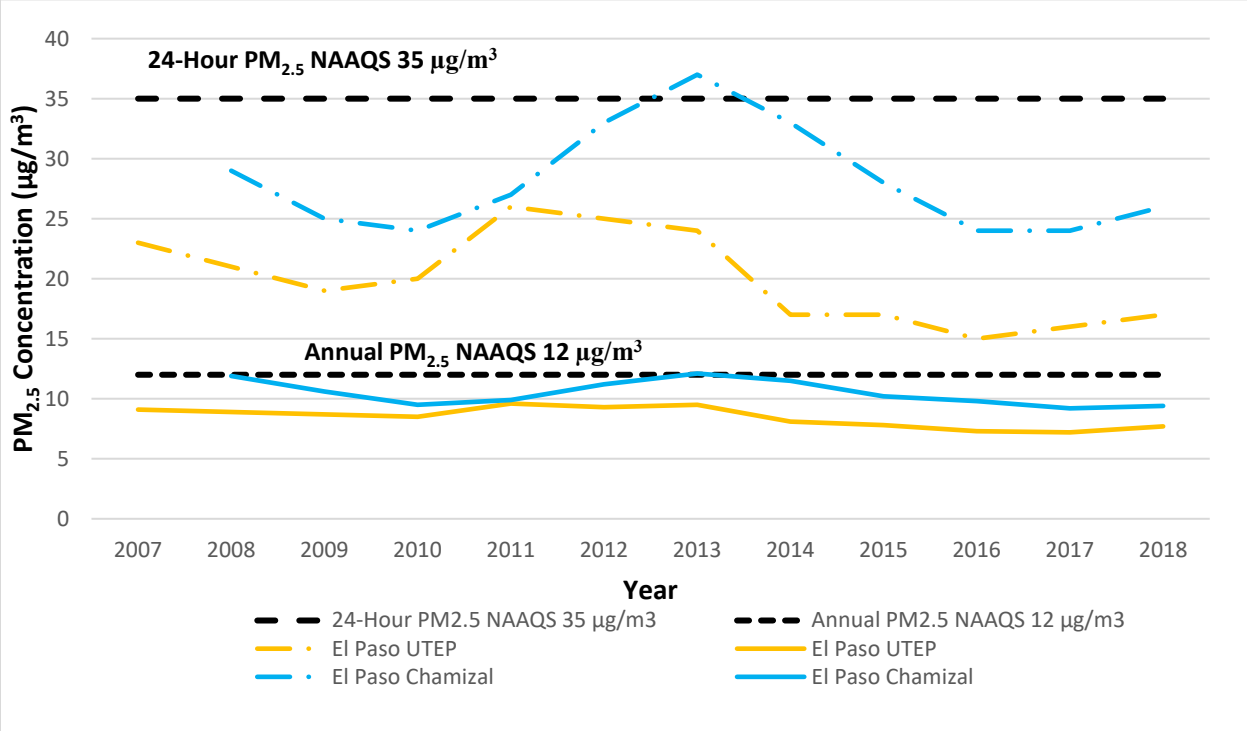
El Paso area $PM_{2.5}$ monitoring began in the late 1990s and early 2000s with the deployment of El Paso Chamizal and El Paso UTEP monitors. Through the 2000s the $PM_{2.5}$ network expanded with $PM_{2.5}$ speciation at El Paso Chamizal. In 2010 and 2012, non-NAAQS comparable continuous $PM_{2.5}$ monitors were added to Ascarate Park SE and Socorro Hueco to monitor concentrations in the populated areas to the southeast and south-southeast of El Paso. $PM_{2.5}$ monitoring began at Bravo Big Bend in 2008. Since the 2015 FYA, one $PM_{2.5}$ network change has occurred. The non-NAAQS comparable Bravo Big Bend $PM_{2.5}$ monitor was upgraded to a FEM continuous monitor in 2017.

As of January 1, 2020, federal standards require a minimum of five Far West area $PM_{2.5}$ monitors. The TCEQ exceeds requirements with nine $PM_{2.5}$ monitors at five sites to measure ambient $PM_{2.5}$ concentration data through gravimetric, speciation, and continuous measurements to determine maximum concentrations and concentrations in areas of high population density. El Paso area monitoring along the international border evaluates regional transport, $PM_{2.5}$ background levels, and ambient $PM_{2.5}$

concentrations in populated areas. $PM_{2.5}$ monitoring in Big Bend National Park provides data to assess regional transport across the United States and the international border.

Design Values and Trends

The El Paso area $PM_{2.5}$ annual and 24-hour $PM_{2.5}$ design values show some variability due to dust events. Figure 47 shows the annual mean and 24-hour 98th percentile $PM_{2.5}$ design value trends in the El Paso area from 2007 through 2018. Data indicate that measured concentrations have remained below the 24-hour $PM_{2.5}$ NAAQS of 35 µg/m^3 since 2014. In addition, annual mean $PM_{2.5}$ concentrations have exhibited a decrease over this same time period with design values from all regulatory monitors remaining below the 12 µg/m^3 annual NAAQS since 2014. The Bravo Big Bend $PM_{2.5}$ FEM monitor has not obtained a three-year design value; therefore, this monitor will not be assessed with the NAAQS Value Percent and Data Trend metrics in this FYA. Yearly data trends for the Bravo Big Bend monitor are provided in Table 46. The Ascarate Park SE, El Paso Chamizal, and Socorro Hueco $PM_{2.5}$ monitors are non-NAAQS comparable; therefore, these monitors will not be assessed with the NAAQS Value Percent and Data Trend metrics.



NAAQS - National Ambient Air Quality Standard
µg/m^3 - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less

Figure 47: El Paso Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2007-2018

Table 46: El Paso Area Particulate Matter of 2.5 Micrometers or Less 98th Percentile of 24-Hour Averages and Annual Mean Concentrations

Site Name	24-Hour			Annual		
	2017	2018	2019	2017	2018	2019
Bravo Big Bend	14*	14*	15	6.6*	6.2*	5.7

*Values for a partial year due to a new monitor (2017) or data loss (2018) do not meet completeness criteria
Results provided in micrograms per cubic meter

Network Evaluation

Table 47 shows how each $PM_{2.5}$ monitor in the Far West Texas area was evaluated using the scoring system described in the Evaluation Methods section. The El Paso Chamizal $PM_{2.5}$ monitors satisfy the $PM_{2.5}$ NCore requirements. The El Paso UTEP FRM monitor satisfies $PM_{2.5}$ SLAMS requirements. The remaining area $PM_{2.5}$ monitors are of value due to current design values, spatial coverage, or the unique information provided regarding background and transported particulate concentrations. Based on these scores, no changes to the Far West Texas area $PM_{2.5}$ network are recommended at this time.

Table 47: Far West Texas Area Particulate Matter of 2.5 Micrometers or Less Network Evaluation

Site Name	Sampler Type	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Ascarate Park Southeast	$PM_{2.5}$ (TEOM)	1	NA	NA	2	2	5	medium
Bravo Big Bend	$PM_{2.5}$ FEM	1	NA	NA	3	2	6	medium
El Paso Chamizal	$PM_{10-2.5}$	4	NA	NA	2	2	8	critical
El Paso Chamizal	$PM_{2.5}$ FEM	4	3	1	2	2	12	critical
El Paso Chamizal	$PM_{2.5}$ FRM	4	3	1	4	2	14	critical
El Paso Chamizal	$PM_{2.5}$ (Speciation)	4	NA	NA	4	2	10	critical
El Paso UTEP	$PM_{2.5}$ FRM	4	2	1	3	2	12	critical
El Paso UTEP	$PM_{2.5}$ (TEOM)	1	NA	NA	4	2	7	medium
Socorro Hueco	$PM_{2.5}$ (TEOM)	1	NA	NA	2	2	5	medium

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**NAAQS Value Percent based on incomplete design value due to data loss or new monitor
NAAQS – National Ambient Air Quality Standards
NA – not applicable
FEM – federal equivalent method
FRM – federal reference method
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less
$PM_{10-2.5}$ – coarse particulate matter
TEOM – tapered element oscillating microbalance, non-NAAQS comparable
UTEP – University of Texas at El Paso

Particulate Matter of 10 Micrometers or Less

The PM_{10} network in the El Paso area fulfills SLAMS requirements based on MSA populations and area concentrations. Figure 40 show the area PM_{10} monitors at sites with a purple section. Appendix A lists active and recently decommissioned PM_{10} monitors, locations, monitoring objectives, and associated spatial scales.

El Paso Area

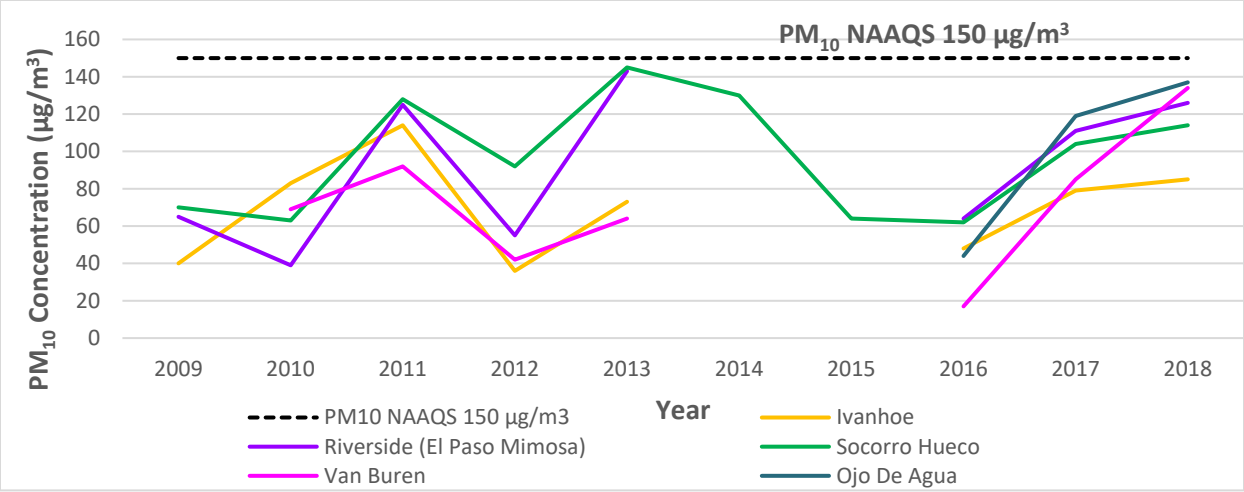
Network History and Current Status

PM_{10} monitoring in the El Paso area began in the late 1980s with deployment of the Riverside and Ivanhoe monitors. Through the early to mid-2000s, the PM_{10} monitoring network expanded in the urban core at Clendenin School, Socorro Hueco, and Tillman to measure concentrations near populated areas and characterize regional air quality. The Clendenin School monitor relocated to the new Van Buren site in 2010. The Socorro Hueco site relocated with the same identification number in 2012. In 2013, the PM_{10} monitor was moved from the Tillman site to the new Ojo De Agua site due to sale of the Tillman site property. Since the 2015 FYA, one El Paso area PM_{10} network change occurred. The PM_{10} monitor at El Paso Riverside was relocated less than one mile away, with the same identification number, to the new El Paso Mimosa site to improve site access safety.

As of January 1, 2020, federal standards require between two to four PM_{10} monitors in the El Paso area. Currently, PM_{10} is monitored at five sites to measure population exposure and highest concentrations.

Design Values and Trends

Compliance with the 24-hour PM_{10} standard is based on the number of measured exceedances of the 150 µg/m^3 standard averaged over three years. The El Paso area has been classified as nonattainment for the 24-hour PM_{10} NAAQS since November 15, 1990. Exceedances, frequently at Socorro Hueco, are variable due to the impact of regional blowing dust and remain heavily impacted by exceptional events. Excluding data from the 2017 and 2018 El Paso Exceptional Events Demonstration, no exceedances at any El Paso area sites have been recorded since the last FYA. Figure 48 shows El Paso area PM_{10} annual maximum 24-hour averages trends, which are frequently influenced by exceptional dust events. Laboratory quality concerns affected Ivanhoe, Riverside, Ojo De Agua, and Van Buren data for 2014 and 2015. Data flagged as Exceptional Events for 2017 and 2018 were not included.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
PM_{10} – particulate matter of 10 micrometers or less

Figure 48: El Paso Area Particulate Matter of 10 Micrometers or Less Maximum Concentration Trends, 2009-2018

Network Evaluation

Table 48 shows how each PM_{10} monitor in the El Paso area was evaluated using the scoring system described in the Evaluation Methods section. The Socorro Hueco and Ivanhoe PM_{10} monitors satisfy SLAMS requirements. The remaining monitors are valuable for spatial coverage and provide area air quality characterization in a nonattainment area. Based on these scores, no further changes to the El Paso area PM_{10} network are recommended at this time.

Table 48: El Paso Area Particulate Matter of 10 Micrometers or Less Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Riverside (El Paso Mimosa)	1	4	3	4	3	15	critical
Ivanhoe	4	2	3	4	3	16	critical
Ojo De Agua	1	4	3	2	3	13	critical
Socorro Hueco	4	3	3	4	3	17	critical
Van Buren	1	4	3	2	3	13	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Lead

The TCEQ Pb network is designed to meet source-oriented SLAMS monitoring requirements to measure maximum Pb concentrations near point sources emitting 0.50 tpy or more of Pb. There is no source-oriented Pb monitoring required in the Far West Texas area. Figure 40 show the area Pb monitors at sites with a black section. Appendix A lists active and recently decommissioned Pb monitors, locations, monitoring objectives, and spatial scale.

El Paso Area

Network History and Current Status

El Paso Pb monitoring began in the late 1970s at the Kern site and expanded to Tillman in 2005, located in the populated downtown El Paso area. These monitors were later relocated to the Ojo de Agua and UTEP sites, in 2012 and 2013, respectively, due to property sale and to improve site access safety. A Pb monitor was deployed at Skyline Park in 2005 and decommissioned in 2014, based on historical measured design values well below the Pb NAAQS. In 2011, a new Pb monitor was deployed at Ascarate Park SE to fulfill NCore requirements. Although the El Paso Chamizal site is the designated NCore site in the area, space limitations at that site precluded deployment of additional monitoring equipment; Ascarate Park SE was selected as an alternative site for meeting this requirement. The NCore Pb monitoring requirement was eliminated in the EPA's final rule published in the Federal Register on March 28, 2016, *Revisions to the Ambient Monitoring Quality Assurance and Other Requirements; Final Rule.*

The largest historical source of Pb in the Far West Texas area was the ASARCO smelter that discontinued operation in 1999 and was demolished and remediated in 2013 and 2016, respectively. El Paso area Pb monitoring has been conducted in populated areas downwind of the ASARCO facility. Since the 2015 FYA, one El Paso area Pb network change occurred. The Ascarate Park SE Pb monitor was decommissioned in December 2016. As of January 1, 2020, federal standards require no Pb monitors in the El Paso area.

Design Values and Trends

In the 2020 AMNP, the TCEQ recommended decommissioning the TSP Pb monitors at El Paso UTEP and Ojo De Agua. The total 2017 El Paso County point source lead emissions of 0.06 tpy (see Table 40) are well below the federal requirement for Pb monitoring of 0.50 tpy, and no single source in the area indicates the need for continued monitoring. The El Paso UTEP and Ojo De Agua monitors' three-month rolling average design values are 0.02 micrograms per cubic meter ($\mu g/m^3$) and 0.00 $\mu g/m^3$, respectively, based on the most recent 38-months data. This recommendation is pending EPA concurrence.

Network Evaluation

Table 49 shows how each Pb monitor in the Far West Texas area was evaluated using the scoring system described in the Evaluation Methods section. The El Paso UTEP and Ojo De Agua monitors are not federally required. Based on these scores, the 2020 AMNP recommendation to decommission the El Paso UTEP and Ojo De Agua monitors continue to be applicable.

Table 49: Far West Texas Area Lead Network Evaluation

Site Name	Regulatory Value	NAAQS Value Percent	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
El Paso UTEP	1	1	1	2	1	6	low
Ojo De Agua	1	1	1	2	1	6	low

NAAQS Value Percent and Data Trend value assessed based on available data.
NAAQS – National Ambient Air Quality Standards
UTEP – University of Texas at El Paso

Photochemical Assessment Monitoring

The VOC network in the Far West Texas area supports PAMS and O_3 enhanced monitoring. Figure 40 show the area VOC monitors at sites with an orange section. Appendix A lists active and recently decommissioned VOC and carbonyl monitors, locations, monitoring objectives, and associated spatial scales.

El Paso Area

Network History and Current Status

El Paso area VOC monitoring began in 1995 at El Paso Chamizal with the deployment of an autoGC to assist in understanding the area's photochemical characteristics. A carbonyl monitor was deployed to Ascarate Park SE in 2010 to further study O_3 precursors not captured in VOC monitoring; however it was decommissioned in December 2018 due to a determination that the data was no longer needed for O_3 precursor modeling.

As of January 1, 2020, there are no federal PAMS requirements for this area. The TCEQ exceeds requirements with one VOC monitor.

Design Values and Trends

Design values and associated trends are not applicable to VOCs and carbonyl monitoring. Monitoring objectives for photochemical assessment monitoring of O_3 precursors include creating a representative VOC and carbonyl ambient air database useful in photochemical grid modeling, developing emission control strategies, and furthering the understanding of pollution transport mechanisms to aid in reaching attainment designations.

Network Evaluation

Table 50 shows how the VOC monitor in the El Paso area was evaluated using the scoring system described in the Evaluation Methods section. The El Paso autoGC supports enhanced O_3 monitoring. The autoGC is located in an area of dense population and is meeting the original monitoring objectives. Based on these scores, no changes to the El Paso area network are recommended at this time.

Table 50: El Paso Area Photochemical Assessment Network Evaluation

Site Name	Sampler Type	Regulatory Value	NAAQS Value Percent	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
El Paso Chamizal	autoGC	1	NA	NA	4	2	7	medium

autoGC – automated gas chromatograph
NAAQS – National Ambient Air Quality Standards
NA – not applicable

Lower Rio Grande Valley Area Evaluation

(Brownsville-Harlingen, Laredo, and McAllen-Edinburg-Mission Areas)

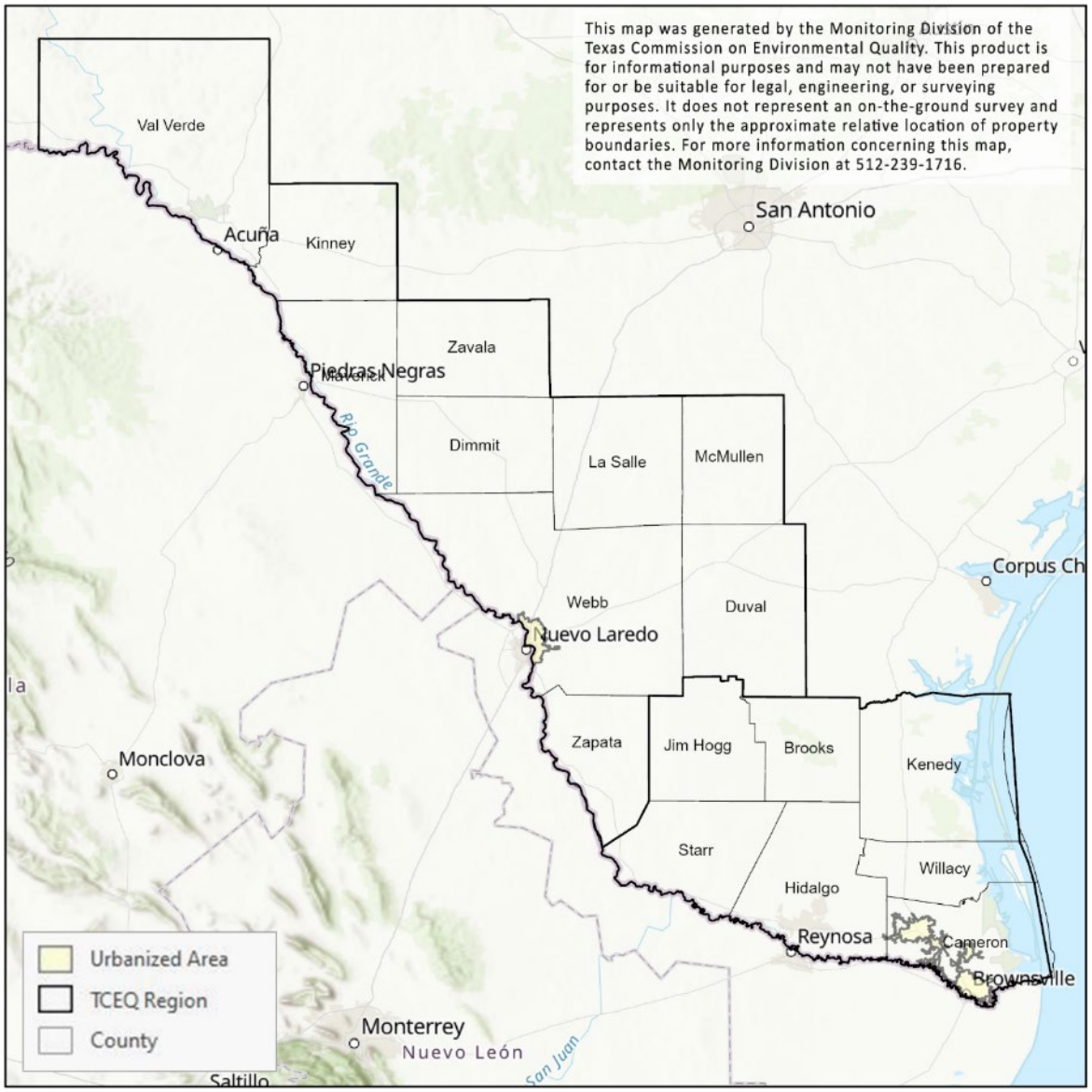


Figure 49: Lower Rio Grande Valley Area Counties and Urban Areas

Lower Rio Grande Valley Area Characteristics and Background

Wind Patterns

Figure 49 illustrates the counties included in the Lower Rio Grande Valley area evaluation. Figure 50 and Figure 51 illustrate typical Lower Rio Grande Valley area annual average wind speed and direction wind roses from local airport meteorological sensors averaged from 2014 to 2018. Figure 50 wind roses were derived from South Padre Island Heliport, Brownsville South Padre Island International Airport, and Mid Valley Airport. The Figure 51 wind rose was derived from Laredo International Airport. Figure 50 and Figure 51 show the annual wind patterns are dominated by south-southeast to north-northwest wind flows from the Gulf of Mexico.

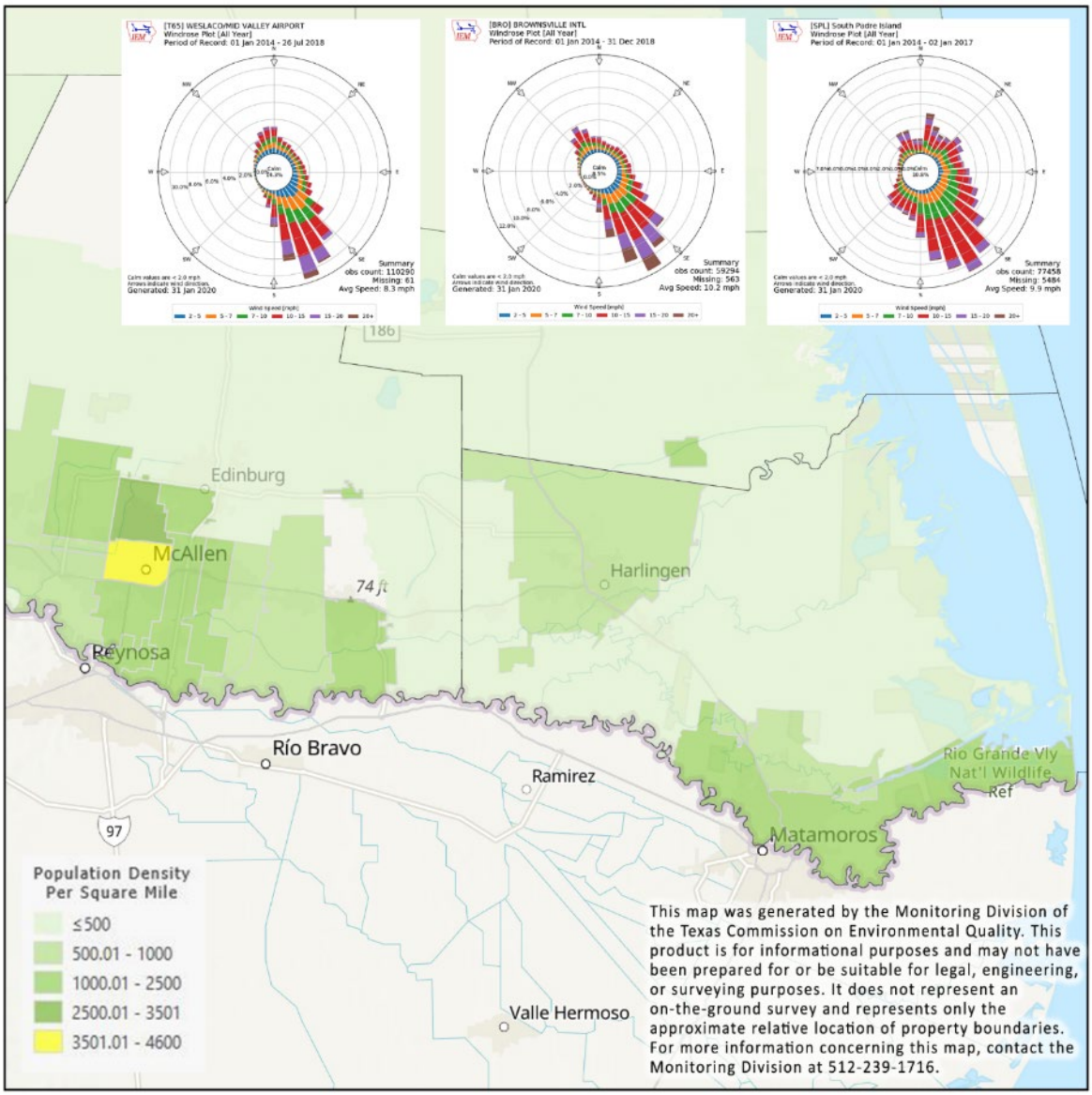


Figure 50: Brownsville-Harlingen and McAllen-Edinburg-Mission Area Population Density and Wind Roses

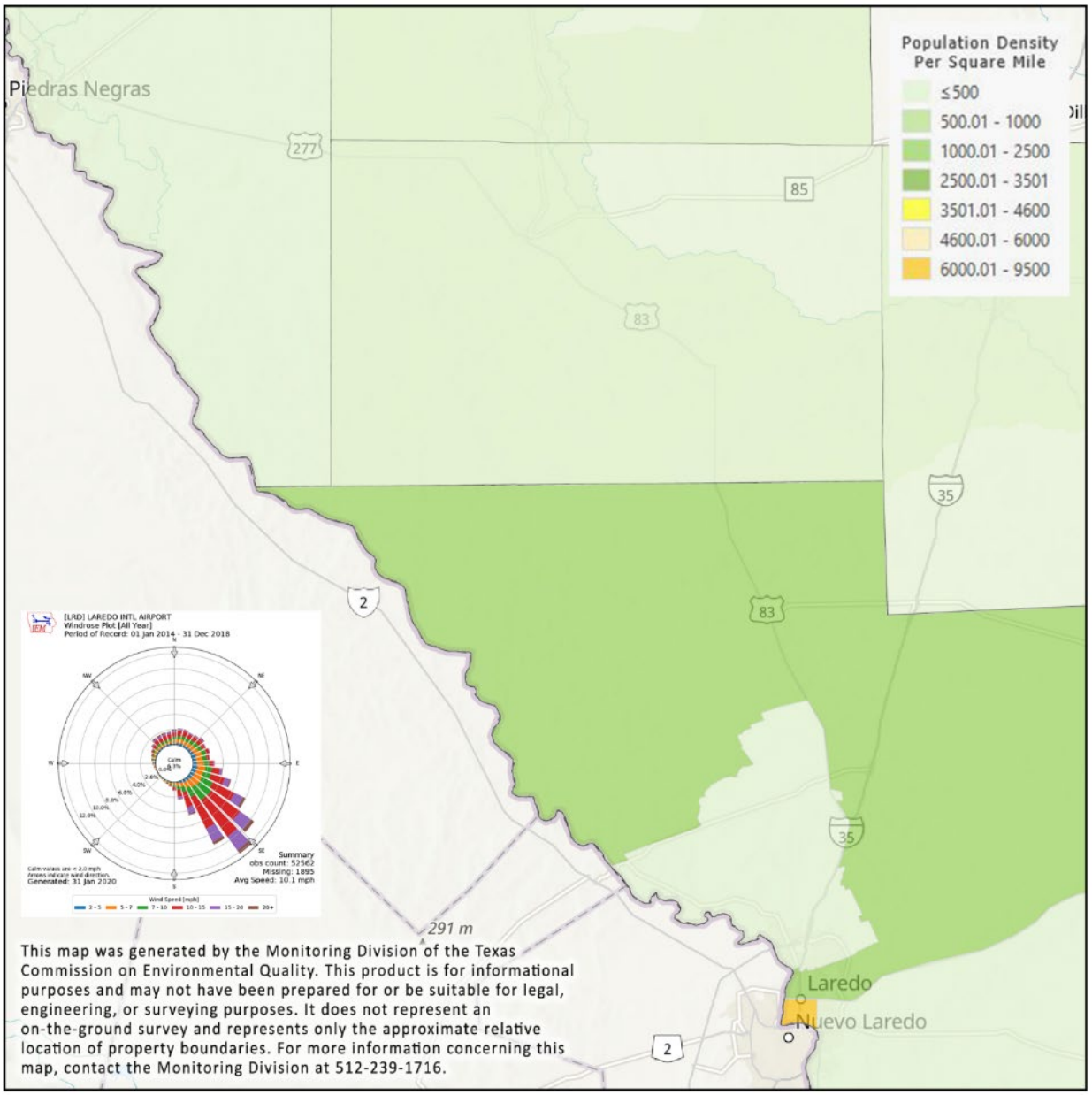


Figure 51: Laredo Area Population Density and Wind Roses

Population

The Lower Rio Grande Valley area has three major MSAs. Monitoring is also conducted in one micropolitan statistical area as noted below.

- The Brownsville-Harlingen (Brownsville) MSA includes Cameron County
- The McAllen-Edinburg-Mission (McAllen) MSA includes Hidalgo County
- The Laredo MSA includes Webb County
- The Eagle Pass micropolitan statistical area includes Maverick County

The Texas Demographics Center projects the combined population of the three Lower Rio Grande Valley area MSAs will exceed 1.5 million persons in 2020. The 2025

projection estimates a 4% population increase from 2020 in the Lower Rio Grande Valley area, with the largest growth at 5% in the McAllen area. Figure 50 and Figure 51 illustrate the population densities across the Lower Rio Grande Valley areas based on actual 2010 U.S. Census Bureau data. Population density is illustrated by square mile for each area zip code.

Brownsville MSA minimum monitoring network design requirements dictated by the latest available census population estimates under 40 CFR §58, Appendix D, include the following.

- one O_3 monitor
- zero to one PM_{10} monitor

The McAllen MSA is required to have the following.

- one O_3 monitor
- two $PM_{2.5}$ monitors
- between one and two PM_{10} monitors

The Laredo MSA is required to have the following.

- zero to one PM_{10} monitor

The TCEQ evaluated population projection data illustrated in Table 2 against Lower Rio Grande Valley area minimum monitoring design requirements partially based on MSA population. No Lower Rio Grande Valley MSA monitoring requirements would increase based on the projected population assessment. The TCEQ meets and exceeds monitoring requirements with the monitors illustrated in Figure 52 and Figure 53.

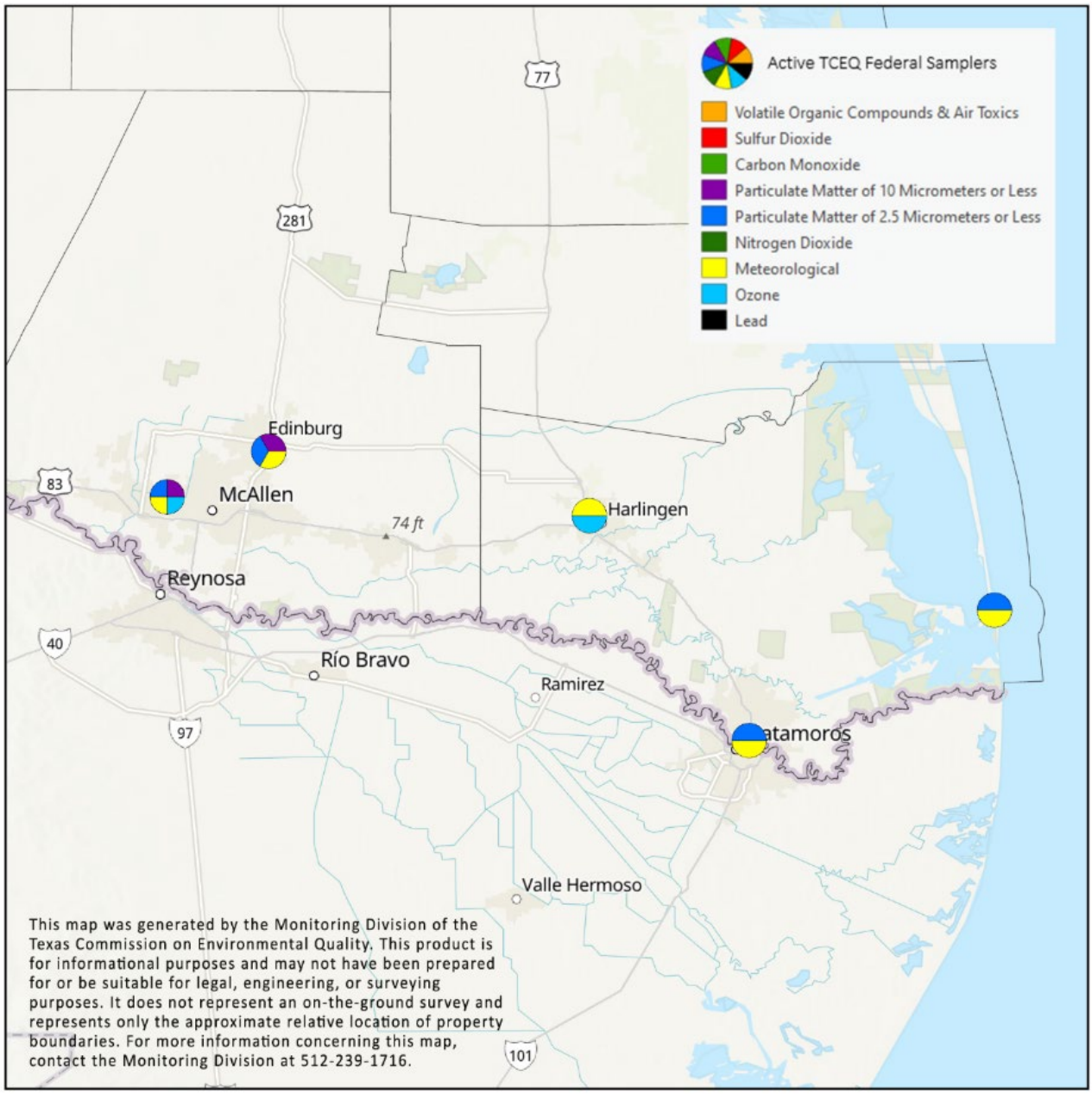


Figure 52: Brownsville-Harlingen and McAllen-Edinburg-Mission Area Active Sites and Monitors

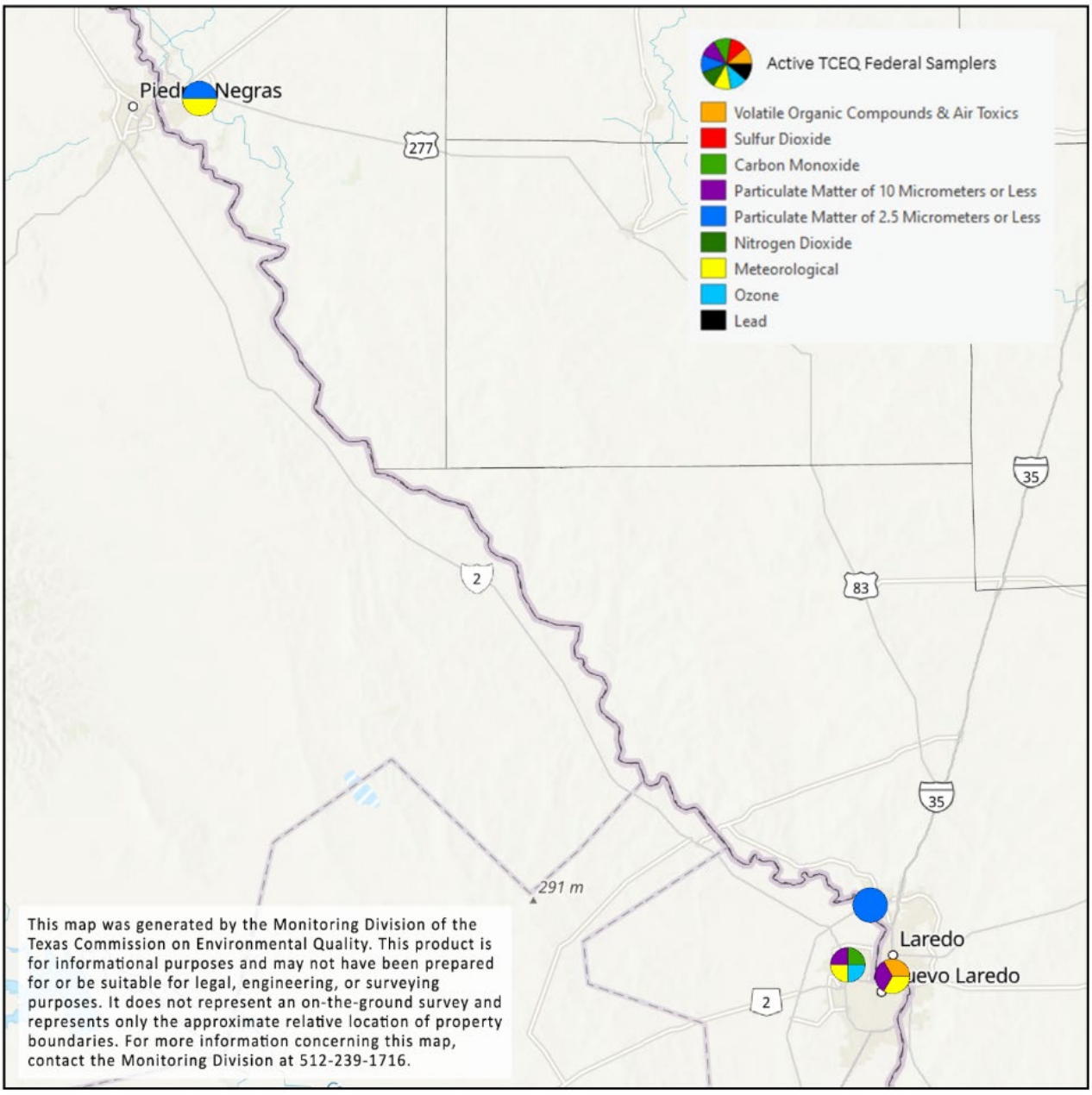


Figure 53: Laredo Area Active Sites and Monitors

Point Sources and Area-Wide Emissions

Anthropogenic Sources

Data from EI source categories show the following for the Lower Rio Grande Valley area:

- The majority of CO is emitted from on-road mobile sources in the Harlingen area and from area and on-road mobile sources in the Laredo area.
- NO_x emissions are predominately from on-road mobile sources in the Harlingen area and from area sources in the Laredo area.

- Area sources account for the majority of VOC, $PM_{2.5}$, and PM_{10} emissions in the Harlingen and Laredo areas.
- Area and non-road mobile sources are the primary contributors of SO_2 emissions in the Harlingen area, while area sources contribute the most SO_2 in the Laredo area.
- Non-road mobile sources contribute the majority of total Pb emissions in the Harlingen and Laredo areas.

EI source totals by pollutant are listed in Table 51. This information, in conjunction with monitoring objectives and regulatory requirements, is used to identify and prioritize areas of interest.

Table 51: 2017 Lower Rio Grande Valley Area Emissions Inventory in Tons Per Year

Area*	Source	VOC	NO_x	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
R15-Harlingen	Point	552	1,490	1,506	437	370	50	0
R15-Harlingen	Area	27,385	4,867	5,799	62,600	8,171	91	0
R15-Harlingen	On-Road Mobile	4,510	8,062	53,959	661	250	57	0
R15-Harlingen	Non-Road Mobile	3,907	4,869	28,609	352	334	62	0.44
R16-Laredo	Point	1,644	1,430	940	121	93	1,369	0
R16-Laredo	Area	89,383	45,350	28,611	29,594	4,202	3,617	0
R16-Laredo	On-Road Mobile	1,820	6,099	20,443	336	176	22	0
R16-Laredo	Non-Road Mobile	1,698	3,359	11,358	257	247	33	0.22

*Appendix D details the counties included for each area.
CO – carbon monoxide
NO_x – oxides of nitrogen
PM – particulate matter
R – TCEQ Region
SO_2 – sulfur dioxide
VOC – volatile organic compounds

Natural Sources

The Lower Rio Grande Valley area has historically been affected by elevated $PM_{2.5}$ concentrations from long-range transport and wind flow patterns, as supported by speciation data, satellite imagery, and back trajectories. Dust from the Sahara Desert typically impacts the Lower Rio Grande Valley area three to six times each summer. Daily average $PM_{2.5}$ concentrations can reach 40 µg/m^3 during these events. Smoke from agricultural burning in Mexico affects the Lower Rio Grande Valley area mainly from April to early June each year when the winds bring in air from eastern Mexico and Central America and is generally associated with abnormally high organic carbon concentrations. Controlled burns, haze, and smoke accumulated from wildfires in the United States and Canada (also known as continental haze) are most common from May through October and often include high O_3 background levels. Long-range transport from other events also impact the Lower Rio Grande Valley area, including wildfires and dust from storms in the West Texas-New Mexico-Northern Mexico area. More detailed information about these types of natural events is available in the

TCEQ's Exceptional Event Flag Demonstrations web page https://www.tceq.texas.gov/airquality/monops/pm_flags.html.

Regional Air Quality

As of January 1, 2020, all Lower Rio Grande Valley geographical areas are designated attainment/unclassifiable for all current NAAQS. In addition, there are no current or historical Air Pollution Watch List areas based on air toxics monitoring.

Lower Rio Grande Valley Area Monitoring Network Evaluation

Ozone

The O_3 network in the Lower Rio Grande Valley area fulfills SLAMS requirements based on population and O_3 design values. Figure 52 and Figure 53 show the area active O_3 monitors at sites with a light blue section. Appendix A lists active and recently decommissioned O_3 monitors, locations, monitoring objectives, and associated spatial scales.

Lower Rio Grande Valley Area

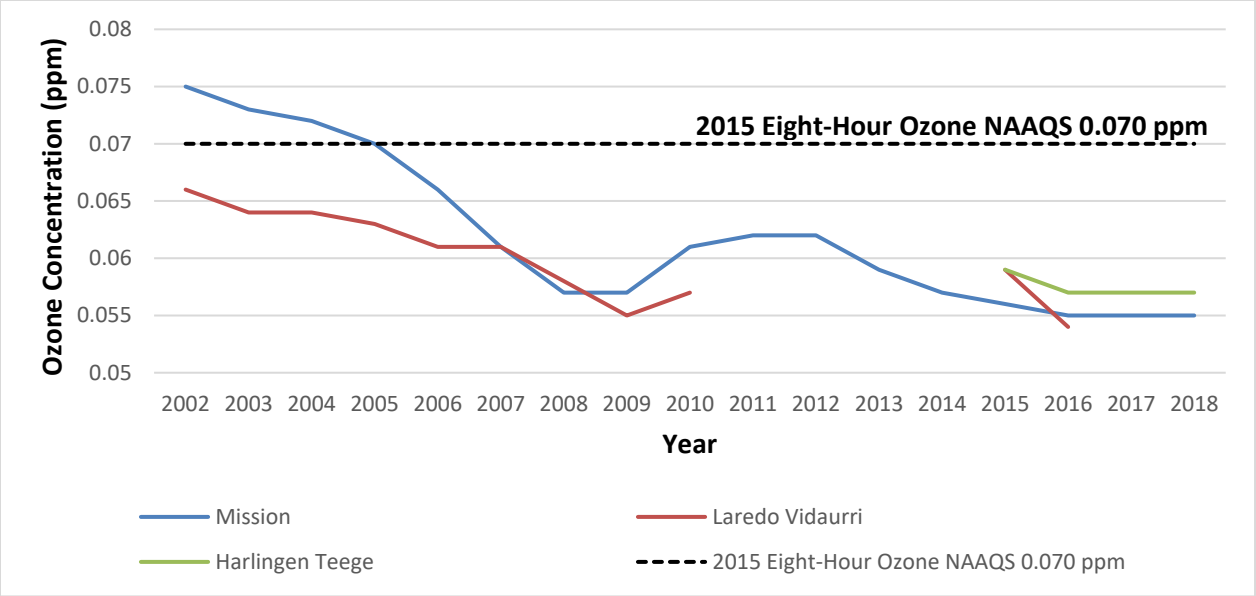
Network History and Current Status

Lower Rio Grande Valley area O_3 monitoring began in the early 1990s with deployment of the Brownsville monitor. In the late 1990s, the O_3 monitoring network expanded in other urban areas to include monitoring in the Laredo and Mission areas to evaluate O_3 concentrations in populated areas. In 2011, the Laredo Vidaurri site was shut down due to construction and was relocated in 2012. In 2012, O_3 monitoring expanded to the Harlingen Teege site. Since the 2015 FYA, one Lower Rio Grande Valley area O_3 network change occurred. The Brownsville monitor was decommissioned in December 2017 as the data aligned with the Harlingen Teege monitor and was considered redundant.

As of January 1, 2020, federal standards require a minimum of two area O_3 monitors. The TCEQ exceeds requirements with three O_3 monitors. While the number of O_3 monitors exceeds area federal requirements, the spatial distribution of the network provides valuable data for evaluating population exposure and maximum concentrations in the area.

