Appendix N

Comments Received on the draft 2022 Annual Monitoring Network Plan

Texas Commission on Environmental Quality
2022 Annual Monitoring Network Plan

From:	Jennifer Hadayia
To:	tceqamnp
Subject:	Comments | 2022 Draft Air Monitoring Network Plan (AMNP)
Date:	Tuesday, May 24, 2022 4:09:54 PM
Attachments:	Air Alliance Houston Comments on TCEQ 2022 AMNP 5-24-22.pdf

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To Whom It May Concern,

Air Alliance Houston (AAH) respectfully submits the attached comments on the 2022 Draft Air Monitoring Network Plan (AMNP).

If there are any questions about our feedback, please feel free to contact me at any time either by telephone at (713) 539-1894 or by email at jennifer@airalliancehouston.org.

Thank you for your time and attention to our recommendations.

--

Jennifer M. Hadayia, MPA, she/her
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May 24, 2022

Texas Commission on Environmental Quality (TCEQ)

P.O Box 13087

Attention: Holly Landuyt, MC-165

Austin, Texas 78711-3087

Sent via: tceqamnp@tceq.texas.gov

RE: 2022 Draft Air Monitoring Network Plan (AMNP)

Dear Ms. Landuyt;

Air Alliance Houston (AAH) appreciates the opportunity to comment on the Texas Commission of Environmental Quality (TCEQ)'s 2022 Draft Air Monitoring Network Plan (AMNP). AAH recognizes that the draft AMNP meets the federal regulatory requirements outlined at 40 CFR 58.10 and corresponding Appendices. In addition, according to the draft, the TCEQ's federal monitoring network includes more than double the number of monitors required by federal rule. The number, type, and location of monitors within the network appears sufficient to characterize area air quality for all areas required within Texas.[1] Furthermore, we support the three new proposed Houston Area monitors in the Fifth Ward, Bayland Park, and Pleasantville neighborhoods. Below, we share with TCEQ some general concerns about the draft as it relates to environmental justice and Particulate Matter (PM) pollution in the Houston Area.

I. COMMENTERS

Air Alliance Houston (AAH) is a Texas 501(c)(3) non-profit advocacy organization working to reduce the public health impacts of air pollution and advance environmental justice through applied research, education, and advocacy. AAH takes a strong stance against disproportionate exposure to air pollution in overburdened communities of color and lower income by focusing attention on health equity and environmental justice.

II. INTRODUCTION

Title 40 Code of Federal Regulations (CFR) Section 58.10 requires Texas to submit an annual monitoring network plan (AMNP) to the United States (US) Environmental Protection

[1] Texas Commission of Environmental Quality's 2022 Draft Air Monitoring Network Plan at P. 7. *See electronically at:* https://www.tceq.texas.gov/downloads/air-quality/air-monitoring/network/draft-2022-amnp.pdf

Agency (EPA) each year. This monitoring plan provides the implementation and maintenance framework for a statewide ambient air quality monitoring network. The TCEQ has created this AMNP to demonstrate how Texas is meeting or will meet federal air monitoring requirements and includes proposed changes from the previous year and future proposed changes to the monitoring network. Specific air monitors used to meet federal air quality standards as well as other monitors that provide additional information on air quality and weather are discussed in the AMNP. Since the AMNP is focused on federally required monitoring, it does not include a review of state-initiated monitoring conducted in addition to federal requirements. As such, commenters will focus on collateral issues mentioned in the draft.

III. RECOMMENDATIONS

A. Areas With Environmental Justice Concerns

Pursuant to the EPA's recommendation in its response to TCEQ's 2021 AMNP, commentors encourage TCEQ to apply an environmental justice analysis to its ambient air monitoring planning as follows: *"For future plans, including next year's plan we encourage TCEQ to continue to evaluate areas with environmental justice concerns related to ambient air monitoring. Where possible, please add detail to the plan discussing the environmental justice considerations taken into account related to the ambient air quality network."*[2]

Commenters do not see this evaluation outlined in the 2022 Draft AMNP. As commentors have recommended to TCEQ in previous correspondence, TCEQ must make a conscious effort to take environmental justice into account when making administrative decisions, including in ambient air quality monitoring. While we appreciate and support the proposed new air monitor in Houston area environmental justice communities like Fifth Ward and Pleasantville, residents and local organizations in these neighborhoods continue to take it upon themselves to monitor their local-level air quality despite the TCEQs extensive monitoring network.

Commentors recommend greater accountability from TCEQ to conduct and provide monitoring results to environmental justice communities. Additionally, we recommend that TCEQ create reports on how it is applying monitor data to address local polluters. If the monitoring branch considers this to be outside the scope of their work, this should be tasked to the appropriate staff.

[2]EPA Response to the 2021 Air Monitoring Network Plan. *See electronically at:* https://www.tceq.texas.gov/downloads/air-quality/air-monitoring/network/historical/epa-response-to-tceq-2021-amnp.pdf

It is critical that ambient air monitoring in overburdened communities is used to hold the sources of such pollution accountable to meeting National Ambient Air Quality Standards (NAAQS).