Design Values and Trends

Lower Rio Grande Valley area eight-hour O_3 design values continue to decline. Design values from the Laredo Vidaurri O_3 monitor were affected for 2011 through 2014 due to the relocation, and in 2017 and 2018 due to data quality concerns. Figure 54 shows the Lower Rio Grande Valley area O_3 design value trends from 2002 through 2018 compared with the 2015 eight-hour O_3 NAAQS of 0.070 ppm.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 54: Eight-Hour Ozone Design Value Trends in the Lower Rio Grande Valley Area, 2002-2018

Network Evaluation

Table 52 shows how each O_3 monitor in the Lower Rio Grande Valley area was evaluated using the scoring system described in the Evaluation Methods section. The Harlingen Teege and Mission monitors satisfy the minimum monitoring requirements for O_3 monitoring. The Laredo Vidaurri O_3 monitor provides area spatial coverage and population exposure. Based on these scores and the current spatial coverage, no changes to the Lower Rio Grande Valley area O_3 network are recommended at this time.

Table 52: Lower Rio Grande Valley Area Ozone Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value*	Total Monitor Value	Assessment Value
Harlingen Teege	4	4	1	1	1	11	critical
Mission	4	3	1	4	1	13	critical
Laredo Vidaurri**	1	3	1	4	1	10	medium

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**Evaluation based on the most recent valid design value
NAAQS – National Ambient Air Quality Standards

Carbon Monoxide

The CO network in the Lower Rio Grande Valley area includes one ambient CO monitor in Laredo. There are no regulatory CO requirements in the Lower Rio Grande Valley area and CO monitoring is not performed in the Brownsville or McAllen areas. Figure 53 shows the area active CO monitor at the site with a light green section. Appendix A

lists active and recently decommissioned CO monitors, locations, monitoring objectives, and associated spatial scales.

Lower Rio Grande Valley Area

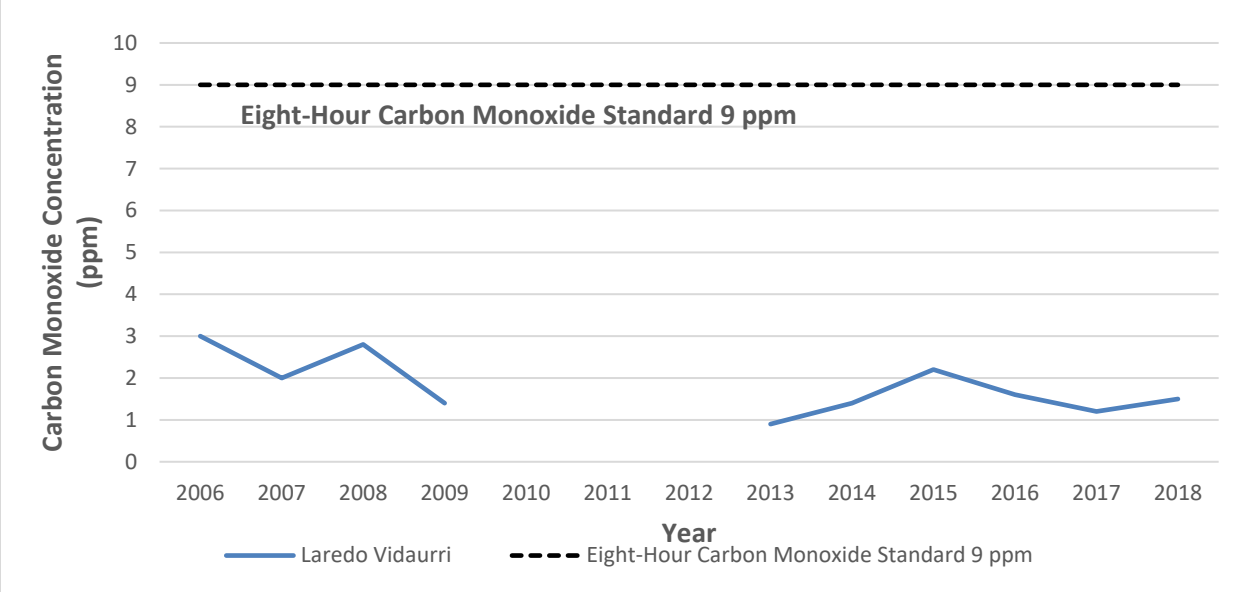
Network History

Lower Rio Grande Valley area CO monitoring began in the 1990's with the deployment of the Brownsville, Laredo Bridge, and Laredo Vidaurri sites. The CO monitors supported monitoring in populated areas and near areas of concentrated mobile-source activities. In 2011, the Laredo Vidaurri site was shut down due to construction and was relocated in 2012.

Since the 2015 FYA, two Lower Rio Grande Valley area CO network changes occurred. The Brownsville and Laredo Bridge CO monitors were decommissioned in December 2017. The Brownsville and Laredo Bridge CO monitor design values were less than 13% of the NAAQS and there were no CO monitoring requirements in either area. As of January 1, 2020, no federal CO monitoring requirements apply in the Lower Rio Grande Valley area. Currently, CO is monitored at one site.

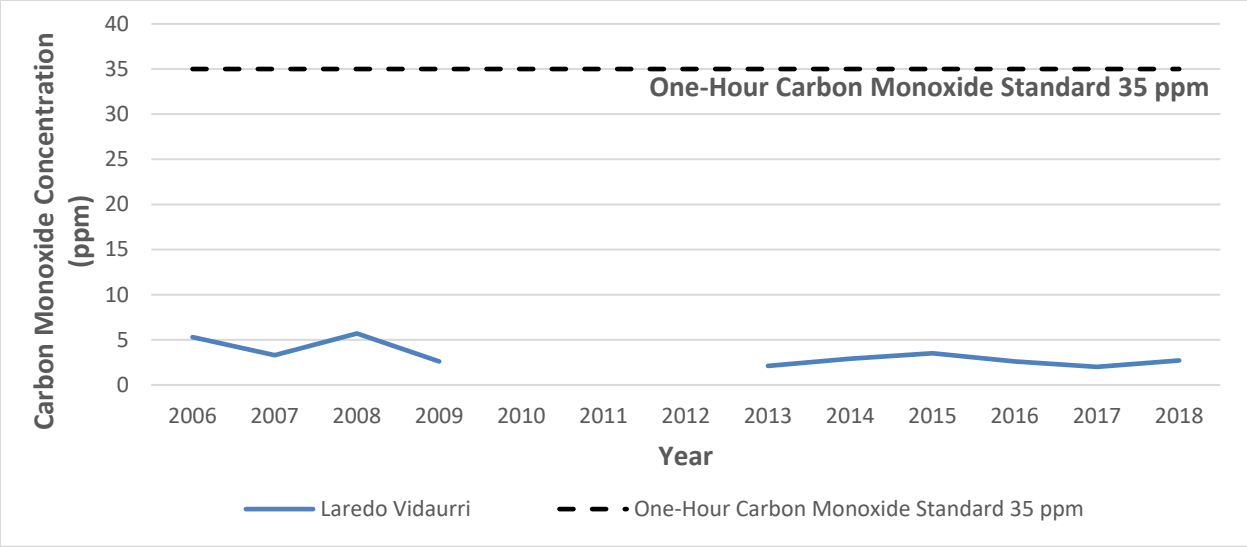
Design Values and Trends

Since 2000, CO design values in the Lower Rio Grande Valley area have remained well below the one-hour CO NAAQS of 35 ppm and the eight-hour CO NAAQS of 9 ppm. The Laredo Vidaurri CO monitor design values were affected for 2010 - 2012 due to data loss and from the relocation. Based on 2018 data, CO design values remain below 5% of the one-hour NAAQS of 35 ppm and below 20% of the eight-hour NAAQS of 9 ppm, as shown in Figure 55 and Figure 56.



NAAQS – National Ambient Air Quality Stand
ppm – part per million

Figure 55: Eight-Hour Carbon Monoxide Design Value Trends in the Lower Rio Grande Valley Area, 2006-2018



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 56: One-Hour Carbon Monoxide Design Value Trends in the Lower Rio Grande Valley Area, 2006-2018

Network Evaluation

Table 53 shows how the CO monitor in the Lower Rio Grande Valley area was evaluated using the scoring system described in the Evaluation Methods section. The Laredo Vidaurri CO monitor exceeds monitoring requirements but provides valuable trends and wildfire assessment data. No changes in the Lower Rio Grande Valley area CO network are recommended at this time.

Table 53: Lower Rio Grande Valley Area Carbon Monoxide Network Evaluation

Site Name	Regulatory Value	NAAQS Value Percent	Data Trend	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Laredo Vidaurri	1	1	3	2	1	8	low

NAAQS – National Ambient Air Quality Standards

Particulate Matter of 2.5 Micrometers or Less

The $PM_{2.5}$ network in the Lower Rio Grande Valley area fulfills SLAMS requirements using a combination of non-continuous FRM and continuous FEM monitors. Figure 52 and Figure 53 show the area $PM_{2.5}$ monitors at sites with a dark blue section. Appendix A lists active and recently decommissioned $PM_{2.5}$ monitors, locations, monitoring objectives, and associated spatial scales.

Lower Rio Grande Valley Area

Network History and Current Status

$PM_{2.5}$ monitoring began in the late 1990s with the deployment of the Mission monitor. In the 2000s, $PM_{2.5}$ monitoring expanded in other urban areas including Brownsville,

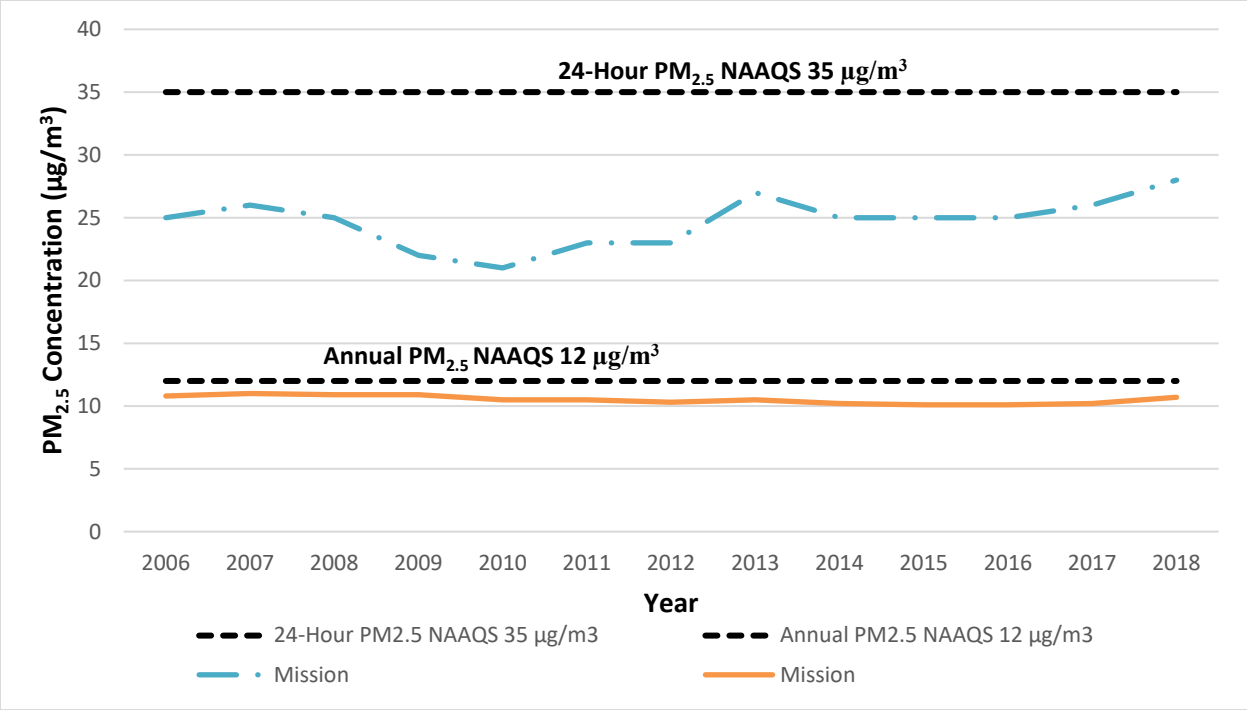
Laredo, and Eagle Pass and also to South Padre Island to evaluate $PM_{2.5}$ background and transport. A $PM_{2.5}$ non-NAAQS comparable continuous monitor replaced the $PM_{2.5}$ gravimetric and speciation monitors at the Isla Blanca State Park site in 2013. A $PM_{2.5}$ FRM monitor was deployed to the Brownsville site and to the new Edinburg East Freddy Gonzalez Drive site in 2015.

Since the 2015 FYA, several changes occurred. Non-continuous $PM_{2.5}$ FRM monitors were upgraded to FEM continuous monitors at the Brownsville and Mission sites in January 2018 and non-NAAQS comparable monitors were upgraded to $PM_{2.5}$ FEM continuous monitors at the Eagle Pass Independent School District (ISD) and World Trade Bridge sites in March 2018. The Isla Blanca State Park site was relocated due to construction and renamed Isla Blanca State Park Road, and the non-NAAQS comparable $PM_{2.5}$ monitor was upgraded to a $PM_{2.5}$ FEM continuous monitors in October 2019.

As of January 1, 2020, federal standards require a minimum of two $PM_{2.5}$ monitors in the McAllen MSA. No federal $PM_{2.5}$ monitoring requirements apply in the Brownsville or Laredo areas. The TCEQ exceeds requirements with six Lower Rio Grande Valley $PM_{2.5}$ monitors that measure ambient $PM_{2.5}$ concentration data through gravimetric and continuous measurements to determine maximum concentrations, concentrations in areas of high population density, and provide background and transport concentrations.

Design Values and Trends

The Lower Rio Grande Valley area annual and 24-hour $PM_{2.5}$ design values have stable and slightly increasing trends. Data indicate that measured concentrations have consistently remained below the 24-hour $PM_{2.5}$ NAAQS of 35 µg/m^3 since 2006. In addition, annual mean $PM_{2.5}$ concentration design values from all regulatory monitors have remained below the 12 µg/m^3 annual NAAQS since 2006. Figure 57 shows the annual mean and 24-hour 98th percentile $PM_{2.5}$ design value trends for the Mission site from 2006 through 2018. The Brownsville and Edinburg East Freddy Gonzalez Drive $PM_{2.5}$ monitors, deployed in 2015, only have one complete three-year design value for 2018, and are therefore, not included in Figure 57. The Eagle Pass ISD and World Trade Bridge $PM_{2.5}$ FEM monitors, deployed in 2018, and the Isla Blanca State Park Road $PM_{2.5}$ FEM monitor, deployed in 2019, have not obtained three complete years of data for a design value calculation; therefore these monitors will not be assessed with the NAAQS Value Percent and Data Trend metrics in this FYA. The yearly data trends for monitors with one design value or less are provided in Table 54.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less

Figure 57: Lower Rio Grande Valley Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2006-2018

Table 54: Lower Rio Grande Valley Area Particulate Matter of 2.5 Micrometers or Less 98th Percentile of 24-Hour Averages and Annual Mean Concentrations

Site Name	24-Hour			Annual		
	2017	2018	2019	2017	2018	2019
Brownsville	24	26	25	9.4	10.5	9.7
Isla Blanca State Park Road	NA	NA	20*	NA	NA	8.9*
Edinburg East Freddy Gonzalez Drive	26	26	34*	9.2	9.0	10.5*
Eagle Pass ISD	NA	24*	21	NA	7.7*	7.5
World Trade Bridge	NA	26*	29	NA	9.4*	10.7

*Values for a partial year, due to data loss or a new monitor, do not meet completeness criteria
Results provided in micrograms per cubic meter
ISD – Independent School district
NA – Not applicable

Network Evaluation

Table 55 shows how each $PM_{2.5}$ monitor in the Lower Rio Grande Valley area was evaluated using the scoring system described in the Evaluation Methods section. The Mission and Edinburg East Freddy Gonzales Drive $PM_{2.5}$ monitors satisfy the $PM_{2.5}$ minimum requirements in the McAllen MSA. The remaining area $PM_{2.5}$ monitors provide

unique information regarding spatial coverage and background and transported particulate concentrations. No changes to the Lower Rio Grande Valley area $PM_{2.5}$ network are recommended at this time, but future evaluation of the monitors will occur once design values are determined.

Table 55: Lower Rio Grande Valley Area Particulate Matter of 2.5 Micrometers or Less Network Evaluation

Site Name	Sampler Type	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Brownsville	$PM_{2.5}$ FEM	1	4	2**	4	1	12	critical
Isla Blanca State Park Road	$PM_{2.5}$ FEM	1	NA	NA	3	1	5	medium
Eagle Pass ISD	$PM_{2.5}$ FEM	1	NA	NA	3	1	5	medium
Mission	$PM_{2.5}$ FEM	4	3	3	4	2	16	critical
Edinburg East Freddy Gonzalez Drive	$PM_{2.5}$ FRM	4	3	2**	1	2	12	critical
World Trade Bridge	$PM_{2.5}$ FEM	1	NA	NA	4	2	7	medium

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**Data Trend assessed based on available data
NAAQS – National Ambient Air Quality Standards
NA – not applicable
FEM – federal equivalent method
FRM – federal reference method
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less

Particulate Matter of 10 Micrometers or Less

The PM_{10} network in the Lower Rio Grande Valley area fulfills SLAMS requirements based on MSA populations and area concentrations. Figure 52 and Figure 53 show area PM_{10} monitors at sites with a purple section. PM_{10} monitoring is not required or performed in the Brownsville area. Appendix A lists active and recently decommissioned PM_{10} monitors, locations, monitoring objectives, and associated spatial scales.

Lower Rio Grande Valley Area

Network History and Current Status

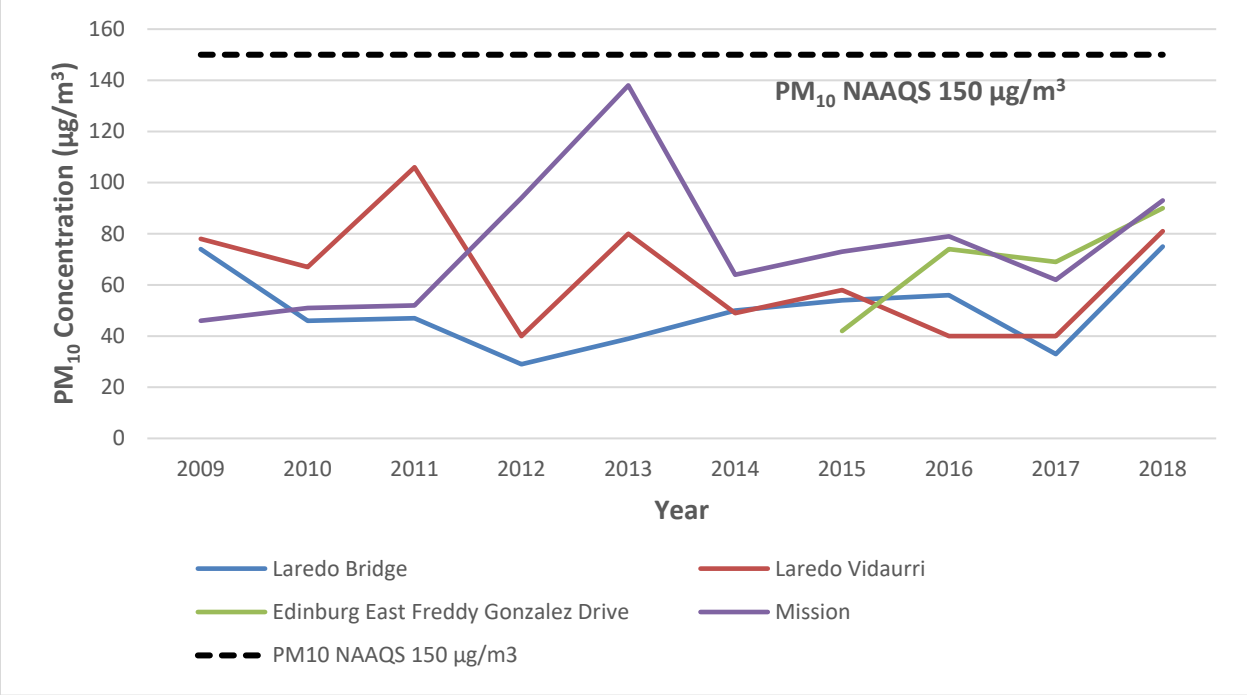
PM_{10} monitoring in the Lower Rio Grande Valley area began in the late 1990s and early 2000s with the deployment of the Laredo Bridge and Mission monitors. Monitoring expanded to include Laredo Vidaurri in 2012 and at Edinburg East Freddy Gonzalez Drive in 2015. The PM_{10} network measures concentrations near populated areas and characterizes regional air quality. Since the 2015 FYA, no Lower Rio Grande Valley area PM_{10} network changes occurred. In the 2020 AMNP, the TCEQ recommended

decommissioning the Edinburg East Freddy Gonzalez Drive PM_{10} monitor due to the data correlating with the Mission monitor. This recommendation is pending EPA concurrence.

As of January 1, 2020, federal standards require a minimum of one to four PM_{10} monitors in the Lower Rio Grande Valley area. Currently, PM_{10} is monitored at four sites to measure population exposure and highest concentrations.

Design Values and Trends

Compliance with the 24-hour PM_{10} standard is based on the number of measured exceedances of the 150 µg/m³ standard averaged over three years. No exceedances at any Lower Rio Grande Valley area sites have been recorded since the last FYA. Figure 58 provides maximum daily PM_{10} concentration trends from 2009 to 2018.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
PM_{10} – particulate matter of 10 micrometers or less

Figure 58: Lower Rio Grande Valley Area Particulate Matter of 10 Micrometers or Less Maximum Concentration Trends, 2009-2018

Network Evaluation

Table 56 shows how each PM_{10} monitor in the Lower Rio Grande Valley area was evaluated using the scoring system described in the Evaluation Methods section. The Mission PM_{10} monitor satisfies SLAMS requirements. Based on the scores and the 2020 AMNP recommendations, no further changes to the Lower Rio Grande Valley area PM_{10} network are recommended at this time.

Table 56: Lower Rio Grande Area Particulate Matter of 10 Micrometers or Less Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Laredo Bridge	1	2	3	4	2	12	medium
Laredo Vidaurri	1	2	3	2	1	9	medium
Mission	4	2	3	3	1	13	critical
Edinburg East Freddy Gonzalez	1	2	3	1	1	8	low

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Lead

Lower Rio Grande Valley Area

Network History and Current Status

The TCEQ Pb network is designed to meet source-oriented SLAMS monitoring requirements to measure maximum Pb concentrations near point sources emitting 0.50 tpy or more of Pb. There is no source-oriented Pb monitoring required in the Lower Rio Grande Valley area. Since the 2015 FYA, two Lower Rio Grande Valley area Pb network changes occurred. The Brownsville and Laredo Vidaurri Pb monitors were decommissioned in December 2017. The monitors were originally deployed in the mid-1990s to evaluate ambient Pb concentrations in populated areas downwind of Mexico industrial sources. Both monitors were exceeding minimum monitoring requirements and were not required for source-oriented monitoring. Appendix A lists the active and recently decommissioned Pb monitors, locations, monitoring objectives, and spatial scale.

Photochemical Assessment Monitoring

The VOC network in the Lower Rio Grande Valley area supports international border federal initiatives. Figure 53 shows the Laredo area VOC monitor at the site with an orange section. Federal photochemical assessments for VOCs are not required or performed in the Brownsville or McAllen areas. Appendix A lists active and recently decommissioned monitors, location, monitoring objective, and associated spatial scale.

Lower Rio Grande Valley Area

Network History and Current Status

Lower Rio Grande Valley VOC monitoring began in the Laredo area in the early 2000s at the Laredo Bridge site to evaluate international transport of VOC pollutants into populated areas. Since the 2015 FYA, no Lower Rio Grande Valley area network changes occurred.

As of January 1, 2020, there are no federal PAMS requirements for this area. The TCEQ exceeds requirements with one VOC monitor.

Design Values and Trends

Design value trends are not applicable to VOC monitoring. VOC monitoring furthers the understanding of international pollution transport for this area.

Network Evaluation

Table 57 shows how the VOC canister monitor in the Lower Rio Grande Valley area was evaluated using the scoring system described in the Evaluation Methods section. Federal funds support the operation of the Laredo Bridge VOC special purpose monitor placed to evaluate international transport of VOC pollutants into populated areas in the Lower Rio Grande Valley area. Based on this information, no changes to the Lower Rio Grande Valley area network are recommended at this time.

Table 57: Lower Rio Grande Valley Area Photochemical Assessment Network Evaluation

Site Name	Sampler Type	Regulatory Value	NAAQS Value Percent	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Laredo Bridge	VOC Canister	1	NA	NA	4	2	7	medium

NAAQS – National Ambient Air Quality Standards
NA – not applicable
VOC – volatile organic compound

North and Northeast Texas Area Evaluation

(Dallas-Fort Worth-Arlington, Longview, Sherman-Denison, Texarkana, and Tyler Areas)

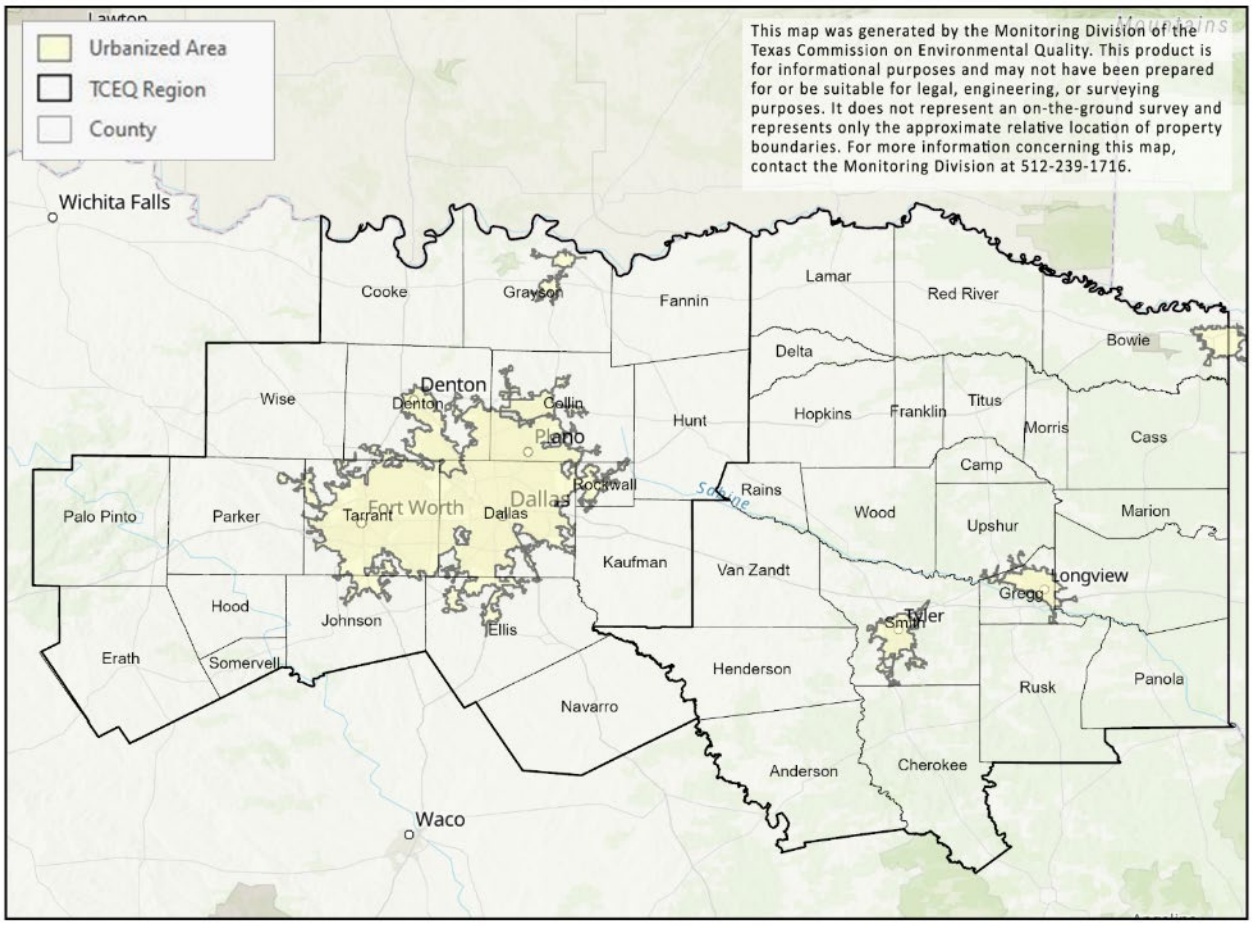


Figure 59: North and Northeast Texas Area Counties and Urban Areas

North and Northeast Texas Area Characteristics and Background

Wind Patterns

Figure 59 illustrates the counties included in the North and Northeast Texas area evaluation. Figure 60 and Figure 61 illustrate typical North and Northeast Texas area annual average wind speed and direction wind roses from local airport meteorological sensors averaged from 2014 to 2018. Figure 60 wind roses were derived from C David Campbell Field-Corsicana Municipal Airport, Dallas Executive Airport and Fort Worth Meacham International Airport. Figure 61 wind roses were derived from East Texas Regional Airport, Mount Pleasant Regional Airport, and Tyler Pounds Regional Airport. Figure 60 wind data indicate the dominant flow is from the south and south-southeast to the north and north-northwest. Figure 61 wind data are variable by area, however dominant winds are also primarily from the south and south-southeast to the north and north-northwest. Winds can originate from the North American continent or in the Caribbean Sea or Atlantic Ocean.

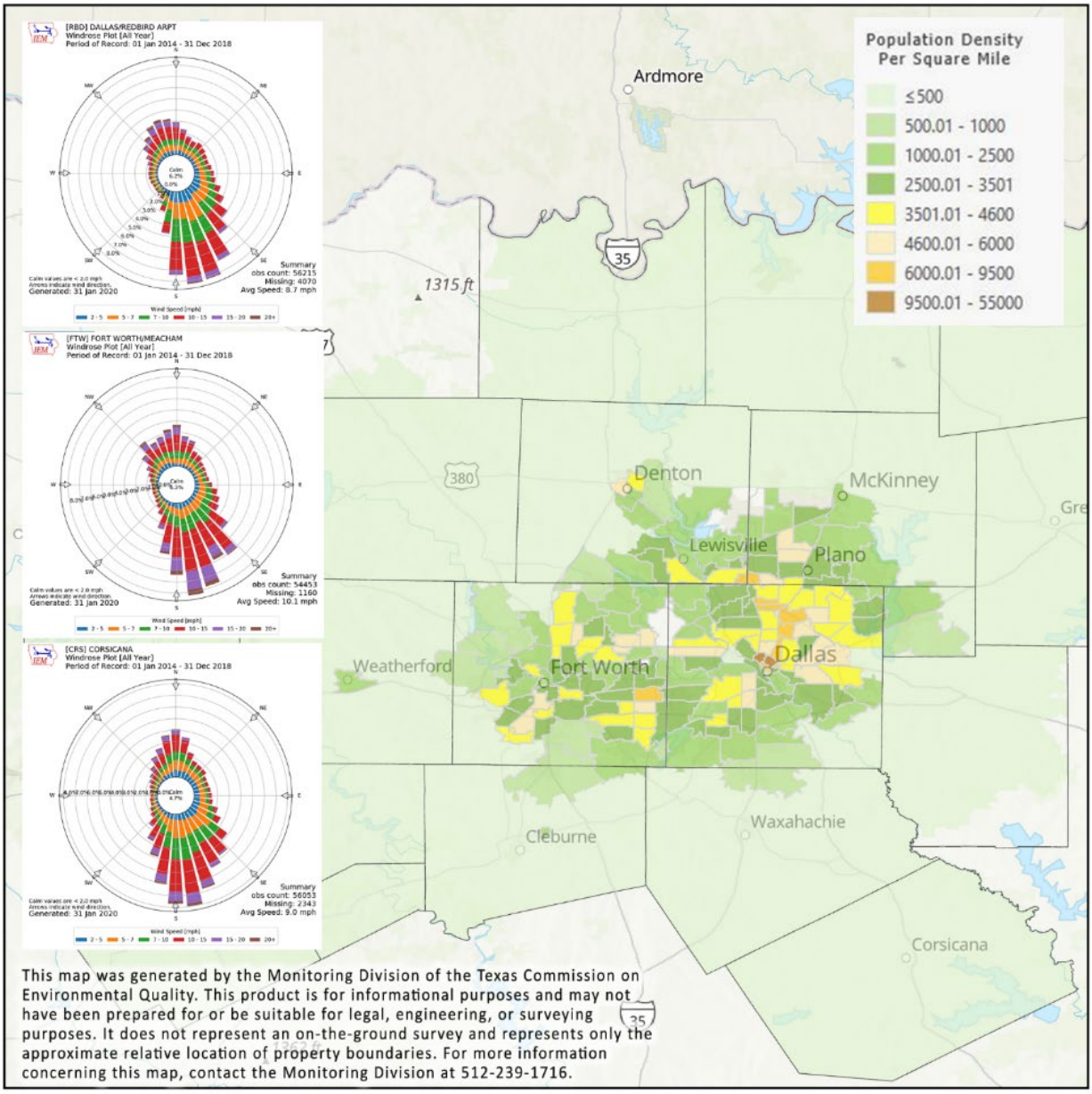


Figure 60: North Texas Area Population Density and Wind Roses

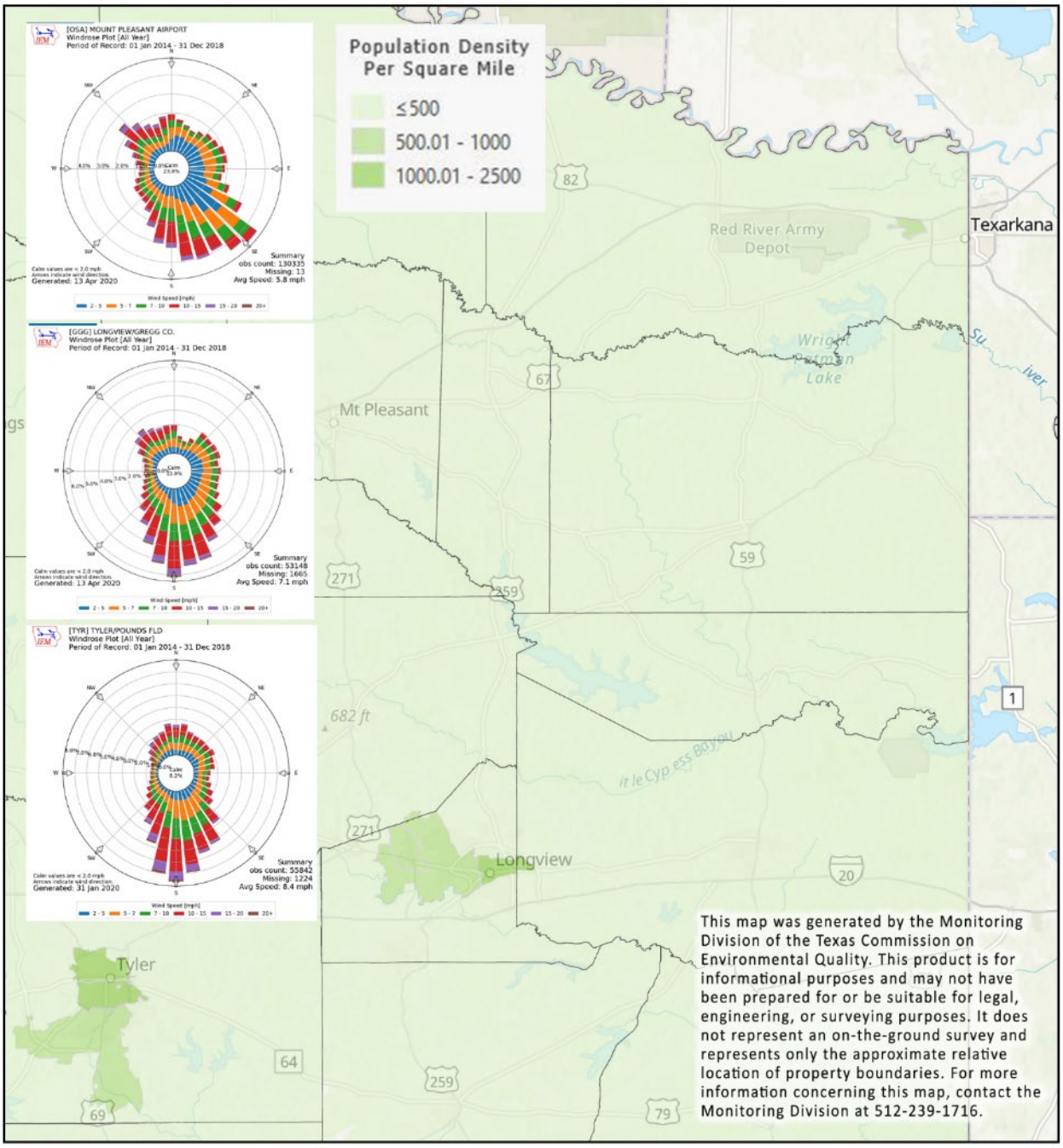


Figure 61: Northeast Texas Area Population Density and Wind Roses

Population and Monitoring Requirements

The North and Northeast Texas area has five major MSAs that include multiple counties. Monitoring is also conducted in three micropolitan statistical areas.

North Texas Area

- The Dallas-Fort Worth-Arlington (DFW) MSA includes Collin, Dallas, Denton, Ellis, Hood, Hunt, Johnson, Kaufman, Parker, Rockwall, Somervell, Tarrant, and Wise Counties
- The Corsicana micropolitan statistical area includes Navarro County

Northeast Texas Area

- The Longview MSA includes Greg, Rusk, and Upshur Counties
- The Sherman-Denison (Sherman) MSA includes Grayson County
- The Texarkana MSA includes Bowie County
- The Tyler MSA includes Smith County
- The Marshall micropolitan statistical area includes Harrison County
- The Mount Pleasant micropolitan statistical area includes Titus County

The Texas Demographics Center projects the combined population of the five North and Northeast Texas MSAs will exceed 8.4 million persons in 2020. The 2025 projection estimates a 9% population increase from 2020 in the North and Northeast Texas area with the largest growth at 10% in the DFW MSA. Figure 60 and Figure 61 illustrate the population densities across the Texas North and Northeast urban areas based on actual 2010 U.S. Census Bureau data. Population density is illustrated by square mile for each area zip code.

DFW MSA minimum monitoring network design requirements dictated by the latest available census population estimates under 40 CFR §58, Appendix D, include the following.

- four O_3 monitors
- two CO monitors
- five NO_2 monitors
- one NO/NO_y monitor
- two SO_2 monitors
- seven $PM_{2.5}$ monitors
- between two and four PM_{10} monitor
- three Pb monitors

The Longview MSA is required to have the following.

- one O_3 monitor
- one SO_2 monitor

The Tyler MSA is required to have the following.

- one O_3 monitor

The Corsicana micropolitan statistical area is required to have the following.

- one SO_2 monitor

The Marshall micropolitan statistical area is required to have the following.

- one SO_2 monitor

The Mount Pleasant micropolitan statistical area is required to have the following.

- one SO_2 monitor

The TCEQ evaluated population projection data illustrated in Table 2 against North and Northeast Texas area minimum monitoring design requirements partially based on MSA population. No North and Northeast Texas MSA monitoring requirements would increase based on the projected population assessment. The TCEQ meets and exceeds monitoring requirements with the monitors illustrated in Figure 62 and Figure 63.

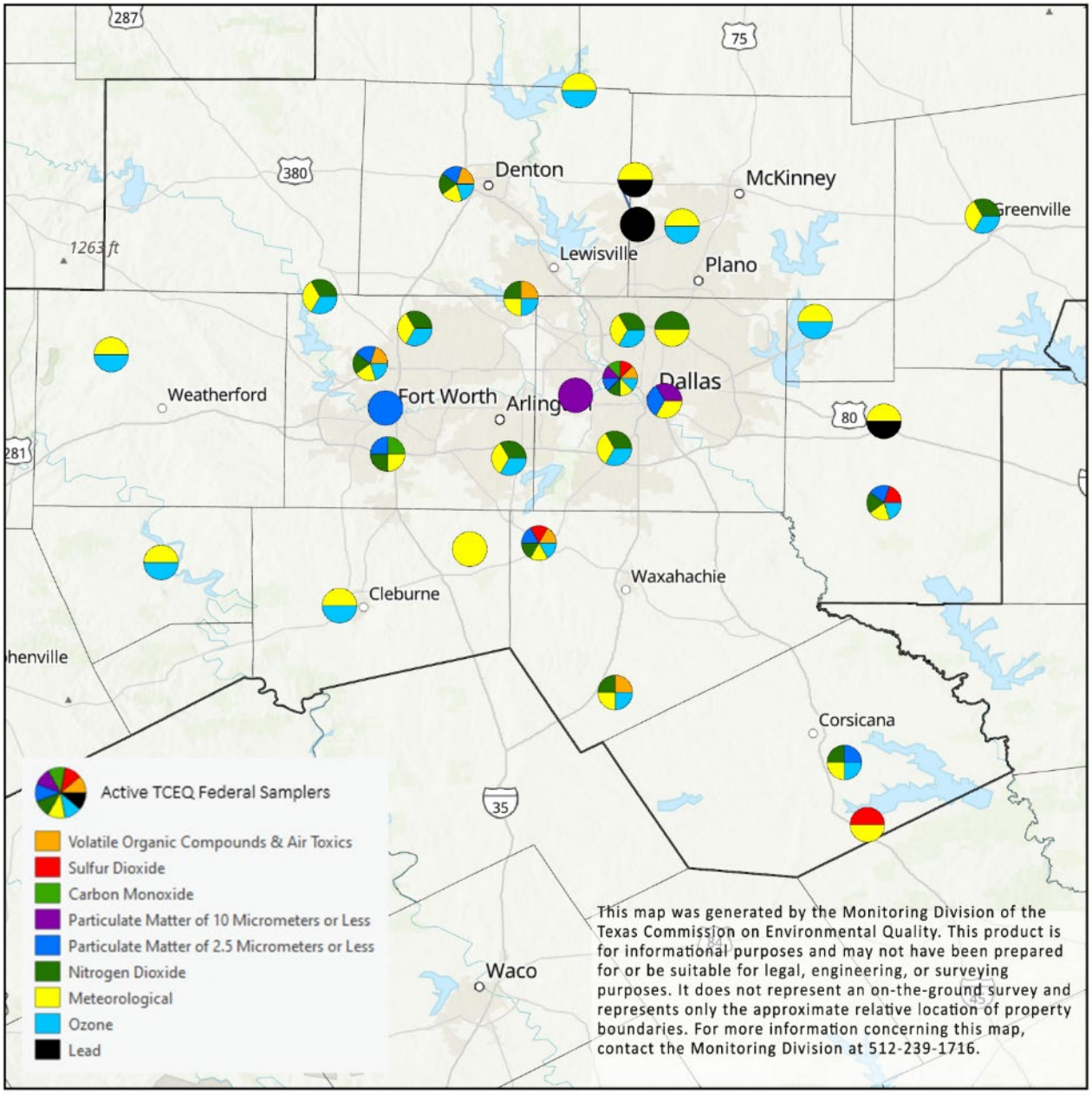


Figure 62: North Texas Area Active Sites and Monitors

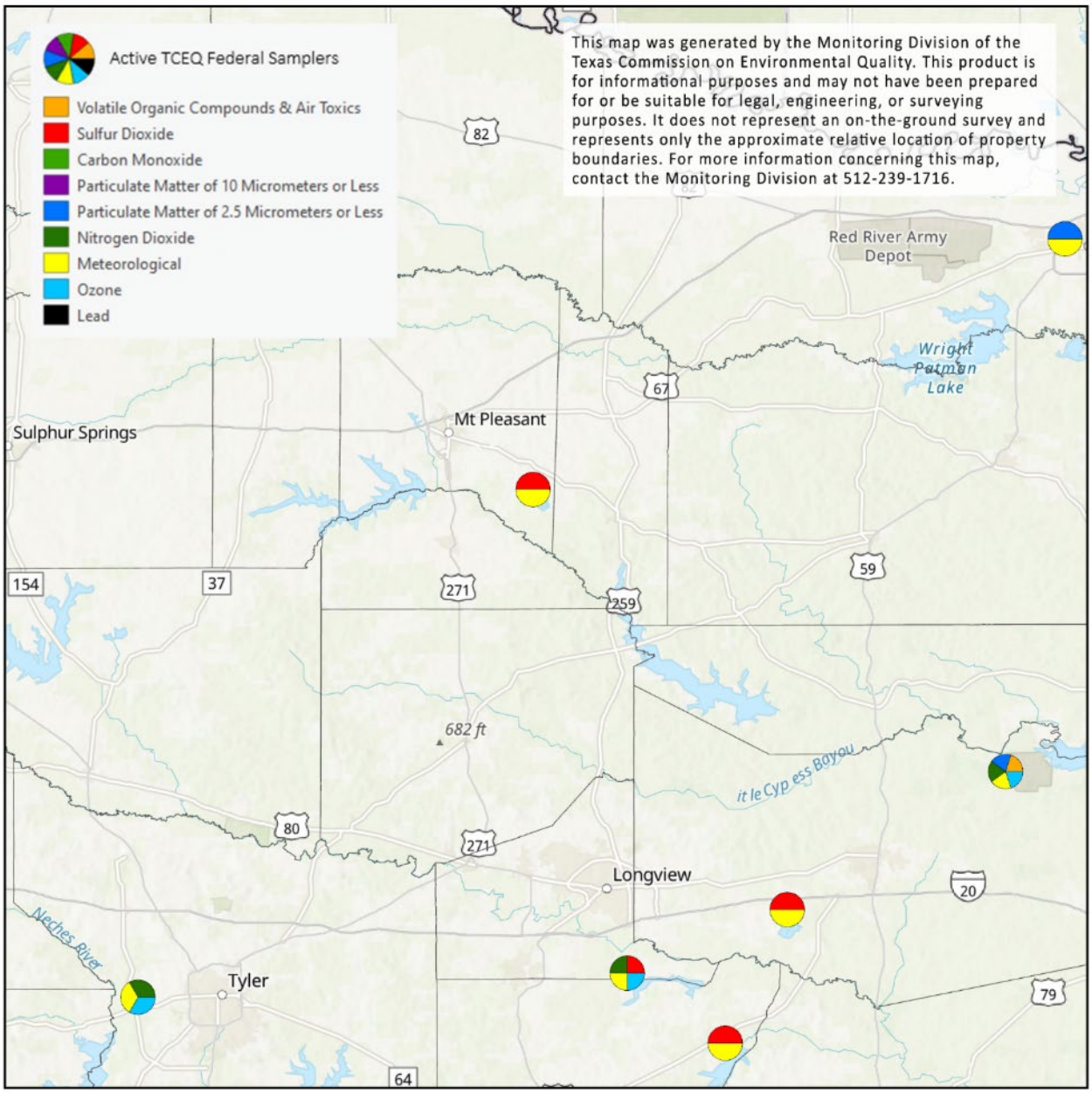


Figure 63: Northeast Texas Active Sites and Monitors

Point Sources and Area-Wide Emissions

Anthropogenic Sources

Data from EI source categories show the following for the North and Northeast Texas area:

- The majority of CO is emitted from on-road mobile sources for the DFW (North Texas) area and point and on-road mobile sources in the Tyler (Northeast Texas) area.

- NO_x emissions are predominately from on-road and non-road mobile sources for the DFW (North Texas) area and point and on-road mobile sources for the Tyler (Northeast Texas) area.
- Area sources account for the majority of VOC, $PM_{2.5}$, and PM_{10} emissions.
- Point sources are the primary contributors of SO_2 emissions.
- Non-road mobile sources contribute the majority of the total Pb emissions in the DFW (North Texas) area, while point sources contribute the majority in the Tyler (Northeast Texas) area.

EI source totals by pollutant by area are listed in Table 58. This information, in conjunction with monitoring objectives and regulatory requirements, is used to identify and prioritize areas of interest.

Table 58: 2017 North and Northeast Texas Area Emissions Inventory in Tons Per Year

Area*	Source	VOC	NO_x	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
R4-DFW	Point	8,575	12,902	12,842	3,553	2,494	6,662	0.85
R4-DFW	Area	113,049	19,806	29,804	375,872	45,982	981	0.00
R4-DFW	On-Road Mobile	23,524	55,745	288,541	4,872	1,949	478	0.00
R4-DFW	Non-Road Mobile	12,692	35,526	171,830	1,957	1,850	692	5.75
R5-Tyler	Point	8,433	38,456	81,210	5,788	3,270	85,460	1.21
R5-Tyler	Area	65,468	15,743	25,192	279,578	32,075	282	0.00
R5-Tyler	On-Road Mobile	5,864	18,044	65,492	1,076	576	78	0.00
R5-Tyler	Non-Road Mobile	4,121	9,799	36,688	699	668	20	0.92

*Appendix D details the counties included for each area.
CO – carbon monoxide
DFW – Dallas Fort Worth
NO_x – oxides of nitrogen
PM – particulate matter
R – TCEQ Region
SO_2 – sulfur dioxide
VOC – volatile organic compounds

Natural Sources

The North and Northeast Texas areas are impacted by seasonal pollutant transport that originates outside of Texas. Accumulated smoke and haze from the eastern United States is typically noted from late spring through summer into early fall. Smoke from agricultural burning in Mexico and Central America arrives in April and May. These smoke events can impact $PM_{2.5}$ concentrations, as well as play a role in elevated O_3 formation. Other transport events that impact $PM_{2.5}$ concentrations include African dust, which typically arrives between June and August, and dust from dust storms in the western Great Plains and northern Mexico, which mainly occur in the spring. These transport events often cause most of the highest daily averages during the year and therefore dominate the annual averages.

Both areas are also affected by large forest fires in East Texas as well as range fires in North Central and West Texas. However, the frequency and duration of these events are small and imported concentrations do not significantly affect the annual averages.

Regional Air Quality

Criteria Pollutants

As of January 1, 2020, the Sherman-Denison, Longview, Tyler, and Texarkana areas are designated as attainment/unclassifiable for all current NAAQS. The DFW area, which includes Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties, is designated as a serious nonattainment area for the 2008 eight-hour O_3 NAAQS of 0.075 ppm. The same DFW area counties, except Rockwall County, are designated as marginal nonattainment for the 2015 eight-hour O_3 NAAQS of 0.070 ppm.

In June 2010, the primary SO_2 NAAQS was revised to a one-hour standard of 75 ppb. Initial designations were made in Round 1 in July 2013 and no areas in Texas were designated at that time. A March 2015 consent decree between the Sierra Club and the EPA set deadlines for the EPA to complete designations for the one-hour SO_2 NAAQS in three additional rounds. Portions of Freestone, Anderson, Rusk, Panola, and Titus Counties were designated nonattainment for the 2010 primary SO_2 standards in Round 2. On August 22, 2019, the EPA proposed to revise the designations for these areas from nonattainment to unclassifiable. All other counties in the north and northeast regions, with the exception of Harrison and Navarro Counties, were designated as attainment/unclassifiable for the 2010 primary SO_2 NAAQS in Rounds 2 and 3 of designations. The EPA will designate Harrison and Navarro Counties, and the remaining undesignated portion of Titus County, in Round 4 by the end of 2020.

Current Nonattainment Designations

2008 Eight-Hour Ozone

On May 21, 2012, the EPA designated a 10-county DFW area (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties) as moderate nonattainment for the 2008 eight-hour O_3 standard with an attainment date of July 20, 2018. Effective September 23, 2019, the EPA reclassified the DFW nonattainment area from moderate to serious. Under the serious classification, the DFW area is required to attain the 2008 eight-hour O_3 standard by the end of 2020 to meet an attainment date of July 20, 2021.

2015 Eight-Hour Ozone

In June 2018, the EPA designated nine counties in the DFW area (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant, and Wise Counties) as marginal nonattainment for the 2015 eight-hour O_3 NAAQS, effective August 3, 2018. Under the marginal classification, the DFW area is required to attain the 2015 eight-hour O_3 NAAQS by the end of 2020 to meet an August 3, 2021, attainment date.

2010 One-Hour Sulfur Dioxide

Effective January 12, 2017, the EPA designated portions of Freestone and Anderson, Rusk and Panola, and Titus Counties as nonattainment for the 2010 one-hour SO_2

NAAQS. On August 22, 2019, the EPA proposed an error correction of the area designations for the 2010 one-hour SO_2 primary NAAQS in Freestone and Anderson Counties, Rusk and Panola Counties, and Titus County to revise the three nonattainment area designations to unclassifiable designations.

Prior Nonattainment Designations

Revoked 1979 One-Hour Ozone

In 1991, the EPA designated a four-county DFW area (Collin, Dallas, Denton, and Tarrant Counties) as moderate nonattainment for the one-hour O_3 standard of 0.124 ppm in accordance with the 1990 FCAA Amendments. In 1996, the EPA reclassified the four-county DFW area from moderate to serious nonattainment. The EPA revoked the one-hour O_3 NAAQS, effective June 15, 2005. The EPA finalized a determination of attainment for the DFW area for the one-hour O_3 NAAQS in October 2008.

On March 27, 2019, the commission adopted a redesignation request and maintenance plan SIP revision that requests that the EPA formally redesignate the DFW area to attainment for the one-hour O_3 NAAQS and provides a maintenance plan that will ensure the area continues to meet the standard through 2032. On April 6, 2020, the EPA published final approval of the SIP revision and determined that the DFW area has met redesignation criteria and is continuing to attain the one-hour O_3 NAAQS. For more information, visit the DFW: O_3 History webpage (https://www.tceq.texas.gov/airquality/sip/dfw/dfw-ozone-history).

Revoked 1997 Eight-Hour Ozone

In 2004, the EPA designated a nine-county DFW area (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties) as a moderate nonattainment area for the 1997 eight-hour O_3 NAAQS of 0.084 ppm. In 2011, the EPA reclassified the area from moderate to serious. The 1997 eight-hour O_3 standard was revoked in April 2015. In September 2015, the EPA published a final determination of attainment for the 1997 eight-hour O_3 NAAQS for the DFW area.

On March 27, 2019, the commission adopted a redesignation request and maintenance plan SIP revision that requests that the EPA formally redesignate the DFW area to attainment for the revoked 1997 eight-hour O_3 NAAQS and provides a maintenance plan that will ensure the area continues to meet the standard through 2032. On April 6, 2020, the EPA published final approval of the SIP revision and determined that the DFW area has met redesignation criteria and is continuing to attain the 1997 eight-hour O_3 NAAQS. For more information, visit the DFW: O_3 History webpage (https://www.tceq.texas.gov/airquality/sip/dfw/dfw-ozone-history).

2008 Lead

On October 15, 2008, the EPA revised the NAAQS for Pb from 1.5 µg/m³ to 0.15 µg/m³. In November 2010, the EPA designated a portion of Collin County surrounding the Exide Technologies Recycling Center in Frisco as nonattainment for the 2008 Pb NAAQS with an attainment date of December 31, 2015. The facility permanently shut down at the end of 2012 and the area demonstrated attainment of the 2008 Pb NAAQS based on 2013 through 2015 monitoring data. On October 19, 2016, the commission adopted a redesignation request and maintenance plan SIP revision that requested that the EPA redesignate the Collin County Pb nonattainment area to attainment for the

2008 Pb standard and provided a maintenance plan to ensure the area remains in attainment of the standard through 2028. On June 29, 2017, the EPA approved the redesignation request and maintenance plan SIP revision and redesignated the Collin County nonattainment area to attainment for the 2008 Pb NAAQS, effective September 17, 2017. For more information, visit the DFW: Pb History webpage (https://www.tceq.texas.gov/airquality/sip/dfw/dfw-lead-history).

North and Northeast Texas Monitoring Network Evaluation

Ozone

The O_3 network in the North and Northeast Texas area fulfills SLAMS requirements based on population and O_3 design values, as well as NCore and PAMS requirements. Figure 62 and Figure 63 show the area active O_3 monitors at sites with a light blue section. O_3 monitoring is not required or performed in the Sherman and Texarkana areas. Appendix A lists active and recently decommissioned O_3 monitors, locations, monitoring objectives, and associated spatial scales.

North Texas Area

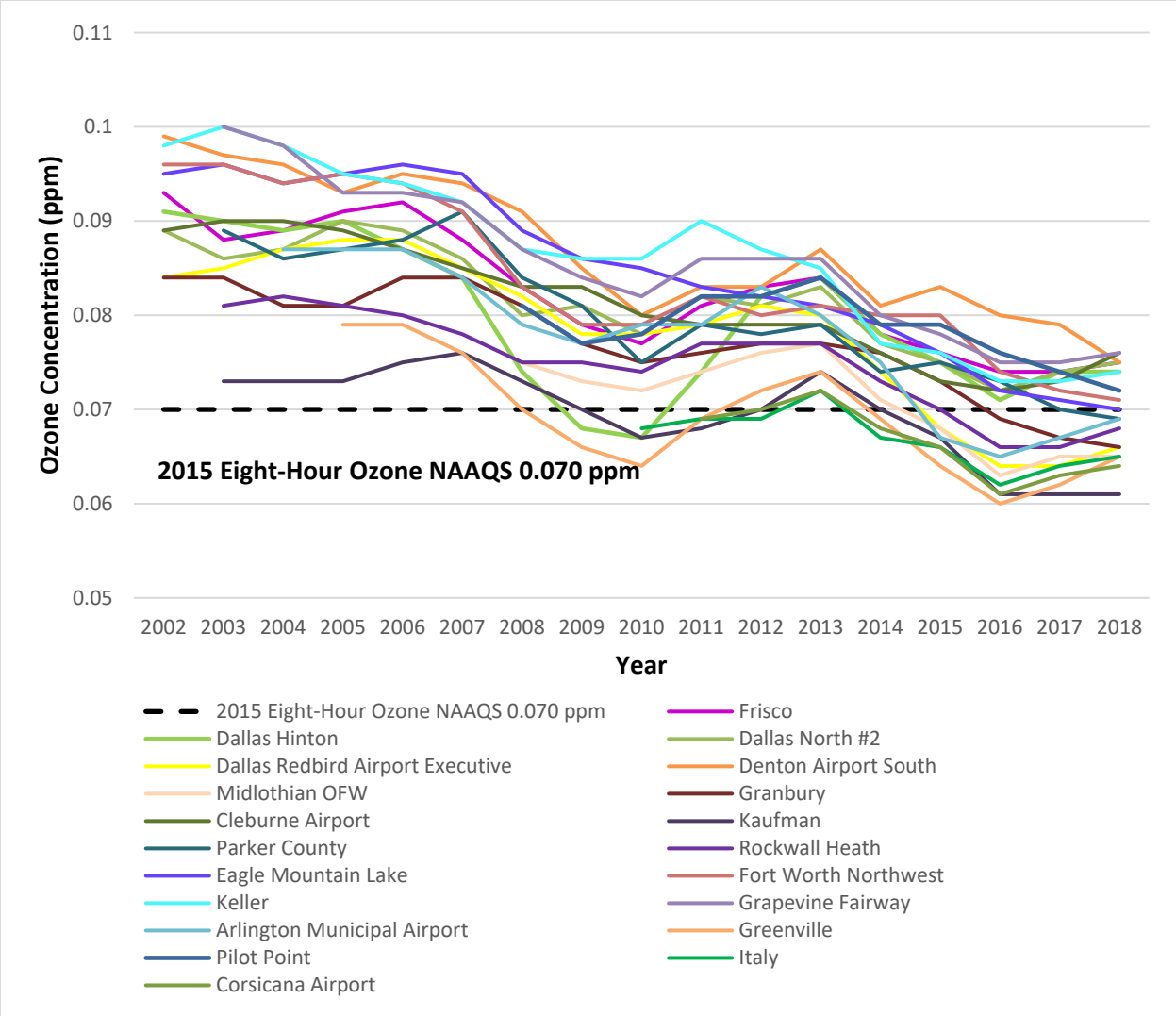
Network History and Current Status

O_3 monitoring in the area began in the 1970s within the urban core with the deployment of the Dallas North O_3 monitor and soon expanded to include additional monitors in the urban core and at suburban locations downwind of the urban core. In the early 2000s, the TCEQ expanded O_3 monitoring outward from the city core to provide information on upwind background concentrations entering the DFW area, regional transport, and O_3 concentrations in populated areas. The Pilot Point and Italy sites were deployed in 2006 and 2007 to evaluate O_3 concentrations upwind and downwind of the DFW area. Since the 2015 FYA, one O_3 network change occurred in the North Texas area. In January 2020, the TCEQ changed the designation of the Corsicana Airport O_3 monitor from state-initiative to a federal SPM supporting upwind and transport information.

As of January 1, 2020, federal standards require a minimum of four area O_3 monitors. The TCEQ exceeds requirements with 19 O_3 monitors in the DFW MSA and one O_3 monitor in the Corsicana micropolitan statistical area. While the number of O_3 monitors exceeds federal requirements, the spatial distribution of the network provides valuable data for evaluating the area.

Design Values and Trends

North Texas area eight-hour O_3 design values continue to decline. Figure 64 shows the North Texas area O_3 design value trends from 2002 through 2018 compared with the 2015 eight-hour O_3 NAAQS of 0.070 ppm.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 64: Eight-Hour Ozone Design Value Trends in the North Texas Area, 2002-2018

Network Evaluation

Table 59 shows how each O_3 monitor in the North Texas area was evaluated using the scoring system described in the Evaluation Methods section. The Dallas Hinton monitor satisfies the requirements for O_3 monitoring at an NCore and at a PAMS site as well as supporting minimum monitoring requirements, while Cleburne Airport, Dallas North #2, and Grapevine Fairway also support minimum monitoring requirements. Denton Airport South, Fort Worth Northwest, Italy, Kaufman, and Keller monitors support the PAMS network. The remaining area O_3 monitors are critical due to current design values and the provided spatial coverage. Based on these scores and the current spatial coverage, no changes to the North Texas area O_3 network are recommended at this time.

Table 59: North Texas Area Ozone Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Arlington Municipal Airport	1	4	1	4	1	11	critical
Cleburne Airport	4	4	1	4	1	14	critical
Corsicana Airport	1	4	1	1	1	8	critical
Dallas Hinton	4	4	2	4	1	15	critical
Dallas North #2	4	4	1	4	1	14	critical
Dallas Redbird Airport Executive	1	4	1	4	1	11	critical
Denton Airport South	1	4	1	4	1	11	critical
Eagle Mountain Lake	1	4	1	4	1	11	critical
Fort Worth Northwest	1	4	1	4	1	11	critical
Frisco	1	4	1	4	1	11	critical
Granbury	1	4	1	4	1	11	critical
Grapevine Fairway	4	4	1	4	1	14	critical
Greenville	1	4	1	4	1	11	critical
Italy	1	4	1	3	1	10	critical
Kaufman	1	4	1	4	1	11	critical
Keller	1	4	1	4	1	11	critical
Midlothian OFW	1	4	1	3	1	10	critical
Parker County	1	4	1	4	1	11	critical
Pilot Point	1	4	1	3	1	10	critical
Rockwall Heath	1	4	1	4	1	11	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
- number
NAAQS – National Ambient Air Quality Standards
OFW – Old Fort Worth Road

Northeast Texas Area

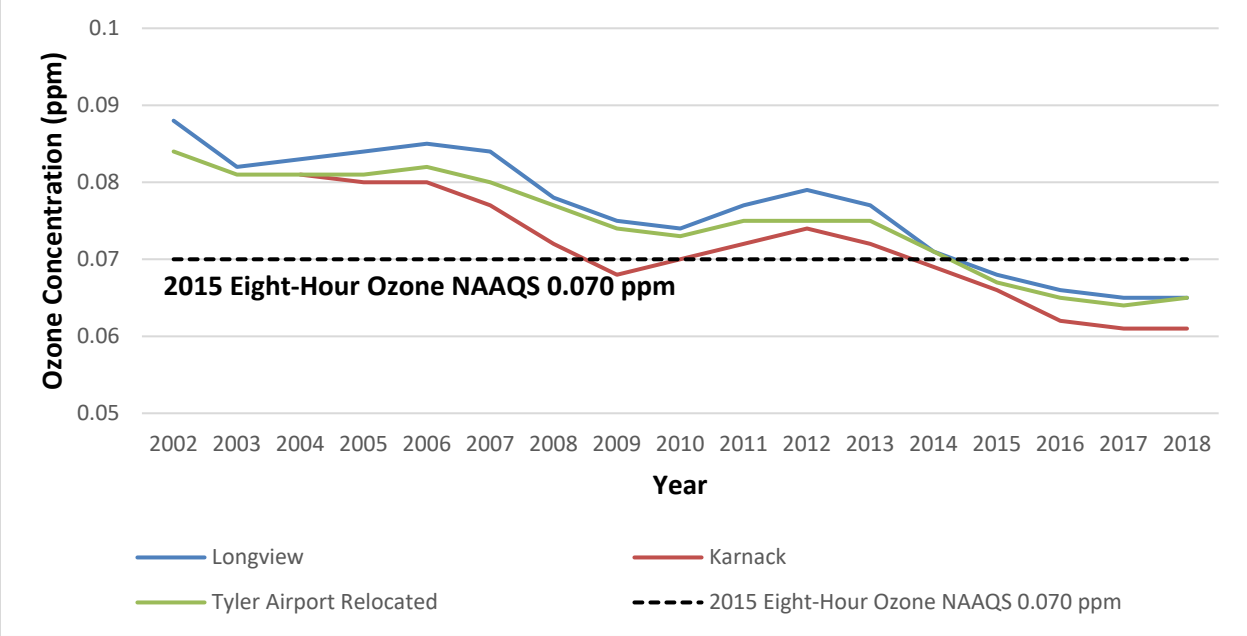
Network History and Current Status

Northeast Texas Area O_3 monitoring began in the 1980s with the deployment of the Longview monitor located to the south of the city and expanded in the 2000s to include monitors at the Tyler Airport Relocated site west of Tyler and the Karnack site east of Marshall on the Texas/Louisiana border. All three monitors provide useful O_3 data representative of general background concentrations in both populated and rural areas. The Karnack site is also used as an upwind monitor for the whole state to assess background and interstate transport. Since the 2015 FYA, the TCEQ has made no changes to the O_3 monitoring network in the Northeast Texas area.

As of January 1, 2020, federal standards require two monitors in the Northeast Texas area for the Tyler and Longview MSAs, based on population and design value. The TCEQ exceeds requirements with three monitors. While the number of O_3 monitors exceeds area federal requirements, the spatial distribution of the network provides valuable data for evaluating background concentrations and the impact of regional transport.

Design Values and Trends

Northeast Texas area eight-hour O_3 design values have declined with design values below the 2015 eight-hour O_3 NAAQS of 0.070 ppm since approximately 2014. Figure 65 shows the O_3 design value trends in the Northeast Texas area from 2002 through 2018.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 65: Eight-Hour Ozone Design Value Trends in the Northeast Texas Area, 2002-2018

Network Evaluation

Table 60 shows how each Northeast Texas area O_3 monitor was evaluated using the scoring system described in the Evaluation Methods section. O_3 monitors at both the Tyler Airport Relocated and Longview sites fulfill minimum federal requirements based on population and design values. The remaining Karnack O_3 monitor is critical due to current design values and provides valuable information related to intrastate transport and background O_3 concentrations for the state. The monitor locations and spatial coverage, the different monitoring objectives, and historical O_3 trends data make each monitor valuable. Based on these scores, no changes to the Northeast Texas area O_3 network are recommended at this time.

Table 60: Northeast Texas Area Ozone Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Longview	4	4	1	4	1	14	critical
Karnack	1	4	1	4	1	11	critical
Tyler Airport Relocated	4	4	1	4	1	14	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS – National Ambient Air Quality Standards

Carbon Monoxide

The CO network in the North Texas area includes ambient and high-sensitivity CO monitors that fulfill NCore and near-road requirements. The PAMS CO monitoring requirement was removed in 2015. CO monitoring is not required or performed in Northeast Texas. Figure 62 shows the area active CO monitors at sites with a light green section. Appendix A lists active and recently decommissioned CO monitors, locations, monitoring objectives, and associated spatial scales.

North Texas Area

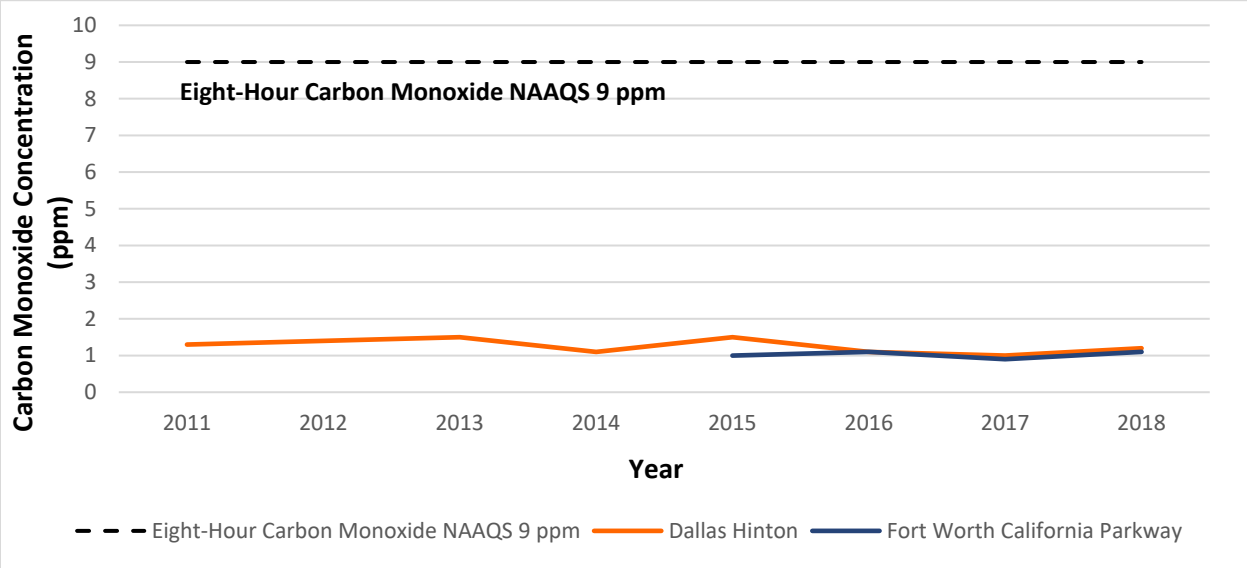
Network History and Current Status

North Texas area CO monitoring began in 1995 with the deployment of the Dallas Hinton monitor to measure CO concentrations in an area of high population density. In 2010, Dallas Hinton was selected as an NCore site to meet new federal monitoring requirements and the CO monitor was replaced with a high sensitivity CO monitor in 2011. A CO monitor was deployed at the Fort Worth California Parkway North site in March 2015 to fulfill the near-road CO monitoring requirement. Since the 2015 FYA, no North Texas area CO network changes have occurred.

As of January 1, 2020, federal standards require a minimum of two area CO monitors to fulfill NCore and near-road requirements. The TCEQ meets these requirements with two area monitors.

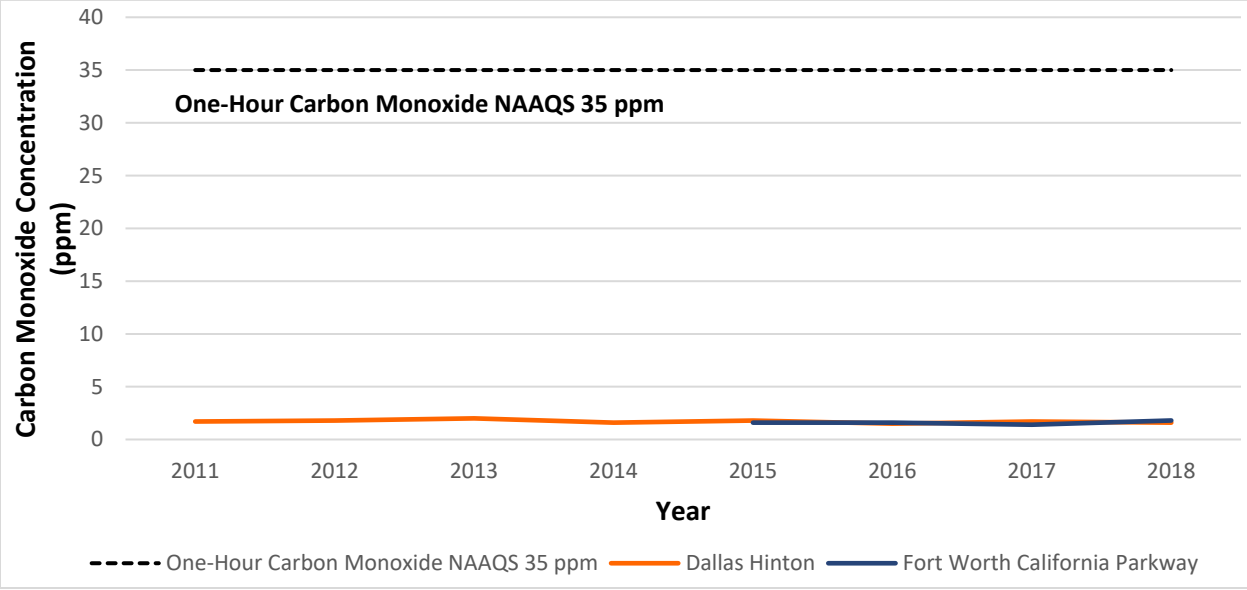
Design Values and Trends

North Texas area CO design values remain below 13% of the eight-hour NAAQS of 9 ppm and below 5% of the one-hour NAAQS of 35 ppm, as shown in Figure 66 and Figure 67.



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 66: Eight-Hour Carbon Monoxide Design Value Trends in the North Texas Area, 2011-2018



NAAQS – National Ambient Air Quality Standard
ppm – part per million

Figure 67: One-Hour Carbon Monoxide Design Value Trends in the North Texas Area, 2011-2018

Network Evaluation

Table 61 shows how each CO monitor in the North Texas area was evaluated using the scoring system described in the Evaluation Methods section. The Dallas Hinton monitor satisfies the requirement for monitoring CO at an NCore site while the Fort Worth California Parkway monitor satisfies the DFW area near-road requirement. No changes in the North Texas area CO network are recommended at this time.

Table 61: North Texas Area Carbon Monoxide Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value	Total Monitor Value	Assessment Value
Dallas Hinton**	4	1	2	3	1	11	critical
Fort Worth California Parkway North	4	1	2	1	3	11	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic high assessment value.
** - high-sensitivity CO monitor
NAAQS – National Ambient Air Quality Standards

Oxides of Nitrogen

The NO_x network in the North and Northeast Texas area includes NO, NO_x, NO_2, and NO_y monitoring and is designed to fulfill area-wide, RA-40, near-road, PAMS, and NCore monitoring requirements. Figure 62 and Figure 63 show the area active NO_x, NO_2, and NO/NO_y monitors at sites with a dark green section. Appendix A lists active and recently decommissioned NO_x, NO_2, and NO/NO_y monitors, locations, monitoring objectives, and associated spatial scales.

North and Northeast Texas Area

Network History and Current Status

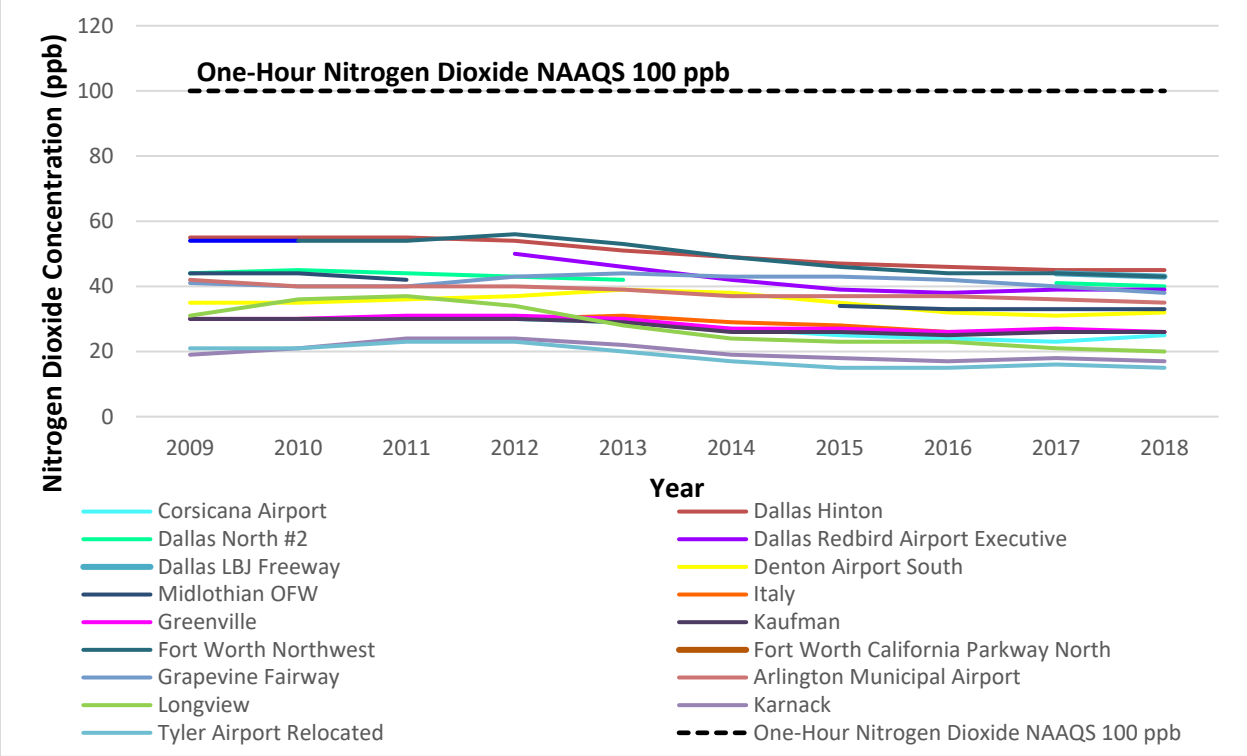
While NO_x monitoring was conducted in the area prior to 1990, significant expansion of the NO_2 monitoring network occurred in the late 1990s and early 2000s in response to new federal PAMS requirements and the need to improve the agency's understanding of O_3 formation and O_3 precursor transport in the North and Northeast Texas areas. Since the last FYA, three changes occurred. In January 2020, the TCEQ changed the designation of the Corsicana Airport, Eagle Mountain Lake and Keller NO_x monitors from state initiative to federal SPM or PAMS supporting upwind and transport information. Corsicana Airport NO_x data have historically been submitted to the EPA and have data trends; as such, this NO_x monitor will be assessed in this FYA. The Eagle Mountain Lake and Keller NO_x monitors will be assessed in the next FYA.

As of January 1, 2020, federal standards require a minimum of five NO_X or NO_2 (direct) monitors and one NO_y monitor to satisfy area-wide, RA-40, near-road, PAMS, and NCore monitoring requirements in North Texas. There are no federal requirements for NO_x monitoring in Northeast Texas. The TCEQ exceeds requirements with 21 total NO_X, NO_2 (direct), and NO_y monitors, with 18 in North Texas and three in Northeast Texas. Monitoring objectives related to these federal requirements include collecting ambient

data in populated areas, measuring maximum O_3 precursor emissions impacts, characterizing upwind and background concentrations, and characterizing downwind transport of O_3 precursors.

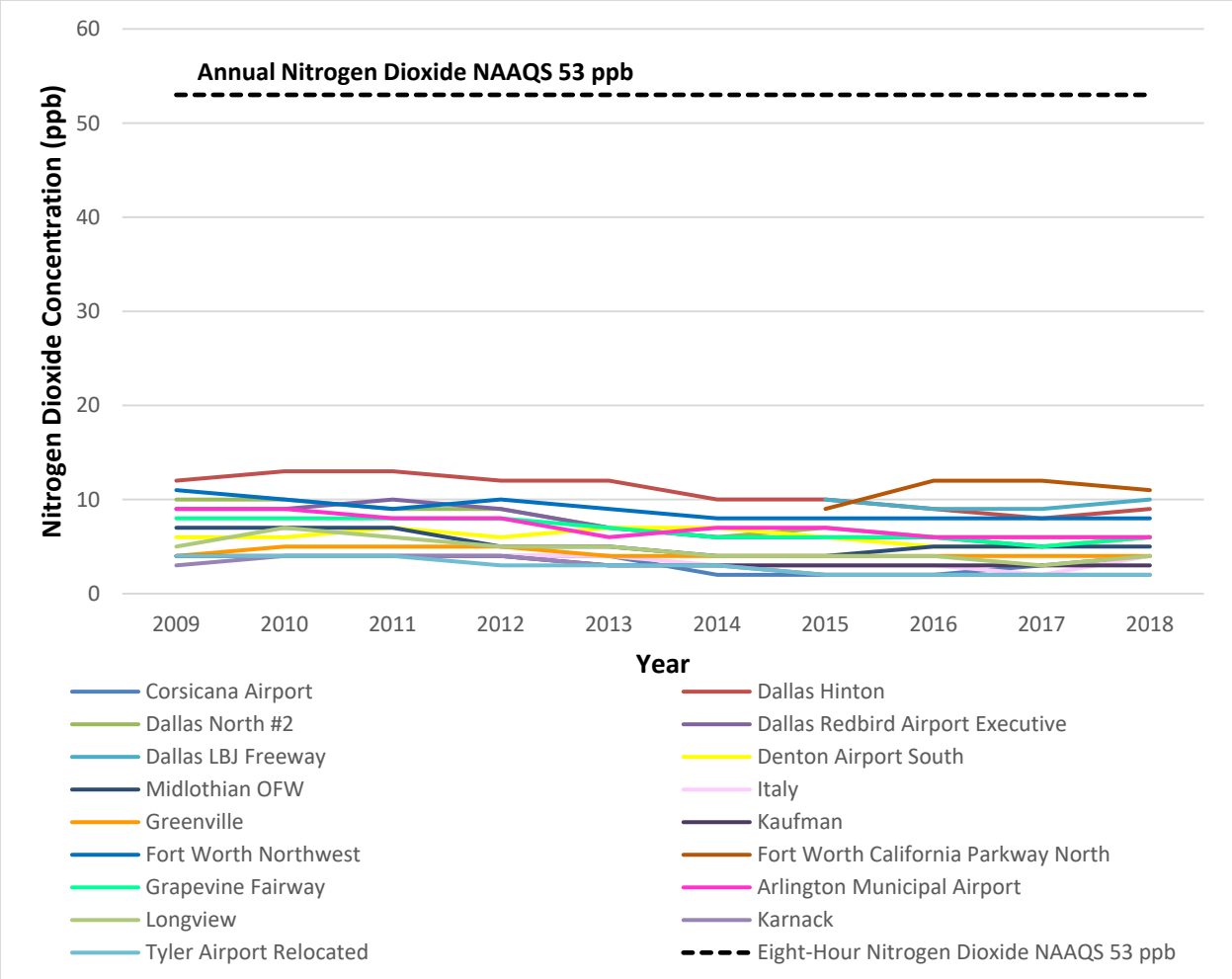
Design Values and Trends

The North and Northeast Texas area one-hour NO_2 design values continue to decline and annual NO_2 concentrations have been stable over the past ten years. All North and Northeast Texas area monitors remain well below the one-hour and annual NO_2 NAAQS. Data loss affected one-hour NO_2 design values at Dallas North #2 (2014-2016), Dallas Redbird Executive Airport (2009-2011), and Midlothian OFW (2012-2014). Figure 68 and Figure 69 show the design value trends in the North and Northeast Texas area from 2009 to 2018.



NAAQS - National Ambient Air Quality Standards
ppb – parts per billion

Figure 68: North and Northeast Texas Area One-Hour Nitrogen Dioxide Design Value Trends, 2009–2018



NAAQS - National Ambient Air Quality Standards
ppb – parts per billion

Figure 69: North and Northeast Area Annual Nitrogen Dioxide Design Value Trends, 2009–2018

Network Evaluation

Table 62 shows how each NO_x, NO_2, or NO_y monitor in the North and Northeast Texas area was evaluated using the scoring system described in the Evaluation Methods section. The Dallas Hinton NO_2 (direct) monitor fulfills the PAMS and area-wide requirements while the NO/NO_y monitor fulfills NCore and PAMS requirements. The Arlington Municipal Airport NO_x monitor fulfills the RA-40 requirement. The Dallas LBJ Freeway and Fort Worth California Parkway North monitors fulfill near-road requirements. The remaining area NO_x and NO_y monitors assist in evaluating the effectiveness of area NO_x control strategies and provide O_3 precursor data. Based on these scores and the data usage, no changes to the North and Northeast Texas area NO_x network are recommended at this time. Monitors with low Assessment Value may be considered for decommission in the 2021 AMNP.

Table 62: North and Northeast Area Oxides of Nitrogen Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historic Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Arlington Municipal Airport	4	1	1	4	3	13	critical
Corsicana Airport	1	1	1	3	2	8	low
Dallas Hinton**	4	1	1	1	3	10	critical
Dallas Hinton***	4	NA	NA	2	2	8	critical
Dallas LBJ Freeway	4	1	1	2	3	11	critical
Dallas North #2	1	1	1	4	2	9	medium
Dallas Redbird Airport Executive	1	1	1	4	2	9	medium
Denton Airport South	1	1	1	4	2	9	medium
Denton Airport South***	1	NA	NA	3	2	6	medium
Fort Worth California Parkway North	4	1	2	1	3	11	critical
Fort Worth Northwest	1	1	1	1	2	6	low
Grapevine Fairway	1	1	1	4	2	9	medium
Greenville	1	1	1	4	2	9	medium
Italy	1	1	1	3	2	8	low
Karnack	1	1	1	4	2	9	medium
Kaufman	1	1	1	4	2	9	medium
Longview	1	1	1	4	2	9	medium
Midlothian OFW	1	1	1	4	2	9	medium
Tyler Airport Relocated	1	1	1	4	2	9	medium

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NA – Not applicable
**NO_2 (direct) monitor
***NO_y – total reactive nitrogen compounds
NO_y monitors provide nitrogen oxide data
NAAQS – National Ambient Air Quality Standards

Sulfur Dioxide

The SO_2 network in the North and Northeast Texas area fulfill NCore, PWEI, and 2015 Data Requirements Rule requirements. Figure 62 and Figure 63 show the area SO_2 monitors at sites with a red section. Appendix A lists active and recently decommissioned SO_2 monitors, locations, monitoring objectives, and associated spatial scales.

North Texas Area

Network History and Current Status

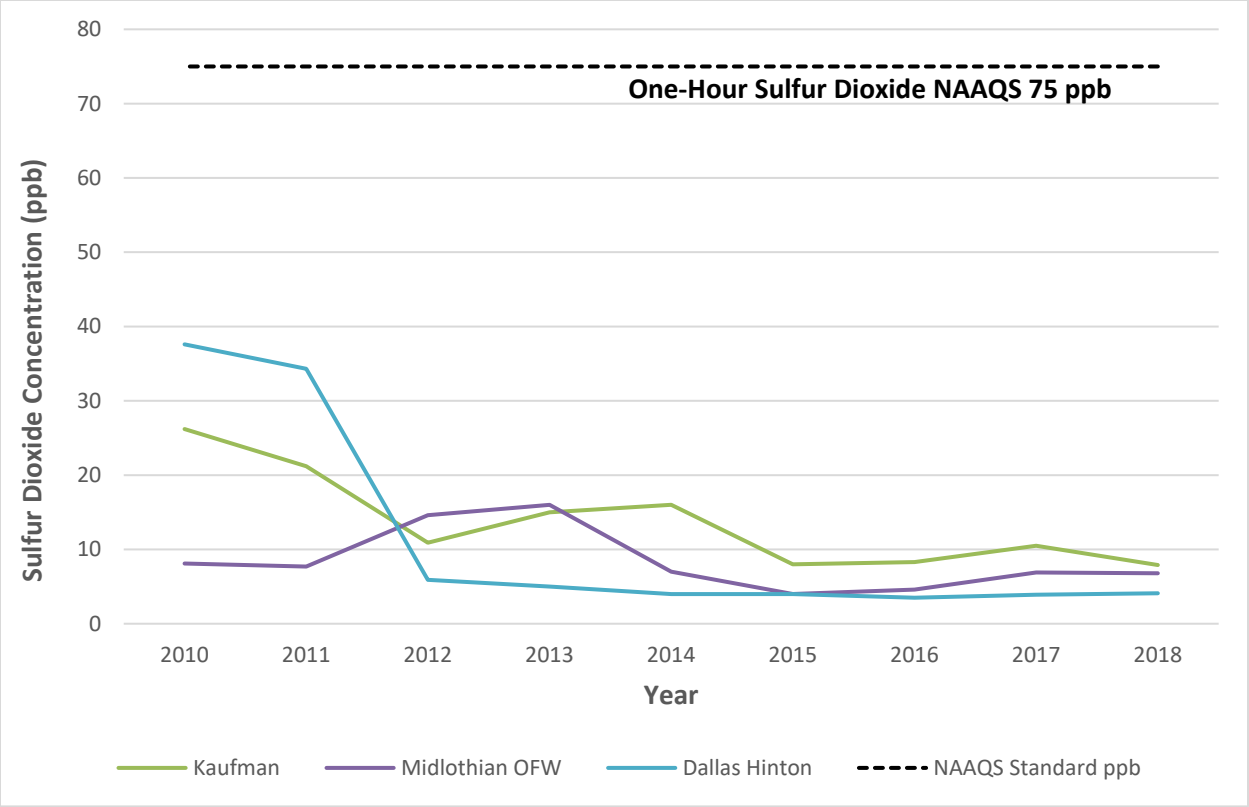
North Texas area SO_2 monitoring began in the mid-1990s with the deployment of SO_2 monitors at Dallas Hinton, located just to the north of downtown Dallas, to provide data in a highly populated area, and at Midlothian Old Fort Worth (OFW) to monitor SO_2 emissions impacts from area cement kilns and to monitor the transport of SO_2 concentrations and associated O_3 precursor contributions from upwind power plants in East Texas into the DFW area. In the early 2000s, SO_2 monitoring at the Kaufman site was established to monitor transport.

Since the last FYA, two North Texas area SO_2 network changes occurred. The Italy SO_2 monitor was decommissioned in December 2017. This monitor was not federally required and maintained historic design values trending downward from 30% to 10% of the 2010 one-hour SO_2 NAAQS from 2010 to 2016. A new source-oriented SO_2 monitoring site was added at Richland Southeast 1220 Road in November 2016. Data from this monitor for calendar years 2017, 2018, and 2019 will be used to determine compliance with the 2010 one-hour SO_2 NAAQS. In the 2020 AMNP, the TCEQ recommended to change Corsicana Airport SO_2 monitor from state initiative to federal SPM. This recommendation is pending EPA concurrence.

As of January 1, 2020, federal standards require a minimum of three area SO_2 monitors related to NCore, PWEI, and the DRR. The TCEQ exceeds requirements with four area SO_2 monitors, three in the DFW MSA and one in the Corsicana micropolitan statistical area.

Design Values and Trends

North Texas area SO_2 design values have continued to decline since 2000 and remain less than 13% of the 2010 one-hour SO_2 NAAQS of 75 ppb. Figure 70 shows the SO_2 design value trends in the DFW area from 2010 through 2018. The Richland Southeast 1220 Road SO_2 monitor completed three-years of data required for design value calculation in 2019. These data are pending EPA review and final publication. This monitor will be assessed for the NAAQS Value and Data Trend metrics during the next FYA. Table 63 shows the annual one-hour SO_2 99th percentile concentrations for this site.



NAAQS – National Ambient Air Quality Standard
ppb – parts per billion

Figure 70: North Texas Area One-Hour Sulfur Dioxide Design Value Trends, 2010-2018

Table 63: North Texas Area Source-Oriented Sulfur Dioxide 99th Percentile Concentration Trends

Site Name	2016	2017	2018	2019
Richland Southeast 1220 Road	60*	104	141	251

*Values for a partial year, due to a new monitor, do not meet completeness criteria
Results provided in parts per billion

Network Evaluation

Table 64 shows how each SO_2 monitor in the North Texas area was evaluated using the scoring system described in the Evaluation Methods section. The Dallas Hinton high-sensitivity SO_2 monitor satisfies the NCore requirement and is considered of critical value while the Kaufman site satisfies the PWEI area requirements. The DRR source-oriented monitor at Richland Southeast 1220 Road is required to meet SO_2 DRR designations. Based on these scores, no changes to the North Texas area SO_2 network are recommended at this time.