B. Particulate Matter Monitoring

Houston's PM2.5 pollution contributed to more than 5,000 premature deaths and cost $49 billion in economic damages in 2015 alone.[3] According to the 2019 World Air Quality Report, Houston ranks 244 out of 1,517 cities for highest PM2.5 in the United States. Moreover, the city has seen a recent rise in both PM2.5 and ozone pollution since 2017.[4] For PM2.5, Houston experienced a 7.8 percent increase from 2017 to 2018 and another 11.3 percent increase from 2018 to 2019. As such, PM2.5 monitoring must be considered a high priority for our region.

In the draft AMNP, TCEQ recommends adding new sites and monitors for PM2.5 FEM continuous and PM10 FEM continuous with an estimated completion date of December 31, 2022. These new sites include the Houston Fifth Ward and Pleasantville areas pending site selection:

Site Name	Monitor	Recommendation	Estimated Completion Date
New Site: Gregory-Portland area	$PM_{2.5}$ FEM continuous	Add special purpose monitoring to new site for spatial coverage	December 31, 2022
Houston Bayland Park	$PM_{2.5}$ FEM continuous	Add special purpose monitoring to existing site for spatial coverage	December 31, 2022
New Site: Houston Fifth Ward area	$PM_{2.5}$ FEM continuous	Add special purpose monitoring to new site for spatial coverage	December 31, 2022
New Site: Houston Pleasantville area	$PM_{2.5}$ FEM continuous	Add special purpose monitoring to new site for spatial coverage	December 31, 2022

Figure 1: Table 12 Particulate Matter of 2.5 Micrometers or Less Monitor Recommendations[5]

In order to determine site location, we strongly recommend involving the residents of these two communities in the decision. For example, Fifth Ward is an area overburdened with pollution from industrial facilities. It is also an area with cancer clusters and a large concentration of

[3] Environmental Defense Fund. Amid COVID-19, the Trump administration sets dangerous air pollution standards. What is at stake for Houstonians? *See electronically at:* https://blogs.edf.org/health/2020/05/11/pm-standards-houston-analysis/

[4] Houston Air Quality Index. See electronically at: https://www.iqair.com/us/usa/texas/houston

[5] Texas Commission of Environmental Quality's 2022 Draft Air Monitoring Network Plan. at p. 25. *See electronically at*: https://www.tceq.texas.gov/downloads/air-quality/air-monitoring/network/draft-2022-amnp.pdf

respiratory illnesses.[6] Community members deserve the opportunity to guide where public regulatory monitors are located so as to generate data they can use to protect their health.

IV. CONCLUSION

Air Alliance Houston (AAH) appreciates the opportunity to comment on the Texas Commission of Environmental Quality (TCEQ)'s 2022 Draft Air Monitoring Network Plan (AMNP). Overall, we applaud TCEQ's efforts to monitor ambient air quality at levels that exceed federal requirements and to add regulator monitors in two of Houston's environmental justice communities. We hope to continue to collaborate with the TCEQ on our common goals of ensuring all people of Texas have the right to breathe clean air. If there are any questions about this letter, please feel free to contact me at any time either by telephone at (713) 539-1894 or by email at Jennifer@airalliancehouston.org.

Respectfully submitted,

Jennifer M. Hadayia, MPA
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[6] ABC13. Fifth Ward Residents Plead For Action From EPA On Cancer Cluster. *See electronically at:* https://abc13.com/cancer-cluster-houstons-fifth-ward-kashmere-gardens-causing-chemical/11611110/

From:	Van Vleck, Matt (PCS)
To:	tceqamnp
Subject:	2022 Air Monitoring Network Plan Comment
Date:	Tuesday, May 24, 2022 2:07:44 PM
Attachments:	image002.png image003.png image004.png 2022 Air Monitoring Network Plan Comment - Harris County.pdf

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Please see Harris County Pollution Control Services Department's attached comment on the 2022 Air Monitoring Network Plan.

Matt Van Vleck

Air Services Manager | Operations and Policy
Harris County Pollution Control

Email: matt.vanvleck@pcs.hctx.net
Direct: (713) 274-6412 | **Main:** (713) 920-2831
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Harris County
Pollution Control
Established in 1953
Harris County Pollution Control Services
Dr. Latrice Babin, Executive Director

May 24, 2022

Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

Re: 2022 Texas Commission on Environmental Quality Annual Monitoring Network Plan

Dear Ms. Landuyt:

Thank you for the opportunity to submit comments regarding the 2022 Texas Commission on Environmental Quality (TCEQ) Annual Monitoring Network Plan (AMNP). Harris County Pollution Control Services Department (PCS) is the local regulatory enforcement authority for air, water, and solid waste issues in Harris County, Texas. We understand that TCEQ has solicited comments regarding the above plan.

PCS understands that TCEQ plans to implement three new monitoring locations in Harris County in 2022:

- Bayland Park
- Fifth Ward
- Pleasantville

TCEQ operates a monitoring site in Bayland Park with NO, NO_2, NO_x and O_3 detection. Bayland Park is located near large residential and commercial warehouse areas in southwest Harris County. TCEQ has recently installed a $PM_{2.5}$ Federal Equivalent Method (FEM) continuous monitor at this location. PCS appreciates the addition of a $PM_{2.5}$ FEM continuous monitor at Bayland Park. PCS believes it will be beneficial to characterize $PM_{2.5}$ concentrations in this area given the close proximity of residences to Interstate 69 and other heavily traveled thoroughfares such as Bissonnet Street, Hillcroft Street and Fondren Road. PCS currently has a non-FEM laser light scattering type

particulate monitor co-located with TCEQ's air monitoring station in Bayland Park as part of Harris County's Community Air Monitoring Program (CAMP). The addition of a PM 2.5 FEM monitor at this location will also benefit Harris County's CAMP program by providing the opportunity to compare CAMP monitor $PM_{2.5}$ data with the co-located FEM analyzer.