Table 64: North Texas Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Dallas Hinton**	4	1	1	4	2	12	critical
Kaufman	4	1	1	4	2	12	critical
Midlothian OFW	1	1	1	4	2	9	medium
Richland Southeast 1220 Road	4	NA	NA	1	4	9	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**high sensitivity SO_2 monitor
NA – Not applicable
NAAQS – National Ambient Air Quality Standard

Northeast Texas Area

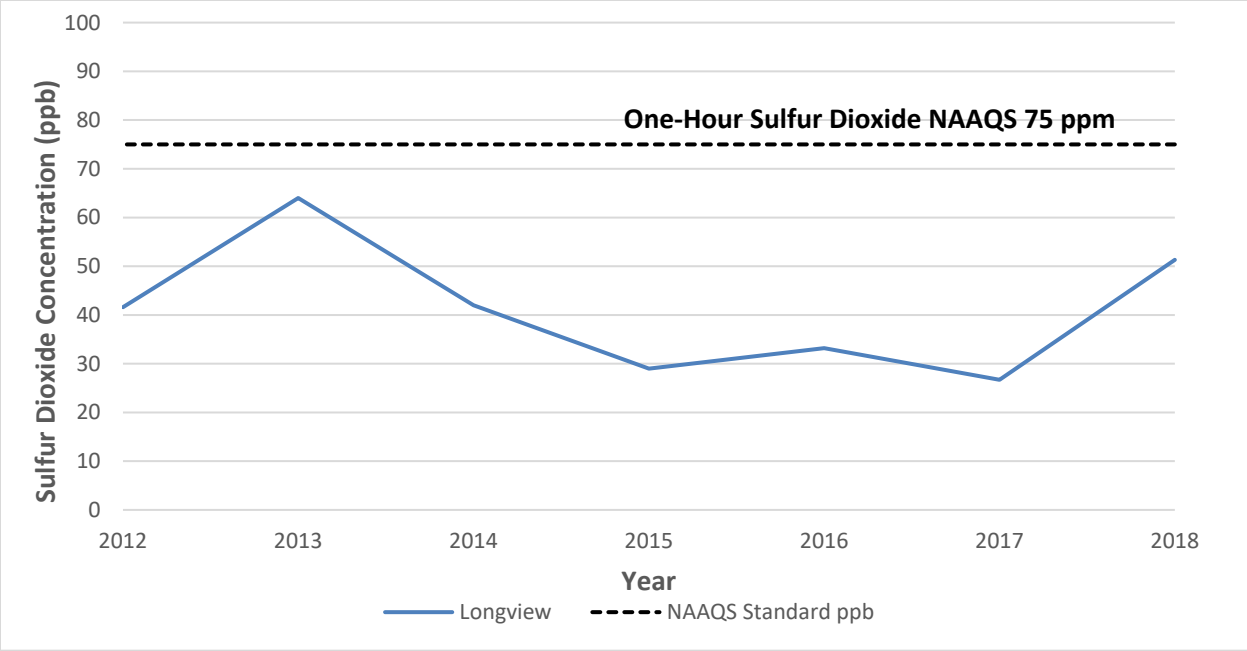
Network History and Current Status

Northeast Texas area SO_2 monitoring began in the late 1990s with the Longview SO_2 monitor located to measure background SO_2 concentrations coming into the Longview area. Since the 2015 FYA, three Northeast Texas area SO_2 network changes occurred. New source oriented SO_2 monitoring sites were added at Cookville RM 4855 and Hallsville Red Oak Road in December 2016. Data from these monitors for calendar years 2017, 2018, and 2019 will be used to determine compliance with the 2010 one-hour SO_2 NAAQS. The Tatum CR 2181d Martin Creek Lake SO_2 monitoring site was added in November 2017 to characterize air quality in the portion of Rusk County designated nonattainment.

As of January 1, 2020, federal standards required a minimum of three Northeast Texas area SO_2 monitors to fulfill DRR and PWEI requirements. The TCEQ exceeds these requirements in the Northeast Texas area with four SO_2 monitors.

Design Values and Trends

Northeast Texas area SO_2 design values for the Longview site decreased from 2013 to 2017, but show an increase in 2018; however, remain less than the 2010 one-hour SO_2 NAAQS of 75 ppb. Figure 71 shows the SO_2 design value trends in the Northeast Texas area from 2012 to 2018. The Cookville RM 4855 and Hallsville Red Oak Road SO_2 monitors completed three-years of data required for design value calculation in 2019. These data are pending EPA review and final publication. The Tatum CR 2181d Martin Creek Lake SO_2 monitor will complete three-years of data required for design value calculation in 2020. These monitors will be assessed for the NAAQS Value and Data Trend metrics during the next FYA. Table 65 shows the annual one-hour SO_2 99^{th} percentile concentrations for these three sites.



NAAQS – National Ambient Air Quality Standard
ppb – parts per billion

Figure 71: Northeast Texas Area One-Hour Sulfur Dioxide Design Value Trends, 2012-2018

Table 65: Northeast Texas Area Source-Oriented Sulfur Dioxide 99th Percentile Concentration Trends

Site Name	2016	2017	2018	2019
Cookville RM 4855	10*	33	20	31
Hallsville Red Oak Road	47*	33	45	54
Tatum CR 2181d Martin Creek Lake	NA	45*	109	115

*Values for a partial year, due to a new monitor, do not meet completeness criteria
Concentration provided in parts per billion
NA – Not applicable

Network Evaluation

Table 66 shows how each SO_2 monitor in the Northeast Texas area was evaluated using the scoring system described in the Evaluation Methods section. The Longview monitor fulfills the PWEI area requirement in the Longview MSA and is considered of critical value. The DRR source-oriented monitors at Cookville RM 4855 and Hallsville Red Oak Road are required to meet SO_2 DRR designations. The remaining SO_2 monitor at Tatum CR 2181d Martin Creek Lake supports air characterization in a nonattainment area. No changes to the Northeast Texas area SO_2 network are recommended at this time.

Table 66: Northeast Texas Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Cookville FM 4855	4	NA	NA	1	4	9	critical
Hallsville Red Oak Road	4	NA	NA	1	4	9	critical
Longview	4	2	3	4	2	15	critical
Tatum CR 2181d Martin Creek Lake	1	NA	NA	1	4	6	medium

*Regulatory Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NA – Not applicable
NAAQS – National Ambient Air Quality Standard
SO_2 – sulfur dioxide

Particulate Matter of 2.5 Micrometers or Less

The $PM_{2.5}$ network in the North and Northeast Texas area fulfills SLAMS, NCore, and near-road requirements using a combination of non-continuous FRM, continuous FEM, and non-NAAQS comparable monitors. Non-NAAQS comparable data were not evaluated for trends against NAAQS criteria in this FYA. Figure 62 and Figure 63 show the area $PM_{2.5}$ monitors at sites with a dark blue section and the $PM_{2.5}$ speciation monitors with an orange section (as air toxics). Appendix A lists active and recently decommissioned $PM_{2.5}$ monitors, locations, monitoring objectives, and associated spatial scales.

North Texas Area

Network History and Current Status

The North Texas area $PM_{2.5}$ monitoring began in the late 1990s and early 2000s with the deployment of Dallas Hinton, Denton Airport South, Convention Center, and Fort Worth Northwest monitors. Through the 2000s the $PM_{2.5}$ network expanded with a variety of $PM_{2.5}$ samplers located at sites distributed on a northwest-southeast line from Denton to southeast Corsicana with most monitors disbursed throughout the Dallas, Fort Worth, and Arlington urban cores. Near-road $PM_{2.5}$ monitoring began at Fort Worth California Parkway in 2015. The monitoring objectives include evaluating regional transport, $PM_{2.5}$ background levels, and ambient $PM_{2.5}$ concentrations in populated areas.

Since the 2015 FYA, several changes occurred. The non-NAAQS comparable monitors at Italy and Arlington Municipal Airport were decommissioned in December 2016 and December 2018, respectively, due to low design values and comparable spatial coverage from nearby monitors. $PM_{2.5}$ FRM monitors were upgraded to FEM continuous monitors at Fort Worth California Parkway North and Fort Worth Northwest and a non-NAAQS comparable monitor was upgraded to a $PM_{2.5}$ FEM continuous monitor at

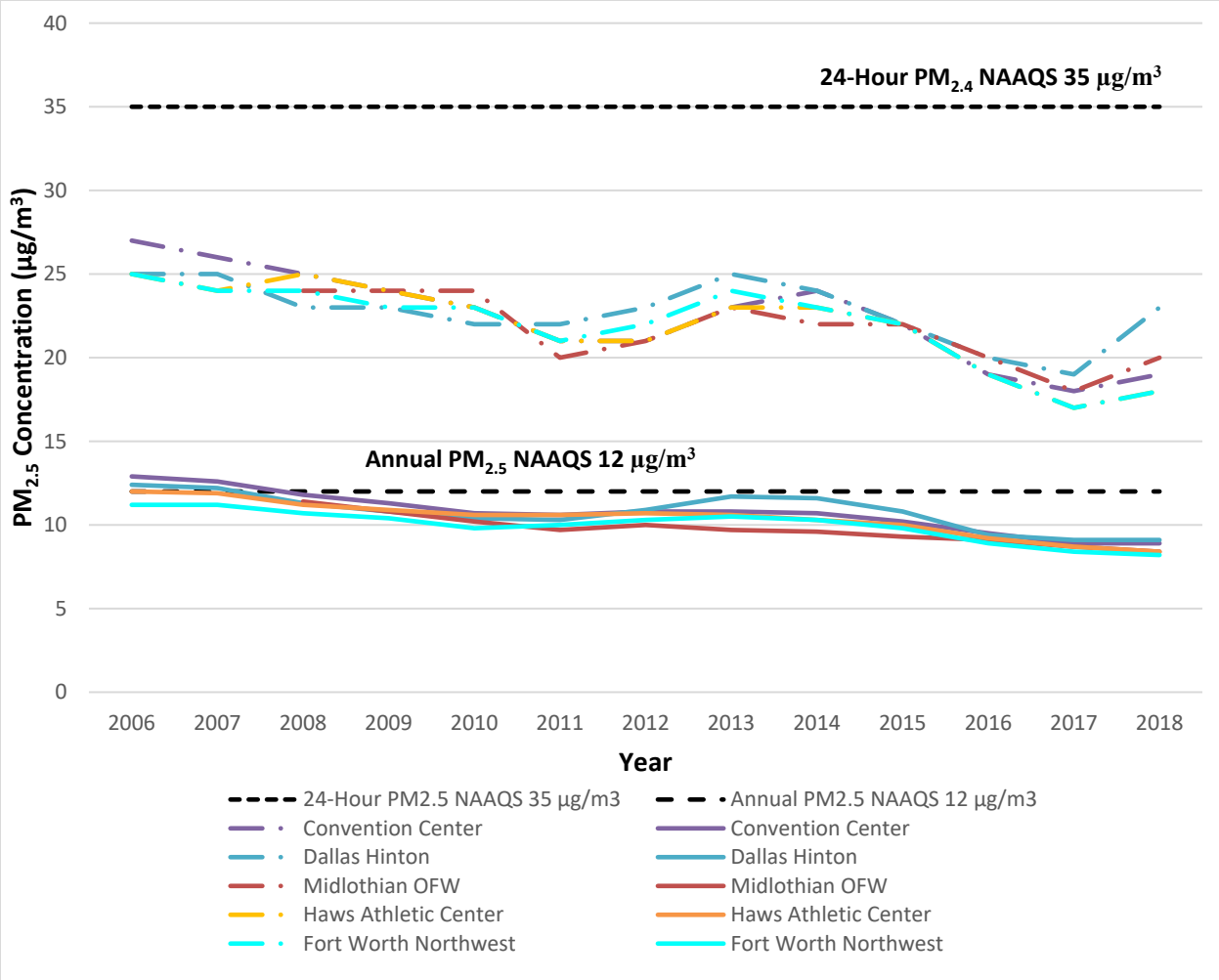
Denton Airport South in July 2019. A $PM_{2.5}$ FRM monitor was upgraded to a FEM continuous monitor at Haws Athletic Center in December 2019.

In the 2019 AMNP, the TCEQ recommended deploying a $PM_{2.5}$ non-NAAQS comparable monitor to the Dallas County southern sector industrial corridor. The Dallas County southern sector air monitoring site will provide improved spatial coverage and air quality information and is expected to be operational soon.

As of January 1, 2020, federal standards require a minimum of seven $PM_{2.5}$ monitors. The TCEQ exceeds requirements with 13 $PM_{2.5}$ monitors in the DFW MSA and one $PM_{2.5}$ monitor in the Corsicana micropolitan statistical area to measure ambient $PM_{2.5}$ concentration data through gravimetric, speciation, and continuous measurements to determine maximum concentrations, concentrations in areas of high population density, and background and transport concentrations.

Design Values and Trends

The North Texas area $PM_{2.5}$ annual and 24-hour $PM_{2.5}$ design values continue to decline. Figure 72 shows the annual mean and 24-hour 98th percentile $PM_{2.5}$ design value trends in the North Texas area from 2006 through 2018. Data indicate that measured concentrations have consistently remained below the 24-hour $PM_{2.5}$ NAAQS of 35 µg/m^3 and the 12 µg/m^3 annual NAAQS since 2006. The Fort Worth California Parkway $PM_{2.5}$ monitor, deployed in 2015, only has one complete three-year design value for 2018, and is therefore, not included in Figure 72. The new Denton Airport South $PM_{2.5}$ FEM monitor has not obtained a three-year design value; therefore, this monitor will not be assessed with the NAAQS Value Percent and Data Trend metrics in this FYA. The Fort Worth California Parkway and Denton Airport South yearly data trends are provided in Table 67. The Corsicana Airport, Kaufman, and Midlothian OFW monitors are non-NAAQS comparable, therefore, these monitors will not be assessed with the NAAQS Value Percent and Data Trend metrics.



NAAQS - National Ambient Air Quality Standards
µg/m^3 - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less

Figure 72: North Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2006-2018

Table 67: North Texas Area Particulate Matter of 2.5 Micrometers or Less 98th Percentile of 24-Hour Averages and Annual Mean Concentrations

Site Name	24-Hour			Annual		
	2017	2018	2019	2017	2018	2019
Denton Airport South	NA	NA	14*	NA	NA	7.6*
Fort Worth California Parkway North	17	18	19	8.7	8.6	8.4

*Values for a partial year, due to a new monitor, do not meet completeness criteria
Results provided in micrograms per cubic meter

Network Evaluation

Table 68 shows how each $PM_{2.5}$ monitor in the North Texas area was evaluated using the scoring system described in the Evaluation Methods section. The Dallas Hinton $PM_{2.5}$ monitors satisfy the multiple $PM_{2.5}$ NCore requirements. Convention Center and Fort Worth Northwest $PM_{2.5}$ monitors satisfy $PM_{2.5}$ SLAMS requirements. The Fort Worth California Parkway North monitor satisfies $PM_{2.5}$ near-road requirements. Based on these scores and the area spatial coverage, no changes to the North Texas area $PM_{2.5}$ network are recommended at this time, but future evaluation of the monitors will occur once design values are determined.

Table 68: North Texas Area Particulate Matter of 2.5 Micrometers or Less Network Evaluation

Site Name	Sampler Type	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value**	Source Impact Value	Total Monitor Value	Assess-ment Value
Convention Center	$PM_{2.5}$ FRM	4	3	1	4	2	14	critical
Corsicana Airport	$PM_{2.5}$ (TEOM)	1	NA	NA	3	2	6	medium
Dallas Hinton	$PM_{10\text{-}2.5}$	4	NA	NA	2	2	8	critical
Dallas Hinton	$PM_{2.5}$ FEM	4	3	1	2	2	12	critical
Dallas Hinton	$PM_{2.5}$ FRM	4	3	1	4	2	14	critical
Dallas Hinton	$PM_{2.5}$ (Speciation)	4	NA	NA	4	2	10	critical
Denton Airport South	$PM_{2.5}$ FEM	1	NA	NA	1	2	4	low
Fort Worth California Parkway North	$PM_{2.5}$ FEM	4	3	2	1	2	12	critical
Fort Worth Northwest	$PM_{2.5}$ FEM	4	2	1	4	2	13	critical
Haws Athletic Center	$PM_{2.5}$ FEM	1	3	1	4	2	11	medium
Kaufman	$PM_{2.5}$ (TEOM)	1	NA	NA	4	2	7	medium
Midlothian OFW	$PM_{2.5}$ (Speciation)	1	NA	NA	3	2	6	medium

Site Name	Sampler Type	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value**	Source Impact Value	Total Monitor Value	Assess-ment Value
Midlothian OFW	$PM_{2.5}$ (TEOM)	1	NA	NA	3	2	6	medium
Midlothian OFW	$PM_{2.5}$ FRM	1	3	1	3	2	10	medium

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**Historical Value based on all years of site $PM_{2.5}$ monitoring
NAAQS – National Ambient Air Quality Standards
NA – not applicable
FEM – federal equivalent method
FRM – federal reference method
OFW – Old Fort Worth
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less
$PM_{10-2.5}$ – coarse particulate matter
TEOM – tapered element oscillating microbalance, non-NAAQS comparable

Northeast Texas Area

Network History and Current Status

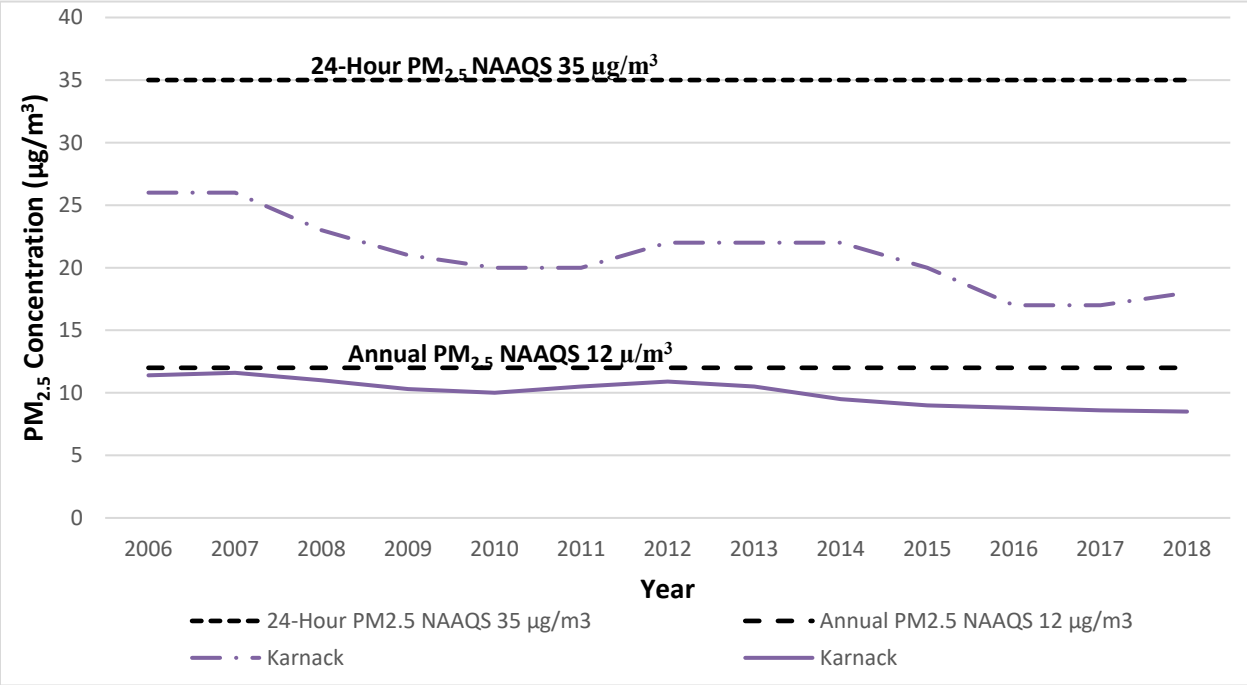
Northeast Texas area $PM_{2.5}$ monitoring began in the late 1990s to early 2000s with the deployment of the Texarkana and Karnack monitors. Since the 2015 FYA, the Texarkana site relocated to the new Texarkana New Boston site with new identification numbers in March 2016 to improve site safety. The $PM_{2.5}$ FRM monitor at this site was upgraded to a $PM_{2.5}$ FEM continuous monitor in January 2019.

As of January 1, 2020, there are no Northeast Texas area $PM_{2.5}$ federal monitoring requirements, however, the current monitors provide valuable data related to background $PM_{2.5}$ concentrations and concentrations in populated areas.

Design Values and Trends

The Northeast Texas area $PM_{2.5}$ annual and 24-hour $PM_{2.5}$ design values continue to decline. Figure 73 shows the annual mean and 24-hour 98th percentile $PM_{2.5}$ design value trends in the Northeast Texas area from 2006 through 2018. Data indicate that measured concentrations have consistently remained below the 24-hour $PM_{2.5}$ NAAQS of 35 µg/m^3 and the 12 µg/m^3 annual NAAQS since 2006. The new Texarkana New Boston $PM_{2.5}$ FEM monitor, deployed in 2016, has not obtained a three-year design value; therefore, this monitor will not be assessed with the NAAQS Value Percent and Data Trend metrics in this FYA. The yearly data trends for this monitor are provided in Table 69. Northeast Texas $PM_{2.5}$ data show concentrations in compliance with the NAAQS. The Karnack $PM_{2.5}$ (TEOM) monitor is non-NAAQS comparable; therefore, this

monitor will not be assessed with the NAAQS Value Percent and Data Trend metrics.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less

Figure 73: Northeast Texas Area Particulate Matter of 2.5 Micrometers or Less in Diameter 24-Hour and Annual Design Value Trends, 2006-2018

Table 69: Northeast Texas Area Particulate Matter of 2.5 Micrometers or Less 98th Percentile of 24-Hour Averages and Annual Mean Concentrations

Site Name	24-Hour			Annual		
	2017	2018	2019	2017	2018	2019
Texarkana New Boston	18	21	19	9	9.4	9.3

Results provided in micrograms per cubic meter

Network Evaluation

Table 70 shows how each $PM_{2.5}$ monitor in the Northeast Texas area was evaluated using the scoring system described in the Evaluation Methods section. No federal $PM_{2.5}$ monitoring requirements apply to the Northeast Texas area. The Texarkana New Boston $PM_{2.5}$ monitor is required to remain until an official design value is obtained. In addition, the area monitors provide valuable spatial coverage and unique data about inter- and intra-regional transport of $PM_{2.5}$, making these monitors of value. No changes to the Northeast Texas area $PM_{2.5}$ network are recommended at this time, but future evaluation of these monitors will occur once design values are determined.

Table 70: Northeast Texas Area Particulate Matter of 2.5 Micrometers or Less Network Evaluation

Site Name	Sampler Type	Regulatory Value	NAAQS Value Percent	Data Trend	Historical Value*	Source Impact Value	Total Monitor Value	Assess-ment Value
Karnack	$PM_{2.5}$ FRM	1	3	1	4	2	11	medium
Karnack	$PM_{2.5}$ (Speciation)	1	NA	NA	3	2	6	medium
Karnack	$PM_{2.5}$ (TEOM)	1	NA	NA	3	2	6	medium
Texarkana New Boston	$PM_{2.5}$ FEM	1	NA	NA	1	2	4	low

*Historical Value based on all years of site $PM_{2.5}$ monitoring
NA – Not applicable
NAAQS – National Ambient Air Quality Standards
FEM – federal equivalent method
FRM – federal reference method
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less
TEOM – tapered element oscillating microbalance, non-NAAQS comparable

Particulate Matter of 10 Micrometers or Less

The PM_{10} network in the North Texas area fulfills requirements based on SLAMS regarding MSA populations and area concentrations. Figure 62 and Figure 63 show the area PM_{10} monitors at sites with a purple section. PM_{10} monitoring is not required or performed in the Northeast Texas area. Appendix A lists active and recently decommissioned PM_{10} monitors, locations, monitoring objectives, and associated spatial scales.

North Texas

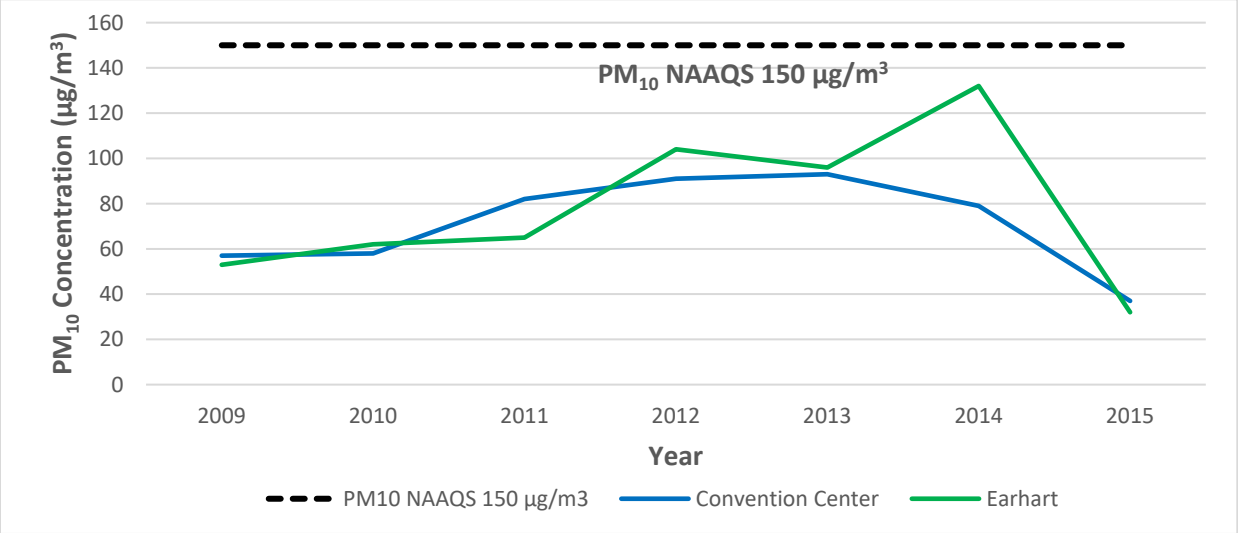
Network History and Current Status

PM_{10} monitoring began in the North Texas area in the late 1980s with deployment of the Convention Center monitor and expanded in the 2000s to include monitoring at Stage Coach in Fort Worth, Earhart, and Dallas North #2. PM_{10} with speciated metal analysis began in 2010 at Morell for source-oriented monitoring. PM_{10} monitoring with speciated metals began in the Northeast Texas area in 2004 at Karnack to support a national air toxics program. Since the 2015 FYA, several PM_{10} network changes occurred. The PM_{10} speciation at Morrell was decommissioned in June 2016 due to the source shut down. The Karnack PM_{10} and speciation was discontinued in June 2018 with the discontinuation of participation in the national program. The PM_{10} monitors at Stage Coach and Dallas North #2 were decommissioned in October and December 2018 due to declining PM_{10} trends. A PM_{10} FRM sampler is expected to be operational soon in the Dallas County southern sector industrial corridor and will provide improved spatial coverage and air quality information

As of January 1, 2020, federal standards require a minimum of two to four area PM_{10} monitors in the North Texas area. Currently, PM_{10} is monitored at two sites to measure population exposure and highest concentrations.

Design Values and Trends

Compliance with the 24-hour PM_{10} standard is based on the number of measured exceedances of the 150 µg/m³ standard averaged over three years. No exceedances at any North Texas area sites have been recorded since the last FYA. Figure 74 provides maximum daily PM_{10} concentration trends from 2009 to 2015. Design values from both monitors were affected for 2016-2018 due to data quality concerns.



NAAQS - National Ambient Air Quality Standards
µg/m³ - microgram per cubic meter
PM_{10} – particulate matter of 10 micrometers or less

Figure 74: North Texas Area Particulate Matter of 10 Micrometers or Less Maximum Concentration Trends, 2009-2015

Network Evaluation

Table 71 shows how each PM_{10} monitor in the North Texas area was evaluated using the scoring system described in the Evaluation Methods section. No sites in the North Texas area exceeded the PM_{10} NAAQS in this assessment. The Convention Center and Earhart PM_{10} monitors satisfy SLAMS requirements. Based on the scores, no further changes to the North Texas area PM_{10} network are recommended at this time.

Table 71: North Texas Area Particulate Matter of 10 Micrometers or Less Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Convention Center	4	1	1	4	2	12	critical
Earhart	4	1	1	3	2	11	critical

*Regulatory Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS Value Percent and Data Trend values assessed based on available data
NAAQS – National Ambient Air Quality Standards

Lead

The TCEQ Pb network is designed to meet SLAMS source-oriented monitoring and SIP maintenance plan requirements to measure maximum Pb concentrations. Figure 62 shows the area Pb monitors at sites with a black section. Pb monitoring is not required or performed in the Northeast Texas area. Appendix A lists active and recently decommissioned Pb monitors, locations, monitoring objectives, and associated spatial scales.

North Texas

Network History and Current Status

North Texas area Pb monitoring began in the mid-1980s at the Frisco 5th Street site to characterize the area around a portion of Collin County surrounding the Exide Technologies Recycling Center in Frisco. Additional monitoring was added in the mid-1990s at Frisco Eubanks and Frisco 7, and in 2011 at Frisco Stonebrook. The Exide facility permanently shut down at the end of 2012. The Terrell Temtex monitor was deployed in 2011 to characterize ambient concentrations of Pb around a local metal recycling facility. Also in 2011, a new Pb monitor was deployed at Dallas Hinton to fulfill NCore requirements. Since the 2015 FYA, several changes occurred. The Dallas Hinton Pb monitor was decommissioned in December 2016, after the requirement was eliminated in the EPA's final rule published in the Federal Register on March 28, 2016, Revisions to the *Ambient Monitoring Quality Assurance and Other Requirements; Final Rule*. The Frisco 5th Street and Frisco 7 Pb monitors were decommissioned in December 2018 due to low design values and a redesignation of the area to attainment.

As of January 1, 2020, federal standards require a minimum of three monitors in locations likely to measure maximum Pb concentrations. The TCEQ meets these requirements with three source-oriented Pb monitors.

Design Values and Trends

The North Texas area Pb design values in Collin County indicate continued compliance with the standard and are provided in Figure 75. The Terrell Temtex 2012-2014 maximum rolling three-month average was 0.05 μg/m^3, 33% of the 2008 Pb NAAQS; subsequent design values for 2015-2018 were affected due to data quality concerns.

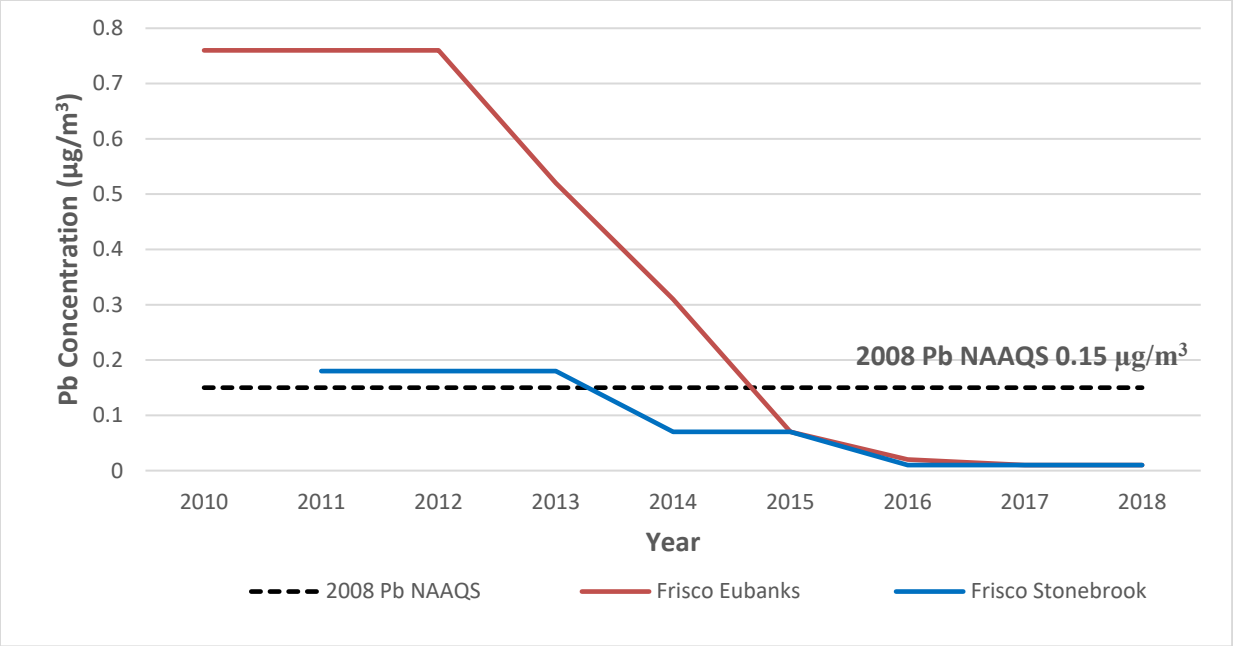


Figure 75: Rolling 3-Month Average Lead (Pb) Design Value Trends in the North Texas Area, 2010-2018

Network Evaluation

Table 72 shows how each Pb monitor in the North Texas area was evaluated using the scoring system described in the Evaluation Methods section. The Frisco Eubanks, Frisco Stonebrook, and Terrell Temtex monitors satisfy SLAMS and SIP maintenance plan requirements. These monitors are located in areas with current or previous Pb sources and are meeting the original monitoring objectives. Based on these scores, no changes to the North Texas area network are recommended at this time.

Table 72: North Texas Area Lead Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Frisco Eubanks	4	1	3	4	4	16	critical
Frisco Stonebrook	4	1	3	2	4	14	critical
Terrell Temtex	4	2	1	2	4	13	critical

*Regulatory Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
NAAQS Value Percent and Data Trend values assessed based on available data
NAAQS – National Ambient Air Quality Standards

Photochemical Assessment Monitoring

The VOC and carbonyl network in the North Texas area fulfills requirements for and supports PAMS. Figure 62 and Figure 63 show the area VOC and carbonyl monitors at sites with an orange section. Sites with active carbonyl monitoring, listed in Table 73, coincide with VOC monitoring and are not differentiated on the maps. VOC and carbonyl monitoring are not required or performed in Northeast Texas. Appendix A lists active and recently decommissioned VOC and carbonyl monitors, locations, monitoring objectives, and associated spatial scales.

North Texas Area

Network History and Current Status

North Texas area VOC monitoring began in the mid-1990s with an autoGC continuous monitor at Dallas Hinton to meet PAMS requirements and expanded with non-continuous canister deployments at Denton Airport South. In the early 2000s, an autoGC was deployed to Fort Worth Northwest to assist understanding the area's photochemical characteristics. Later in the mid-2000s, VOC canister sampling was added to the Grapevine Fairway and Italy sites to further evaluate O_3 precursors upwind and downwind of the North Texas urban area. North Texas area carbonyl monitoring began in the late 1990s and the early 2000s at Dallas Hinton and Fort Worth Northwest to support PAMS requirements. Since the last FYA no changes have occurred.

As of January 1, 2020, federal standards require a minimum of one autoGC and one carbonyl sampler. The TCEQ exceeds requirements with two autoGCs, three VOC by canister samplers, and two carbonyl samplers.

Design Values and Trends

Design values and associated trends are not applicable to VOCs and carbonyl monitoring. Monitoring objectives for photochemical assessment monitoring of O_3 precursors include creating a representative VOC and carbonyl ambient air database useful in photochemical grid modeling, developing emission control strategies, and furthering the understanding of pollution transport mechanisms to aid in reaching attainment designations.

Network Evaluation

Table 73 shows how each VOC and carbonyl monitor in the North Texas area was evaluated using the scoring system described in the Evaluation Methods section. The Dallas Hinton autoGC and carbonyl monitors satisfy PAMS requirements. The remaining area autoGCs, VOC canisters, and carbonyl monitors support the PAMS network. Monitors are located in areas of interest and are meeting the original monitoring objectives. Based on these scores, no changes to the North Texas area network are recommended at this time.

Table 73: North Texas Area Photochemical Assessment Network Evaluation

Site Name	Sampler Type	Regulatory Value*	NAAQS Value Percent	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assess-ment Value
Dallas Hinton	Carbonyl	4	NA	NA	4	2	10	critical
Dallas Hinton	VOC (AutoGC)	4	NA	NA	4	2	10	critical
Fort Worth Northwest	Carbonyl	1	NA	NA	4	2	7	medium
Fort Worth Northwest	VOC (AutoGC)	1	NA	NA	4	2	7	medium
Denton Airport South	VOC (Canister)	1	NA	NA	4	2	7	medium
Italy	VOC (Canister)	1	NA	NA	3	2	6	medium
Grapevine Fairway	VOC (Canister)	1	NA	NA	4	2	7	medium

*Regulatory Value of four indicates an implicit federal requirement equaling an automatic critical assessment value.
AutoGC – automated gas chromatograph
NA – not applicable
NAAQS – National Ambient Air Quality Standards
VOC – volatile organic compound

Panhandle and West Texas Area Evaluation

(Abilene, Amarillo, Lubbock, Midland, Odessa, San Angelo, and Wichita Falls Areas)

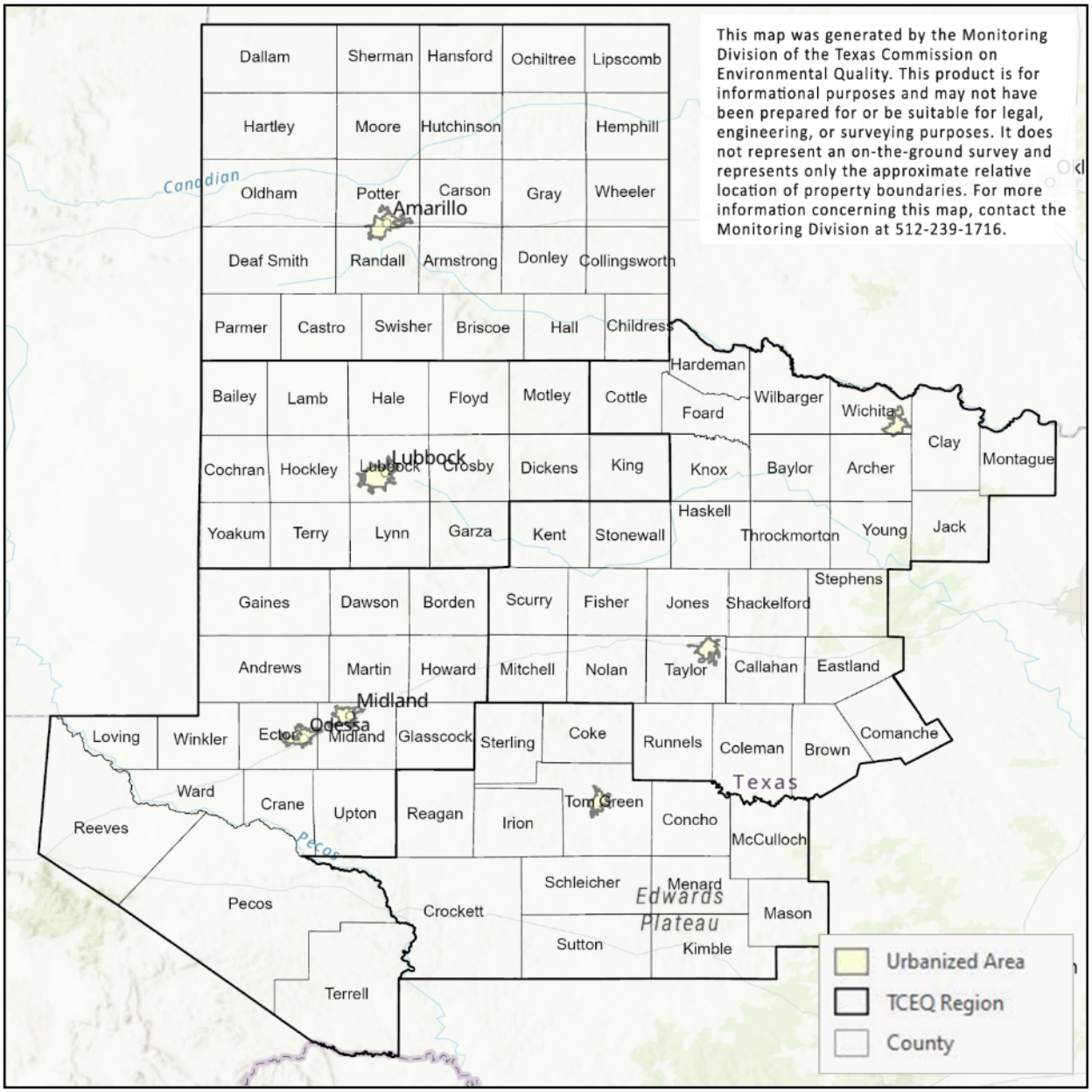


Figure 76: Panhandle and West Texas Area Counties and Urban Areas

Panhandle and West Texas Area Characteristics and Background

Wind Patterns

Figure 76 illustrates the counties included in the Texas Panhandle and West Texas area evaluation. Figure 77 illustrates typical Panhandle and West Texas area annual average wind speed and direction wind roses from local airport meteorological sensors averaged from 2014 to 2018. Figure 77 wind roses were derived from Rick Husband Amarillo International Airport, Lubbock Preston Smith International Airport, Odessa-Schlemeyer Field Airport, and Wichita Falls Regional Airport. Wind data indicate the dominant flow is from the south in the Lubbock and Amarillo areas and from the south and south-southeast in the Odessa and Wichita Falls areas. The plains, tablelands, and plateaus of the Panhandle and West Texas area provide few wind breaks, allowing pollutant transport across the entire region with few areas of geographic concentration. Blowing dust and smoke from outside the area are often visible by satellite imagery and measured across multiple monitors, emphasizing the regional focus on particulate matter.

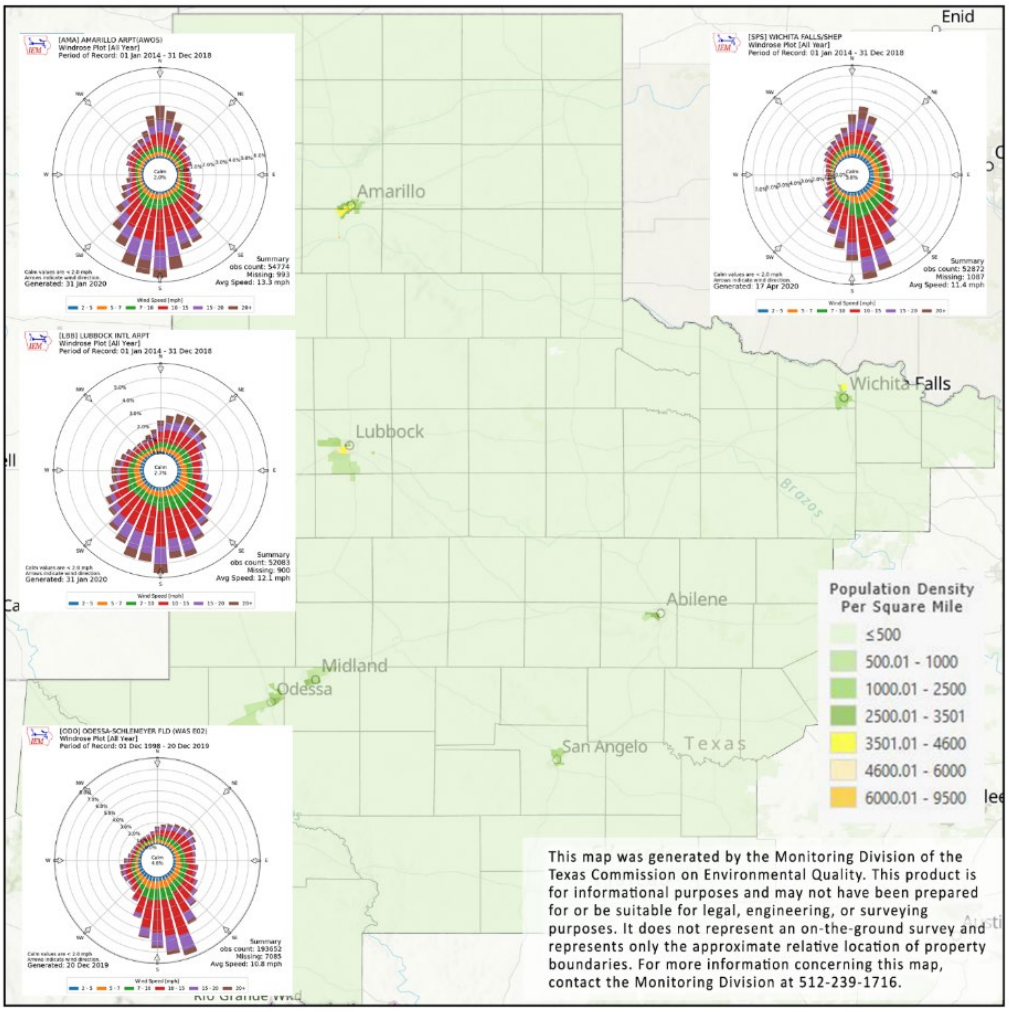


Figure 77: Panhandle and West Texas Area Population Density and Wind Roses

Population

The Panhandle and West Texas area has seven major MSAs that include multiple counties. Monitoring is also conducted in two micropolitan statistical areas.

- The Abilene MSA includes Callahan, Jones, and Taylor Counties
- The Amarillo MSA includes Armstrong, Carson, Oldham, Potter, and Randall Counties
- The Lubbock MSA includes Crosby, Lubbock, and Lynn Counties
- The Midland MSA includes Martin and Midland Counties
- The Odessa MSA includes Ector County
- The San Angelo MSA includes Irion, Sterling, and Tom Green Counties
- The Wichita Falls MSA includes Archer, Clay, and Wichita Counties
- The Big Spring micropolitan statistical area includes Howard County
- The Borger micropolitan statistical area includes Hutchinson County

The Texas Demographics Center projects the combined population of the seven Panhandle and West Texas area MSAs will exceed 1.4 million persons in 2020. The 2025 projection estimates an 8% population increase from 2020 in the Panhandle and West Texas area with the largest growth in the Midland and Odessa areas at 19% and 17%, respectively. Figure 77 illustrates the population densities across the Panhandle and West Texas urban areas based on actual 2010 U.S. Census Bureau data. Population density is illustrated by square mile for each area zip code.