The AMNP also states that TCEQ plans to establish an air monitoring site with a $PM_{2.5}$ FEM continuous monitor, a PM_{10} FEM continuous monitor, a canister sampler to measure VOC every sixth day, and meteorological monitoring in Houston's Fifth Ward area.

Houston's Fifth Ward is a densely populated residential area, northeast of Downtown Houston, with both Interstate 69 and Interstate 10 running through it. A portion of a major Union Pacific rail facility is also located in the Fifth Ward.

PCS supports the addition of a monitoring site with $PM_{2.5}$, PM_{10}, and VOC detection capability in this area. PCS believes it would be beneficial to characterize $PM_{2.5}$, PM_{10}, and VOC concentrations in this area given the presence of two major interstates and a major rail facility with associated rail cars in chemical service traveling to and from Harris County's numerous chemical manufacturing and refining facilities.

The AMNP states that TCEQ plans to establish an air monitoring site with a $PM_{2.5}$ FEM continuous monitor and meteorological monitoring in Pleasantville.

Pleasantville is northeast Downtown Houston and is bordered by Loop 610 on the east side and is bisected by Interstate 10. Pleasantville has a large residential area in its southern quarter. Anheuser-Busch Houston Brewery is located just north of the residential area. Magellan Pipeline Company, LP is located 1.6 miles to the north-northwest of the residential area and Valero Refining-Texas LP is located 1.25 miles to the southeast.

PCS supports the addition of a monitoring site with $PM_{2.5}$ detection capability near the Pleasantville residential area. PCS believes that it would be beneficial to characterize $PM_{2.5}$ concentrations in this area given the proximity of Loop 610, Interstate 10, and Anheuser-Busch Houston Brewery to residences. PCS also recommends the addition of a Gas Chromatograph or similar VOC analyzer in Pleasantville due to the proximity of Magellan Pipeline Company's terminal and the Valero refinery.

The AMNP also states that TCEQ is considering the addition of a VOC canister to the existing Houston East air monitoring site. PCS supports the addition of a VOC canister sampler at this site. PCS believes it would be beneficial to characterize VOC in this area given its proximity to a residential neighborhood located between the monitoring site and Magellan Terminal Holdings LP's Houston Ship Channel facility, located 1.5 miles to the southeast.

PCS also recommends placement of a $PM_{2.5}$ FEM continuous monitor in south Houston, ideally east of Highway 288, between South Loop 610 and the Sam Houston Tollway. There are twenty-seven concrete batch plants in the area bordered by South Loop 610, the Sam Houston Tollway, South Post Oak Road, and Interstate 45. PCS believes it would be beneficial to characterize $PM_{2.5}$ in this area given its high population density and numerous concrete batch plant facilities. TCEQ currently has no $PM_{2.5}$ monitoring in this area.

Thank you for the opportunity to provide these comments regarding the 2022 Annual Monitoring Network Plan. Should you have any questions, please contact Matt Van Vleck at 713-274-6412 or via email at matt.vanvleck@pcs.hctx.net.

Sincerely,

For Dr. Latrice Babin

Dr. Latrice Babin
Executive Director

cc: Helen Bonnyman - Harris County Judge's Office
Sonya Marrett - Harris County Precinct 1
Kristen Lee – Harris County Precinct 2
Bruce High - Harris County Precinct 3
Ron Layton - Harris County Precinct 4
Sarah Utley - Harris County Attorney's Office
Nicole Bealle - TCEQ Region 12

From:	Gunter CleanAir
To:	tceqamnp
Subject:	Monitor request public comment-2022 annual monitoring plan
Date:	Saturday, May 21, 2022 8:39:13 AM
Attachments:	Gunter Concrete Batch Plant Cluster Modeling Report.pdf

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My name is Deirdre Diamond and I am requesting a TCEQ monitor to be placed in our community as part of TCEQs 2022 annual air quality monitoring plan. Our community has 11 permitted concrete batch plants within a mile of each other and an aggregate storage facility. There is a 12th batch plant in the permitting process for the site with five existing plants. We have air dispersion modeling that shows one of the sites exceeds NAAQS for PM2.5, PM10, and NO2. PM10 is predicted to be 10 times what it should be for the site with five batch plants.. The modeling also predicts 3500 trucks service the one 873 Wall Street site. Those 3500 trucks go right past our schools to get to the plants. The plants struggle with mitigating their dust, the roads are y rarely watered and the roads are not paved. 3500 trucks a day traveling up one road to get to all five plants make it very difficult to control the dust and we have videos and pictures of the dust leaving the property line. We now have children diagnosed with pollution related asthma exacerbation and countless community members suffering from severe allergies. Our purple air monitors consistently show high PM levels during batching hours. Our community needs a TCEQ monitor. The state needs to monitor the impact of such a large cluster of batch plants in one small area so the community can be informed. Our schools need the ability to warn and predict air quality so that children do not get exposed outside leading to asthma exacerbation. Our elderly population or those with chronic respiratory disease needs a local warning sign to stay in doors to prevent any COPD or chronic disease exacerbation. Please add a monitor to our community, strategically placed to monitor the plants and their impact to our deteriorating air quality.

Please air dispersion modeling attached. This file only evaluated the 873 site. This site has five permitted plants, with another in the process for being approved. Across the street are another six plants not evaluated.

Thank you,
Deirdre Diamond
214.448.7149
GunterCleanAir
2105 Bledsoe Rd
Gunter, Texas 75058

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AIR QUALITY DISPERSION MODELING REPORT
CONCRETE BATCH PLANT CLUSTER – GUNTER, TX

Prepared for:

GUNTER CLEAN AIR
GUNTER, TX

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January 2022

AIR QUALITY DISPERSION MODELING REPORT
CONCRETE BATCH PLANT CLUSTER – GUNTER, TX

TABLE OF CONTENTS

Section		Page No
EXECUTIVE SUMMARY		1
1.0	INTRODUCTION AND BACKGROUND	3
1.1	Overview	3
1.2	Site Description	4
2.0	EMISSIONS INVENTORY	6
2.1	Concrete Branch Plant	6
2.2	Truck Traffic Fugitive Dust	7
2.3	Diesel-Fired Generator Engines	11
3.0	DISPERSION MODELING INPUT DATA	12
3.1	Model Selection and Technical Inputs	12
3.2	Receptor Inputs	12
3.3	Meteorological Data Inputs	13
4.0	RESULTS AND DISCUSSION	14
4.1	Particulate Matter (PM_{10} & $PM_{2.5}$)	14
4.2	Nitrogen Dioxide (NO2)	17
4.3	Discussion/Conclusions	18

APPENDICES

APPENDIX A	Emission Information	19
APPENDIX B	Electronic Copy of Modeling Input/Output Files	

AIR QUALITY DISPERSION MODELING REPORT
CONCRETE BATCH PLANT CLUSTER – GUNTER, TX

TABLE OF CONTENTS
(Continued)

LIST OF FIGURES

Figure		Page No
1	Concrete Batch Plant Locations Assumed for Dispersion Modeling	5
2	AERMOD Source Locations	10
3	H2H 24-hour PM_{10} Concentrations	15
4	H8H 24-hour $PM_{2.5}$ Concentrations	16
5	H8H 1-hour NO_2 Concentrations	18

LIST OF TABLES

Table		Page No
ES-1	Summary of Modeling Results	2
1	PM_{10} & $PM_{2.5}$ Emissions from Concrete Truck Loading	7
2	Predicted PM_{10} and $PM_{2.5}$ Concentrations	14
3	Predicted NO_2 Concentrations	17

EXECUTIVE SUMMARY

A dispersion modeling study has been conducted for emissions of particulate matter less than 2.5 microns ($PM_{2.5}$), particulate matter less than 10 microns (PM_{10}), and nitrogen oxides (NOx) associated with a cluster of five adjacent concrete batch plants located near Gunter, TX. The dispersion modeling analysis has been prepared by Air Resource Specialists, Inc. (ARS) of Fort Collins, Colorado.

Each concrete batch plant considered in the dispersion modeling analysis has been granted or has applied for approval under the Texas Air Quality Standard Permit for Concrete Batch Plants (Effective September 22, 2021). Under the Standard Permit, concrete production at a single site is limited to no more than 300 cubic yards per hour or 6,000 cubic yards per day. ARS understands that each of the five concrete batch plants considered in this analysis has been considered a separate "site" by the Texas Commission on Environmental Quality (TCEQ) and as such, each plant has been granted or has applied for the Standard Permit. Under the Standard Permit, the term "site" is defined as follows: *The total of all stationary sources located on one or more contiguous or adjacent properties, which are under common control of the same person (or persons under common control).*

In this situation, each Standard Permit has been issued to a separate company. However, the five concrete batch plants are located on contiguous and adjacent properties and have a common plant access road from the closest public road (Wall Street Road). The permit applications have represented that each plant was a single site, but the applications submitted to TCEQ did not acknowledge the presence of any adjacent concrete batch plants. In the opinion of Clean Air Gunter, the five concrete batch plants are functionally a single plant and the separate ownership for each plant appears to be an attempt to circumvent the Standard Permit capacity restriction for concrete production at a single site.

Dispersion modeling was conducted using the AMS/EPA Regulatory Model (AERMOD) Version 21112. AERMOD was executed as per 40 CFR 51 Appendix W and used all regulatory default model inputs.

Modeling results are summarized in Table ES-1. The modeling results indicate exceedances of the applicable National Ambient Air Quality Standards (NAAQS). Therefore, the dispersion modeling study concludes that the Texas Air Quality Standard Permit for Concrete Batch Plants (Effective Date September 22, 2021) is not protective of the NAAQS when multiple concrete batch plants are located in close proximity to one another.