Amarillo MSA minimum monitoring network design requirements dictated by the latest available census population estimates under 40 CFR §58, Appendix D, include the following.

- one SO_2 monitor
- zero to one PM_{10} monitor

The Lubbock MSA is required to have the following.

- zero to one PM_{10} monitor

The Big Spring micropolitan statistical area is required to have the following.

- one SO_2 monitor

The Borger micropolitan statistical area is required to have the following.

- one SO_2 monitor

The TCEQ evaluated population projection data illustrated in Table 2 against the Panhandle and West Texas area minimum monitoring design requirements partially based on MSA population. No Panhandle and West Texas area MSA monitoring requirements would increase based on the projected population assessment, with one exception. The Lubbock MSA may require one O_3 monitor by 2025. The TCEQ meets and exceeds the monitoring requirements with the monitors illustrated in Figure 78.

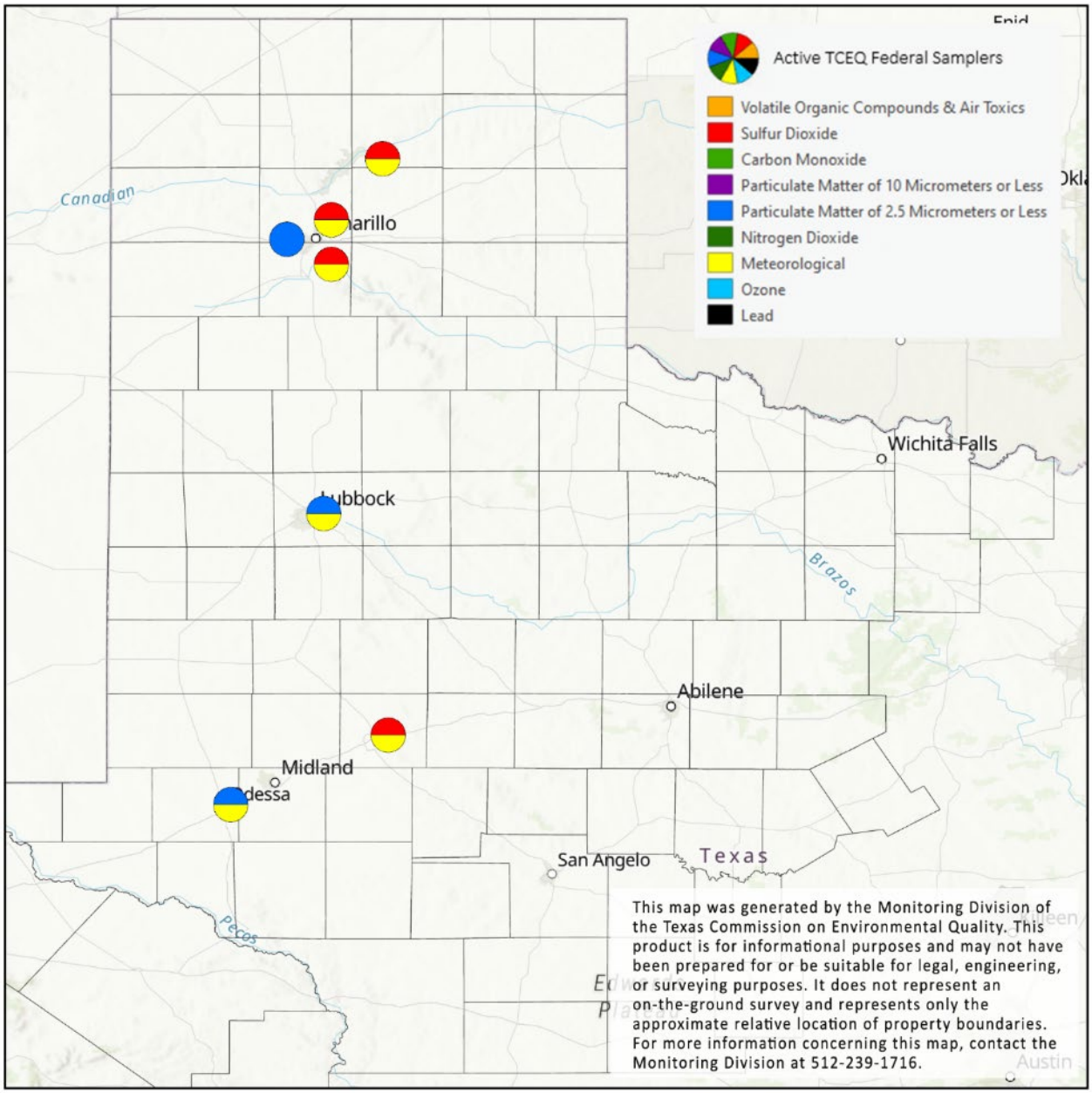


Figure 78: Panhandle and West Texas Area Active Sites and Monitors

Point Sources and Area-Wide Emissions

Anthropogenic Sources

Data from EI source categories show the following for the Panhandle and West Texas area:

- The majority of CO is emitted from on-road and non-road mobile sources in the Amarillo, Lubbock, and Abilene areas and from area sources and on-road mobile sources in the Midland and San Angelo areas.

- NO_x emissions are predominately from on-road and non-road mobile sources, area sources, and point sources in the Amarillo, Lubbock, and Abilene areas and from area sources in the Midland and San Angelo areas.
- Area sources account for the majority of VOC, $PM_{2.5}$, and PM_{10} emissions.
- Point sources are the primary contributors of SO_2 emissions for the Amarillo, Lubbock, Abilene, and Midland areas, while area sources contribute the most SO_2 in the San Angelo area.
- Non-road mobile sources contribute the majority of the total Pb emissions.

EI source data for the Panhandle and West Texas area are detailed in Table 74. This information, in conjunction with monitoring objectives and regulatory requirements, is used to identify and prioritize areas of interest.

Table 74: 2017 Panhandle and West Texas Area Emissions Inventory in Tons Per Year

Area	Source	VOC	NO_x	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
R1-Amarillo	Point	4,498	17,380	14,722	2,441	1,483	28,508	0.57
R1-Amarillo	Area	64,145	16,574	14,435	137,693	16,126	269	0
R1-Amarillo	On-Road Mobile	2,560	11,708	27,061	653	379	31	0
R1-Amarillo	Non-Road Mobile	1,998	16,386	19,685	823	793	49	0.75
R2-Lubbock	Point	1,058	5,750	8,402	1,687	436	14,408	0.04
R2-Lubbock	Area	44,495	4,619	7,062	91,333	13,429	866	0
R2-Lubbock	On-Road Mobile	1,968	5,817	22,158	369	180	24	0
R2-Lubbock	Non-Road Mobile	1,176	5,789	13,798	416	400	19	0.41
R3-Abilene	Point	1,600	8,791	2,413	1,413	918	1,817	0.05
R3-Abilene	Area	69,296	10,344	14,260	146,516	19,246	172	0
R3-Abilene	On-Road Mobile	2,991	13,550	33,684	748	434	40	0
R3-Abilene	Non-Road Mobile	2,667	11,699	23,671	738	710	78	0.83
R7-Midland	Point	5,238	18,055	13,059	1,128	703	14,637	0.02
R7-Midland	Area	353,092	53,636	48,182	53,312	7,390	12,674	0
R7-Midland	On-Road Mobile	2,130	9,287	27,702	544	271	37	0
R7-Midland	Non-Road Mobile	1,679	4,572	14,516	406	390	26	0.66
R8-San Angelo	Point	1,479	2,844	2,011	132	99	487	0
R8-San Angelo	Area	56,917	13,313	10,440	30,449	3,898	1,235	0
R8-San Angelo	On-Road Mobile	837	3,860	10,839	221	120	14	0

Area	Source	VOC	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead
R8-San Angelo	Non-Road Mobile	714	1,530	5,710	150	144	4	0.09

CO – carbon monoxide
NO_x – oxides of nitrogen
PM – particulate matter
R – TCEQ Region
SO_2 – sulfur dioxide
VOC – volatile organic compounds

Natural Sources

The Panhandle and West Texas area is affected by the same seasonal pollutant transport that influences air quality in the North, Coastal, and Far West Texas areas. Regional blowing dust from the White Sands vicinity of New Mexico, eastern New Mexico, and local Texas Panhandle areas can be transported behind strong cold fronts. These regional-scale dust storms occur mainly in the spring, but can develop from late October through the winter and spring into early June. The origin and tracks of these storms can be characterized using satellite imagery and correlated with increased local $PM_{2.5}$ data during these events. Daily average $PM_{2.5}$ concentrations can reach 40 µg/m^3 during these events.

Smoke events that affect the Panhandle and West Texas area are typically prevalent in the summer months. Accumulated smoke and haze from the eastern United States generally arrive in late spring through early fall, while smoke from agricultural burning in Mexico and Central America arrives in April and May. Like dust storms, these events are also often visible on satellite imagery and can be associated with discernable increases in local $PM_{2.5}$. Daily average $PM_{2.5}$ concentrations can reach 50 µg/m^3 during these events.

Regional Air Quality

Regional air quality history and current status were evaluated to determine monitoring needs, including the continued need for monitoring during maintenance periods after an area has met all air quality standards.

Criteria Pollutants

As of January 1, 2020, all Panhandle and West Texas geographical areas are designated attainment/unclassifiable for all current NAAQS, with the exception of Potter, Hutchinson, and Howard Counties. In June 2010, the primary SO_2 NAAQS was revised to a one-hour standard of 75 ppb. Initial designations were made in Round 1 in July 2013 and no areas in Texas were designated at that time. A March 2015 consent decree between the Sierra Club and the EPA set deadlines for the EPA to complete designations for the one-hour SO_2 NAAQS in three additional rounds. In Round 2, Potter County was designated as unclassifiable for the 2010 primary SO_2 NAAQS.[1] All other Panhandle and West Texas region counties, with the exception of Hutchinson and Howard Counties, were designated as attainment/unclassifiable for the 2010 primary

[1] The EPA is not required to designate Potter County again in Round 4 but may do so at the Administrator's discretion.

SO_2 NAAQS in either Rounds 2 or 3 of designations. The EPA will designate Hutchinson and Howard Counties in Round 4 by the end of 2020.

Panhandle and West Texas Monitoring Network Evaluation

Sulfur Dioxide

The SO_2 network in the Panhandle and West Texas area fulfills 2015 Data Requirements Rule requirements based on characterizing air quality around sources emitting 2,000 tpy or more of SO_2. Figure 78 shows SO_2 monitor locations at sites in the Amarillo, Big Spring, and Borger areas with a red section. SO_2 monitoring is not required or performed in the Abilene, Lubbock, Midland, Odessa, San Angelo, or Wichita Falls areas. Appendix A lists active and recently decommissioned SO_2 monitors, locations, monitoring objectives, and associated spatial scales.

Panhandle and West Texas Area

Network History and Current Status

Panhandle and West Texas area SO_2 monitoring began in October 2013 with the deployment of the Amarillo 24th Avenue monitor. The Amarillo 24th Avenue SO_2 monitor, located in northeast Amarillo near the edge of a residential area, was sited to measure SO_2 concentrations in a highly populated area. Since the last FYA, three area SO_2 network changes occurred. New source-oriented SO_2 monitoring sites were added at Amarillo Xcel El Rancho, Big Spring Midway, and Borger FM 1559 in late 2016. Data from these monitors for calendar years 2017, 2018, and 2019 will be used to determine compliance with the 2010 one-hour SO_2 NAAQS. As of January 1, 2020, federal standards require a minimum of three area SO_2 monitors related to the DRR. The TCEQ exceeds requirements with four federal SO_2 monitors.

Design Values and Trends

The 2016-2018 SO_2 design value at the Amarillo 24th Avenue site is 15 parts per billion. Amarillo 24th Avenue SO_2 monitor design values, which require three consecutive years of data, were affected for 2015 due to data loss. This monitor has an overall trend decline since 2013, based on the annual one-hour SO_2 99th percentile concentrations, and remains less than 50% of the 2010 one-hour SO_2 NAAQS of 75 ppb. The Amarillo Xcel El Rancho, Big Spring Midway, and Borger FM 1559 SO_2 monitors completed three-years of data required for design value calculation in 2019. These data are pending EPA review and final publication. These monitors will be assessed for the NAAQS Value and Data Trend metrics during the next FYA. Table 75 shows the annual one-hour SO_2 99th percentile concentrations for the four sites in the Panhandle and West Texas area.

Table 75: Panhandle and West Texas Area Source-Oriented Sulfur Dioxide 99th Percentile Concentration Trends

Site Name	2013	2014	2015	2016	2017	2018	2019
Amarillo 24th Avenue	25*	18	20*	17	16	12	8
Amarillo Xcel El Rancho	NA	NA	NA	48*	114	133	95

Site Name	2013	2014	2015	2016	2017	2018	2019
Big Spring Midway	NA	NA	NA	54*	88	99	80
Borger FM 1559	NA	NA	NA	183*	246	214	168

Results provided in parts per billion
*Values for a partial year, due to data loss or a new monitor, do not meet completeness criteria
NA – Not applicable

Network Evaluation

Table 76 shows how each SO_2 monitor in the Panhandle and West Texas area was evaluated using the scoring system described in the Evaluation Methods section. The DRR source-oriented monitors at Amarillo Xcel El Rancho, Big Spring Midway, and Borger FM 1559 are required to meet SO_2 DRR designations. The remaining SO_2 monitor at Amarillo 24th Avenue is sited to measure ambient SO_2 levels in populated areas and continues to meet its monitoring objective. Although the Assessment Value for the SO_2 monitor at Amarillo 24th Avenue is low, this monitor provides valuable data for the area. No changes to the Panhandle and West Texas area SO_2 network are recommended at this time.

Table 76: Panhandle and West Texas Area Sulfur Dioxide Network Evaluation

Site Name	Regulatory Value*	NAAQS Value Percent*	Data Trend	Historical Value	Source Impact Value	Total Monitor Value	Assessment Value
Amarillo 24th Avenue	1	1**	1***	2	2	7	low
Amarillo Xcel El Rancho	4	NA	NA	1	4	9	critical
Big Spring Midway	4	NA	NA	1	4	9	critical
Borger FM 1559	4	NA	NA	1	4	9	critical

*Regulatory Value or NAAQS Value Percent of four indicates an implicit federal requirement equaling an automatic critical assessment value.
**Assessment based on 2016-2018 design value
***Assessment based on annual one-hour SO_2 99th percentile concentrations
NA – Not applicable
NAAQS – National Ambient Air Quality Standard

Particulate Matter of 2.5 Micrometers or Less

The $PM_{2.5}$ network in the Panhandle and West Texas area measures ambient concentrations of $PM_{2.5}$ in populated areas and aids in evaluating exceptional events. Figure 78 shows the Amarillo, Lubbock, and Odessa area $PM_{2.5}$ monitors at sites with a dark blue section. $PM_{2.5}$ monitoring is not required or performed in the Abilene, Midland, San Angelo, or Wichita Falls areas. Appendix A lists active and recently decommissioned $PM_{2.5}$ monitors, locations, monitoring objectives, and associated spatial scales.

Panhandle and West Texas Area

Network History and Current Status

Panhandle and West Texas area $PM_{2.5}$ monitoring began in the early 2000s with the deployment of continuous $PM_{2.5}$ monitors at Odessa-Hays Elementary School and Odessa Gonzales in 2000 and 2002, respectively, to improve spatial coverage in West Texas, provide data representative of ambient conditions in populated areas, and aid in evaluating exceptional events. A continuous $PM_{2.5}$ monitor was deployed at the Amarillo A&M site in 2005 to measure ambient concentrations in populated areas of Amarillo and evaluate the effects of regional dust storms in the Texas Panhandle. A $PM_{2.5}$ continuous monitor was deployed at the Lubbock-$PM_{2.5}$ site from 2008 to 2014. This site was decommissioned in November 2014 at the property owner's request to vacate the site. The continuous $PM_{2.5}$ monitor provided meaningful information about regional transport of $PM_{2.5}$ in the Lubbock area, as well as information on ambient $PM_{2.5}$ conditions in Lubbock's populated urban area. The original site was relocated to Lubbock 12th Street in 2016.

Since the last FYA, five $PM_{2.5}$ area network changes occurred. A non-NAAQS comparable, continuous $PM_{2.5}$ monitor was deployed to the Lubbock 12th Street site in August 2016. The Odessa-Hays Elementary School $PM_{2.5}$ monitor was decommissioned in December 2016. In 2018, the three non-NAAQS comparable monitors at Amarillo A&M, Lubbock 12th Street, and Odessa Gonzales were upgraded to $PM_{2.5}$ FEM monitors.

As of January 1, 2020, there are no Panhandle and West Texas area $PM_{2.5}$ federal monitoring requirements, however, the three current monitors provide valuable data related to transport, background $PM_{2.5}$ concentrations, and concentrations in populated areas.

Design Values and Trends

The Panhandle and West Texas area $PM_{2.5}$ FEM monitors, deployed in 2018, have not yet obtained three complete years of data for a design value calculation; therefore, these monitors will not be assessed with the NAAQS Value Percent and Data Trend metrics in this FYA. The $PM_{2.5}$ FEM monitor yearly data trends are provided in Table 77. $PM_{2.5}$ data at all three monitors show concentrations in compliance with the NAAQS.

Table 77: Panhandle and West Texas Area Particulate Matter of 2.5 Micrometers or Less 98th Percentile of 24-Hour Averages and Annual Mean Concentrations

Site Name	24-Hour		Annual	
	2018*	2019	2018*	2019
Amarillo A&M	12	13	5.9	5.2
Lubbock 12th Street	20	14	5.8	6.4
Odessa Gonzalez	23	17	8.5	7.6

*Values for a partial year, due to a new monitor, do not meet completeness criteria
Results provided in micrograms per cubic meter

Network Evaluation

Table 78 shows how each $PM_{2.5}$ monitor in the Panhandle and West Texas area was evaluated using the scoring system described in the Evaluation Methods section. No federal $PM_{2.5}$ monitoring requirements apply to this area; however, these monitors are required to remain until an official design value is obtained. Additionally, continuous $PM_{2.5}$ measurements from these monitors provide meaningful data regarding regional $PM_{2.5}$ transport and exceptional events in areas that have historically been impacted by dust events. No changes to the Panhandle and West Texas area $PM_{2.5}$ network are recommended at this time but future evaluation of these monitors will occur once design values are determined.

Table 78: Panhandle and West Texas Area Particulate Matter of 2.5 Micrometers or Less Network Evaluation

Site Name	Sampler Type	Regulatory Value	NAAQS Value Percent	Data Trend	Historical Value*	Source Impact Value	Total Monitor Value	Assess-ment Value
Amarillo A&M	$PM_{2.5}$ FEM	1	NA	NA	4	1	6	medium
Lubbock 12th Street	$PM_{2.5}$ FEM	1	NA	NA	1	1	3	low
Odessa Gonzalez	$PM_{2.5}$ FEM	1	NA	NA	4	1	6	medium

*Historical Value based on all years of site $PM_{2.5}$ monitoring
NAAQS – National Ambient Air Quality Standards
FEM – federal equivalent method
NA – Not applicable
$PM_{2.5}$ – particulate matter of 2.5 micrometers or less

Lead

Network History and Current Status

The TCEQ Pb network is designed to meet source-oriented SLAMS monitoring requirements to measure maximum Pb concentrations near point sources emitting 0.50 tpy or more of Pb. There is no source-oriented Pb monitoring required in the Panhandle and West Texas area. Since the 2015 FYA, the Amarillo State Highway (SH) 136 Pb monitor was decommissioned. The Pb monitor exceeded monitoring requirements and was no longer necessary for source-oriented monitoring. The monitor was initially deployed in 2010 due to current point-source emissions inventory levels; however, emissions significantly decreased. Based on historical monitoring data, the TCEQ demonstrated that the Pb source would not contribute to a maximum Pb concentration in ambient air of more than 50% of the standard. The Amarillo SH 136 Pb monitor was decommissioned in November 2018. Appendix A lists active and recently decommissioned Pb monitor locations, monitoring objectives, and spatial scales.

Appendix A

Texas Commission on Environmental Quality Ambient Monitoring Site List 2015-2020

Texas Commission on Environmental Quality
2020 Five-Year Ambient Monitoring Network Assessment

Appendix A - Texas Commission on Environmental Quality Ambient Air Monitoring Site List 2015-2020

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Central TX	Austin-Round Rock-Georgetown, TX	484530020	Austin Audubon Society	12200 Lime Creek Rd, Leander	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Rural	Active	3/10/1997
Central TX	Austin-Round Rock-Georgetown, TX	484530020	Austin Audubon Society	12200 Lime Creek Rd, Leander	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Rural	Active	1/1/2008
Central TX	Austin-Round Rock-Georgetown, TX	484530020	Austin Audubon Society	12200 Lime Creek Rd, Leander	PM2.5 (FRM)	SLAMS, SPM	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Rural	Inactive	1/20/2017
Central TX	Austin-Round Rock-Georgetown, TX	484530020	Austin Audubon Society	12200 Lime Creek Rd, Leander	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Rural	Inactive	10/2/2017
Central TX	Austin-Round Rock-Georgetown, TX	484530020	Austin Audubon Society	12200 Lime Creek Rd, Leander	Solar Radiation	SPM	Continuous	Population Exposure	Urban Scale	Rural	Active	7/9/1997
Central TX	Austin-Round Rock-Georgetown, TX	484530020	Austin Audubon Society	12200 Lime Creek Rd, Leander	Temperature	SPM	Continuous	Population Exposure	Urban Scale	Rural	Active	3/10/1997
Central TX	Austin-Round Rock-Georgetown, TX	484530020	Austin Audubon Society	12200 Lime Creek Rd, Leander	Wind	SPM	Continuous	Population Exposure	Urban Scale	Rural	Active	3/10/1997
Central TX	Austin-Round Rock-Georgetown, TX	484531068	Austin North Interstate 35	8912 N IH 35 SVRD SB, Austin	CO	Near-Road SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	12/19/2016
Central TX	Austin-Round Rock-Georgetown, TX	484531068	Austin North Interstate 35	8912 N IH 35 SVRD SB, Austin	NO, NO2, NOx	Near-Road SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	4/16/2014

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Central TX	Austin-Round Rock-Georgetown, TX	484531068	Austin North Interstate 35	8912 N IH 35 SVRD SB, Austin	PM2.5 (FRM)	Near-Road SLAMS	24 Hours; 1/3 Days	Max Precursor Emissions Impact	Microscale	Urban and Center City	Inactive	11/2/2018
Central TX	Austin-Round Rock-Georgetown, TX	484531068	Austin North Interstate 35	8912 N IH 35 SVRD SB, Austin	PM2.5 FEM (Beta 1022)	Near-Road SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	10/25/2018
Central TX	Austin-Round Rock-Georgetown, TX	484531068	Austin North Interstate 35	8912 N IH 35 SVRD SB, Austin	Temperature	SPM	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	4/16/2014
Central TX	Austin-Round Rock-Georgetown, TX	484531068	Austin North Interstate 35	8912 N IH 35 SVRD SB, Austin	Wind	SPM	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	4/16/2014
Central TX	Austin-Round Rock-Georgetown, TX	484530014	Austin Northwest	3724 North Hills Dr, Austin	NO, NO2, NOx	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	Active	3/28/2012
Central TX	Austin-Round Rock-Georgetown, TX	484530014	Austin Northwest	3724 North Hills Dr, Austin	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	9/20/1979
Central TX	Austin-Round Rock-Georgetown, TX	484530014	Austin Northwest	3724 North Hills Dr, Austin	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	4/1/2001
Central TX	Austin-Round Rock-Georgetown, TX	484530014	Austin Northwest	3724 North Hills Dr, Austin	SO2	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	Active	11/28/2012
Central TX	Austin-Round Rock-Georgetown, TX	484530014	Austin Northwest	3724 North Hills Dr, Austin	Temperature	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	6/1/1996
Central TX	Austin-Round Rock-Georgetown, TX	484530014	Austin Northwest	3724 North Hills Dr, Austin	Wind	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	6/1/1996

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Central TX	Austin-Round Rock-Georgetown, TX	484530021	Austin Webberville Rd	2600B Webberville Rd, Austin	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	10/21/1999
Central TX	Austin-Round Rock-Georgetown, TX	484530021	Austin Webberville Rd	2600B Webberville Rd, Austin	PM2.5 (FRM)	QA Collocated, SLAMS	24 Hours; 1/6 Days, 24 Hours; 1/12 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	1/1/2008
Central TX	Austin-Round Rock-Georgetown, TX	484530021	Austin Webberville Rd	2600B Webberville Rd, Austin	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	9/19/2016
Central TX	Austin-Round Rock-Georgetown, TX	484530021	Austin Webberville Rd	2600B Webberville Rd, Austin	PM2.5 FEM (Beta 1022)	SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	4/27/2017
Central TX	Austin-Round Rock-Georgetown, TX	484530021	Austin Webberville Rd	2600B Webberville Rd, Austin	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	9/30/1999
Central TX	Austin-Round Rock-Georgetown, TX	484530021	Austin Webberville Rd	2600B Webberville Rd, Austin	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	9/30/1999
Central TX	Austin-Round Rock-Georgetown, TX	481490001	Fayette County	636 Roznov Rd, Round Top	PM2.5 (TEOM)**	SPM	Continuous	Regional Transport; Source Oriented	Regional Scale	Rural	Inactive	12/4/2018
Central TX	College Station-Bryan, TX	480411086	Bryan Finfeather Road	3670 Finfeather Road, <none>	PM2.5 FEM (Beta 1022)	SPM	Continuous	Population Exposure; Regional Transport	Neighbor-hood	Rural	Active	2/27/2020
Central TX	College Station-Bryan, TX	480411086	Bryan Finfeather Road	3670 Finfeather Road, <none>	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	2/27/2020
Central TX	College Station-Bryan, TX	480411086	Bryan Finfeather Road	3670 Finfeather Road, <none>	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	2/27/2020
Central TX	College Station-Bryan, TX	483951076	Franklin Oak Grove	8127 Oak Grove Road, Franklin	SO2	SLAMS	Continuous	Source Oriented	Neighbor-hood	Rural	Active	10/13/2016

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Central TX	College Station-Bryan, TX	483951076	Franklin Oak Grove	8127 Oak Grove Road, Franklin	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	10/13/2016
Central TX	College Station-Bryan, TX	483951076	Franklin Oak Grove	8127 Oak Grove Road, Franklin	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	10/13/2016
Central TX	Killeen-Temple-Fort Hood, TX	480271047	Killeen Skylark Field	1605 Stone Tree Drive, Killeen	NO, NO2, NOx	SPM	Continuous	General Background	Urban Scale	Urban and Center City	Active	4/3/2018
Central TX	Killeen-Temple-Fort Hood, TX	480271047	Killeen Skylark Field	1605 Stone Tree Drive, Killeen	O3	SLAMS	Continuous	Population Exposure	Urban Scale	Urban and Center City	Active	6/11/2009
Central TX	Killeen-Temple-Fort Hood, TX	480271047	Killeen Skylark Field	1605 Stone Tree Drive, Killeen	Temperature	SPM	Continuous	Population Exposure	Urban Scale	Urban and Center City	Active	6/11/2009
Central TX	Killeen-Temple-Fort Hood, TX	480271047	Killeen Skylark Field	1605 Stone Tree Drive, Killeen	Wind	SPM	Continuous	Population Exposure	Urban Scale	Urban and Center City	Active	6/11/2009
Central TX	Killeen-Temple-Fort Hood, TX	480271045	Temple Georgia	8406 Georgia Avenue, Temple	O3	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	Active	10/4/2013
Central TX	Killeen-Temple-Fort Hood, TX	480271045	Temple Georgia	8406 Georgia Avenue, Temple	PM2.5 FEM (Beta 1022)	SPM	Continuous	Population Exposure	Urban Scale	Suburban	Active	3/15/2019
Central TX	Killeen-Temple-Fort Hood, TX	480271045	Temple Georgia	8406 Georgia Avenue, Temple	Temperature	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	10/4/2013
Central TX	Killeen-Temple-Fort Hood, TX	480271045	Temple Georgia	8406 Georgia Avenue, Temple	Wind	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	10/4/2013
Central TX	none	481611084	Fairfield FM 2570 Ward Ranch	488 FM 2570, Fairfield	SO2	SPM	Continuous	Source Oriented	Neighbor-hood	Rural	Active	10/30/2017
Central TX	none	481611084	Fairfield FM 2570 Ward Ranch	488 FM 2570, Fairfield	Temperature	SPM	Continuous	Source Oriented	Neighbor-hood	Rural	Active	10/30/2017
Central TX	none	481611084	Fairfield FM 2570 Ward Ranch	488 FM 2570, Fairfield	Wind	SPM	Continuous	Source Oriented	Neighbor-hood	Rural	Active	10/30/2017
Central TX	none	482551070	Karnes County	1100B East Main Avenue, Karnes City	NO, NO2, NOx	SPM	Continuous	Max Precursor Emissions Impact; Upwind Background	Urban Scale	Rural	Active	1/7/2015

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Central TX	none	483311075	Rockdale John D. Harper Road	3990 John D Harper Road, Rockdale	SO2	SLAMS	Continuous	Source Oriented	Neighbor-hood	Rural	Inactive	6/5/2020
Central TX	none	483311075	Rockdale John D. Harper Road	3990 John D Harper Road, Rockdale	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Inactive	6/5/2020
Central TX	none	483311075	Rockdale John D. Harper Road	3990 John D Harper Road, Rockdale	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Inactive	6/5/2020
Central TX	San Antonio-New Braunfels, TX	480290059	Calaveras Lake	14620 Laguna Rd, San Antonio	NO, NO2, NOx	SLAMS	Continuous	Source Oriented; Upwind Background	Urban Scale	Rural	Active	5/13/1998
Central TX	San Antonio-New Braunfels, TX	480290059	Calaveras Lake	14620 Laguna Rd, San Antonio	O3	SLAMS	Continuous	Source Oriented; Upwind Background	Urban Scale	Rural	Active	5/13/1998
Central TX	San Antonio-New Braunfels, TX	480290059	Calaveras Lake	14620 Laguna Rd, San Antonio	PM2.5 (FRM)	SLAMS, SPM	24 Hours; 1/6 Days	Population Exposure; Upwind Background	Urban Scale	Rural	Inactive	11/5/2018
Central TX	San Antonio-New Braunfels, TX	480290059	Calaveras Lake	14620 Laguna Rd, San Antonio	PM2.5 (TEOM)**	SPM	Continuous	Regional Transport	Regional Scale	Rural	Inactive	11/6/2018
Central TX	San Antonio-New Braunfels, TX	480290059	Calaveras Lake	14620 Laguna Rd, San Antonio	PM2.5 FEM (Beta 1022)	SLAMS	Continuous	Population Exposure; Source Oriented	Urban Scale	Rural	Active	11/8/2018
Central TX	San Antonio-New Braunfels, TX	480290059	Calaveras Lake	14620 Laguna Rd, San Antonio	SO2	SLAMS	Continuous	Population Exposure; Source Oriented	Neighbor-hood	Rural	Active	12/17/2012
Central TX	San Antonio-New Braunfels, TX	480290059	Calaveras Lake	14620 Laguna Rd, San Antonio	Temperature	SPM	Continuous	Source Oriented	Urban Scale	Rural	Active	5/13/1998
Central TX	San Antonio-New	480290059	Calaveras Lake	14620 Laguna Rd, San Antonio	Wind	SPM	Continuous	Source Oriented	Urban Scale	Rural	Active	5/13/1998

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
	Braunfels, TX											
Central TX	San Antonio-New Braunfels, TX	480290052	Camp Bullis	F Range (1000Yd marker off Wilderness Trail), Near Wilderness Rd, San Antonio	NO, NO2, NOx	SPM	Continuous	Max Precursor Emissions Impact	Urban Scale	Rural	Active	8/18/2014
Central TX	San Antonio-New Braunfels, TX	480290052	Camp Bullis	F Range (1000Yd marker off Wilderness Trail), Near Wilderness Rd, San Antonio	O3	SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Urban Scale	Rural	Active	8/12/1998
Central TX	San Antonio-New Braunfels, TX	480290052	Camp Bullis	F Range (1000Yd marker off Wilderness Trail), Near Wilderness Rd, San Antonio	Solar Radiation	SPM	Continuous	Highest Concentration	Urban Scale	Rural	Active	8/12/1998
Central TX	San Antonio-New Braunfels, TX	480290052	Camp Bullis	F Range (1000Yd marker off Wilderness Trail), Near Wilderness Rd, San Antonio	Temperature	SPM	Continuous	Highest Concentration	Urban Scale	Rural	Active	8/12/1998
Central TX	San Antonio-New Braunfels, TX	480290052	Camp Bullis	F Range (1000Yd marker off Wilderness Trail), Near Wilderness Rd, San Antonio	Wind	SPM	Continuous	Highest Concentration	Urban Scale	Rural	Active	8/12/1998
Central TX	San Antonio-New Braunfels, TX	480290055	CPS Pecan Valley	802 Pecan Valley Drive, San Antonio	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Inactive	11/23/2015
Central TX	San Antonio-New Braunfels, TX	484931038	Floresville Hospital Boulevard	1404 Hospital Blvd, Floresville	NO, NO2, NOx	SPM	Continuous	Max Precursor Emissions Impact; Upwind Background	Urban Scale	Rural	Active	8/13/2013

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Central TX	San Antonio-New Braunfels, TX	480290060	Frank Wing Municipal Court	401 South Frio St, San Antonio	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Middle Scale	Urban and Center City	Active	5/18/2000
Central TX	San Antonio-New Braunfels, TX	480290677	Old Hwy 90	911 Old Hwy 90 West, San Antonio	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	10/9/2006
Central TX	San Antonio-New Braunfels, TX	480290676	Palo Alto	9011 Poteet Jourdanton Hwy, San Antonio	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	6/11/2020
Central TX	San Antonio-New Braunfels, TX	480290676	Palo Alto	9011 Poteet Jourdanton Hwy, San Antonio	Temperature	SPM	Continuous	General Background	Neighbor-hood	Urban and Center City	Inactive	6/11/2020
Central TX	San Antonio-New Braunfels, TX	480290676	Palo Alto	9011 Poteet Jourdanton Hwy, San Antonio	Wind	SPM	Continuous	General Background	Neighbor-hood	Urban and Center City	Inactive	6/11/2020
Central TX	San Antonio-New Braunfels, TX	480291087	San Antonio Bulverde Parkway	3843 Bulverde Parkway, <none>	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Active	12/11/2019
Central TX	San Antonio-New Braunfels, TX	480291087	San Antonio Bulverde Parkway	3843 Bulverde Parkway, <none>	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	11/5/2019
Central TX	San Antonio-New Braunfels, TX	480291087	San Antonio Bulverde Parkway	3843 Bulverde Parkway, <none>	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	11/5/2019
Central TX	San Antonio-New Braunfels, TX	480291080	San Antonio Gardner Road	7145 Gardner Road, San Antonio	SO2	SLAMS	Continuous	Source Oriented	Neighbor-hood	Suburban	Active	11/18/2016
Central TX	San Antonio-New Braunfels, TX	480291080	San Antonio Gardner Road	7145 Gardner Road, San Antonio	Temperature	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	11/18/2016

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Central TX	San Antonio-New Braunfels, TX	480291080	San Antonio Gardner Road	7145 Gardner Road, San Antonio	Wind	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	11/18/2016
Central TX	San Antonio-New Braunfels, TX	480291069	San Antonio Interstate 35	9904 IH 35 N, San Antonio	CO	Near-Road SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	12/22/2016
Central TX	San Antonio-New Braunfels, TX	480291069	San Antonio Interstate 35	9904 IH 35 N, San Antonio	NO, NO2, NOx	Near-Road SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	1/8/2014
Central TX	San Antonio-New Braunfels, TX	480291069	San Antonio Interstate 35	9904 IH 35 N, San Antonio	PM2.5 (FRM)	Near-Road SLAMS	24 Hours; 1/3 Days	Max Precursor Emissions Impact	Microscale	Urban and Center City	Inactive	11/5/2018
Central TX	San Antonio-New Braunfels, TX	480291069	San Antonio Interstate 35	9904 IH 35 N, San Antonio	PM2.5 FEM (Beta 1022)	Near-Road SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	11/8/2018
Central TX	San Antonio-New Braunfels, TX	480291069	San Antonio Interstate 35	9904 IH 35 N, San Antonio	Temperature	SPM	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	1/8/2014
Central TX	San Antonio-New Braunfels, TX	480291069	San Antonio Interstate 35	9904 IH 35 N, San Antonio	Wind	SPM	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	1/8/2014
Central TX	San Antonio-New Braunfels, TX	480290032	San Antonio Northwest	6655 Bluebird Lane, San Antonio	NO, NO2, NOx	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	10/17/2012
Central TX	San Antonio-New Braunfels, TX	480290032	San Antonio Northwest	6655 Bluebird Lane, San Antonio	O3	SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Urban Scale	Suburban	Active	7/17/1981

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Central TX	San Antonio-New Braunfels, TX	480290032	San Antonio Northwest	6655 Bluebird Lane, San Antonio	PM2.5 (FRM)	QA Collocated, SLAMS, SPM	24 Hours; 1/6 Days, 24 Hours; 1/12 Days, 24 Hours; 1/3 Days	Population Exposure; Quality Assurance	Urban Scale	Suburban	Active	1/1/2008
Central TX	San Antonio-New Braunfels, TX	480290032	San Antonio Northwest	6655 Bluebird Lane, San Antonio	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Urban Scale	Suburban	Inactive	11/5/2018
Central TX	San Antonio-New Braunfels, TX	480290032	San Antonio Northwest	6655 Bluebird Lane, San Antonio	PM2.5 FEM (Beta 1022)	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	Active	11/8/2018
Central TX	San Antonio-New Braunfels, TX	480290032	San Antonio Northwest	6655 Bluebird Lane, San Antonio	Temperature	SPM	Continuous	Highest Concentration	Urban Scale	Suburban	Active	9/16/1996
Central TX	San Antonio-New Braunfels, TX	480290032	San Antonio Northwest	6655 Bluebird Lane, San Antonio	Wind	SPM	Continuous	Highest Concentration	Urban Scale	Suburban	Active	9/16/1996
Central TX	San Antonio-New Braunfels, TX	480290053	Selma	16289 North Evans Rd #2, Selma	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Inactive	12/9/2019
Central TX	San Antonio-New Braunfels, TX	480290053	Selma	16289 North Evans Rd #2, Selma	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Inactive	12/29/2017
Central TX	San Antonio-New Braunfels, TX	480131090	Von Ormy Highway 16	17534 North State Highway 16, <none>	PM2.5 FEM (Beta 1022)	SPM	Continuous	Population Exposure; Source Oriented	Microscale	Rural	Active	5/29/2020
Central TX	San Antonio-New Braunfels, TX	480131090	Von Ormy Highway 16	17534 North State Highway 16, <none>	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	5/29/2020

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Central TX	San Antonio-New Braunfels, TX	480131090	Von Ormy Highway 16	17534 North State Highway 16, <none>	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	5/29/2020
Central TX	Waco, TX	483091037	Waco Mazanec	4472 Mazanec Rd, Waco	CO	SLAMS	Continuous	Upwind Background	Urban Scale	Rural	Active	4/16/2007
Central TX	Waco, TX	483091037	Waco Mazanec	4472 Mazanec Rd, Waco	NO, NO2, NOx	SLAMS	Continuous	Upwind Background	Urban Scale	Rural	Inactive	12/31/2017
Central TX	Waco, TX	483091037	Waco Mazanec	4472 Mazanec Rd, Waco	O3	SLAMS	Continuous	Upwind Background	Regional Scale	Rural	Active	4/16/2007
Central TX	Waco, TX	483091037	Waco Mazanec	4472 Mazanec Rd, Waco	PM2.5 (TEOM)**	SPM	Continuous	Regional Transport	Regional Scale	Rural	Active	4/16/2007
Central TX	Waco, TX	483091037	Waco Mazanec	4472 Mazanec Rd, Waco	SO2	SLAMS	Continuous	Upwind Background	Urban Scale	Rural	Active	4/16/2007
Central TX	Waco, TX	483091037	Waco Mazanec	4472 Mazanec Rd, Waco	Solar Radiation	SPM	Continuous	Regional Transport	Urban Scale	Rural	Active	4/16/2007
Central TX	Waco, TX	483091037	Waco Mazanec	4472 Mazanec Rd, Waco	Temperature	SPM	Continuous	Regional Transport	Urban Scale	Rural	Active	4/16/2007
Central TX	Waco, TX	483091037	Waco Mazanec	4472 Mazanec Rd, Waco	Wind	SPM	Continuous	Regional Transport	Urban Scale	Rural	Active	4/16/2007
Coastal TX	Beaumont-Port Arthur, TX	482450009	Beaumont Downtown	1086 Vermont Avenue, Beaumont	NO, NO2, NOx	PAMS, SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	1/1/1980
Coastal TX	Beaumont-Port Arthur, TX	482450009	Beaumont Downtown	1086 Vermont Avenue, Beaumont	O3	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Suburban	Active	1/1/1980
Coastal TX	Beaumont-Port Arthur, TX	482450009	Beaumont Downtown	1086 Vermont Avenue, Beaumont	SO2	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	1/1/1980
Coastal TX	Beaumont-Port Arthur, TX	482450009	Beaumont Downtown	1086 Vermont Avenue, Beaumont	Solar Radiation	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Suburban	Active	4/23/2002
Coastal TX	Beaumont-Port Arthur, TX	482450009	Beaumont Downtown	1086 Vermont Avenue, Beaumont	Speciated VOC (AutoGC)	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Suburban	Active	8/29/2006
Coastal TX	Beaumont-Port Arthur, TX	482450009	Beaumont Downtown	1086 Vermont Avenue, Beaumont	Temperature	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Suburban	Active	12/9/1997

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Beaumont-Port Arthur, TX	482450009	Beaumont Downtown	1086 Vermont Avenue, Beaumont	Wind	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Suburban	Active	12/9/1997
Coastal TX	Beaumont-Port Arthur, TX	482450022	Hamshire	12552 Second St, Not In A City	NO, NO2, NOx	SLAMS	Continuous	General Background; Regional Transport	Neighborhood Urban Scale	Suburban	Active	2/16/2000
Coastal TX	Beaumont-Port Arthur, TX	482450022	Hamshire	12552 Second St, Not In A City	O3	SLAMS	Continuous	General Background; Regional Transport	Urban Scale	Suburban	Active	2/16/2000
Coastal TX	Beaumont-Port Arthur, TX	482450022	Hamshire	12552 Second St, Not In A City	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Inactive	12/31/2016
Coastal TX	Beaumont-Port Arthur, TX	482450022	Hamshire	12552 Second St, Not In A City	PM2.5 FEM (Beta 1022)	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	5/16/2017
Coastal TX	Beaumont-Port Arthur, TX	482450022	Hamshire	12552 Second St, Not In A City	Solar Radiation	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	4/23/2002
Coastal TX	Beaumont-Port Arthur, TX	482450022	Hamshire	12552 Second St, Not In A City	Temperature	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	2/16/2000
Coastal TX	Beaumont-Port Arthur, TX	482450022	Hamshire	12552 Second St, Not In A City	Wind	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	2/1/2000
Coastal TX	Beaumont-Port Arthur, TX	482450018	Jefferson County Airport	End of 90th Street @ Jefferson County Airport, Port Arthur	Precipitation	PAMS, SLAMS	Continuous	General Background	Neighbor-hood	Suburban	Active	7/21/2005
Coastal TX	Beaumont-Port Arthur, TX	482450018	Jefferson County Airport	End of 90th Street @ Jefferson County Airport, Port Arthur	Temperature	PAMS, SLAMS	Continuous	General Background	Neighbor-hood	Suburban	Active	6/16/2005
Coastal TX	Beaumont-Port Arthur, TX	482450018	Jefferson County Airport	End of 90th Street @ Jefferson County Airport, Port Arthur	Wind	PAMS, SLAMS	Continuous	General Background	Neighbor-hood	Suburban	Active	6/16/2005
Coastal TX	Beaumont-Port Arthur, TX	482451035	Nederland High School	1800 N. 18th Street, Nederland	Barometric Pressure	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Suburban	Active	8/30/2006

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Beaumont-Port Arthur, TX	482451035	Nederland High School	1800 N. 18th Street, Nederland	CO (High Sensitivity)	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Suburban	Inactive	11/15/2018
Coastal TX	Beaumont-Port Arthur, TX	482451035	Nederland High School	1800 N. 18th Street, Nederland	Dew Point	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	8/30/2006
Coastal TX	Beaumont-Port Arthur, TX	482451035	Nederland High School	1800 N. 18th Street, Nederland	NO, NO2, NOx	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Suburban	Active	8/30/2006
Coastal TX	Beaumont-Port Arthur, TX	482451035	Nederland High School	1800 N. 18th Street, Nederland	O3	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Suburban	Active	9/1/2006
Coastal TX	Beaumont-Port Arthur, TX	482451035	Nederland High School	1800 N. 18th Street, Nederland	Relative Humidity	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Suburban	Active	8/30/2006
Coastal TX	Beaumont-Port Arthur, TX	482451035	Nederland High School	1800 N. 18th Street, Nederland	Solar Radiation	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Suburban	Active	8/30/2006
Coastal TX	Beaumont-Port Arthur, TX	482451035	Nederland High School	1800 N. 18th Street, Nederland	Speciated VOC (AutoGC)	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Suburban	Active	9/1/2006
Coastal TX	Beaumont-Port Arthur, TX	482451035	Nederland High School	1800 N. 18th Street, Nederland	Temperature	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Suburban	Active	8/30/2006
Coastal TX	Beaumont-Port Arthur, TX	482451035	Nederland High School	1800 N. 18th Street, Nederland	UV Radiation	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Suburban	Active	8/30/2006
Coastal TX	Beaumont-Port Arthur, TX	482451035	Nederland High School	1800 N. 18th Street, Nederland	Wind	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Suburban	Active	8/30/2006
Coastal TX	Beaumont-Port Arthur, TX	483611083	Orange 1st Street	2239 1st Street, Orange	SO2	SLAMS	Continuous	Source Oriented	Neighbor-hood	Urban and Center City	Active	10/3/2016