Table ES-1

SUMMARY OF MODELING RESULTS
WALL STREET ROAD CONCRETE BATCH PLANT CLUSTER: GUNTER, TX
SOURCE IMPACT ONLY (NO BACKGROUND ADDED)

Pollutant	Averaging Time	Rank	Maximum Air Quality Impact	NAAQS
$PM_{2.5}$	24-Hour	H8H	129.4 $\mu g/m^3$	35.0 $\mu g/m^3$
PM_{10}	24-Hour	H2H	1509.4 $\mu g/m^3$	150 $\mu g/m^3$
NO_2	1-Hour	H8H	208.4 $\mu g/m^3$	188 $\mu g/m^3$

1.0 INTRODUCTION AND BACKGROUND

1.1 Overview

A dispersion modeling study has been conducted for emissions of particulate matter less than 2.5 microns ($PM_{2.5}$), particulate matter less than 10 microns (PM_{10}), and nitrogen oxides (NOx) associated with a cluster of five adjacent concrete batch plants located near Gunter, TX. The dispersion modeling analysis has been prepared by Air Resource Specialists, Inc. (ARS) of Fort Collins, Colorado.

Each concrete batch plant considered in the dispersion modeling analysis has been granted or has applied for approval under the Texas Air Quality Standard Permit for Concrete Batch Plants, (Effective September 22, 2021). Under the Standard Permit, concrete production at a single site is limited to no more than 300 cubic yards per hour or 6,000 cubic yards per day. ARS understands that each of the five concrete batch plants in this modeling analysis has been considered a separate "site" by the Texas Commission on Environmental Quality (TCEQ) and as such, each plant has been granted or has applied for a separate Standard Permit. Under the Standard Permit, the term "site" is defined as follows: *The total of all stationary sources located on one or more contiguous or adjacent properties, which are under common control of the same person (or persons under common control).*

In this situation, separate companies have applied for the Standard Permits. However, the five concrete batch plants are all located on contiguous and adjacent properties and have a common plant access road from the closest public road (Wall Street Road). The permit application for the various concrete batch plants have represented that each plant is a single site, but the applications submitted to TCEQ did not referenceor acknowledge the presence of any adjacent concrete batch plants. In the opinion of Clean Air Gunter, the five concrete batch plants are functionally a single plant and the separate ownership for each plant appears to be an attempt to circumvent the Standard Permit capacity restriction for concrete production at a single site.

Dispersion modeling was conducted using the AMS/EPA Regulatory Model (AERMOD) Version 21112. AERMOD was executed as per 40 CFR 51 Appendix W and used all regulatory default model inputs.

1.2 Site Description

Permit applications have been submitted for five separate concrete batch plants to be located at or near 873 Wall Street Road. Gunter, TX. The five companies are listed below:

- Nelson Brothers
- Wildcatter Redi Mix
- Terra Enterprise
- Preferred Materials LLC
- Metroplex Gunite

The Standard Permit applications submitted by each company to TCEQ have conflicting information in that the individual properties described under each application appear to overlap. None of the permit applications reference or acknowledge the adjacent concrete batch plant facilities nor do any of the application materials show the proposed concrete batch plant locations in reference to one another. Because the permitapplications lack reliable site information for each concrete batch plant, an idealized siteplan was developed by ARS for the modeling study. The expected location of the five plants as used for the modeling study has been presented in Figure 1.

Figure 1: Concrete Batch Plant Locations Assumed for Dispersion Modeling Idealized Locations Based on Application Data Submitted to TCEQ

The Google Earth image used for the base map (Figure 1) showed one existing concrete batch plant (Nelson Brothers). In order to develop the idealized configuration for the concrete batch plant cluster, each adjacent plant was assumed to mimic the size and equipment configuration of the Nelson Brothers plant shown on Google Earth. The five plants were arranged in an “L” shape on properties adjacent to the Nelson Brothers site. Wildcatter Redi Mix was assumed to be located directly north of Nelson Brothers and Preferred Materials was then assumed to be directly north of Wildcatter. Terra Enterprise was assumed to be located directly east of Nelson Brothers and Metroplex Gunite was assumed to be directly east of Terra.

All five plants share a common access road to reach the nearest public roadway (Wall Street Road). ARS’ information is that the common access road connecting the concrete batch plant cluster to Wall Street Road is not a public road. The access road is visible on Figure 1.

2.0 EMISSIONS INVENTORY

In order to simplify the dispersion modeling analysis, only the most significant emission sources associated with each concrete batch plant were considered. Smaller minor sources of emissions were not evaluated. The emissions considered were as follows:

- Concrete Batch Plant Truck Loading
- Truck Traffic Fugitive Dust Emissions
- Diesel-Fired Electric Generator

The details for these emission calculations are presented in the sections below. The modeling and associated emissions addressed the maximum daily emissions as allowed under the Standard Permit for Concrete Batch Plants (Effective Date: September 22, 2021), unless the permit application for an individual site listed a lower production rate. A printed copy of the emission calculation spreadsheets has been provided in Attachment 1.

2.1 Concrete Batch Plant Emissions

The concrete batch plant emissions were derived using EPA's Compilation of Air Pollution Emission Factors (AP-42), Section 11.12 (Concrete Batching).

Under AP-42, emission estimates for PM_{10} are presented for a range of activities associate with concrete batch plant operations. However, the greatest magnitude of PM_{10} emissions occurs from concrete truck loading. As such, only the concrete truck loading emissions were considered in this analysis.

The concrete truck loading emissions are presented below (Table 1).

As per AP-42, emissions are calculated based on the weight of the cement and cement supplement[1]. Using information in AP-42, this is estimated at 564 lb/cu yard, consisting of 491 lb/cu yd for cement and 73 lb/cu yd for cement supplement.