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Beaumont-Port Arthur, TX	483611083	Orange 1st Street	2239 1st Street, Orange	Temperature	SPM	Continuous	General Background	Neighbor-hood	Urban and Center City	Active	10/3/2016
Coastal TX	Beaumont-Port Arthur, TX	483611083	Orange 1st Street	2239 1st Street, Orange	Wind	SPM	Continuous	General Background	Neighbor-hood	Urban and Center City	Active	10/3/2016
Coastal TX	Beaumont-Port Arthur, TX	482450021	Port Arthur Memorial School	2200 Jefferson Drive, Port Arthur	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Inactive	7/25/2017
Coastal TX	Beaumont-Port Arthur, TX	482450021	Port Arthur Memorial School	2200 Jefferson Drive, Port Arthur	PM2.5 FEM (Beta 1022)	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	7/25/2017
Coastal TX	Beaumont-Port Arthur, TX	482450011	Port Arthur West	623 Ellias Street, Port Arthur	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	7/24/2012
Coastal TX	Beaumont-Port Arthur, TX	482450011	Port Arthur West	623 Ellias Street, Port Arthur	SO2	SLAMS	Continuous	Source Oriented	Neighbor-hood	Urban and Center City	Active	7/24/2012
Coastal TX	Beaumont-Port Arthur, TX	482450011	Port Arthur West	623 Ellias Street, Port Arthur	Solar Radiation	SPM	Continuous	Population Exposure; Source Oriented	Neighbor-hood	Urban and Center City	Active	7/24/2012
Coastal TX	Beaumont-Port Arthur, TX	482450011	Port Arthur West	623 Ellias Street, Port Arthur	Temperature	SPM	Continuous	Source Oriented	Neighbor-hood	Urban and Center City	Active	7/24/2012
Coastal TX	Beaumont-Port Arthur, TX	482450011	Port Arthur West	623 Ellias Street, Port Arthur	Wind	SPM	Continuous	Population Exposure; Source Oriented	Neighbor-hood	Urban and Center City	Active	7/24/2012
Coastal TX	Beaumont-Port Arthur, TX	482451071	Port Arthur West 7th Street Gate 2	West 7th Street, Valero Port Arthur Gate 2, Port Arthur	SO2	SLAMS	Continuous	Source Oriented	Neighbor-hood	Rural	Active	9/30/2016
Coastal TX	Beaumont-Port Arthur, TX	482451071	Port Arthur West 7th Street Gate 2	West 7th Street, Valero Port Arthur Gate 2, Port Arthur	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	9/30/2016
Coastal TX	Beaumont-Port Arthur, TX	482451071	Port Arthur West 7th Street Gate 2	West 7th Street, Valero Port Arthur Gate 2, Port Arthur	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	9/30/2016
Coastal TX	Beaumont-Port Arthur, TX	482450101	SETRPC 40 Sabine Pass	5200 Mechanic, Not In A City	O3	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Rural	Active	9/22/1999

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Beaumont-Port Arthur, TX	483611100	SETRPC 42 Mauriceville	Intersection of TX Hwys 62 & 12, Port Arthur	PM2.5 (TEOM)**	SPM	Continuous	Upwind Background	Regional Scale	Suburban	Inactive	7/26/2017
Coastal TX	Beaumont-Port Arthur, TX	483611100	SETRPC 42 Mauriceville	Intersection of TX Hwys 62 & 12, Port Arthur	PM2.5 FEM (Beta 1022)	SPM	Continuous	Regional Transport; Upwind Background	Regional Scale	Suburban	Active	7/27/2017
Coastal TX	Beaumont-Port Arthur, TX	482450102	SETRPC 43 Jefferson Co Airport	Jefferson County Airport, Port Arthur	O3	SPM	Continuous	Max Precursor Emissions Impact	Middle Scale	Suburban	Active	7/7/1999
Coastal TX	Beaumont-Port Arthur, TX	483611001	West Orange	2700 Austin Ave, West Orange	NO, NO2, NOx	SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	12/10/1997
Coastal TX	Beaumont-Port Arthur, TX	483611001	West Orange	2700 Austin Ave, West Orange	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	12/10/1997
Coastal TX	Beaumont-Port Arthur, TX	483611001	West Orange	2700 Austin Ave, West Orange	Solar Radiation	SPM	Continuous	Source Oriented	Neighbor-hood	Urban and Center City	Active	4/23/2002
Coastal TX	Beaumont-Port Arthur, TX	483611001	West Orange	2700 Austin Ave, West Orange	Temperature	SPM	Continuous	Source Oriented	Neighbor-hood	Urban and Center City	Active	12/10/1997
Coastal TX	Beaumont-Port Arthur, TX	483611001	West Orange	2700 Austin Ave, West Orange	Wind	SPM	Continuous	Source Oriented	Neighbor-hood	Urban and Center City	Active	12/10/1997
Coastal TX	Corpus Christi, TX	483550032	Corpus Christi Huisache	3810 Huisache Street, Corpus Christi	PM2.5 (FRM)	SLAMS	24 Hours; 1/3 Days	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	3/12/2018
Coastal TX	Corpus Christi, TX	483550032	Corpus Christi Huisache	3810 Huisache Street, Corpus Christi	PM2.5 (FRM)	QA Collocated, SLAMS, SPM	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	3/12/2018
Coastal TX	Corpus Christi, TX	483550032	Corpus Christi Huisache	3810 Huisache Street, Corpus Christi	PM2.5 FEM (Beta 1022)	QA Collocated, SLAMS	Continuous	Quality Assurance	Neighbor-hood	Urban and Center City	Active	3/13/2018
Coastal TX	Corpus Christi, TX	483550032	Corpus Christi Huisache	3810 Huisache Street, Corpus Christi	PM2.5 FEM (Beta 1022)	SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	3/13/2018

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Corpus Christi, TX	483550032	Corpus Christi Huisache	3810 Huisache Street, Corpus Christi	SO2	SLAMS	Continuous	Highest Concentration; Population Exposure	Neighbor-hood	Urban and Center City	Active	8/6/1997
Coastal TX	Corpus Christi, TX	483550032	Corpus Christi Huisache	3810 Huisache Street, Corpus Christi	Temperature	SPM	Continuous	Population Exposure	Middle Scale	Urban and Center City	Active	8/6/1997
Coastal TX	Corpus Christi, TX	483550032	Corpus Christi Huisache	3810 Huisache Street, Corpus Christi	Wind	SPM	Continuous	Population Exposure	Middle Scale	Urban and Center City	Active	8/6/1997
Coastal TX	Corpus Christi, TX	483550026	Corpus Christi Tuloso	9860 La Branch, Corpus Christi	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	7/26/1984
Coastal TX	Corpus Christi, TX	483550026	Corpus Christi Tuloso	9860 La Branch, Corpus Christi	SO2	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	10/31/1987
Coastal TX	Corpus Christi, TX	483550026	Corpus Christi Tuloso	9860 La Branch, Corpus Christi	Temperature	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	3/18/1998
Coastal TX	Corpus Christi, TX	483550026	Corpus Christi Tuloso	9860 La Branch, Corpus Christi	Wind	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	3/18/1998
Coastal TX	Corpus Christi, TX	483550025	Corpus Christi West	902 Airport Blvd, Corpus Christi	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	3/18/1998
Coastal TX	Corpus Christi, TX	483550025	Corpus Christi West	902 Airport Blvd, Corpus Christi	SO2	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	3/18/1998
Coastal TX	Corpus Christi, TX	483550025	Corpus Christi West	902 Airport Blvd, Corpus Christi	Solar Radiation	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	8/13/2002
Coastal TX	Corpus Christi, TX	483550025	Corpus Christi West	902 Airport Blvd, Corpus Christi	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	3/18/1998
Coastal TX	Corpus Christi, TX	483550025	Corpus Christi West	902 Airport Blvd, Corpus Christi	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	3/18/1998
Coastal TX	Corpus Christi, TX	483550034	Dona Park	5707 Up River Rd, Corpus Christi	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	10/5/2002
Coastal TX	Corpus Christi, TX	483550034	Dona Park	5707 Up River Rd, Corpus Christi	PM10 (FRM)	QA Collocated, SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	12/31/2016

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Corpus Christi, TX	483550034	Dona Park	5707 Up River Rd, Corpus Christi	PM2.5 (Speciation)	CSN Supplemental, SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	1/31/2001
Coastal TX	Corpus Christi, TX	483550034	Dona Park	5707 Up River Rd, Corpus Christi	PM2.5 (TEOM)**	SPM	Continuous	Regional Transport	Neighbor-hood	Urban and Center City	Active	6/11/2013
Coastal TX	Corpus Christi, TX	483550034	Dona Park	5707 Up River Rd, Corpus Christi	PM2.5 FRM (with speciation)	CSN Supplemental, SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	1/31/2001
Coastal TX	Corpus Christi, TX	483550034	Dona Park	5707 Up River Rd, Corpus Christi	Speciated VOC (Canister)	SPM	24 Hours; 1/6 Days	Highest Concentration	Neighbor-hood	Urban and Center City	Active	10/5/2002
Coastal TX	Corpus Christi, TX	483550034	Dona Park	5707 Up River Rd, Corpus Christi	Temperature	SPM	Continuous	Highest Concentration	Regional Scale	Urban and Center City	Active	10/1/2002
Coastal TX	Corpus Christi, TX	483550034	Dona Park	5707 Up River Rd, Corpus Christi	Wind	SPM	Continuous	Highest Concentration	Regional Scale	Urban and Center City	Active	10/1/2002
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010058	Baytown	7210 1/2 Bayway Drive, Baytown	PM2.5 (FRM)	SLAMS, SPM	24 Hours; 1/6 Days	Population Exposure	Middle Scale, Neighbor-hood	Suburban	Inactive	3/20/2017
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010058	Baytown	7210 1/2 Bayway Drive, Baytown	PM2.5 (TEOM)**	SPM	Continuous	Regional Transport	Neighbor-hood	Suburban	Inactive	12/31/2016
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010058	Baytown	7210 1/2 Bayway Drive, Baytown	PM2.5 FEM (Beta 1022)	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	3/21/2017
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010058	Baytown	7210 1/2 Bayway Drive, Baytown	Temperature	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	8/14/1998
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010058	Baytown	7210 1/2 Bayway Drive, Baytown	Wind	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	8/14/1998

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011017	Baytown Garth	8622 Garth Road Unit A, Baytown	O3	SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Suburban	Active	2/20/2014
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011017	Baytown Garth	8622 Garth Road Unit A, Baytown	SO2	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	2/20/2014
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011017	Baytown Garth	8622 Garth Road Unit A, Baytown	Solar Radiation	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	2/20/2014
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011017	Baytown Garth	8622 Garth Road Unit A, Baytown	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	2/20/2014
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011017	Baytown Garth	8622 Garth Road Unit A, Baytown	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	2/20/2014
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010026	Channelview	1405 Sheldon Road, Channelview	Dew Point	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	7/15/2010
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010026	Channelview	1405 Sheldon Road, Channelview	NO, NO2, NOx	PAMS, SLAMS	Continuous	Population Exposure	Middle Scale, Neighbor-hood	Suburban	Active	7/15/2010
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010026	Channelview	1405 Sheldon Road, Channelview	O3	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Suburban	Active	1/1/1980
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010026	Channelview	1405 Sheldon Road, Channelview	Relative Humidity	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Suburban	Active	7/15/2010
Coastal TX	Houston-The Woodlands-	482010026	Channelview	1405 Sheldon Road, Channelview	Solar Radiation	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Suburban	Active	7/15/2010

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
	Sugar Land, TX											
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010026	Channelview	1405 Sheldon Road, Channelview	Speciated VOC (AutoGC)	PAMS, SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	8/4/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010026	Channelview	1405 Sheldon Road, Channelview	Temperature	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Suburban	Active	7/15/2010
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010026	Channelview	1405 Sheldon Road, Channelview	Wind	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Suburban	Active	7/15/2010
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	Barometric Pressure	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	2/8/2005
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	Carbonyl	PAMS, SLAMS	24 Hours; 1/6 Days, Seasonal	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	5/16/1996
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	CO (High Sensitivity)	PAMS, SLAMS, SPM	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	1/1/1978
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	Dew Point	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	1/14/2005
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	NO, NO2, NOx	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	1/18/2000

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	O3	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	1/18/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	PM10 (FRM)	QA Collocated SLAMS	24 Hours; 1/12 Days	Highest Concentration; Population Exposure	Neighbor-hood	Urban and Center City	Active	1/1/2011
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	PM10 (FRM)	SLAMS	24 Hours; 1/3 Days, 24 Hours; 1/6 Days	Highest Concentration; Source Oriented	Neighbor-hood	Urban and Center City	Active	10/1/1998
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	PM10 (Speciation)	SPM	24 Hours; 1/3 Days	Population Exposure; Source Oriented	Neighbor-hood	Urban and Center City	Inactive	12/31/2016
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	PM2.5 (FRM)	SLAMS	24 Hours; 1/1 Days	Highest Concentration; Population Exposure; Source Oriented	Neighbor-hood	Urban and Center City	Active	1/1/1999
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	PM2.5 (FRM)	QA Collocated, SLAMS	24 Hours; 1/6 Days	Highest Concentration; Population Exposure	Neighbor-hood	Urban and Center City	Active	4/6/1999
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	10/16/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	Precipitation	SPM	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	6/22/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	Relative Humidity	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	1/22/1998

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	SO2	SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	4/28/1982
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	Solar Radiation	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	7/15/1998
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	Speciated VOC (AutoGC)	PAMS, SLAMS	Continuous	Highest Concentration; Population Exposure; Source Oriented	Neighbor-hood	Urban and Center City	Active	7/1/1995
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	Temperature	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	12/17/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	UV Radiation	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	7/15/1998
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011035	Clinton	9525 1/2 Clinton Dr, Houston	Wind	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	12/17/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	483390078	Conroe Relocated	9472A Hwy 1484, Conroe	NO, NO2, NOx	PAMS, SLAMS	Continuous	General Background; Population Exposure	Urban Scale	Suburban	Active	10/26/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	483390078	Conroe Relocated	9472A Hwy 1484, Conroe	O3	PAMS, SLAMS	Continuous	General Background; Population Exposure	Urban Scale	Suburban	Active	10/26/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	483390078	Conroe Relocated	9472A Hwy 1484, Conroe	PM2.5 (TEOM)**	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	11/8/2001
Coastal TX	Houston-The Woodlands-	483390078	Conroe Relocated	9472A Hwy 1484, Conroe	Solar Radiation	PAMS, SLAMS	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	6/26/2002

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
	Sugar Land, TX											
Coastal TX	Houston-The Woodlands-Sugar Land, TX	483390078	Conroe Relocated	9472A Hwy 1484, Conroe	Temperature	PAMS, SLAMS	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	10/26/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	483390078	Conroe Relocated	9472A Hwy 1484, Conroe	Wind	PAMS, SLAMS	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	10/26/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	481671034	Galveston 99th Street	9511 Avenue V 1/2, Galveston	Dew Point	SPM	Continuous	General Background; Upwind Background	Middle Scale	Suburban	Active	3/20/2007
Coastal TX	Houston-The Woodlands-Sugar Land, TX	481671034	Galveston 99th Street	9511 Avenue V 1/2, Galveston	NO, NO2, NOx	PAMS, SLAMS	Continuous	General Background; Upwind Background	Middle Scale, Urban Scale	Suburban	Active	3/20/2007
Coastal TX	Houston-The Woodlands-Sugar Land, TX	481671034	Galveston 99th Street	9511 Avenue V 1/2, Galveston	O3	PAMS, SLAMS	Continuous	Max Ozone Concentration; Upwind Background	Urban Scale	Suburban	Active	3/20/2007
Coastal TX	Houston-The Woodlands-Sugar Land, TX	481671034	Galveston 99th Street	9511 Avenue V 1/2, Galveston	PM2.5 (FRM)	SPM	<None>	Regional Transport	Regional Scale	Suburban	Inactive	4/12/2019
Coastal TX	Houston-The Woodlands-Sugar Land, TX	481671034	Galveston 99th Street	9511 Avenue V 1/2, Galveston	PM2.5 (TEOM)**	SPM	Continuous	Regional Transport	Regional Scale	Suburban	Inactive	1/22/2019
Coastal TX	Houston-The Woodlands-Sugar Land, TX	481671034	Galveston 99th Street	9511 Avenue V 1/2, Galveston	PM2.5 FEM (Beta 1022)	SPM	Continuous	Regional Transport	Regional Scale	Suburban	Active	4/15/2019
Coastal TX	Houston-The Woodlands-Sugar Land, TX	481671034	Galveston 99th Street	9511 Avenue V 1/2, Galveston	Relative Humidity	PAMS, SLAMS	Continuous	Max Ozone Concentration; Upwind Background	Urban Scale	Suburban	Active	3/20/2007

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	481671034	Galveston 99th Street	9511 Avenue V 1/2, Galveston	Solar Radiation	PAMS, SLAMS	Continuous	Max Ozone Concentration; Upwind Background	Urban Scale	Suburban	Active	3/20/2007
Coastal TX	Houston-The Woodlands-Sugar Land, TX	481671034	Galveston 99th Street	9511 Avenue V 1/2, Galveston	Temperature	PAMS, SLAMS	Continuous	Max Ozone Concentration; Upwind Background	Urban Scale	Suburban	Active	3/20/2007
Coastal TX	Houston-The Woodlands-Sugar Land, TX	481671034	Galveston 99th Street	9511 Avenue V 1/2, Galveston	Wind	PAMS, SLAMS	Continuous	Max Ozone Concentration; Upwind Background	Urban Scale	Suburban	Active	5/20/2007
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010024	Houston Aldine	4510 1/2 Aldine Mail Rd, Houston	Barometric Pressure	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Suburban	Active	4/2/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010024	Houston Aldine	4510 1/2 Aldine Mail Rd, Houston	Dew Point	SPM	Continuous	Population Exposure	Urban Scale	Suburban	Active	3/1/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010024	Houston Aldine	4510 1/2 Aldine Mail Rd, Houston	NO, NO2, NOx	PAMS, SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Neighbor-hood	Suburban	Active	4/2/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010024	Houston Aldine	4510 1/2 Aldine Mail Rd, Houston	NOy (High Sensitivity)	PAMS, SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Neighbor-hood	Suburban	Active	6/7/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010024	Houston Aldine	4510 1/2 Aldine Mail Rd, Houston	O3	PAMS, SLAMS	Continuous	Max Ozone Concentration; Population Exposure	Neighbor-hood	Suburban	Active	4/2/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010024	Houston Aldine	4510 1/2 Aldine Mail Rd, Houston	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Middle Scale	Suburban	Inactive	10/30/2018
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010024	Houston Aldine	4510 1/2 Aldine Mail Rd, Houston	PM2.5 (FRM)	QA Collocated, SLAMS	<None>	Population Exposure	Neighbor-hood	Suburban	Active	8/14/2000

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010024	Houston Aldine	4510 1/2 Aldine Mail Rd, Houston	PM2.5 (Speciation)	SPM	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Inactive	12/18/2019
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010024	Houston Aldine	4510 1/2 Aldine Mail Rd, Houston	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Inactive	5/6/2019
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010024	Houston Aldine	4510 1/2 Aldine Mail Rd, Houston	PM2.5 FEM (Beta 1022)	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	5/22/2019
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010024	Houston Aldine	4510 1/2 Aldine Mail Rd, Houston	Relative Humidity	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Suburban	Active	3/1/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010024	Houston Aldine	4510 1/2 Aldine Mail Rd, Houston	Solar Radiation	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Suburban	Active	7/15/1998
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010024	Houston Aldine	4510 1/2 Aldine Mail Rd, Houston	Temperature	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Suburban	Active	4/2/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010024	Houston Aldine	4510 1/2 Aldine Mail Rd, Houston	Wind	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Suburban	Active	4/2/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010055	Houston Bayland Park	6400 Bissonnet Street, Houston	NO, NO2, NOx	SLAMS	Continuous	Population Exposure	Middle Scale, Neighbor-hood	Suburban	Active	3/24/1998
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010055	Houston Bayland Park	6400 Bissonnet Street, Houston	O3	SLAMS	Continuous	Population Exposure	Middle Scale	Suburban	Active	3/24/1998

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010055	Houston Bayland Park	6400 Bissonnet Street, Houston	Solar Radiation	SPM	Continuous	General Background; Max Precursor Emissions Impact	Middle Scale	Suburban	Active	7/15/1998
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010055	Houston Bayland Park	6400 Bissonnet Street, Houston	Temperature	SPM	Continuous	General Background; Max Precursor Emissions Impact	Middle Scale	Suburban	Active	3/24/1998
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010055	Houston Bayland Park	6400 Bissonnet Street, Houston	Wind	SPM	Continuous	General Background; Max Precursor Emissions Impact	Middle Scale	Suburban	Active	3/24/1998
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010051	Houston Croquet	13826 1/2 Croquet, Houston	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	2/8/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010051	Houston Croquet	13826 1/2 Croquet, Houston	SO2	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	2/8/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010051	Houston Croquet	13826 1/2 Croquet, Houston	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	2/8/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010051	Houston Croquet	13826 1/2 Croquet, Houston	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	2/8/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	Barometric Pressure	PAMS, SLAMS	Continuous	General Background	Neighbor-hood	Urban and Center City	Active	5/16/2019

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	Carbonyl	PAMS, SLAMS	24 Hours; 1/6 days; Seasonal, Three 8-Hour; 1/3 day; Seasonal	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	6/3/1998
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	CO (High Sensitivity)	NCORE, SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	12/14/2010
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	Dew Point	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	2/29/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	NO, NO2, NOx	NCORE, PAMS, SLAMS	Continuous	Population Exposure; Source Oriented	Neighbor-hood	Urban and Center City	Inactive	2/19/2019
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	NO2 (Direct)	PAMS, SLAMS	Continuous	Population Exposure; Source Oriented	Neighbor-hood	Urban and Center City	Active	3/15/2019
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	NOy (High Sensitivity)	NCORE, PAMS, SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	12/14/2010
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	O3	NCORE, PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	3/20/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	PM10 (FRM)	QA Collocated, SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	10/30/2018

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Max Precursor Emissions Impact; Population Exposure; Source Oriented	Neighbor-hood	Urban and Center City	Inactive	10/30/2018
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	PM10 (Speciation)	NATTS, SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	6/30/2018
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	PM10 (Speciation)	QA Collocated, SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	6/30/2018
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	PM10-2.5	NCORE, SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	1/5/2011
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	PM2.5 (Carbon)	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	12/31/2016
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	PM2.5 (Carbon)	SPM	Continuous	General Background	Neighbor-hood	Urban and Center City	Inactive	12/31/2016
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	PM2.5 (FRM)	NCORE, SLAMS	24 Hours; 1/3 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	8/10/2013
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	PM2.5 (Speciation)	CSN STN, QA Collocated, SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	1/1/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	PM2.5 (Speciation)	CSN STN, NCORE, SLAMS	24 Hours; 1/3 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	1/1/2000

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	12/6/2019
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	PM2.5 FEM (Beta 1020)	NCORE, SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	1/5/2011
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	Precipitation	PAMS, SLAMS	Continuous	General Background	Neighbor-hood	Urban and Center City	Active	6/1/2019
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	Relative Humidity	NCORE PAMS SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	2/29/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	SO2 (High Sensitivity)	NCORE, SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	12/13/2010
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	Solar Radiation	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	10/1/1996
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	Speciated VOC (AutoGC)	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	1/16/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	Speciated VOC (Canister)	NATTS, QA Collocated, SLAMS	24 Hours; 1/6 Days	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Inactive	6/30/2018
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	Speciated VOC (Canister)	NATTS, PAMS, SLAMS, SPM	24 Hours; 1/6 Days	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	11/5/1996

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	SVOC	NATTS, SLAMS	24 Hours; 1/6 Days	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Inactive	6/30/2018
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	SVOC	QA Collocated, SLAMS	24 Hours; 1/6 Days	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Inactive	6/30/2018
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	Temperature	NCORE, PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	3/20/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	TSP (Pb)	NCORE, SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	12/31/2016
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	UV Radiation	PAMS, SLAMS	Continuous	General Background	Neighbor-hood	Urban and Center City	Active	5/16/2019
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011039	Houston Deer Park #2	4514 1/2 Durant St, Deer Park	Wind	NCORE, PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	3/20/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011034	Houston East	1262 1/2 Mae Drive, Houston	NO, NO2, NOx	SLAMS	Continuous	Highest Concentration ; Population Exposure	Middle Scale, Neighbor-hood	Suburban	Active	5/7/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011034	Houston East	1262 1/2 Mae Drive, Houston	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	5/7/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011034	Houston East	1262 1/2 Mae Drive, Houston	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Inactive	3/7/2017
Coastal TX	Houston-The Woodlands-	482011034	Houston East	1262 1/2 Mae Drive, Houston	PM2.5 FEM (Beta 1022)	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	7/13/2017

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
	Sugar Land, TX											
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011034	Houston East	1262 1/2 Mae Drive, Houston	Temperature	SPM	Continuous	Population Exposure	Urban Scale	Suburban	Active	5/7/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011034	Houston East	1262 1/2 Mae Drive, Houston	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	5/7/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010060	Houston Kirkpatrick	5565 Kirkpatrick, Houston	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	2/10/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010060	Houston Kirkpatrick	5565 Kirkpatrick, Houston	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	2/10/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010062	Houston Monroe	9726 1/2 Monroe, Houston	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	2/9/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010062	Houston Monroe	9726 1/2 Monroe, Houston	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Active	10/1/1989
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010062	Houston Monroe	9726 1/2 Monroe, Houston	Precipitation	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	4/3/2002
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010062	Houston Monroe	9726 1/2 Monroe, Houston	SO2	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Inactive	12/21/2017
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011052	Houston North Loop	822 North Loop, Houston	CO	Near-Road SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	4/15/2015

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011052	Houston North Loop	822 North Loop, Houston	NO, NO2, NOx	Near-Road SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	4/15/2015
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011052	Houston North Loop	822 North Loop, Houston	PM2.5 (FRM)	Near-Road SLAMS	24 Hours; 1/3 Days	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	4/13/2015
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011052	Houston North Loop	822 North Loop, Houston	Temperature	SPM	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	4/15/2015
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011052	Houston North Loop	822 North Loop, Houston	Wind	SPM	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	4/15/2015
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010046	Houston North Wayside	7330 1/2 North Wayside, Houston	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	2/22/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010046	Houston North Wayside	7330 1/2 North Wayside, Houston	SO2	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Inactive	12/29/2017
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011066	Houston Southwest Freeway	5617 Westward Avenue, Houston	NO, NO2, NOx	Near-Road SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	1/22/2014
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011066	Houston Southwest Freeway	5617 Westward Avenue, Houston	Temperature	SPM	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	1/22/2014
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011066	Houston Southwest Freeway	5617 Westward Avenue, Houston	Wind	SPM	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	1/22/2014
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010066	Houston Westhollow	3333 1/2 Hwy 6 South, Houston	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	3/7/2000

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010066	Houston Westhollow	3333 1/2 Hwy 6 South, Houston	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Active	4/1/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010066	Houston Westhollow	3333 1/2 Hwy 6 South, Houston	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	3/1/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010066	Houston Westhollow	3333 1/2 Hwy 6 South, Houston	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	3/7/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011042	Kingwood	3603 1/2 West Lake Houston Pkwy, Houston	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Inactive	12/31/2016
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011042	Kingwood	3603 1/2 West Lake Houston Pkwy, Houston	Precipitation	SPM	Continuous	General Background	Neighbor-hood	Suburban	Inactive	1/20/2017
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011043	La Porte Airport C243	La Porte Airport, 2434 Buchanan Street, La Porte	Precipitation	PAMS, SLAMS	Continuous	General Background	Neighbor-hood	Suburban	Active	5/3/2012
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011043	La Porte Airport C243	La Porte Airport, 2434 Buchanan Street, La Porte	Temperature	PAMS, SLAMS	Continuous	General Background	Neighbor-hood	Suburban	Active	5/3/2012
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011043	La Porte Airport C243	La Porte Airport, 2434 Buchanan Street, La Porte	Wind	PAMS, SLAMS	Continuous	General Background	Neighbor-hood	Suburban	Active	5/3/2012
Coastal TX	Houston-The Woodlands-Sugar Land, TX	480391016	Lake Jackson	109B Brazoria Hwy 332 West, Lake Jackson	NO, NO2, NOx	SLAMS	Continuous	Population Exposure; Source Oriented	Middle Scale, Neighbor-hood	Suburban	Active	6/10/2003
Coastal TX	Houston-The Woodlands-Sugar Land, TX	480391016	Lake Jackson	109B Brazoria Hwy 332 West, Lake Jackson	O3	SLAMS	Continuous	Population Exposure; Source Oriented	Neighbor-hood	Suburban	Active	6/10/2003

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	480391016	Lake Jackson	109B Brazoria Hwy 332 West, Lake Jackson	Solar Radiation	SPM	Continuous	Highest Concentration	Middle Scale	Suburban	Active	6/10/2003
Coastal TX	Houston-The Woodlands-Sugar Land, TX	480391016	Lake Jackson	109B Brazoria Hwy 332 West, Lake Jackson	Temperature	SPM	Continuous	Highest Concentration	Middle Scale	Suburban	Active	6/10/2003
Coastal TX	Houston-The Woodlands-Sugar Land, TX	480391016	Lake Jackson	109B Brazoria Hwy 332 West, Lake Jackson	Wind	SPM	Continuous	Highest Concentration	Middle Scale	Suburban	Active	6/10/2003
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010047	Lang	4401 1/2 Lang Rd, Houston	NO, NO2, NOx	SLAMS	Continuous	Population Exposure	Middle Scale, Urban Scale	Suburban	Active	3/8/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010047	Lang	4401 1/2 Lang Rd, Houston	O3	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	Active	3/8/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010047	Lang	4401 1/2 Lang Rd, Houston	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Active	10/2/1998
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011015	Lynchburg Ferry	4364 Independence Parkway South, Baytown	NO, NO2, NOx	SLAMS	Continuous	Source Oriented	Middle Scale, Neighbor-hood	Suburban	Active	4/24/2003
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011015	Lynchburg Ferry	4364 Independence Parkway South, Baytown	O3	SLAMS	Continuous	Source Oriented	Middle Scale	Suburban	Active	4/24/2003
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011015	Lynchburg Ferry	4364 Independence Parkway South, Baytown	Solar Radiation	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	5/22/2003
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011015	Lynchburg Ferry	4364 Independence Parkway South, Baytown	Temperature	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	4/24/2003

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011015	Lynchburg Ferry	4364 Independence Parkway South, Baytown	Wind	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	4/24/2003
Coastal TX	Houston-The Woodlands-Sugar Land, TX	480391004	Manvel Croix Park	4503 Croix Pkwy, Manvel	NO, NO2, NOx	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	Active	8/23/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	480391004	Manvel Croix Park	4503 Croix Pkwy, Manvel	O3	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	Active	8/23/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	480391004	Manvel Croix Park	4503 Croix Pkwy, Manvel	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	8/23/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	480391004	Manvel Croix Park	4503 Croix Pkwy, Manvel	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	8/23/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010029	Northwest Harris County	16822 Kitzman, Tomball	Dew Point	SPM	Continuous	Source Oriented	Microscale	Rural	Active	6/27/2002
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010029	Northwest Harris County	16822 Kitzman, Tomball	NO, NO2, NOx	PAMS, SLAMS	Continuous	Extreme Downwind; Population Exposure; Upwind Background	Urban Scale	Rural	Active	4/1/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010029	Northwest Harris County	16822 Kitzman, Tomball	O3	PAMS, SLAMS	Continuous	Extreme Downwind; Population Exposure; Upwind Background	Urban Scale	Rural	Active	4/1/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010029	Northwest Harris County	16822 Kitzman, Tomball	Relative Humidity	PAMS, SLAMS	Continuous	Extreme Downwind; Upwind Background	Urban Scale	Rural	Active	6/27/2002

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010029	Northwest Harris County	16822 Kitzman, Tomball	Solar Radiation	PAMS, SLAMS	Continuous	Extreme Downwind; Upwind Background	Urban Scale	Rural	Active	7/15/1998
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010029	Northwest Harris County	16822 Kitzman, Tomball	Temperature	PAMS, SLAMS	Continuous	Extreme Downwind; Upwind Background	Urban Scale	Rural	Active	4/1/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010029	Northwest Harris County	16822 Kitzman, Tomball	Wind	PAMS, SLAMS	Continuous	Extreme Downwind; Upwind Background	Urban Scale	Rural	Active	4/1/1997
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010416	Park Place	7421 Park Place Blvd, Houston	Barometric Pressure	SPM	Continuous	General Background	Neighbor-hood	Urban and Center City	Active	2/22/2006
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010416	Park Place	7421 Park Place Blvd, Houston	Dew Point	SPM	Continuous	General Background	Neighbor-hood	Urban and Center City	Active	2/22/2006
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010416	Park Place	7421 Park Place Blvd, Houston	NO, NO2, NOx	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	2/22/2006
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010416	Park Place	7421 Park Place Blvd, Houston	O3	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	2/22/2006
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010416	Park Place	7421 Park Place Blvd, Houston	Precipitation	SPM	Continuous	General Background	Neighbor-hood	Urban and Center City	Active	2/22/2006
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010416	Park Place	7421 Park Place Blvd, Houston	Relative Humidity	SPM	Continuous	General Background	Neighbor-hood	Urban and Center City	Active	2/22/2006
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010416	Park Place	7421 Park Place Blvd, Houston	SO2	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	2/22/2006

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010416	Park Place	7421 Park Place Blvd, Houston	Solar Radiation	SPM	Continuous	General Background	Neighbor-hood	Urban and Center City	Active	2/22/2006
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010416	Park Place	7421 Park Place Blvd, Houston	Temperature	SPM	Continuous	General Background	Neighbor-hood	Urban and Center City	Active	2/22/2006
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010416	Park Place	7421 Park Place Blvd, Houston	UV Radiation	SPM	Continuous	General Background	Neighbor-hood	Urban and Center City	Active	2/22/2006
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010416	Park Place	7421 Park Place Blvd, Houston	Wind	SPM	Continuous	General Background	Neighbor-hood	Urban and Center City	Active	2/22/2006
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482010071	Pasadena HL&P	1001 1/2 Red Bluff, Pasadena	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	12/31/2016
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011050	Seabrook Friendship Park	4522 Park Rd, Seabrook	NO, NO2, NOx	SLAMS	Continuous	Population Exposure	Middle Scale, Neighbor-hood	Suburban	Active	7/29/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011050	Seabrook Friendship Park	4522 Park Rd, Seabrook	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	7/29/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011050	Seabrook Friendship Park	4522 Park Rd, Seabrook	PM2.5 (TEOM)**	SPM	Continuous	Highest Concentration	Middle Scale	Suburban	Active	8/17/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011050	Seabrook Friendship Park	4522 Park Rd, Seabrook	SO2	SPM	Continuous	Population Exposure; Source Oriented	Neighbor-hood	Suburban	Inactive	12/31/2017
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011050	Seabrook Friendship Park	4522 Park Rd, Seabrook	Solar Radiation	SPM	Continuous	Highest Concentration	Middle Scale	Suburban	Active	6/26/2002

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011050	Seabrook Friendship Park	4522 Park Rd, Seabrook	Temperature	SPM	Continuous	Highest Concentration	Middle Scale	Suburban	Active	7/29/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	482011050	Seabrook Friendship Park	4522 Park Rd, Seabrook	Wind	SPM	Continuous	Highest Concentration	Middle Scale	Suburban	Active	7/29/2001
Coastal TX	Houston-The Woodlands-Sugar Land, TX	480710013	Smith Point Hawkins Camp	1850 Hawkins Camp Rd, Anahuac	Temperature	SPM	Continuous	Source Oriented	Neighbor-hood	Suburban	Active	9/6/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	480710013	Smith Point Hawkins Camp	1850 Hawkins Camp Rd, Anahuac	Wind	SPM	Continuous	Source Oriented	Neighbor-hood	Suburban	Active	9/1/2000
Coastal TX	Houston-The Woodlands-Sugar Land, TX	481670005	Texas City Ball Park	2516 1/2 Texas Avenue, Texas City	SO2	SPM	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Active	2/17/2004
Coastal TX	Houston-The Woodlands-Sugar Land, TX	481670004	Texas City Fire Station	2516 Texas Avenue, Texas City	PM10 (FRM)	QA Collocated, SLAMS	24 Hours; 1/6 Days	Highest Concentration	Neighbor-hood	Urban and Center City	Inactive	9/1/2017
Coastal TX	Houston-The Woodlands-Sugar Land, TX	481670004	Texas City Fire Station	2516 Texas Avenue, Texas City	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Highest Concentration	Neighbor-hood	Urban and Center City	Active	11/24/1989
Coastal TX	Kingsville, TX*	482730314	National Seashore	20420 Park Road, Corpus Christi	PM2.5 (TEOM)**	SPM	Continuous	Regional Transport	Regional Scale	Rural	Inactive	3/9/2018
Coastal TX	Kingsville, TX*	482730314	National Seashore	20420 Park Road, Corpus Christi	PM2.5 FEM (Beta 1022)	SPM	Continuous	Regional Transport	Regional Scale	Rural	Active	3/14/2018
Coastal TX	Kingsville, TX*	482730314	National Seashore	20420 Park Road, Corpus Christi	Temperature	SPM	Continuous	Regional Transport	Regional Scale	Rural	Active	12/11/2002
Coastal TX	Kingsville, TX*	482730314	National Seashore	20420 Park Road, Corpus Christi	Wind	SPM	Continuous	Regional Transport	Regional Scale	Rural	Active	12/11/2002
Coastal TX	Victoria, TX	484690003	Victoria	106 Mockingbird Lane, Victoria	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and	Active	1/21/1998

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
										Center City		
Coastal TX	Victoria, TX	484690003	Victoria	106 Mockingbird Lane, Victoria	Solar Radiation	SPM	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Active	8/13/2002
Coastal TX	Victoria, TX	484690003	Victoria	106 Mockingbird Lane, Victoria	Temperature	SPM	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Active	1/21/1998
Coastal TX	Victoria, TX	484690003	Victoria	106 Mockingbird Lane, Victoria	Wind	SPM	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Active	1/21/1998
Far West TX	El Paso, TX	481410055	Ascarate Park SE	650 R E Thomason Loop, El Paso	Barometric Pressure	PAMS, SLAMS	Continuous	Max Ozone Concentration ; Upwind Background	Neighbor-hood	Suburban	Active	1/21/2000
Far West TX	El Paso, TX	481410055	Ascarate Park SE	650 R E Thomason Loop, El Paso	Carbonyl	SPM	24 Hours; 1/6 Days	Max Ozone Concentration ; Upwind Background	Neighbor-hood	Suburban	Inactive	10/30/2018
Far West TX	El Paso, TX	481410055	Ascarate Park SE	650 R E Thomason Loop, El Paso	CO	SLAMS	Continuous	Highest Concentration	Urban Scale	Suburban	Inactive	12/31/2017
Far West TX	El Paso, TX	481410055	Ascarate Park SE	650 R E Thomason Loop, El Paso	Dew Point	SPM	Continuous	Highest Concentration ; Upwind Background	Urban Scale	Suburban	Active	9/24/1999
Far West TX	El Paso, TX	481410055	Ascarate Park SE	650 R E Thomason Loop, El Paso	NO, NO2, NOx	PAMS, SLAMS	Continuous	Highest Concentration ; Upwind Background	Neighborh ood Urban Scale	Suburban	Active	9/24/1999
Far West TX	El Paso, TX	481410055	Ascarate Park SE	650 R E Thomason Loop, El Paso	O3	PAMS, SLAMS	Continuous	Max Ozone Concentration ; Upwind Background	Neighbor-hood	Suburban	Active	9/24/1999
Far West TX	El Paso, TX	481410055	Ascarate Park SE	650 R E Thomason Loop, El Paso	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	11/19/2010
Far West TX	El Paso, TX	481410055	Ascarate Park SE	650 R E Thomason Loop, El Paso	Relative Humidity	PAMS, SLAMS	Continuous	Max Ozone Concentration ; Upwind Background	Neighbor-hood	Suburban	Active	11/6/2001

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Far West TX	El Paso, TX	481410055	Ascarate Park SE	650 R E Thomason Loop, El Paso	Solar Radiation	PAMS, SLAMS	Continuous	Max Ozone Concentration ; Upwind Background	Neighbor-hood	Suburban	Active	1/21/2000
Far West TX	El Paso, TX	481410055	Ascarate Park SE	650 R E Thomason Loop, El Paso	Temperature	PAMS, SLAMS	Continuous	Max Ozone Concentration ; Upwind Background	Neighbor-hood	Suburban	Active	9/24/1999
Far West TX	El Paso, TX	481410055	Ascarate Park SE	650 R E Thomason Loop, El Paso	TSP (Pb)	NCORE, SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Inactive	12/31/2016
Far West TX	El Paso, TX	481410055	Ascarate Park SE	650 R E Thomason Loop, El Paso	Visibility	SPM	Continuous	Highest Concentration ; Population Exposure	Urban Scale	Suburban	Active	11/19/2010
Far West TX	El Paso, TX	481410055	Ascarate Park SE	650 R E Thomason Loop, El Paso	Wind	PAMS, SLAMS	Continuous	Max Ozone Concentration ; Upwind Background	Neighbor-hood	Suburban	Active	8/31/1999
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	CO (High Sensitivity)	NCORE, SLAMS	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Active	11/16/2010
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	Dew Point	SPM	Continuous	Highest Concentration ; Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	7/2/1998
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	NO, NO2, NOx	NCORE PAMS SLAMS	Continuous	Highest Concentration ; Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	6/24/1998
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	NOy (High Sensitivity)	NCORE, SLAMS	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Active	11/18/2010
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	O3	NCORE PAMS SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	6/24/1998

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Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	PM10-2.5	NCORE, SLAMS	Continuous	Highest Concentration ; Population Exposure	Neighbor-hood	Urban and Center City	Active	1/25/2011
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	PM2.5 (FRM)	QA Collocated, SLAMS	24 Hours; 1/3 Days, 24 Hours; 1/6 Days	Highest Concentration ; Population Exposure	Neighbor-hood	Urban and Center City	Inactive	12/12/2019
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	PM2.5 (FRM)	NCORE, SLAMS, SPM	24 Hours; 1/3 Days	Highest Concentration ; Population Exposure	Neighbor-hood	Urban and Center City	Active	1/1/1999
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	PM2.5 (Speciation)	CSN STN, NCORE, SLAMS	24 Hours; 1/3 Days	Highest Concentration	Neighbor-hood	Urban and Center City	Active	10/1/2000
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	PM2.5 FEM (Beta 1020)	NCORE, SLAMS	Continuous	Highest Concentration ; Population Exposure	Neighbor-hood	Urban and Center City	Active	1/25/2011
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	Relative Humidity	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	4/14/1997
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	SO2 (High Sensitivity)	NCORE, SLAMS	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Active	11/18/2010
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	Solar Radiation	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	6/24/1998
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	Speciated VOC (AutoGC)	PAMS, SLAMS	Continuous	Highest Concentration ; Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	7/1/1995
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	Temperature	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	4/14/1997
Far West TX	El Paso, TX	481410044	El Paso Chamizal	800 S San Marcial Street, El Paso	Wind	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	4/14/1997

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Far West TX	El Paso, TX	481410038	El Paso Mimosa	7501 Mimosa Avenue, El Paso	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Active	10/12/1988
Far West TX	El Paso, TX	481410037	El Paso UTEP	250 Rim Rd, El Paso	CO	SPM	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Active	1/17/2018
Far West TX	El Paso, TX	481410037	El Paso UTEP	250 Rim Rd, El Paso	Dew Point	SPM	Continuous	Max Ozone Concentration ; Population Exposure	Neighbor-hood	Urban and Center City	Active	6/3/1998
Far West TX	El Paso, TX	481410037	El Paso UTEP	250 Rim Rd, El Paso	NO, NO2, NOx	PAMS, SLAMS	Continuous	Max Ozone Concentration ; Population Exposure	Neighbor-hood	Urban and Center City	Active	6/3/1998
Far West TX	El Paso, TX	481410037	El Paso UTEP	250 Rim Rd, El Paso	O3	PAMS, SLAMS	Continuous	Max Ozone Concentration ; Population Exposure	Neighbor-hood	Urban and Center City	Active	6/3/1998
Far West TX	El Paso, TX	481410037	El Paso UTEP	250 Rim Rd, El Paso	PM2.5 (FRM)	SLAMS, SPM	24 Hours; 1/6 Days	General Background; Population Exposure	Neighbor-hood	Urban and Center City	Active	1/1/2005
Far West TX	El Paso, TX	481410037	El Paso UTEP	250 Rim Rd, El Paso	PM2.5 (TEOM)**	SPM	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Active	2/1/2000
Far West TX	El Paso, TX	481410037	El Paso UTEP	250 Rim Rd, El Paso	Precipitation	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Urban and Center City	Active	8/11/2004
Far West TX	El Paso, TX	481410037	El Paso UTEP	250 Rim Rd, El Paso	Relative Humidity	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Urban and Center City	Active	11/6/2001
Far West TX	El Paso, TX	481410037	El Paso UTEP	250 Rim Rd, El Paso	SO2	SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	12/31/2017
Far West TX	El Paso, TX	481410037	El Paso UTEP	250 Rim Rd, El Paso	Solar Radiation	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Urban and Center City	Active	6/10/1996
Far West TX	El Paso, TX	481410037	El Paso UTEP	250 Rim Rd, El Paso	Temperature	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Urban and Center City	Active	6/3/1998

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Far West TX	El Paso, TX	481410037	El Paso UTEP	250 Rim Rd, El Paso	TSP (Pb)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	4/25/2012
Far West TX	El Paso, TX	481410037	El Paso UTEP	250 Rim Rd, El Paso	UV Radiation	PAMS, SLAMS, SPM	Continuous	Max Ozone Concentration	Neighbor-hood	Urban and Center City	Active	6/3/1998
Far West TX	El Paso, TX	481410037	El Paso UTEP	250 Rim Rd, El Paso	Wind	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Urban and Center City	Active	6/3/1998
Far West TX	El Paso, TX	481410029	Ivanhoe	10834 Ivanhoe (Ivanhoe Fire Station), El Paso	O3	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	3/29/2000
Far West TX	El Paso, TX	481410029	Ivanhoe	10834 Ivanhoe (Ivanhoe Fire Station), El Paso	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Active	10/1/1988
Far West TX	El Paso, TX	481410029	Ivanhoe	10834 Ivanhoe (Ivanhoe Fire Station), El Paso	Relative Humidity	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Inactive	8/31/2015
Far West TX	El Paso, TX	481410029	Ivanhoe	10834 Ivanhoe (Ivanhoe Fire Station), El Paso	Relative Humidity	Border Grant SLAMS	Continuous	General Background	Neighbor-hood	Suburban	Active	9/1/2015
Far West TX	El Paso, TX	481410029	Ivanhoe	10834 Ivanhoe (Ivanhoe Fire Station), El Paso	Temperature	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	9/1/2015
Far West TX	El Paso, TX	481410029	Ivanhoe	10834 Ivanhoe (Ivanhoe Fire Station), El Paso	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Inactive	8/31/2015
Far West TX	El Paso, TX	481410029	Ivanhoe	10834 Ivanhoe (Ivanhoe Fire Station), El Paso	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Inactive	8/31/2015
Far West TX	El Paso, TX	481410029	Ivanhoe	10834 Ivanhoe (Ivanhoe Fire Station), El Paso	Wind	Border Grant SLAMS	Continuous	General Background	Neighbor-hood	Suburban	Active	9/1/2015
Far West TX	El Paso, TX	481411021	Ojo De Agua	6767 Ojo De Agua, El Paso	CO	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	6/6/2013
Far West TX	El Paso, TX	481411021	Ojo De Agua	6767 Ojo De Agua, El Paso	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Active	4/15/2013
Far West TX	El Paso, TX	481411021	Ojo De Agua	6767 Ojo De Agua, El Paso	PM10 (FRM)	QA Collocated SLAMS	24 Hours; 1/12 Days	Population Exposure	Neighbor-hood	Suburban	Active	4/15/2013
Far West TX	El Paso, TX	481411021	Ojo De Agua	6767 Ojo De Agua, El Paso	TSP (Pb)	QA Collocated, SLAMS	24 Hours; 1/12 Days	Population Exposure	Neighbor-hood	Suburban	Inactive	11/5/2018
Far West TX	El Paso, TX	481411021	Ojo De Agua	6767 Ojo De Agua, El Paso	TSP (Pb)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Active	4/15/2013

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Far West TX	El Paso, TX	481411021	Ojo De Agua	6767 Ojo De Agua, El Paso	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	5/24/2013
Far West TX	El Paso, TX	481410058	Skyline Park	5050A Yvette Drive, El Paso	O3	Border Grant SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	7/11/2000
Far West TX	El Paso, TX	481410058	Skyline Park	5050A Yvette Drive, El Paso	SO2	Border Grant SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Inactive	12/13/2017
Far West TX	El Paso, TX	481410058	Skyline Park	5050A Yvette Drive, El Paso	Temperature	Border Grant SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	7/11/2000
Far West TX	El Paso, TX	481410058	Skyline Park	5050A Yvette Drive, El Paso	Wind	Border Grant SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	7/1/2000
Far West TX	El Paso, TX	481410057	Socorro Hueco	320 Old Hueco Tanks Road, El Paso	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	12/5/2012
Far West TX	El Paso, TX	481410057	Socorro Hueco	320 Old Hueco Tanks Road, El Paso	PM10 (FRM)	Border Grant SLAMS	24 Hours; 1/6 Days	General Background; Population Exposure	Neighbor-hood	Suburban	Active	12/5/2012
Far West TX	El Paso, TX	481410057	Socorro Hueco	320 Old Hueco Tanks Road, El Paso	PM10 (FRM)	Border Grant, QA Collocated SLAMS	24 Hours; 1/12 Days	Population Exposure	Neighbor-hood	Suburban	Active	12/5/2012
Far West TX	El Paso, TX	481410057	Socorro Hueco	320 Old Hueco Tanks Road, El Paso	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	12/5/2012
Far West TX	El Paso, TX	481410057	Socorro Hueco	320 Old Hueco Tanks Road, El Paso	SVOC	SPM	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Inactive	9/1/2019
Far West TX	El Paso, TX	481410057	Socorro Hueco	320 Old Hueco Tanks Road, El Paso	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	12/5/2012
Far West TX	El Paso, TX	481410057	Socorro Hueco	320 Old Hueco Tanks Road, El Paso	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	12/5/2012
Far West TX	El Paso, TX	481410693	Van Buren	2700 Harrison Avenue, El Paso	PM10 (FRM)	SPM	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	8/6/2010
Far West TX	El Paso, TX	481410693	Van Buren	2700 Harrison Avenue, El Paso	Relative Humidity	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	8/3/2010
Far West TX	El Paso, TX	481410693	Van Buren	2700 Harrison Avenue, El Paso	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	8/3/2010

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Far West TX	El Paso, TX	481410693	Van Buren	2700 Harrison Avenue, El Paso	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	7/5/2010
Far West TX	none	480430101	Bravo Big Bend	Big Bend National Park, Big Bend Nat Park	PM2.5 (TEOM)**	SPM	Continuous	Regional Transport	Regional Scale	Rural	Inactive	11/30/2016
Far West TX	none	480430101	Bravo Big Bend	Big Bend National Park, Big Bend Nat Park	PM2.5 FEM (Beta 1022)	SPM	Continuous	General Background	Regional Scale	Rural	Active	5/5/2017
Far West TX	none	480430101	Bravo Big Bend	Big Bend National Park, Big Bend Nat Park	Temperature	SPM	Continuous	General Background	Microscale	Rural	Active	12/17/2007
Far West TX	none	480430101	Bravo Big Bend	Big Bend National Park, Big Bend Nat Park	Wind	SPM	Continuous	General Background	Regional Scale	Rural	Active	12/17/2007
LRGV Tx	Brownsville-Harlingen, TX	480610006	Brownsville	344 Porter Drive, Brownsville	CO	SPM	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Inactive	12/31/2017
LRGV Tx	Brownsville-Harlingen, TX	480610006	Brownsville	344 Porter Drive, Brownsville	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	12/31/2017
LRGV Tx	Brownsville-Harlingen, TX	480610006	Brownsville	344 Porter Drive, Brownsville	PM2.5 (FRM)	SLAMS	24 Hours; 1/3 Days	Population Exposure	Regional Scale	Urban and Center City	Inactive	12/31/2017
LRGV Tx	Brownsville-Harlingen, TX	480610006	Brownsville	344 Porter Drive, Brownsville	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Urban Scale	Urban and Center City	Inactive	12/31/2016
LRGV Tx	Brownsville-Harlingen, TX	480610006	Brownsville	344 Porter Drive, Brownsville	PM2.5 FEM (Beta 1022)	SLAMS	Continuous	Population Exposure	Regional Scale	Urban and Center City	Active	1/24/2018
LRGV Tx	Brownsville-Harlingen, TX	480610006	Brownsville	344 Porter Drive, Brownsville	Solar Radiation	SPM	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Active	8/13/2002
LRGV Tx	Brownsville-Harlingen, TX	480610006	Brownsville	344 Porter Drive, Brownsville	SVOC	SPM	24 Hours; 1/6 Days	Population Exposure; Upwind Background	Middle Scale	Urban and Center City	Inactive	9/1/2019

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
LRGV Tx	Brownsville-Harlingen, TX	480610006	Brownsville	344 Porter Drive, Brownsville	Temperature	SPM	Continuous	Population Exposure	Urban Scale	Urban and Center City	Active	4/7/1998
LRGV Tx	Brownsville-Harlingen, TX	480610006	Brownsville	344 Porter Drive, Brownsville	TSP (Pb)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Urban Scale	Urban and Center City	Inactive	12/31/2017
LRGV Tx	Brownsville-Harlingen, TX	480610006	Brownsville	344 Porter Drive, Brownsville	Wind	SPM	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Active	4/7/1998
LRGV Tx	Brownsville-Harlingen, TX	480611023	Harlingen Teege	1602 W Teege Avenue, Harlingen	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	10/9/2012
LRGV Tx	Brownsville-Harlingen, TX	480611023	Harlingen Teege	1602 W Teege Avenue, Harlingen	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	10/9/2012
LRGV Tx	Brownsville-Harlingen, TX	480611023	Harlingen Teege	1602 W Teege Avenue, Harlingen	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	10/9/2012
LRGV Tx	Brownsville-Harlingen, TX	480612004	Isla Blanca State Park Road	Lot B 69 1/2, South Padre Island	PM2.5 (TEOM)**	SPM	Continuous	Regional Transport	Urban Scale	Rural	Inactive	9/30/2019
LRGV Tx	Brownsville-Harlingen, TX	480612004	Isla Blanca State Park Road	Lot B 69 1/2, South Padre Island	PM2.5 FEM (Beta 1022)	SPM	Continuous	Regional Transport	Urban Scale	Rural	Active	10/7/2019
LRGV Tx	Brownsville-Harlingen, TX	480612004	Isla Blanca State Park Road	Lot B 69 1/2, South Padre Island	Temperature	SPM	Continuous	Regional Transport	Regional Scale	Rural	Active	8/2/2005
LRGV Tx	Brownsville-Harlingen, TX	480612004	Isla Blanca State Park Road	Lot B 69 1/2, South Padre Island	Wind	SPM	Continuous	Regional Transport	Regional Scale	Rural	Active	8/2/2005
LRGV Tx	Eagle Pass, TX	483230004	Eagle Pass	265 Foster Maldonado, Eagle Pass	PM2.5 (TEOM)**	SPM	Continuous	Regional Transport	Regional Scale	Urban and Center City	Inactive	3/26/2018
LRGV Tx	Eagle Pass, TX	483230004	Eagle Pass	265 Foster Maldonado, Eagle Pass	PM2.5 FEM (Beta 1022)	SPM	Continuous	Regional Transport	Regional Scale	Urban and Center City	Active	3/28/2018
LRGV Tx	Eagle Pass, TX	483230004	Eagle Pass	265 Foster Maldonado, Eagle Pass	Temperature	SPM	Continuous	Regional Transport	Regional Scale	Urban and Center City	Active	8/23/2005
LRGV Tx	Eagle Pass, TX	483230004	Eagle Pass	265 Foster Maldonado, Eagle Pass	Visibility	SPM	Continuous	Regional Transport	Regional Scale	Urban and Center City	Active	8/23/2005

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
LRGV Tx	Eagle Pass, TX	483230004	Eagle Pass	265 Foster Maldonado, Eagle Pass	Wind	SPM	Continuous	Regional Transport	Regional Scale	Urban and Center City	Active	8/23/2005
LRGV Tx	Laredo, TX	484790017	Laredo Bridge	700 Zaragosa St, Laredo	CO	Border Grant SLAMS	Continuous	Population Exposure; Source Oriented	Microscale	Urban and Center City	Inactive	12/31/2017
LRGV Tx	Laredo, TX	484790017	Laredo Bridge	700 Zaragosa St, Laredo	PM10 (FRM)	Border Grant SLAMS	24 Hours; 1/6 Days	Highest Concentration	Microscale	Urban and Center City	Active	10/3/1999
LRGV Tx	Laredo, TX	484790017	Laredo Bridge	700 Zaragosa St, Laredo	Speciated VOC (Canister)	Border Grant SLAMS	24 Hours; 1/6 Days	Highest Concentration	Neighbor-hood	Urban and Center City	Active	12/20/2000
LRGV Tx	Laredo, TX	484790017	Laredo Bridge	700 Zaragosa St, Laredo	Temperature	Border Grant SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	9/21/1999
LRGV Tx	Laredo, TX	484790017	Laredo Bridge	700 Zaragosa St, Laredo	Wind	Border Grant SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	9/21/1999
LRGV Tx	Laredo, TX	484790016	Laredo Vidaurri	2020 Vidaurri Ave, Laredo	CO	Border Grant SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	8/15/2012
LRGV Tx	Laredo, TX	484790016	Laredo Vidaurri	2020 Vidaurri Ave, Laredo	O3	Border Grant SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	8/15/2012
LRGV Tx	Laredo, TX	484790016	Laredo Vidaurri	2020 Vidaurri Ave, Laredo	PM10 (FRM)	Border Grant SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Active	8/17/2012
LRGV Tx	Laredo, TX	484790016	Laredo Vidaurri	2020 Vidaurri Ave, Laredo	PM10 (FRM)	Border Grant, QA Collocated SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Inactive	12/31/2016
LRGV Tx	Laredo, TX	484790016	Laredo Vidaurri	2020 Vidaurri Ave, Laredo	Temperature	Border Grant SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	8/15/2012
LRGV Tx	Laredo, TX	484790016	Laredo Vidaurri	2020 Vidaurri Ave, Laredo	TSP (Pb)	Border Grant SLAMS SPM	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Inactive	12/31/2017
LRGV Tx	Laredo, TX	484790016	Laredo Vidaurri	2020 Vidaurri Ave, Laredo	Wind	Border Grant SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	8/15/2012
LRGV Tx	Laredo, TX	484790313	World Trade Bridge	Mines Road 11601 FM 1472, Laredo	PM2.5 (TEOM)**	Border Grant SLAMS SPM	Continuous	Source Oriented	Microscale	Suburban	Inactive	3/1/2018

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
LRGV Tx	Laredo, TX	484790313	World Trade Bridge	Mines Road 11601 FM 1472, Laredo	PM2.5 FEM (Beta 1022)	SLAMS	Continuous	Source Oriented	Microscale	Suburban	Active	3/28/2018
LRGV Tx	McAllen-Edinburg-Mission, TX	482151046	Edinburg East Freddy Gonzalez Drive	1491 East Freddy Gonzalez Drive, Edinburg	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Regional Scale	Urban and Center City	Active	7/16/2015
LRGV Tx	McAllen-Edinburg-Mission, TX	482151046	Edinburg East Freddy Gonzalez Drive	1491 East Freddy Gonzalez Drive, Edinburg	PM2.5 (FRM)	SLAMS	24 Hours; 1/3 Days	Population Exposure	Regional Scale	Urban and Center City	Active	7/8/2015
LRGV Tx	McAllen-Edinburg-Mission, TX	482151046	Edinburg East Freddy Gonzalez Drive	1491 East Freddy Gonzalez Drive, Edinburg	Temperature	SPM	Continuous	Population Exposure	Regional Scale	Urban and Center City	Active	7/15/2015
LRGV Tx	McAllen-Edinburg-Mission, TX	482151046	Edinburg East Freddy Gonzalez Drive	1491 East Freddy Gonzalez Drive, Edinburg	Wind	SPM	Continuous	Population Exposure	Regional Scale	Urban and Center City	Active	7/15/2015
LRGV Tx	McAllen-Edinburg-Mission, TX	482150043	Mission	2300 North Glasscock, Mission	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	4/6/1998
LRGV Tx	McAllen-Edinburg-Mission, TX	482150043	Mission	2300 North Glasscock, Mission	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Urban Scale	Suburban	Active	1/18/2008
LRGV Tx	McAllen-Edinburg-Mission, TX	482150043	Mission	2300 North Glasscock, Mission	PM2.5 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Urban Scale	Suburban	Inactive	12/31/2017
LRGV Tx	McAllen-Edinburg-Mission, TX	482150043	Mission	2300 North Glasscock, Mission	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Urban Scale	Suburban	Inactive	1/16/2018
LRGV Tx	McAllen-Edinburg-Mission, TX	482150043	Mission	2300 North Glasscock, Mission	PM2.5 FEM (Beta 1022)	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	Active	1/24/2018
LRGV Tx	McAllen-Edinburg-Mission, TX	482150043	Mission	2300 North Glasscock, Mission	Solar Radiation	SPM	Continuous	Population Exposure	Microscale	Suburban	Active	8/13/2002
LRGV Tx	McAllen-Edinburg-Mission, TX	482150043	Mission	2300 North Glasscock, Mission	SVOC	SPM	24 Hours; 1/6 Days	Population Exposure	Microscale	Suburban	Inactive	9/1/2019
LRGV Tx	McAllen-Edinburg-Mission, TX	482150043	Mission	2300 North Glasscock, Mission	Temperature	SPM	Continuous	Population Exposure	Microscale	Suburban	Active	4/6/1998

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LRGV Tx	McAllen-Edinburg-Mission, TX	482150043	Mission	2300 North Glasscock, Mission	Wind	SPM	Continuous	Population Exposure	Microscale	Suburban	Active	4/6/1998
North and Northeast TX	Corsicana, TX*	483491051	Corsicana Airport	Corsicana Airport, Corsicana	Dew Point	SPM	Continuous	Source Oriented	Neighbor-hood	Rural	Active	6/17/2009
North and Northeast TX	Corsicana, TX*	483491051	Corsicana Airport	Corsicana Airport, Corsicana	NO, NO2, NOx	SPM	Continuous	General Background; Max Precursor Emissions Impact	Urban Scale	Rural	Active	6/16/2009
North and Northeast TX	Corsicana, TX*	483491051	Corsicana Airport	Corsicana Airport, Corsicana	O3	SPM	Continuous	General Background; Max Ozone Concentration	Urban Scale	Rural	Active	6/16/2009
North and Northeast TX	Corsicana, TX*	483491051	Corsicana Airport	Corsicana Airport, Corsicana	PM2.5 (TEOM)**	SPM	Continuous	Source Oriented	Neighbor-hood	Rural	Active	6/16/2009
North and Northeast TX	Corsicana, TX*	483491051	Corsicana Airport	Corsicana Airport, Corsicana	Relative Humidity	SPM	Continuous	General Background	Urban Scale	Rural	Active	6/16/2009
North and Northeast TX	Corsicana, TX*	483491051	Corsicana Airport	Corsicana Airport, Corsicana	SO2	SPM	Continuous	Source Oriented	Urban Scale	Rural	Active	6/16/2009
North and Northeast TX	Corsicana, TX*	483491051	Corsicana Airport	Corsicana Airport, Corsicana	Temperature	SPM	Continuous	General Background	Urban Scale	Rural	Active	6/16/2009
North and Northeast TX	Corsicana, TX*	483491051	Corsicana Airport	Corsicana Airport, Corsicana	Wind	SPM	Continuous	General Background	Urban Scale	Rural	Active	6/16/2009
North and Northeast TX	Corsicana, TX*	483491081	Richland Southeast 1220 Road	Southeast 1220 Road, Richland	SO2	SLAMS	Continuous	Source Oriented	Neighbor-hood	Rural	Active	11/16/2016
North and Northeast TX	Corsicana, TX*	483491081	Richland Southeast 1220 Road	Southeast 1220 Road, Richland	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	11/16/2016
North and Northeast TX	Corsicana, TX*	483491081	Richland Southeast 1220 Road	Southeast 1220 Road, Richland	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	11/16/2016
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393011	Arlington Municipal Airport	5504 South Collins Street, Arlington	NO, NO2, NOx	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	1/17/2002

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North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393011	Arlington Municipal Airport	5504 South Collins Street, Arlington	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	1/17/2002
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393011	Arlington Municipal Airport	5504 South Collins Street, Arlington	PM2.5 (TEOM)**	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Inactive	12/4/2018
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393011	Arlington Municipal Airport	5504 South Collins Street, Arlington	Solar Radiation	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	5/8/2002
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393011	Arlington Municipal Airport	5504 South Collins Street, Arlington	Temperature	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	1/17/2002
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393011	Arlington Municipal Airport	5504 South Collins Street, Arlington	Wind	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	1/17/2002
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482510003	Cleburne Airport	1650 Airport Drive, Cleburne	O3	PAMS, SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	Active	5/10/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482510003	Cleburne Airport	1650 Airport Drive, Cleburne	Solar Radiation	PAMS, SLAMS	Continuous	General Background	Neighbor-hood	Suburban	Active	5/8/2002
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482510003	Cleburne Airport	1650 Airport Drive, Cleburne	Temperature	PAMS, SLAMS	Continuous	General Background	Neighbor-hood	Suburban	Active	5/10/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482510003	Cleburne Airport	1650 Airport Drive, Cleburne	Wind	PAMS, SLAMS	Continuous	General Background	Neighbor-hood	Suburban	Active	5/1/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130050	Convention Center	717 South Akard, Dallas	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	8/1/1988
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130050	Convention Center	717 South Akard, Dallas	PM10 (FRM)	QA Collocated SLAMS	24 Hours; 1/12 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	1/1/2011
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130050	Convention Center	717 South Akard, Dallas	PM2.5 (FRM)	SLAMS	24 Hours; 1/3 Days	Highest Concentration ; Population Exposure	Neighbor-hood	Urban and Center City	Active	6/28/2002

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North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130050	Convention Center	717 South Akard, Dallas	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	4/2/2002
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130050	Convention Center	717 South Akard, Dallas	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	4/2/2002
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	Barometric Pressure	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	5/11/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	Carbonyl	PAMS, SLAMS	24 Hours; 1/6 days; Seasonal, Three 8-Hour; 1/3 day; Seasonal	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	6/29/1999
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	CO (High Sensitivity)	NCORE PAMS SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	1/1/2011
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	Dew Point	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	3/15/2004
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	NO, NO2, NOx	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Inactive	5/6/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	NO2 (Direct)	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	5/30/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	NOy (High Sensitivity)	NCORE PAMS SLAMS	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Active	3/2/2011
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	O3	NCORE PAMS SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	4/4/1995

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North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	PM10-2.5	NCORE, SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	2/22/2011
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	PM2.5 (FRM)	QA Collocated, SLAMS, SPM	24 Hours; 1/6 Days, 24 Hours; 1/12 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	3/31/1999
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	PM2.5 (FRM)	NCORE, SLAMS	24 Hours; 1/3 Days, 24 Hours; 1/1 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	1/1/1999
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	PM2.5 (Speciation)	CSN STN, NCORE, SLAMS	24 Hours; 1/3 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	10/1/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	PM2.5 (TEOM)**	SPM	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Inactive	12/31/2015
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	PM2.5 FEM (Beta 1020)	NCORE, SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	2/22/2011
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	Precipitation	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	6/1/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	Relative Humidity	NCORE PAMS SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	1/18/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	SO2 (High Sensitivity)	NCORE SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	1/1/2011
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	Solar Radiation	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	12/15/1999
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	Speciated VOC (AutoGC)	PAMS, SLAMS	Continuous	Highest Concentration ; Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	6/4/1996

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North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	Speciated VOC (Canister)	PAMS, SLAMS, SPM	24 Hours; 1/6 Days	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	7/29/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	Temperature	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	4/4/1995
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	TSP (Pb)	NCORE, SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	12/31/2016
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	UV Radiation	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	5/11/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	Visibility	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	3/13/2001
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130069	Dallas Hinton	1415 Hinton Street, Dallas	Wind	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	12/14/1999
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481131067	Dallas LBJ Freeway	8652 LBJ Freeway, Dallas	NO, NO2, NOx	Near-Road SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	4/2/2014
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481131067	Dallas LBJ Freeway	8652 LBJ Freeway, Dallas	Temperature	SPM	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	4/2/2014
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481131067	Dallas LBJ Freeway	8652 LBJ Freeway, Dallas	Wind	SPM	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	4/2/2014
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130075	Dallas North #2	12532 1/2 Nuestra Drive, Dallas	NO, NO2, NOx	PAMS, SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	11/3/1998
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130075	Dallas North #2	12532 1/2 Nuestra Drive, Dallas	O3	PAMS, SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	Active	11/3/1998
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130075	Dallas North #2	12532 1/2 Nuestra Drive, Dallas	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Urban Scale	Suburban	Inactive	12/31/2018

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North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130075	Dallas North #2	12532 1/2 Nuestra Drive, Dallas	Solar Radiation	PAMS, SLAMS, SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	5/16/2002
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130075	Dallas North #2	12532 1/2 Nuestra Drive, Dallas	Temperature	PAMS, SLAMS, SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	11/3/1998
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130075	Dallas North #2	12532 1/2 Nuestra Drive, Dallas	Wind	PAMS	Continuous	General Background	Neighbor-hood	Suburban	Active	11/3/1998
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130087	Dallas Redbird Airport Executive	3277 W Redbird Lane, Dallas	NO, NO2, NOx	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	4/1/1995
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130087	Dallas Redbird Airport Executive	3277 W Redbird Lane, Dallas	O3	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	Active	12/13/1999
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130087	Dallas Redbird Airport Executive	3277 W Redbird Lane, Dallas	Temperature	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	12/13/1999
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130087	Dallas Redbird Airport Executive	3277 W Redbird Lane, Dallas	Wind	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	12/13/1999
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481210034	Denton Airport South	Denton Airport South, Denton	Dew Point	SPM	Continuous	Population Exposure	Urban Scale	Rural	Active	6/7/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481210034	Denton Airport South	Denton Airport South, Denton	NO, NO2, NOx	PAMS, SLAMS	Continuous	Max Ozone Concentration ; Population Exposure	Urban Scale	Rural	Active	3/20/1998
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481210034	Denton Airport South	Denton Airport South, Denton	NOy (High Sensitivity)	PAMS, SLAMS	Continuous	Max Ozone Concentration ; Population Exposure	Urban Scale	Rural	Active	5/9/2008
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481210034	Denton Airport South	Denton Airport South, Denton	O3	PAMS, SLAMS	Continuous	Max Ozone Concentration ; Population Exposure	Urban Scale	Rural	Active	3/20/1998
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481210034	Denton Airport South	Denton Airport South, Denton	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Urban Scale	Rural	Inactive	7/30/2019

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North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481210034	Denton Airport South	Denton Airport South, Denton	PM2.5 FEM (Beta 1022)	SPM	Continuous	Population Exposure	Urban Scale	Rural	Active	7/30/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481210034	Denton Airport South	Denton Airport South, Denton	Precipitation	PAMS, SLAMS	Continuous	Max Ozone Concentration	Urban Scale	Rural	Active	11/16/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481210034	Denton Airport South	Denton Airport South, Denton	Relative Humidity	PAMS, SLAMS	Continuous	Max Ozone Concentration	Urban Scale	Rural	Active	6/7/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481210034	Denton Airport South	Denton Airport South, Denton	Solar Radiation	PAMS, SLAMS	Continuous	Max Ozone Concentration	Urban Scale	Rural	Active	6/7/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481210034	Denton Airport South	Denton Airport South, Denton	Speciated VOC (Canister)	PAMS, SLAMS	24 Hours; 1/6 Days	Max Ozone Concentration ; Population Exposure	Urban Scale	Rural	Active	6/11/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481210034	Denton Airport South	Denton Airport South, Denton	Temperature	PAMS, SLAMS	Continuous	Max Ozone Concentration	Urban Scale	Rural	Active	3/20/1998
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481210034	Denton Airport South	Denton Airport South, Denton	Wind	PAMS, SLAMS	Continuous	Max Ozone Concentration	Urban Scale	Rural	Active	3/20/1998
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484390075	Eagle Mountain Lake	14290 Morris Dido Newark Rd, Eagle Mountain	NO, NO2, NOx	SPM	Continuous	Max Precursor Emissions Impact	Urban Scale	Rural	Active	4/10/2010
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484390075	Eagle Mountain Lake	14290 Morris Dido Newark Rd, Eagle Mountain	O3	SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Rural	Active	6/1/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484390075	Eagle Mountain Lake	14290 Morris Dido Newark Rd, Eagle Mountain	Solar Radiation	SPM	Continuous	Highest Concentration	Middle Scale	Rural	Active	5/8/2002
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484390075	Eagle Mountain Lake	14290 Morris Dido Newark Rd, Eagle Mountain	Temperature	SPM	Continuous	Highest Concentration	Middle Scale	Rural	Active	6/6/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484390075	Eagle Mountain Lake	14290 Morris Dido Newark Rd, Eagle Mountain	Wind	SPM	Continuous	Highest Concentration	Middle Scale	Rural	Active	6/6/2000

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130061	Earhart	3434 Bickers (Earhart Elem School), Dallas	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Urban and Center City	Active	4/1/2009
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391053	Fort Worth California Parkway North	1198 California Parkway North, <none>	CO	Near-Road SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	3/12/2015
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391053	Fort Worth California Parkway North	1198 California Parkway North, <none>	NO, NO2, NOx	Near-Road SLAMS	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	3/12/2015
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391053	Fort Worth California Parkway North	1198 California Parkway North, <none>	PM2.5 (FRM)	Near-Road SLAMS	24 Hours; 1/3 Days	Max Precursor Emissions Impact	Microscale	Urban and Center City	Inactive	7/30/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391053	Fort Worth California Parkway North	1198 California Parkway North, <none>	PM2.5 FEM (Beta 1022)	QA Collocated, SLAMS	Continuous	Quality Assurance	Microscale	Urban and Center City	Active	7/31/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391053	Fort Worth California Parkway North	1198 California Parkway North, <none>	PM2.5 FEM (Beta 1022)	Near-Road SLAMS	Continuous	Population Exposure	Microscale	Urban and Center City	Active	7/31/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391053	Fort Worth California Parkway North	1198 California Parkway North, <none>	Temperature	SPM	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	3/12/2015
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391053	Fort Worth California Parkway North	1198 California Parkway North, <none>	Wind	SPM	Continuous	Max Precursor Emissions Impact	Microscale	Urban and Center City	Active	3/12/2015
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391002	Fort Worth Northwest	3317 Ross Ave, Fort Worth	Carbonyl	PAMS, SLAMS	24 Hours; 1/6 Days, Seasonal	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	5/27/2003
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391002	Fort Worth Northwest	3317 Ross Ave, Fort Worth	Dew Point	SPM	Continuous	Population Exposure	Middle Scale	Urban and Center City	Active	10/18/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391002	Fort Worth Northwest	3317 Ross Ave, Fort Worth	NO, NO2, NOx	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	1/1/1976

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391002	Fort Worth Northwest	3317 Ross Ave, Fort Worth	O3	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	8/12/1997
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391002	Fort Worth Northwest	3317 Ross Ave, Fort Worth	PM2.5 (FRM)	SLAMS	24 Hours; 1/3 Days	Population Exposure	Neighbor-hood	Urban and Center City	Inactive	7/30/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391002	Fort Worth Northwest	3317 Ross Ave, Fort Worth	PM2.5 FEM (Beta 1022)	SLAMS	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	7/31/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391002	Fort Worth Northwest	3317 Ross Ave, Fort Worth	Relative Humidity	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	10/18/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391002	Fort Worth Northwest	3317 Ross Ave, Fort Worth	Solar Radiation	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	10/18/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391002	Fort Worth Northwest	3317 Ross Ave, Fort Worth	Speciated VOC (AutoGC)	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	5/6/2003
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391002	Fort Worth Northwest	3317 Ross Ave, Fort Worth	Speciated VOC (Canister)	PAMS, SLAMS, SPM	24 Hours; 1/6 Days	Max Precursor Emissions Impact; Population Exposure	Neighbor-hood	Urban and Center City	Active	11/5/2003
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391002	Fort Worth Northwest	3317 Ross Ave, Fort Worth	Temperature	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	8/12/1997
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391002	Fort Worth Northwest	3317 Ross Ave, Fort Worth	Wind	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Neighbor-hood	Urban and Center City	Active	8/12/1997
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	480850005	Frisco	6590 Hillcrest Road, Frisco	O3	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	Active	7/29/1997
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	480850005	Frisco	6590 Hillcrest Road, Frisco	Solar Radiation	SPM	Continuous	General Background	Urban Scale	Suburban	Active	5/16/2002

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North and Northeast TX	Dallas-Fort Worth-Arlington, TX	480850005	Frisco	6590 Hillcrest Road, Frisco	Temperature	SPM	Continuous	General Background	Urban Scale	Suburban	Active	6/12/1997
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	480850005	Frisco	6590 Hillcrest Road, Frisco	Wind	SPM	Continuous	General Background	Urban Scale	Suburban	Active	6/12/1997
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	480850003	Frisco 5th St	7471 South 5th Street, Frisco	TSP (Pb)	SLAMS	24 Hours; 1/6 Days	Population Exposure; Source Oriented	Middle Scale	Suburban	Inactive	12/31/2018
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	480850007	Frisco 7	6931 Ash Street, Frisco	TSP (Pb)	QA Collocated, SLAMS	24 Hours; 1/6 Days	Population Exposure; Source Oriented	Neighbor-hood	Suburban	Inactive	1/31/2017
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	480850007	Frisco 7	6931 Ash Street, Frisco	TSP (Pb)	SLAMS	24 Hours; 1/6 Days	Population Exposure; Source Oriented	Neighbor-hood	Suburban	Inactive	12/31/2018
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	480850009	Frisco Eubanks	6601 Eubanks, Frisco	Temperature	SPM	Continuous	Population Exposure; Source Oriented	Neighbor-hood	Suburban	Active	6/8/2011
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	480850009	Frisco Eubanks	6601 Eubanks, Frisco	TSP (Pb)	QA Collocated SLAMS	24 Hours; 1/6 Days, 24 Hours; 1/12 Days	Population Exposure; Source Oriented	Neighbor-hood	Suburban	Active	11/17/2011
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	480850009	Frisco Eubanks	6601 Eubanks, Frisco	TSP (Pb)	SLAMS	24 Hours; 1/6 Days	Population Exposure; Source Oriented	Neighbor-hood	Suburban	Active	1/15/1995
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	480850009	Frisco Eubanks	6601 Eubanks, Frisco	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	6/8/2011
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	480850029	Frisco Stonebrook	7202 Stonebrook Parkway, Frisco	TSP (Pb)	SPM	24 Hours; 1/6 Days	Population Exposure; Source Oriented	Neighbor-hood	Suburban	Active	1/7/2011
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393009	Grapevine Fairway	4100 Fairway Dr, Grapevine	Barometric Pressure	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Suburban	Active	10/19/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393009	Grapevine Fairway	4100 Fairway Dr, Grapevine	Dew Point	SPM	Continuous	Highest Concentration ; Max Ozone Concentration	Neighbor-hood	Suburban	Active	10/16/2000

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393009	Grapevine Fairway	4100 Fairway Dr, Grapevine	NO, NO2, NOx	PAMS, SLAMS	Continuous	Max Ozone Concentration ; Population Exposure	Neighbor-hood	Suburban	Active	9/12/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393009	Grapevine Fairway	4100 Fairway Dr, Grapevine	O3	PAMS, SLAMS	Continuous	Max Ozone Concentration ; Population Exposure	Neighbor-hood	Suburban	Active	8/4/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393009	Grapevine Fairway	4100 Fairway Dr, Grapevine	Relative Humidity	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Suburban	Active	10/16/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393009	Grapevine Fairway	4100 Fairway Dr, Grapevine	Solar Radiation	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Suburban	Active	10/18/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393009	Grapevine Fairway	4100 Fairway Dr, Grapevine	Speciated VOC (Canister)	PAMS, SLAMS	24 Hours; 1/6 Days	Max Ozone Concentration ; Population Exposure	Neighbor-hood	Suburban	Active	10/30/2003
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393009	Grapevine Fairway	4100 Fairway Dr, Grapevine	Temperature	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Suburban	Active	8/4/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393009	Grapevine Fairway	4100 Fairway Dr, Grapevine	Wind	PAMS, SLAMS	Continuous	Max Ozone Concentration	Neighbor-hood	Suburban	Active	8/1/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482311006	Greenville	824 Sayle Street, Greenville	NO, NO2, NOx	SLAMS	Continuous	Population Exposure; Upwind Background	Neighbor-hood	Suburban	Active	3/20/2003
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482311006	Greenville	824 Sayle Street, Greenville	O3	SLAMS	Continuous	Population Exposure; Upwind Background	Neighbor-hood	Suburban	Active	3/20/2003
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482311006	Greenville	824 Sayle Street, Greenville	Solar Radiation	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	3/20/2003
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482311006	Greenville	824 Sayle Street, Greenville	Temperature	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	3/20/2003

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482311006	Greenville	824 Sayle Street, Greenville	Wind	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	3/20/2003
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391006	Haws Athletic Center	600 1/2 Congress St, Fort Worth	PM2.5 (FRM)	SLAMS	24 Hours; 1/3 Days	Highest Concentration ; Population Exposure	Neighbor-hood	Urban and Center City	Inactive	12/2/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391006	Haws Athletic Center	600 1/2 Congress St, Fort Worth	PM2.5 (TEOM)**	SPM	Continuous	Highest Concentration	Neighbor-hood	Urban and Center City	Inactive	12/4/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484391006	Haws Athletic Center	600 1/2 Congress St, Fort Worth	PM2.5 FEM (Beta 1022)	SPM	Continuous	Population Exposure	Neighbor-hood	Urban and Center City	Active	12/4/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481391044	Italy	900 FM 667 Ellis County, Italy	Dew Point	SPM	Continuous	Upwind Background	Urban Scale	Rural	Active	8/31/2007
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481391044	Italy	900 FM 667 Ellis County, Italy	NO, NO2, NOx	PAMS, SLAMS	Continuous	Upwind Background	Urban Scale	Rural	Active	8/31/2007
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481391044	Italy	900 FM 667 Ellis County, Italy	O3	PAMS, SLAMS	Continuous	Upwind Background	Urban Scale	Rural	Active	8/31/2007
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481391044	Italy	900 FM 667 Ellis County, Italy	PM2.5 (TEOM)**	SPM	Continuous	Upwind Background	Regional Scale	Rural	Inactive	12/6/2016
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481391044	Italy	900 FM 667 Ellis County, Italy	Relative Humidity	PAMS, SLAMS	Continuous	Upwind Background	Urban Scale	Rural	Active	8/31/2007
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481391044	Italy	900 FM 667 Ellis County, Italy	SO2	SPM	Continuous	Upwind Background	Urban Scale	Rural	Inactive	12/26/2017
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481391044	Italy	900 FM 667 Ellis County, Italy	Solar Radiation	PAMS, SLAMS	Continuous	Upwind Background	Urban Scale	Rural	Active	8/31/2007
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481391044	Italy	900 FM 667 Ellis County, Italy	Speciated VOC (Canister)	PAMS, SLAMS	24 Hours; 1/6 Days	Upwind Background	Urban Scale	Rural	Active	9/3/2007

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481391044	Italy	900 FM 667 Ellis County, Italy	Temperature	PAMS, SLAMS	Continuous	Upwind Background	Urban Scale	Rural	Active	8/31/2007
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481391044	Italy	900 FM 667 Ellis County, Italy	UV Radiation	PAMS, SLAMS	Continuous	Upwind Background	Urban Scale	Rural	Active	8/31/2007
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481391044	Italy	900 FM 667 Ellis County, Italy	Wind	PAMS, SLAMS	Continuous	Upwind Background	Urban Scale	Rural	Active	8/31/2007
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482511008	Johnson County Luisa	2420 Luisa Ln, Alvarado	Speciated VOC (Canister)	SPM	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Active	11/23/2010
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482511008	Johnson County Luisa	2420 Luisa Ln, Alvarado	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	11/23/2010
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482511008	Johnson County Luisa	2420 Luisa Ln, Alvarado	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	11/23/2010
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482570005	Kaufman	3790 S Houston St, Kaufman	Dew Point	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	10/19/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482570005	Kaufman	3790 S Houston St, Kaufman	NO, NO2, NOx	PAMS, SLAMS	Continuous	Population Exposure; Upwind Background	Neighborh ood Urban Scale	Suburban	Active	10/2/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482570005	Kaufman	3790 S Houston St, Kaufman	O3	PAMS, SLAMS	Continuous	Population Exposure; Upwind Background	Urban Scale	Suburban	Active	9/10/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482570005	Kaufman	3790 S Houston St, Kaufman	PM2.5 (TEOM)**	SPM	Continuous	Upwind Background	Regional Scale	Suburban	Active	10/4/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482570005	Kaufman	3790 S Houston St, Kaufman	Relative Humidity	PAMS, SLAMS	Continuous	Upwind Background	Urban Scale	Suburban	Active	10/18/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482570005	Kaufman	3790 S Houston St, Kaufman	SO2	SLAMS	Continuous	Population Exposure; Upwind Background	Neighbor-hood	Suburban	Active	9/10/2000

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482570005	Kaufman	3790 S Houston St, Kaufman	Solar Radiation	PAMS, SLAMS	Continuous	Upwind Background	Urban Scale	Suburban	Active	10/19/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482570005	Kaufman	3790 S Houston St, Kaufman	Temperature	PAMS, SLAMS	Continuous	Upwind Background	Urban Scale	Suburban	Active	9/10/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482570005	Kaufman	3790 S Houston St, Kaufman	Wind	PAMS, SLAMS	Continuous	Upwind Background	Urban Scale	Suburban	Active	9/1/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484392003	Keller	FAA Site off Alta Vista Road, Fort Worth	NO, NO2, NOx	PAMS, SLAMS	Continuous	Max Precursor Emissions Impact	Urban Scale	Suburban	Active	4/10/2010
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484392003	Keller	FAA Site off Alta Vista Road, Fort Worth	O3	PAMS, SLAMS	Continuous	Max Ozone Concentration Population Exposure	Neighbor-hood	Suburban	Active	7/16/1997
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484392003	Keller	FAA Site off Alta Vista Road, Fort Worth	Solar Radiation	PAMS, SLAMS, SPM	Continuous	General Background	Urban Scale	Suburban	Active	5/8/2002
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484392003	Keller	FAA Site off Alta Vista Road, Fort Worth	Temperature	PAMS, SLAMS, SPM	Continuous	General Background	Urban Scale	Suburban	Active	7/16/1997
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484392003	Keller	FAA Site off Alta Vista Road, Fort Worth	Wind	PAMS, SLAMS, SPM	Continuous	General Background	Urban Scale	Suburban	Active	7/16/1997
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481390016	Midlothian OFW	2725 Old Fort Worth Road, Midlothian	NO, NO2, NOx	SLAMS	Continuous	Source Oriented	Neighbor-hood	Suburban	Active	3/18/2003
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481390016	Midlothian OFW	2725 Old Fort Worth Road, Midlothian	O3	SLAMS	Continuous	Population Exposure	Urban Scale	Suburban	Active	4/1/2006
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481390016	Midlothian OFW	2725 Old Fort Worth Road, Midlothian	PM2.5 (Speciation)	SPM	24 Hours; 1/6 Days	Population Exposure; Source Oriented	Neighborh ood, Regional Scale	Suburban	Active	9/1/2005
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481390016	Midlothian OFW	2725 Old Fort Worth Road, Midlothian	PM2.5 (TEOM)**	SPM	Continuous	Regional Transport	Regional Scale	Suburban	Active	4/3/2006

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481390016	Midlothian OFW	2725 Old Fort Worth Road, Midlothian	PM2.5 FRM (with speciation)	SPM	24 Hours; 1/6 Days	Population Exposure; Source Oriented	Regional Scale	Suburban	Active	9/1/2005
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481390016	Midlothian OFW	2725 Old Fort Worth Road, Midlothian	SO2	SLAMS	Continuous	Source Oriented	Neighbor-hood	Suburban	Active	8/27/1997
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481390016	Midlothian OFW	2725 Old Fort Worth Road, Midlothian	Solar Radiation	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	4/2/2006
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481390016	Midlothian OFW	2725 Old Fort Worth Road, Midlothian	Temperature	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	8/27/1997
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481390016	Midlothian OFW	2725 Old Fort Worth Road, Midlothian	Wind	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	8/27/1997
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481130018	Morrell	3049 Morrell, Dallas	PM10 (Speciation)	SPM	24 Hours; 1/6 Days	Source Oriented	Neighbor-hood	Urban and Center City	Inactive	6/1/2016
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	483670081	Parker County	3033 New Authon Rd, Weatherford	O3	SLAMS	Continuous	Population Exposure	Urban Scale	Rural	Active	7/26/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	483670081	Parker County	3033 New Authon Rd, Weatherford	Solar Radiation	SPM	Continuous	Source Oriented	Neighbor-hood	Rural	Active	5/8/2002
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	483670081	Parker County	3033 New Authon Rd, Weatherford	Temperature	SPM	Continuous	Source Oriented	Neighbor-hood	Rural	Active	7/26/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	483670081	Parker County	3033 New Authon Rd, Weatherford	Wind	SPM	Continuous	Source Oriented	Neighbor-hood	Rural	Active	7/1/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481211032	Pilot Point	792 E Northside Dr, Pilot Point	O3	SLAMS	Continuous	Population Exposure	Regional Scale	Suburban	Active	5/3/2006
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481211032	Pilot Point	792 E Northside Dr, Pilot Point	Solar Radiation	SPM	Continuous	Upwind Background	Regional Scale	Suburban	Active	5/3/2006

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481211032	Pilot Point	792 E Northside Dr, Pilot Point	Temperature	SPM	Continuous	Upwind Background	Regional Scale	Suburban	Active	5/3/2006
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	481211032	Pilot Point	792 E Northside Dr, Pilot Point	Wind	SPM	Continuous	Upwind Background	Regional Scale	Suburban	Active	5/3/2006
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	483970001	Rockwall Heath	100 E Heath St, Rockwall	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	8/8/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	483970001	Rockwall Heath	100 E Heath St, Rockwall	Solar Radiation	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	5/16/2002
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	483970001	Rockwall Heath	100 E Heath St, Rockwall	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	8/8/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	483970001	Rockwall Heath	100 E Heath St, Rockwall	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	8/1/2000
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	484393010	Stage Coach	8900 West Freeway, White Settlement	PM10 (FRM)	SLAMS	24 Hours; 1/6 Days	Population Exposure	Neighbor-hood	Suburban	Inactive	10/30/2018
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482570020	Terrell Temtex	2988 Temtex Blvd, Terrell	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	12/3/2019
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482570020	Terrell Temtex	2988 Temtex Blvd, Terrell	TSP (Pb)	QA Collocated SLAMS	24 Hours; 1/12 Days	Population Exposure; Source Oriented	Neighbor-hood	Rural	Active	4/13/2017
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482570020	Terrell Temtex	2988 Temtex Blvd, Terrell	TSP (Pb)	SLAMS	24 Hours; 1/6 Days	Population Exposure; Source Oriented	Neighbor-hood	Rural	Active	1/1/2011
North and Northeast TX	Dallas-Fort Worth-Arlington, TX	482570020	Terrell Temtex	2988 Temtex Blvd, Terrell	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	12/3/2019
North and Northeast TX	Granbury, TX*	482210001	Granbury	200 N Gordon Street, Granbury	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	5/9/2000
North and Northeast TX	Granbury, TX*	482210001	Granbury	200 N Gordon Street, Granbury	Solar Radiation	SPM	Continuous	General Background	Middle Scale	Suburban	Active	5/8/2002