Two concrete batch plant sizes were considered. The larger plant size used the maximum allowable production in the Standard Permit, or 6,000 cu yd per day. The Standard Permit daily production restriction is limiting as the hourly production restriction of 300 cu yd per day would exceed 6,000 cu yd per day if the plant operated continuously over 24 hours. The larger plant size was applied at three plants (Nelson Brothers, Wildcatter, and Preferred Materials). The smaller plant size of 150 cu yd per hour was used for two of the concrete batch plants (Terra Enterprises and Metroplex Gunite) based on the plant production data presented in the permit applications.

[1] AP-42, Table 11.12-2, Footnote g

$PM_{2.5}$ emissions are not explicitly identified in AP-42 Table 11.12-2 for concrete truck loading. As such, the $PM_{2.5}$ emissions factor was estimated using the $PM_{2.5}$ to PM_{10} ratios as taken from AP-42, Table 11.12-3.

Table 1
PM-10 & PM-2.5 Emissions from Concrete Truck Loading

		AP-42 Factor[2]	Larger Plant 6,000 cu yd/day		Smaller Plant 150 cu yd/hr	
		lb/ton	lb/day	g/sec	lb/hr	g/sec
PM_{10}	Uncontrolled	0.31	524.53	2.76	13.11	1.65
	Controlled	0.0263	44.50	0.23	1.11	0.14
$PM_{2.5}$	Uncontrolled	0.05	84.60	0.44	2.12	0.27
	Controlled	0.003945	6.67	0.035	0.17	0.021

For the modeling, the controlled PM_{10} and $PM_{2.5}$ emissions were used for input to AERMOD based on the emissions control requirements imposed in the TCEQ Standard Permit. Emissions were input to AERMOD as a volume source located at the center of each concrete batch plant property with an assigned a release height of 3.0 meters and assumed volume dimensions of 1 meter x 1 meter x 1 meter. These assumptions yielded an estimate of 0.465 meters for both the initial horizontal dimension (sigma y_o) and initial vertical dimension (sigma z_o).

2.2 Truck Traffic Fugitive Dust

The concrete batch plant cluster modeling also considered fugitive dust emissions released from truck traffic entering and exiting the different facilities. Truck traffic considered included both the concrete trucks carrying product to customers as well as trucks bringing raw materials to the site. Fugitive dust emissions from truck traffic are not normally considered in TCEQ permit analyses but were considered in the ARS concrete batch plant cluster modeling because the associated fugitive emissions are significant and have a real impact on local air quality.

[2] AP-42, Table 11.12-2

For concrete trucks, the truck capacity was assumed to be 7.85 cu yd per truck based on concrete mixer truck specifications found from an internet search.[3] This assumption yielded 765 trucks per day for the larger plants (6,000 cu yd/day) and 459 trucks per day for the smaller plants (150 cu yd/hr). For the raw materials, the calculations used 564 lb/cu yd for cement and cement supplement as described previously and an average load size of 25 tons, which is typical load for over the road trucks. With these assumptions, the raw material deliveries were calculated to be 68 trucks per day for the larger plants (6,000 cu yd/day) and 41 trucks per day for the smaller plants (150 cu yd/hr).

The five concrete batch plants considered in this modeling analysis have the potential to generate a combined total of almost 3,500 truck trips per day, which is approximately one truck every minute on average. All of the associated truck traffic would enter/exit along a common access road segment to reach the nearest public roadway, i.e., Wall Street Road.

The AP-42 calculations for truck traffic fugitive dust require the average vehicle weight. These calculations were based upon data for the cement mixer trucks since the mixer trucks generate the majority of the traffic. Using the concrete mixer truck specification data described previously, the estimated truck empty weight was 18 tons. The loaded weight was estimated to be 33.7 tons based on the average truck load of 7.85 cu yd per truck described previously (equal to 15.7 ton/truck). The average of 25.85 tons was then applied for the vehicle weight in the AP-42 calculations, which represents the average vehicle weight for trucks making a round trip to/from the batch plants.

The PM_{10} and $PM_{2.5}$ emissions were calculated using the emissions factor equation presented in AP-42, Section 13.2.2 (Unpaved Roads), Equation 1a, as documented below:

$E = k * (s/12)^a * (w/3)^b$, where:

k = constant, 1.5 for PM_{10} and 0.15 for $PM_{2.5}$
s = silt content (4.8% assumed)[4]
w = average vehicle weight (25.85 tons, as described above)
a = constant, 0.9
b = constant, 0.45

Using the above data, the calculated emission factors are:

PM_{10} = 1.73 lb/VMT
$PM_{2.5}$ = 0.17 lb/VMT

[3] https://www.readymix2go.co.uk
[4] AP-4, Table 13.2.2-1, Average road silt content for sand and gravel processing

For the AERMOD modeling, truck traffic fugitive dust emissions were assigned to one of eleven (11) road segments. The road segments and other source locations are illustrated in Figure 2. Road segment #1 is the entry/exit at Wall Street Road and the segments are numbered sequentially as one moves east and north from the Wall Street Road entry/exit point. The assumed access roads for each individual concrete batch plant were assumed to intersect the common access road at the southeast corner of each individual batch plant property and were aligned north/south just outside the east boundary of each individual facility. At the midpoint of the eastern boundary for each facility, the truck traffic was assumed to turn 90 degrees to enter each facility. The internal roads within each facility were assumed to run from this point to the truck loading station at the center of each facility. The details for the truck traffic fugitive dust calculations for each road segment are provided in the calculation spreadsheet (See Attachment 1).