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
North and Northeast TX	Granbury, TX*	482210001	Granbury	200 N Gordon Street, Granbury	Temperature	SPM	Continuous	General Background	Middle Scale	Suburban	Active	5/9/2000
North and Northeast TX	Granbury, TX*	482210001	Granbury	200 N Gordon Street, Granbury	Wind	SPM	Continuous	General Background	Middle Scale	Suburban	Active	5/1/2000
North and Northeast TX	Longview, TX	481830001	Longview	Gregg Co Airport near Longview, Longview	NO, NO2, NOx	SPM	Continuous	Population Exposure	Neighbor-hood	Rural	Active	6/17/1998
North and Northeast TX	Longview, TX	481830001	Longview	Gregg Co Airport near Longview, Longview	O3	SLAMS	Continuous	Population Exposure	Neighbor-hood	Rural	Active	1/1/1983
North and Northeast TX	Longview, TX	481830001	Longview	Gregg Co Airport near Longview, Longview	Precipitation	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	4/26/2005
North and Northeast TX	Longview, TX	481830001	Longview	Gregg Co Airport near Longview, Longview	SO2	SLAMS	Continuous	General Background; Population Exposure	Neighbor-hood	Rural	Active	5/26/1999
North and Northeast TX	Longview, TX	481830001	Longview	Gregg Co Airport near Longview, Longview	Solar Radiation	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	6/10/2004
North and Northeast TX	Longview, TX	481830001	Longview	Gregg Co Airport near Longview, Longview	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	11/5/1997
North and Northeast TX	Longview, TX	481830001	Longview	Gregg Co Airport near Longview, Longview	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	11/5/1997
North and Northeast TX	Longview, TX	484011082	Tatum CR 2181d Martin Creek Lake	9515 County Road 2181d, Tatum	SO2	SPM	Continuous	Source Oriented	Neighbor-hood	Rural	Active	11/1/2017
North and Northeast TX	Longview, TX	484011082	Tatum CR 2181d Martin Creek Lake	9515 County Road 2181d, Tatum	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	11/1/2017
North and Northeast TX	Longview, TX	484011082	Tatum CR 2181d Martin Creek Lake	9515 County Road 2181d, Tatum	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	11/1/2017
North and Northeast TX	Marshall, TX	482030002	Karnack	Hwy 134 & Spur 449, Not In A City	Carbonyl	NATTS, SLAMS, SPM	24 Hours; 1/6 Days	General Background	Regional Scale	Rural	Inactive	6/30/2018

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
North and Northeast TX	Marshall, TX	482030002	Karnack	Hwy 134 & Spur 449, Not In A City	PM10 (FRM)	SPM	24 Hours; 1/6 Days	General Background	Neighbor-hood	Rural	Inactive	10/31/2018
North and Northeast TX	Marshall, TX	482030002	Karnack	Hwy 134 & Spur 449, Not In A City	PM10 (Speciation)	NATTS, SLAMS	24 Hours; 1/6 Days	General Background	Regional Scale	Rural	Inactive	6/30/2018
North and Northeast TX	Marshall, TX	482030002	Karnack	Hwy 134 & Spur 449, Not In A City	SVOC	NATTS, SLAMS	24 Hours; 1/6 Days	General Background	Regional Scale	Rural	Inactive	6/30/2018
North and Northeast TX	Marshall, TX*	482031079	Hallsville Red Oak Road	9206 Red Oak Road, Hallsville	SO2	SLAMS	Continuous	Source Oriented	Neighbor-hood	Rural	Active	12/6/2016
North and Northeast TX	Marshall, TX*	482031079	Hallsville Red Oak Road	9206 Red Oak Road, Hallsville	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	12/6/2016
North and Northeast TX	Marshall, TX*	482031079	Hallsville Red Oak Road	9206 Red Oak Road, Hallsville	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	12/6/2016
North and Northeast TX	Marshall, TX*	482030002	Karnack	Hwy 134 & Spur 449, Not In A City	NO, NO2, NOx	SLAMS	Continuous	General Background	Regional Scale, Urban Scale	Rural	Active	8/28/2001
North and Northeast TX	Marshall, TX*	482030002	Karnack	Hwy 134 & Spur 449, Not In A City	O3	SLAMS	Continuous	General Background	Regional Scale	Rural	Active	8/28/2001
North and Northeast TX	Marshall, TX*	482030002	Karnack	Hwy 134 & Spur 449, Not In A City	PM2.5 (FRM)	SPM	24 Hours; 1/6 Days	General Background	Regional Scale	Rural	Active	9/6/2001
North and Northeast TX	Marshall, TX*	482030002	Karnack	Hwy 134 & Spur 449, Not In A City	PM2.5 (Speciation)	CSN Supplemental, SLAMS	24 Hours; 1/6 Days, 24 Hours; 1/3 Days	General Background; Regional Transport	Regional Scale	Rural	Active	8/17/2009
North and Northeast TX	Marshall, TX*	482030002	Karnack	Hwy 134 & Spur 449, Not In A City	PM2.5 (TEOM)**	SPM	Continuous	General Background	Regional Scale	Rural	Active	1/1/2007
North and Northeast TX	Marshall, TX*	482030002	Karnack	Hwy 134 & Spur 449, Not In A City	Solar Radiation	SPM	Continuous	General Background	Urban Scale	Rural	Active	8/19/2002
North and Northeast TX	Marshall, TX*	482030002	Karnack	Hwy 134 & Spur 449, Not In A City	Speciated VOC (Canister)	NATTS, SLAMS, SPM	24 Hours; 1/6 Days	General Background	Regional Scale	Rural	Active	1/20/2004
North and Northeast TX	Marshall, TX*	482030002	Karnack	Hwy 134 & Spur 449, Not In A City	Temperature	SPM	Continuous	General Background	Urban Scale	Rural	Active	8/28/2001
North and Northeast TX	Marshall, TX*	482030002	Karnack	Hwy 134 & Spur 449, Not In A City	Visibility	SPM	Continuous	General Background	Urban Scale	Rural	Active	9/6/2001

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
North and Northeast TX	Marshall, TX*	482030002	Karnack	Hwy 134 & Spur 449, Not In A City	Wind	SPM	Continuous	General Background	Urban Scale	Rural	Active	8/28/2001
North and Northeast TX	Mount Pleasant, TX*	484491078	Cookville FM 4855	385 CR 4855, Not In A City	SO2	SLAMS	Continuous	Source Oriented	Neighbor-hood	Rural	Active	12/7/2016
North and Northeast TX	Mount Pleasant, TX*	484491078	Cookville FM 4855	385 CR 4855, Not In A City	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	12/7/2016
North and Northeast TX	Mount Pleasant, TX*	484491078	Cookville FM 4855	385 CR 4855, Not In A City	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	12/7/2016
North and Northeast TX	Texarkana, TX-Texarkana, AR	480370004	Texarkana	2315 W 10th Street, Texarkana	PM2.5 (FRM)	SLAMS, SPM	24 Hours; 1/3 Days	Population Exposure	Urban Scale	Urban and Center City	Inactive	2/25/2016
North and Northeast TX	Texarkana, TX-Texarkana, AR	480371031	Texarkana New Boston	2700 New Boston Rd, Texarkana	PM2.5 (FRM)	SLAMS, SPM	24 Hours; 1/3 Days, 24 Hours; 1/6 Days	Population Exposure	Urban Scale	Urban and Center City	Inactive	12/31/2018
North and Northeast TX	Texarkana, TX-Texarkana, AR	480371031	Texarkana New Boston	2700 New Boston Rd, Texarkana	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Urban Scale	Urban and Center City	Inactive	11/9/2018
North and Northeast TX	Texarkana, TX-Texarkana, AR	480371031	Texarkana New Boston	2700 New Boston Rd, Texarkana	PM2.5 FEM (Beta 1022)	SLAMS	Continuous	Population Exposure	Urban Scale	Urban and Center City	Active	1/9/2019
North and Northeast TX	Texarkana, TX-Texarkana, AR	480371031	Texarkana New Boston	2700 New Boston Rd, Texarkana	Temperature	SPM	Continuous	Population Exposure	Urban Scale	Urban and Center City	Active	3/23/2016
North and Northeast TX	Texarkana, TX-Texarkana, AR	480371031	Texarkana New Boston	2700 New Boston Rd, Texarkana	Wind	SPM	Continuous	Population Exposure	Urban Scale	Urban and Center City	Active	3/23/2016
North and Northeast TX	Tyler, TX	484230007	Tyler Airport Relocated	14790 County Road 1145, Tyler	NO, NO2, NOx	SPM	Continuous	General Background	Urban Scale	Rural	Active	5/25/2000
North and Northeast TX	Tyler, TX	484230007	Tyler Airport Relocated	14790 County Road 1145, Tyler	O3	SLAMS	Continuous	General Background	Urban Scale	Rural	Active	5/25/2000
North and Northeast TX	Tyler, TX	484230007	Tyler Airport Relocated	14790 County Road 1145, Tyler	Precipitation	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	7/6/2011
North and Northeast TX	Tyler, TX	484230007	Tyler Airport Relocated	14790 County Road 1145, Tyler	Solar Radiation	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	8/19/2002

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
North and Northeast TX	Tyler, TX	484230007	Tyler Airport Relocated	14790 County Road 1145, Tyler	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	5/25/2000
North and Northeast TX	Tyler, TX	484230007	Tyler Airport Relocated	14790 County Road 1145, Tyler	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	5/1/2000
Panhandle and West TX	Amarillo, TX	483751025	Amarillo 24th Avenue	4205 NE 24th Avenue, Amarillo	SO2	SLAMS	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	10/16/2013
Panhandle and West TX	Amarillo, TX	483751025	Amarillo 24th Avenue	4205 NE 24th Avenue, Amarillo	Temperature	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	10/16/2013
Panhandle and West TX	Amarillo, TX	483751025	Amarillo 24th Avenue	4205 NE 24th Avenue, Amarillo	Wind	SPM	Continuous	General Background	Neighbor-hood	Suburban	Active	10/16/2013
Panhandle and West TX	Amarillo, TX	483750320	Amarillo A&M	6500 Amarillo Blvd West, Amarillo	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Urban Scale	Urban and Center City	Inactive	7/11/2018
Panhandle and West TX	Amarillo, TX	483750320	Amarillo A&M	6500 Amarillo Blvd West, Amarillo	PM2.5 FEM (Beta 1022)	SPM	Continuous	Population Exposure	Urban Scale	Urban and Center City	Active	7/12/2018
Panhandle and West TX	Amarillo, TX	483750024	Amarillo SH 136	7100 State Highway 136, Amarillo	TSP (Pb)	SLAMS	24 Hours; 1/6 Days	Population Exposure; Source Oriented	Middle Scale	Rural	Inactive	11/29/2018
Panhandle and West TX	Amarillo, TX	483751077	Amarillo Xcel El Rancho	Folsom Rd. & El Rancho Rd., Amarillo	SO2	SLAMS	Continuous	Source Oriented	Neighbor-hood	Rural	Active	12/16/2016
Panhandle and West TX	Amarillo, TX	483751077	Amarillo Xcel El Rancho	Folsom Rd. & El Rancho Rd., Amarillo	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	12/16/2016
Panhandle and West TX	Amarillo, TX	483751077	Amarillo Xcel El Rancho	Folsom Rd. & El Rancho Rd., Amarillo	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	12/16/2016
Panhandle and West TX	Big Spring, TX*	482271072	Big Spring Midway	1218 N. Midway Rd, Big Spring	SO2	SLAMS	Continuous	Source Oriented	Neighbor-hood	Rural	Active	12/3/2016
Panhandle and West TX	Big Spring, TX*	482271072	Big Spring Midway	1218 N. Midway Rd, Big Spring	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	12/3/2016
Panhandle and West TX	Big Spring, TX*	482271072	Big Spring Midway	1218 N. Midway Rd, Big Spring	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	12/3/2016
Panhandle and West TX	Borger, TX*	482331073	Borger FM 1559	19440 FM 1559, Borger	SO2	SLAMS	Continuous	Source Oriented	Neighbor-hood	Rural	Active	11/2/2016

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Panhandle and West TX	Borger, TX*	482331073	Borger FM 1559	19440 FM 1559, Borger	Temperature	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	11/2/2016
Panhandle and West TX	Borger, TX*	482331073	Borger FM 1559	19440 FM 1559, Borger	Wind	SPM	Continuous	General Background	Neighbor-hood	Rural	Active	11/2/2016
Panhandle and West TX	Lubbock, TX	483031028	Lubbock 12th Street	3901 East 12th Street, Lubbock	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Urban Scale	Urban and Center City	Inactive	7/10/2018
Panhandle and West TX	Lubbock, TX	483031028	Lubbock 12th Street	3901 East 12th Street, Lubbock	PM2.5 FEM (Beta 1022)	SPM	Continuous	Population Exposure	Urban Scale	Urban and Center City	Active	7/11/2018
Panhandle and West TX	Lubbock, TX	483031028	Lubbock 12th Street	3901 East 12th Street, Lubbock	Temperature	SPM	Continuous	General Background	Regional Scale	Urban and Center City	Active	8/13/2016
Panhandle and West TX	Lubbock, TX	483031028	Lubbock 12th Street	3901 East 12th Street, Lubbock	Wind	SPM	Continuous	General Background	Regional Scale	Urban and Center City	Active	8/13/2016
Panhandle and West TX	Odessa, TX	481351014	Odessa Gonzales	2700 Disney, Odessa	PM2.5 (TEOM)**	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Inactive	7/9/2018
Panhandle and West TX	Odessa, TX	481351014	Odessa Gonzales	2700 Disney, Odessa	PM2.5 FEM (Beta 1022)	SPM	Continuous	Highest Concentration	Regional Scale	Suburban	Active	7/10/2018
Panhandle and West TX	Odessa, TX	481351014	Odessa Gonzales	2700 Disney, Odessa	Temperature	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	6/6/2002
Panhandle and West TX	Odessa, TX	481351014	Odessa Gonzales	2700 Disney, Odessa	Wind	SPM	Continuous	Population Exposure	Neighbor-hood	Suburban	Active	6/6/2002
Panhandle and West TX	Odessa, TX	481350003	Odessa-Hays Elementary School	Barrett & Monahans Streets, Odessa	PM2.5 (TEOM)**	SPM	Continuous	Population Exposure	Urban Scale	Suburban	Inactive	12/31/2016
Panhandle and West TX	Odessa, TX	481350003	Odessa-Hays Elementary School	Barrett & Monahans Streets, Odessa	Speciated VOC (AutoGC)	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Inactive	4/18/2015
Panhandle and West TX	Odessa, TX	481350003	Odessa-Hays Elementary School	Barrett & Monahans Streets, Odessa	Temperature	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	1/2/1997

Section	CBSA	Site Number	Site Name	Address	Sampler Type	Network	Operating Schedule	Monitoring Objective	Spatial Scale	Location Setting	Sampler Status	Sampler Status Date
Panhandle and West TX	Odessa, TX	481350003	Odessa-Hays Elementary School	Barrett & Monahans Streets, Odessa	Wind	SPM	Continuous	Highest Concentration	Neighbor-hood	Suburban	Active	1/2/1997

* - Micropolitan Statistical Area
** - Monitor is not suitable for comparison against the annual PM2.5 NAAQS as described in 40 Code of Federal Regulations §58.30
*** - Granbury, Texas, is not a Metropolitan Statistical Area on the US Census Bureaus' list, but is designated as such in AQS, Granbury, Texas is located in Hood County, Texas and in the Dallas-Fort Worth-Arlington MSA
@ - at
24-Hour Avg, 1/6 Days - 1 24-Hour Average, Once every Sixth Day
24-Hour; 1/3 Days - 1 24-Hour Sample, Once every Third Day
24-Hours, Daily - 1 24-Hour Sample, Daily
24 1-Hour Avg; Daily - 24 1-Hour Average, Daily
3 8-Hours - 1/3 Days (Jun - Aug) 8 3-Hour Samples, Once every third Day from June through August
24-Hour; 1/6 Days - 1 24-Hour Sample, Once every Sixth Day
AQS - Air Quality System
AR - Arkansas
AutoGC - automated gas chromatograph
Border - The Border network designation is part of the SLAMS network for monitors within 100 kilometers of the United States/Mexico border.
CBSA - core based statistical area
CSN STN Chemical Speciation Network Speciation Trends Network site (includes NCore monitors/requirements, samples analyzed by EPA contracted laboratory)
CSN SupplementalChemical Speciation Network supplemental speciation site (samples analyzed by TCEQ contracted laboratory)
CO - carbon monoxide
FEM - federal equivalent method
FM - Farm-to-Market
FRM - federal reference method
Hwy - Highway
IH - Interstate Highway
NCore - National Core Multipollutant Monitoring Stations
NO2 - nitrogen dioxide
NO, NO2, NOx - nitrogen oxides
NOy - total reactive nitrogen
O3 - ozone
OFW - Old Fort Worth
PAMS - Photochemical Assessment Monitoring Stations
PM10 - particulate matter of 10 micrometers or less in diameter
PM10-2.5 - coarse particulate matter
PM2.5 - particulate matter of 2.5 micrometers or less in diameter
QA Collocated - quality assurance collocated monitor
SE - southeast
SETRPC - Southeast Texas Regional Planning Commission
SLAMS State or Local Air Monitoring Stations
SO2 sulfur dioxide (one-hour and five-minute maximum monitors)
SPM special purpose monitor
SVOC semi-volatile organic compound
TCEQ Texas Commission on Environmental Quality
TEOM tapered element oscillating microbalance (not NAAQS comparable)
TSP (Pb) - total suspended particulate (lead)
TX - Texas
VOC - volatile organic compound

Appendix B

Lead Waiver Renewal

Texas Commission on Environmental Quality
2020 Five-Year Ambient Monitoring Network Assessment

Introduction

On November 12, 2008, the United States Environmental Protection Agency (EPA) finalized the new 0.15 microgram per cubic meter (µg/m^3) National Ambient Air Quality Standard (NAAQS) for lead (Pb) based on a rolling three-month average. According to 40 Code of Federal Regulation (CFR) Part (§) 58, Appendix D, Section 4.5(a), agencies are required to conduct ambient air Pb monitoring near Pb sources expected to or have been shown to contribute to a maximum Pb concentration in ambient air in excess of the NAAQS. At a minimum, there must be one source-oriented State or Local Air Monitoring Stations (SLAMS) site located to measure the maximum Pb concentration in ambient air resulting from each non-airport Pb source which emits 0.50 or more tons per year (tpy). 40 CFR §58, Appendix D, Section 4.5(a)(ii), further notes that a monitoring agency can receive a waiver from the source-oriented monitoring requirement for a given source if it can demonstrate that the Pb source will not contribute to a maximum Pb concentration in ambient air in excess of 50 percent (%) of the NAAQS (based on historical monitoring data, modeling, or other means). The waiver must be renewed once every five years as part of the five-year network assessment.

The Lower Colorado River Authority (LCRA) Sam Seymour Fayette Power Plant was identified as a source meeting the criteria of emitting 0.50 tpy or more of Pb. The modeling analysis included in this appendix was conducted to provide the demonstration needed to request a waiver from the source-oriented Pb monitoring requirement.

Model Selection and Components

The Texas Commission on Environmental Quality (TCEQ) used the EPA's recommended American Meteorological Society EPA Regulatory Model (AERMOD) modeling system to predict design value concentrations. The modeling demonstration utilized the current version of AERMOD and its components available at the time TCEQ conducted the modeling. Table 1 lists the version of AERMOD and its components used in the demonstration. Since the current version of AERMOD is not capable of calculating rolling three-month average concentrations, the EPA post processor LeadPost was used. The input values to LeadPost are monthly average values at each receptor in the POSTFILE output format from AERMOD.

Table 1: Model Versions Used

Model	Version
AERMOD	19191
AERMET	19191
AERMAP	18081
BPIPPRIME	04274
AERMINUTE	15272
AERSURFACE	13016
LEADPOST	13262

Receptor Grid

The modeling included a discrete cartesian grid of 7,776 receptors. The grid consisted of receptors with 100 meter spacing. All receptor locations were treated as ambient air, including on property locations.

Terrain

LCRA Fayette Power Plant is located in south central Texas and the terrain in the area of analysis varies from generally flat with minor elevation changes to rolling hills. The AERMAP terrain preprocessor was used to account for any terrain changes and to specify terrain elevations for receptors and sources. The source of the elevation data incorporated into the model is from the United States Geological Survey (USGS) National Elevation Database.

Meteorology and Surface Characteristics

The TCEQ processed National Weather Service (NWS) meteorological data from Austin-Bergstrom International Airport in Austin, Texas (station 13904) and upper air observations from Fort Worth, Texas (station 3990) using AERMET. Austin-Bergstrom International Airport is approximately 90 kilometers northwest of LCRA Fayette Power Plant, and the upper air NWS station in Fort Worth is approximately 320 kilometers north of LCRA Fayette Power Plant. Five years of data, 2014-2018, were used to generate the surface and profile meteorological data files for AERMOD. Processing was performed in AERMET using the default ADJ_U* option. AERMINUTE was utilized to incorporate one-minute wind data from Austin-Bergstrom International Airport to reduce the occurrence of calm and missing wind observations. The AERMINUTE processing included a low wind speed threshold set to 0.5 meters per second, consistent with the guidance noted in an EPA's memorandum titled *Use of ASOS meteorological data in AERMOD dispersion modeling*.

Prior to running AERMET, it is necessary to specify the surface characteristics (albedo, Bowen ratio, and surface roughness) which are a function of land use and precipitation. This was done using the AERMET preprocessor, AERSURFACE. AERSUFACE utilized the 1992 National Land Cover Dataset (NLCD) to extract surface characteristics for a one-kilometer radius area around both the Austin-Bergstrom International Airport and LCRA Fayette Power Plant. Average surface characteristics were calculated for a single sector on an annual basis using the default setting for AERSURFACE.

The average surface characteristics are similar for both sites. In addition, the meteorological data are considered representative of the domain for this demonstration since no significant terrain exists between the sites, and both areas have similar topography. Table 2 summarizes the average surface characteristics for both locations.

Table 2: Average Surface Characteristics

Location	Albedo	Bowen Ratio	Surface roughness (meter)
Austin-Bergstrom International Airport	0.17	0.73	0.04
LCRA Fayette Power Plant	0.16	0.57	0.02

LCRA – Lower Colorado River Authority

Source Characterization

LCRA Fayette Power Plant operates three pulverized coal steam electric generating units exhausting through three stacks. The TCEQ modeled each stack as a point source using permitted allowable emissions and obtained source information from permitting files and emission inventory information. Table 3 lists the source parameters and Pb emission rates for each unit. The source coordinates are in the Universal Transverse Mercator (UTM) Zone 14 North, North American Datum of 1983 (NAD83) coordinate system.

Table 3: Modeled Source Parameters and Emission Rates

Source Identification Number	Easting (meter)	Northing (meter)	Stack Height (meter)	Stack Temp-erature (Kelvin)	Stack Exit Velocity (meters per second)	Stack Diameter (meter)	Emission Rate (pounds per hour)
3_1B	717,164.3	3,311,555	162	334	10.91	7.85	0.22
FFP_1N	717,225.7	3,311,653	160	331	16.92	8.69	0.25
FFP_2N	717,225.7	3,311,635	160	331	16.92	8.69	0.25

Building Downwash

The TCEQ utilized the Building Profile Input Program with Plume Rise Model Enhancements (PRIME) to determine the direction-specific building downwash parameters for LCRA Fayette Power Plant sources. The building parameters were obtained from modeling submitted in support of permit applications.

Modeling Summary and Results

The TCEQ conducted modeling using currently permitted source parameters and maximum allowable emission rates to predict a rolling three-month average concentration. The maximum predicted ground level concentration (GLCmax) is 0.00305 µg/m^3, which is approximately 2% of the Pb NAAQS. The location of the GLCmax is approximately 1,350 meters north of stack 3-1B.

Table 4. Modeling Results

Easting (meters)	Northing (meters)	Averaging Time	GLCmax (µg/m^3)	Standard (µg/m^3)
717,200	3,312,900	rolling three-month	0.00305	0.15

µg/m^3 - microgram per cubic meter
GLCmax – ground level concentration

Appendix C

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Texas Commission on Environmental Quality
2020 Five-Year Ambient Monitoring Network Assessment

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Appendix D

Texas Metropolitan, Micropolitan, and County Area Details

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Five-Year Assessment Section	Texas Region	Texas Core Based Statistical Area Title	Statistical Area Type	County Name	County Type
Central	R11-Austin	Austin-Round Rock-Georgetown	Metropolitan Statistical Area	Bastrop County	Outlying
Central	R11-Austin	Austin-Round Rock-Georgetown	Metropolitan Statistical Area	Caldwell County	Outlying
Central	R11-Austin	Austin-Round Rock-Georgetown	Metropolitan Statistical Area	Hays County	Central
Central	R11-Austin	Austin-Round Rock-Georgetown	Metropolitan Statistical Area	Travis County	Central
Central	R11-Austin	Austin-Round Rock-Georgetown	Metropolitan Statistical Area	Williamson County	Central
Central	11-Austin	none	none	Blanco County	Outlying
Central	11-Austin	none	none	Burnet County	Outlying
Central	11-Austin	none	none	Fayette County	Outlying
Central	11-Austin	none	none	Lee County	Outlying
Central	11-Austin	none	none	Llano county	Outlying
Central	R13-San Antonio	Fredericksburg	Micropolitan Statistical Area	Gillespie County	Central
Central	R13-San Antonio	Kerrville	Micropolitan Statistical Area	Kerr County	Central
Central	13-San Antonio	none	none	Edwards County	Outlying
Central	13-San Antonio	none	none	Karnes County	Outlying
Central	13-San Antonio	none	none	Real County	Outlying
Central	R13-San Antonio	Pearsall	Micropolitan Statistical Area	Frio County	Central
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Atascosa County	Outlying
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Bandera County	Outlying
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Bexar County	Central
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Comal County	Central
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Guadalupe County	Central
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Kendall County	Outlying
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Medina County	Outlying
Central	R13-San Antonio	San Antonio-New Braunfels	Metropolitan Statistical Area	Wilson County	Outlying
Central	R13-San Antonio	Uvalde	Micropolitan Statistical Area	Uvalde County	Central
Central	R9-Waco	Brenham	Micropolitan Statistical Area	Washington County	Central
Central	R9-Waco	College Station-Bryan	Metropolitan Statistical Area	Brazos County	Central
Central	R9-Waco	College Station-Bryan	Metropolitan Statistical Area	Burleson County	Outlying
Central	R9-Waco	College Station-Bryan	Metropolitan Statistical Area	Robertson County	Outlying
Central	R9-Waco	Killeen-Temple	Metropolitan Statistical Area	Bell County	Central
Central	R9-Waco	Killeen-Temple	Metropolitan Statistical Area	Coryell County	Central
Central	R9-Waco	Killeen-Temple	Metropolitan Statistical Area	Lampasas County	Outlying
Central	9-Waco	none	none	Bosque County	Outlying

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Central	9-Waco	none	none	Freestone County	Outlying
Central	9-Waco	none	none	Grimes County	Outlying
Central	9-Waco	none	none	Hamilton County	Outlying
Central	9-Waco	none	none	Hill County	Outlying
Central	9-Waco	none	none	Leon County	Outlying
Central	9-Waco	none	none	Limestone County	Outlying
Central	9-Waco	none	none	Madison County	Outlying
Central	9-Waco	none	none	Milam County	Outlying
Central	9-Waco	none	none	Mills County	Outlying
Central	9-Waco	none	none	San Saba County	Outlying
Central	R9-Waco	Waco	Metropolitan Statistical Area	Falls County	Outlying
Central	R9-Waco	Waco	Metropolitan Statistical Area	McLennan County	Central
Coastal	R10-Beaumont	Beaumont-Port Arthur	Metropolitan Statistical Area	Hardin County	Outlying
Coastal	R10-Beaumont	Beaumont-Port Arthur	Metropolitan Statistical Area	Jefferson County	Central
Coastal	R10-Beaumont	Beaumont-Port Arthur	Metropolitan Statistical Area	Orange County	Central
Coastal	R10-Beaumont	Lufkin	Micropolitan Statistical Area	Angelina County	Central
Coastal	R10-Beaumont	Nacogdoches	Micropolitan Statistical Area	Nacogdoches County	Central
Coastal	10-Beaumont	none	none	Houston County	Outlying
Coastal	10-Beaumont	none	none	Jasper County	Outlying
Coastal	10-Beaumont	none	none	Newton County	Outlying
Coastal	10-Beaumont	none	none	Polk County	Outlying
Coastal	10-Beaumont	none	none	Sabine County	Outlying
Coastal	10-Beaumont	none	none	County	Outlying
Coastal	10-Beaumont	none	none	San Jacinto County	Outlying
Coastal	10-Beaumont	none	none	Shelby County	Outlying
Coastal	10-Beaumont	none	none	Trinity County	Outlying
Coastal	10-Beaumont	none	none	Tyler County	Outlying
Coastal	R12-Houston	Bay City	Micropolitan Statistical Area	Matagorda County	Central
Coastal	R12-Houston	El Campo	Micropolitan Statistical Area	Wharton County	Central
Coastal	R12-Houston	Houston-The Woodlands-Sugar Land	Metropolitan Statistical Area	Austin County	Outlying
Coastal	R12-Houston	Houston-The Woodlands-Sugar Land	Metropolitan Statistical Area	Brazoria County	Central
Coastal	R12-Houston	Houston-The Woodlands-Sugar Land	Metropolitan Statistical Area	Chambers County	Central
Coastal	R12-Houston	Houston-The Woodlands-Sugar Land	Metropolitan Statistical Area	Fort Bend County	Central

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Coastal	R12-Houston	Houston-The Woodlands-Sugar Land	Metropolitan Statistical Area	Galveston County	Central
Coastal	R12-Houston	Houston-The Woodlands-Sugar Land	Metropolitan Statistical Area	Harris County	Central
Coastal	R12-Houston	Houston-The Woodlands-Sugar Land	Metropolitan Statistical Area	Liberty County	Outlying
Coastal	R12-Houston	Houston-The Woodlands-Sugar Land	Metropolitan Statistical Area	Montgomery County	Outlying
Coastal	R12-Houston	Houston-The Woodlands-Sugar Land	Metropolitan Statistical Area	Waller County	Outlying
Coastal	R12-Houston	Huntsville	Micropolitan Statistical Area	Walker County	Central
Coastal	12-Houston	none	none	Colorado County	Outlying
Coastal	R14-Corpus Christi	Alice	Micropolitan Statistical Area	Jim Wells County	Central
Coastal	R14-Corpus Christi	Beeville	Micropolitan Statistical Area	Bee County	Central
Coastal	R14-Corpus Christi	Corpus Christi	Metropolitan Statistical Area	Nueces County	Central
Coastal	R14-Corpus Christi	Corpus Christi	Metropolitan Statistical Area	San Patricio County	Central
Coastal	R14-Corpus Christi	Kingsville	Micropolitan Statistical Area	Kleberg County	Central
Coastal	14-Corpus Christi	none	none	DeWitt County	Outlying
Coastal	14-Corpus Christi	none	none	Gonzales County	Outlying
Coastal	14-Corpus Christi	none	none	Jackson County	Outlying
Coastal	14-Corpus Christi	none	none	Lavaca County	Outlying
Coastal	14-Corpus Christi	none	none	Live Oak County	Outlying
Coastal	14-Corpus Christi	none	none	Refugio County	Outlying
Coastal	R14-Corpus Christi	Port Lavaca	Micropolitan Statistical Area	Calhoun County	Central
Coastal	R14-Corpus Christi	Rockport	Micropolitan Statistical Area	Aransas County	Central
Coastal	R14-Corpus Christi	Victoria	Metropolitan Statistical Area	Goliad County	Outlying
Coastal	R14-Corpus Christi	Victoria	Metropolitan Statistical Area	Victoria County	Central
Far West	R6-El Paso	El Paso	Metropolitan Statistical Area	El Paso County	Central
Far West	R6-El Paso	El Paso	Metropolitan Statistical Area	Hudspeth County	Outlying
Far West	6-El Paso	none	none	Brewster County	Outlying
Far West	6-El Paso	none	none	Culberson County	Outlying
Far West	6-El Paso	none	none	Jeff Davis County	Outlying
Far West	6-El Paso	none	none	Presidio County	Outlying
Lower Rio Grande Valley	R15-Harlingen	Brownsville-Harlingen	Metropolitan Statistical Area	Cameron County	Central
Lower Rio Grande Valley	R15-Harlingen	Kingsville	Micropolitan Statistical Area	Kenedy County	Outlying
Lower Rio Grande Valley	R15-Harlingen	McAllen-Edinburg-Mission	Metropolitan Statistical Area	Hidalgo County	Central
Lower Rio Grande Valley	15-Harlingen	none	none	Brooks County	Outlying
Lower Rio Grande Valley	15-Harlingen	none	none	Jim Hogg County	Outlying

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Lower Rio Grande Valley	R15-Harlingen	Raymondville	Micropolitan Statistical Area	Willacy County	Central
Lower Rio Grande Valley	R15-Harlingen	Rio Grande City-Roma	Micropolitan Statistical Area	Starr County	Central
Lower Rio Grande Valley	R16-Laredo	Alice	Micropolitan Statistical Area	Duval County	Outlying
Lower Rio Grande Valley	R16-Laredo	Del Rio	Micropolitan Statistical Area	Val Verde County	Central
Lower Rio Grande Valley	R16-Laredo	Eagle Pass	Micropolitan Statistical Area	Maverick County	Central
Lower Rio Grande Valley	R16-Laredo	Laredo	Metropolitan Statistical Area	Webb County	Central
Lower Rio Grande Valley	16-Laredo	none	none	Dimmit County	Outlying
Lower Rio Grande Valley	16-Laredo	none	none	Kinney County	Outlying
Lower Rio Grande Valley	16-Laredo	none	none	La Salle County	Outlying
Lower Rio Grande Valley	16-Laredo	none	none	McMullen County	Outlying
Lower Rio Grande Valley	16-Laredo	none	none	Zavala County	Outlying
Lower Rio Grande Valley	R16-Laredo	Zapata	Micropolitan Statistical Area	Zapata County	Central
North and Northeast	R4-Dallas Fort Worth	Bonham	Micropolitan Statistical Area	Fannin County	Central
North and Northeast	R4-Dallas Fort Worth	Corsicana	Micropolitan Statistical Area	Navarro County	Central
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Collin County	Central
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Dallas County	Central
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Denton County	Outlying
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Ellis County	Central
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Hunt County	Outlying
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Johnson County	Central
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Kaufman County	Outlying
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Parker County	Outlying
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Rockwall County	Central
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Tarrant County	Central
North and Northeast	R4-Dallas Fort Worth	Dallas-Fort Worth-Arlington	Metropolitan Statistical Area	Wise County	Outlying
North and Northeast	R4-Dallas Fort Worth	Gainesville	Micropolitan Statistical Area	Cooke County	Central
North and Northeast	R4-Dallas Fort Worth	Granbury	Micropolitan Statistical Area	Hood County	Central
North and Northeast	R4-Dallas Fort Worth	Mineral Wells	Micropolitan Statistical Area	Palo Pinto County	Central
North and Northeast	4-Dallas Forth Worth	none	none	Somervell County	Outlying
North and Northeast	R4-Dallas Fort Worth	Sherman-Denison	Metropolitan Statistical Area	Grayson County	Central
North and Northeast	R4-Dallas Fort Worth	Stephenville	Micropolitan Statistical Area	Erath County	Central
North and Northeast	R5-Tyler	Athens	Micropolitan Statistical Area	Henderson County	Central
North and Northeast	R5-Tyler	Jacksonville	Micropolitan Statistical Area	Cherokee County	Central

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North and Northeast	R5-Tyler	Longview	Metropolitan Statistical Area	Gregg County	Central
North and Northeast	R5-Tyler	Longview	Metropolitan Statistical Area	Rusk County	Outlying
North and Northeast	R5-Tyler	Longview	Metropolitan Statistical Area	Upshur County	Outlying
North and Northeast	R5-Tyler	Marshall	Micropolitan Statistical Area	Harrison County	Outlying
North and Northeast	R5-Tyler	Mount Pleasant	Micropolitan Statistical Area	Camp County	Outlying
North and Northeast	R5-Tyler	Mount Pleasant	Micropolitan Statistical Area	Titus County	Central
North and Northeast	5-Tyler	none	none	Cass County	Outlying
North and Northeast	5-Tyler	none	none	Delta County	Outlying
North and Northeast	5-Tyler	none	none	Franklin County	Outlying
North and Northeast	5-Tyler	none	none	Marion County	Outlying
North and Northeast	5-Tyler	none	none	Morris County	Outlying
North and Northeast	5-Tyler	none	none	Panola County	Outlying
North and Northeast	5-Tyler	none	none	Rains County	Outlying
North and Northeast	5-Tyler	none	none	Red River County	Outlying
North and Northeast	5-Tyler	none	none	Van Zandt County	Outlying
North and Northeast	5-Tyler	none	none	Wood County	Outlying
North and Northeast	R5-Tyler	Palestine	Micropolitan Statistical Area	Anderson County	Central
North and Northeast	R5-Tyler	Paris	Micropolitan Statistical Area	Lamar County	Central
North and Northeast	R5-Tyler	Sulphur Springs	Micropolitan Statistical Area	Hopkins County	Central
North and Northeast	R5-Tyler	Texarkana, Texas-Arkansas	Metropolitan Statistical Area	Bowie County	Central
North and Northeast	R5-Tyler	Tyler	Metropolitan Statistical Area	Smith County	Central
Panhandle and West	R1-Amarillo	Amarillo	Metropolitan Statistical Area	Armstrong County	Outlying
Panhandle and West	R1-Amarillo	Amarillo	Metropolitan Statistical Area	Carson County	Outlying
Panhandle and West	R1-Amarillo	Amarillo	Metropolitan Statistical Area	Oldham County	Outlying
Panhandle and West	R1-Amarillo	Amarillo	Metropolitan Statistical Area	Potter County	Central
Panhandle and West	R1-Amarillo	Amarillo	Metropolitan Statistical Area	Randall County	Central
Panhandle and West	R1-Amarillo	Borger	Micropolitan Statistical Area	Hutchinson County	Central
Panhandle and West	R1-Amarillo	Dumas	Micropolitan Statistical Area	Moore County	Central
Panhandle and West	R1-Amarillo	Hereford	Micropolitan Statistical Area	Deaf Smith County	Central
Panhandle and West	1-Amarillo	none	none	Briscoe County	Outlying
Panhandle and West	1-Amarillo	none	none	Castro County	Outlying
Panhandle and West	1-Amarillo	none	none	Childress County	Outlying
Panhandle and West	1-Amarillo	none	none	Collingsworth County	Outlying

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Panhandle and West	1-Amarillo	none	none	Dallam County	Outlying
Panhandle and West	1-Amarillo	none	none	Donley County	Outlying
Panhandle and West	1-Amarillo	none	none	Hall County	Outlying
Panhandle and West	1-Amarillo	none	none	Hansford County	Outlying
Panhandle and West	1-Amarillo	none	none	Hartley County	Outlying
Panhandle and West	1-Amarillo	none	none	Hemphill County	Outlying
Panhandle and West	1-Amarillo	none	none	Lipscomb County	Outlying
Panhandle and West	1-Amarillo	none	none	Ochiltree County	Outlying
Panhandle and West	1-Amarillo	none	none	Parmer County	Outlying
Panhandle and West	1-Amarillo	none	none	Sherman County	Outlying
Panhandle and West	1-Amarillo	none	none	Swisher County	Outlying
Panhandle and West	1-Amarillo	none	none	Wheeler County	Outlying
Panhandle and West	R1-Amarillo	Pampa	Micropolitan Statistical Area	Gray County	Central
Panhandle and West	R1-Amarillo	Pampa	Micropolitan Statistical Area	Roberts County	Outlying
Panhandle and West	R2-Lubbock	Levelland	Micropolitan Statistical Area	Hockley County	Central
Panhandle and West	R2-Lubbock	Lubbock	Metropolitan Statistical Area	Crosby County	Outlying
Panhandle and West	R2-Lubbock	Lubbock	Metropolitan Statistical Area	Lubbock County	Central
Panhandle and West	R2-Lubbock	Lubbock	Metropolitan Statistical Area	Lynn County	Outlying
Panhandle and West	2-Lubbock	none	none	Bailey County	Outlying
Panhandle and West	2-Lubbock	none	none	Cochran County	Outlying
Panhandle and West	2-Lubbock	none	none	Dickens County	Outlying
Panhandle and West	2-Lubbock	none	none	Floyd County	Outlying
Panhandle and West	2-Lubbock	none	none	Garza County	Outlying
Panhandle and West	2-Lubbock	none	none	King County	Outlying
Panhandle and West	2-Lubbock	none	none	Lamb County	Outlying
Panhandle and West	2-Lubbock	none	none	Motley County	Outlying
Panhandle and West	2-Lubbock	none	none	Terry County	Outlying
Panhandle and West	2-Lubbock	none	none	Yoakum County	Outlying
Panhandle and West	R2-Lubbock	Plainview	Micropolitan Statistical Area	Hale County	Central
Panhandle and West	R3-Abilene	Abilene	Metropolitan Statistical Area	Callahan County	Outlying
Panhandle and West	R3-Abilene	Abilene	Metropolitan Statistical Area	Jones County	Outlying
Panhandle and West	R3-Abilene	Abilene	Metropolitan Statistical Area	Taylor County	Central
Panhandle and West	R3-Abilene	Brownwood	Micropolitan Statistical Area	Brown County	Central

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Panhandle and West	3-Abilene	none	none	Baylor County	Outlying
Panhandle and West	3-Abilene	none	none	Coleman County	Outlying
Panhandle and West	3-Abilene	none	none	Comanche County	Outlying
Panhandle and West	3-Abilene	none	none	Cottle County	Outlying
Panhandle and West	3-Abilene	none	none	Eastland County	Outlying
Panhandle and West	3-Abilene	none	none	Fisher County	Outlying
Panhandle and West	3-Abilene	none	none	Foard County	Outlying
Panhandle and West	3-Abilene	none	none	Hardeman County	Outlying
Panhandle and West	3-Abilene	none	none	Haskell County	Outlying
Panhandle and West	3-Abilene	none	none	Jack County	Outlying
Panhandle and West	3-Abilene	none	none	Kent County	Outlying
Panhandle and West	3-Abilene	none	none	Knox County	Outlying
Panhandle and West	3-Abilene	none	none	Mitchell County	Outlying
Panhandle and West	3-Abilene	none	none	Montague County	Outlying
Panhandle and West	3-Abilene	none	none	Runnels County	Outlying
Panhandle and West	3-Abilene	none	none	Shackelford County	Outlying
Panhandle and West	3-Abilene	none	none	Stephens County	Outlying
Panhandle and West	3-Abilene	none	none	Stonewall County	Outlying
Panhandle and West	3-Abilene	none	none	Throckmorton County	Outlying
Panhandle and West	3-Abilene	none	none	Young County	Outlying
Panhandle and West	R3-Abilene	Snyder	Micropolitan Statistical Area	Scurry County	Central
Panhandle and West	R3-Abilene	Sweetwater	Micropolitan Statistical Area	Nolan County	Central
Panhandle and West	R3-Abilene	Vernon	Micropolitan Statistical Area	Wilbarger County	Central
Panhandle and West	R3-Abilene	Wichita Falls	Metropolitan Statistical Area	Archer County	Outlying
Panhandle and West	R3-Abilene	Wichita Falls	Metropolitan Statistical Area	Clay County	Outlying
Panhandle and West	R3-Abilene	Wichita Falls	Metropolitan Statistical Area	Wichita County	Central
Panhandle and West	R7-Midland	Andrews	Micropolitan Statistical Area	Andrews County	Central
Panhandle and West	R7-Midland	Big Spring	Micropolitan Statistical Area	Howard County	Central
Panhandle and West	R7-Midland	Lamesa	Micropolitan Statistical Area	Dawson County	Central
Panhandle and West	R7-Midland	Midland	Metropolitan Statistical Area	Martin County	Outlying
Panhandle and West	R7-Midland	Midland	Metropolitan Statistical Area	Midland County	Central
Panhandle and West	7-Midland	none	none	Borden County	Outlying
Panhandle and West	7-Midland	none	none	Crane County	Outlying

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Panhandle and West	7-Midland	none	none	Gaines County	Outlying
Panhandle and West	7-Midland	none	none	Glasscock County	Outlying
Panhandle and West	7-Midland	none	none	Pecos County	Outlying
Panhandle and West	7-Midland	none	none	Terrel County	Outlying
Panhandle and West	7-Midland	none	none	Upton County	Outlying
Panhandle and West	7-Midland	none	none	Ward County	Outlying
Panhandle and West	7-Midland	none	none	Winkler County	Outlying
Panhandle and West	R7-Midland	Odessa	Metropolitan Statistical Area	Ector County	Central
Panhandle and West	R7-Midland	Pecos	Micropolitan Statistical Area	Loving County	Outlying
Panhandle and West	R7-Midland	Pecos	Micropolitan Statistical Area	Reeves County	Central
Panhandle and West	8-San Angelo	none	none	Coke County	Outlying
Panhandle and West	8-San Angelo	none	none	Concho County	Outlying
Panhandle and West	8-San Angelo	none	none	Crockett County	Outlying
Panhandle and West	8-San Angelo	none	none	Kimble County	Outlying
Panhandle and West	8-San Angelo	none	none	Mason County	Outlying
Panhandle and West	8-San Angelo	none	none	McColloch County	Outlying
Panhandle and West	8-San Angelo	none	none	Menard County	Outlying
Panhandle and West	8-San Angelo	none	none	Reagan County	Outlying
Panhandle and West	8-San Angelo	none	none	Schleicher County	Outlying
Panhandle and West	8-San Angelo	none	none	Sutton County	Outlying
Panhandle and West	R8-San Angelo	San Angelo	Metropolitan Statistical Area	Irion County	Outlying
Panhandle and West	R8-San Angelo	San Angelo	Metropolitan Statistical Area	Sterling County	Outlying
Panhandle and West	R8-San Angelo	San Angelo	Metropolitan Statistical Area	Tom Green County	Central