Based on the Standard Permit, fugitive dust controls are required to mitigate dust generated from vehicle traffic. A control factor of 75% was applied to account for fugitive dust mitigation on road segments internal to each plant site. However, because the Standard Permit requires fugitive dust mitigation only within the identified batch plant boundary, no dust mitigation was assumed for road segments outside of the plant properties, such as the common access road.

Figure 2
AERMOD Source Input Locations

For AERMOD, the truck traffic fugitive dust was modeled using current US Environmental Protection Agency (EPA) recommendations for haul road truck traffic[5]. The "area source" approach listed by EPA was followed. The road width was assumed to be 8.0 meters, which would represent a standard two-lane roadway and the truck heightfrom the specification data described earlier was 12 feet.

Following the EPA "area source" haul road modeling recommendations, the plume width was calculated using the roadway width plus 6 meters, which for this modeling study was 14.0 meters (6 + 8 = 14). For the vertical plume dimension, the top of the plume was assumed to be 1.7 * truck height or 20.4 feet (6.2 meters). The emissions release height would be the midpoint of the vertical dimension, or 3.1 meters. The initial vertical dimension (sigma z_o) was calculated to be 2.88 meters (sigma z_o = Plume height / 2.15).

[5] Haul Road Workgroup Final Report to EPA-OAQPS, March 12, 2012.

2.3 Diesel-Fired Generator Engines

Under the TCEQ Standard Permit for Concrete Batch Plants, each plant is allowed a generator engine up to 1,000 horsepower (hp) is size. The nitrogen oxide (NOx) emissions associated with a 1,000 hp diesel-fired engine was included in the modeling.

The Standard Permit requires that any generator engine meet the New Source Performance Standards (NSPS) as applicable, codified at 40 CFR 60 Subpart IIII. Under Subpart IIII, the emission limitations are variable based on the age and size of the engine.

For the purpose of this modeling study, the engine NOx emissions were calculated using the applicable Subpart IIII emissions limit for certain Tier 1 engines, or 9.8 g/KW-hr (equal to 7.3 g/hp-hr). At this emission rate, a 1,000 hp generator engine would have NOx emissions of 16.08 lb/hr (2.028 g/sec). A newer engine would have lower emissionsthan assumed by the modeling. However, an older engine that predates Subpart IIII would have no maximum allowable NOx emissions.

The TCEQ Standard Permit sets 8 feet as minimum stack height for any associated generator engine, and this stack height was used for the engine NOx modeling. For the other engine parameters, ARS used data describing a 750 hp engine located in our archives from a prior modeling study, as itemized below:

- Exhaust Temperature = 915 deg F
- Stack Diameter = 0.75 ft
- Stack Velocity = 240 ft/sec

3.0 DISPERSION MODELING INPUT DATA

3.1 Model Selection and Technical Inputs

Dispersion modeling was conducted using the AMS/EPA Regulatory Model (AERMOD) Version 21112. All AERMOD technical options selected followed the regulatory default option. Model inputs also specified rural conditions for dispersion coefficients and other variables. ARS uses the BEEST interface for AERMOD developed by Providence Engineering.

The application of AERMOD followed applicable guidance from the *EPA Guideline for Air Quality Models* (40 CFR 51, Appendix W). For the conversion of generator engine NOx emissions to the regulated form, e.g., nitrogen dioxide (NO_2), ARS applied the ambient ratio method (ARM2) as recommended in Appendix W. ARM2 data inputs used the EPA-recommended default values (max = 0.9, min = 0.5).

All modeling used the Universal Transverse Mercator (UTM) grid coordinates. Electronic copies of the various AERMOD input/output files are available upon request.

The design concentrations for comparison to the NAAQS were based on the form of the NAAQS. For PM_{10}, ARS used the highest-second highest (H2H) predicted 24-hour PM_{10} concentration because the NAAQS allows one exceedance per year. For $PM_{2.5}$ and NO_2, the modeling used the highest-eighth-highest (H8H) concentration because both the $PM_{2.5}$ and NO_2 NAAQS are based on the 98th percentile concentration.

3.2 Receptor Inputs

For this modeling study, ARS calculated the modeled concentrations for locations in the immediate vicinity of the concrete batch plant cluster, where the concentrations are expected to the at or close to the maximum impact levels. Receptors surrounding the concrete batch plant cluster at a resolution of 100 meters were input to AERMOD. Any receptor falling within the property boundary for any individual concrete batch plant was excluded from the modeling.

Terrain elevations for receptors were determined using the 3D Elevation Program (3DEP), formerly the National Elevation Dataset (NED). The 3DEP elevation data at a resolution of 1-arcsecond were downloaded from EPA at https://gaftp.epa.gov/Air/aqmg/3dep/. Terrain heights for emissions sources and receptors and were then calculated using the 3DEP elevation data and the most recent version of AERMAP (Version 18081), which is supplied with the BEEST AERMOD modeling software. The EPA website provides the 3DEP elevation data in a format compatible with AERMAP without any additional manipulation/formatting by the user.

3.3 Meteorological Data Inputs

The dispersion modeling study used meteorological data downloaded from TCEQ. ARS used the calendar year 2016 preprocessed meteorological data file recommended by TCEQ for the Gunter location (Grayson County).

The Grayson County meteorological data were generated by TCEQ using surface meteorological data from Denton (TX) Municipal Airport (WBAN = 3991) and corresponding upper air data collected at Fort Worth TX (WBAN = 3990). Based on the TCEQ documentation, the meteorological data were processed by TCEQ using AERMET Version 19191 and applied the U-Star option as recommended by Appendix W.

On the TCEQ website, preprocessed meteorological data are available for different surface roughness heights. ARS selected preprocessed TCEQ data calculated using the "medium" surface roughness height (0.1 to 0.7 meters).

4.0 RESULTS AND DISCUSSION

4.1 Particulate Matter (PM_{10} & $PM_{2.5}$)

Table 2 summarizes the concrete batch plant cluster AERMOD dispersion modeling results for PM_{10} and $PM_{2.5}$ and compares the results to the applicable NAAQS. Dispersion modeling results are presented for the 24-hour average using the highest 2nd highest (H2H) modeled concentration for PM_{10} and the highest 8th highest (H8H) modeled concentration for $PM_{2.5}$. This approach for selecting the design value matches the form of the NAAQS. The PM_{10} NAAQS allows for once exceedance per year, so the H2H concentration is the appropriate design value. The $PM_{2.5}$ NAAQS is based on the 98th percentile concentration and the H8H concentration represents the 98th percentile when a one-year period is considered.

The modeled impacts in Table 2 are for the modeled emission sources, which include the concrete mixer truck loading operations plus fugitive dust from truck traffic entering and exiting each batch plant. No other PM_{10} and $PM_{2.5}$ emission sources at the concrete batch plant were considered, such as material stockpiles, loading and handling of raw materials, equipment traffic (e.g., front end loader) on unpaved areas within the plant. Also, a background concentration has not been added to these results.

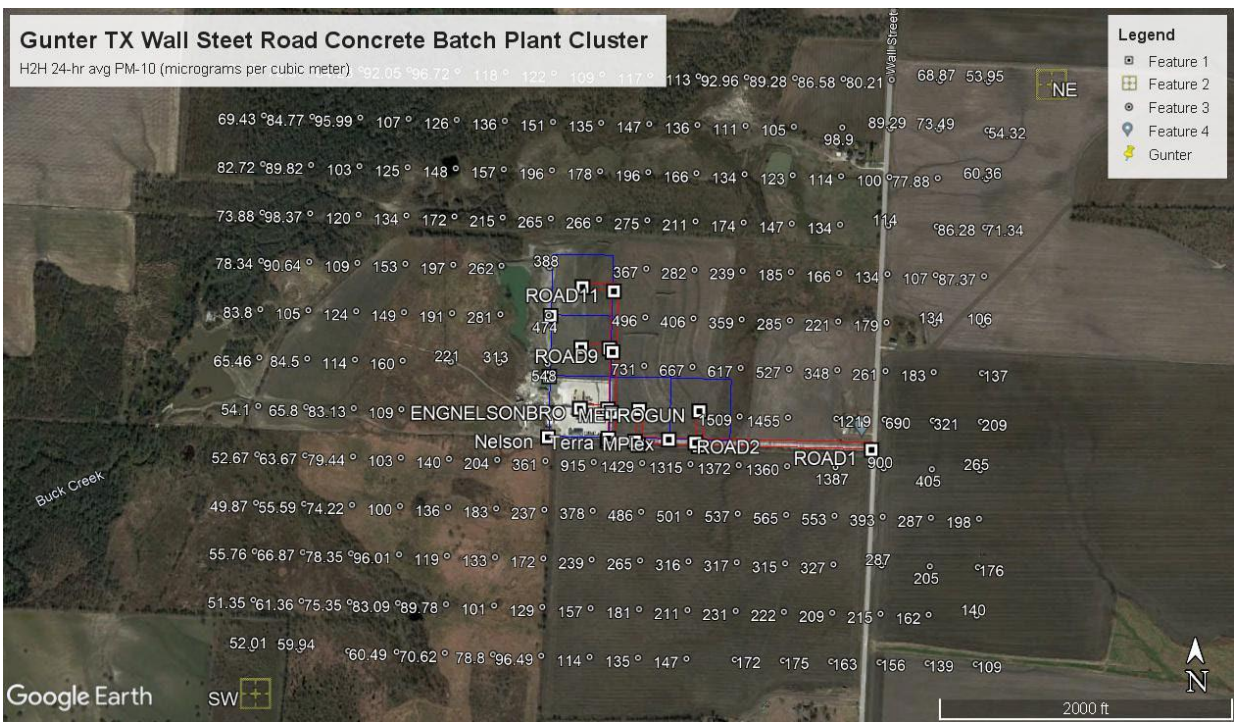
Only the 24-hour average concentrations have been reported from the modeling because the emission calculations were representative of the worst-case emissions day with all plants operating at the maximum capacity identified in the respective applications for the TCEQ Standard Permit.

Table 2
Predicted PM_{10} and $PM_{2.5}$ Concentrations
Gunter TX Wall Street Road Concrete Batch Plant Cluster

Pollutant	Averaging Period	Rank	Model Concentration Prediction	PRIMARY NAAQS
			($\mu g/m^3$)	($\mu g/m^3$)
$PM_{2.5}$	24-Hour Average	H2H	17.23	35
PM_{10}	24-Hour Average	H8H	44.24	150

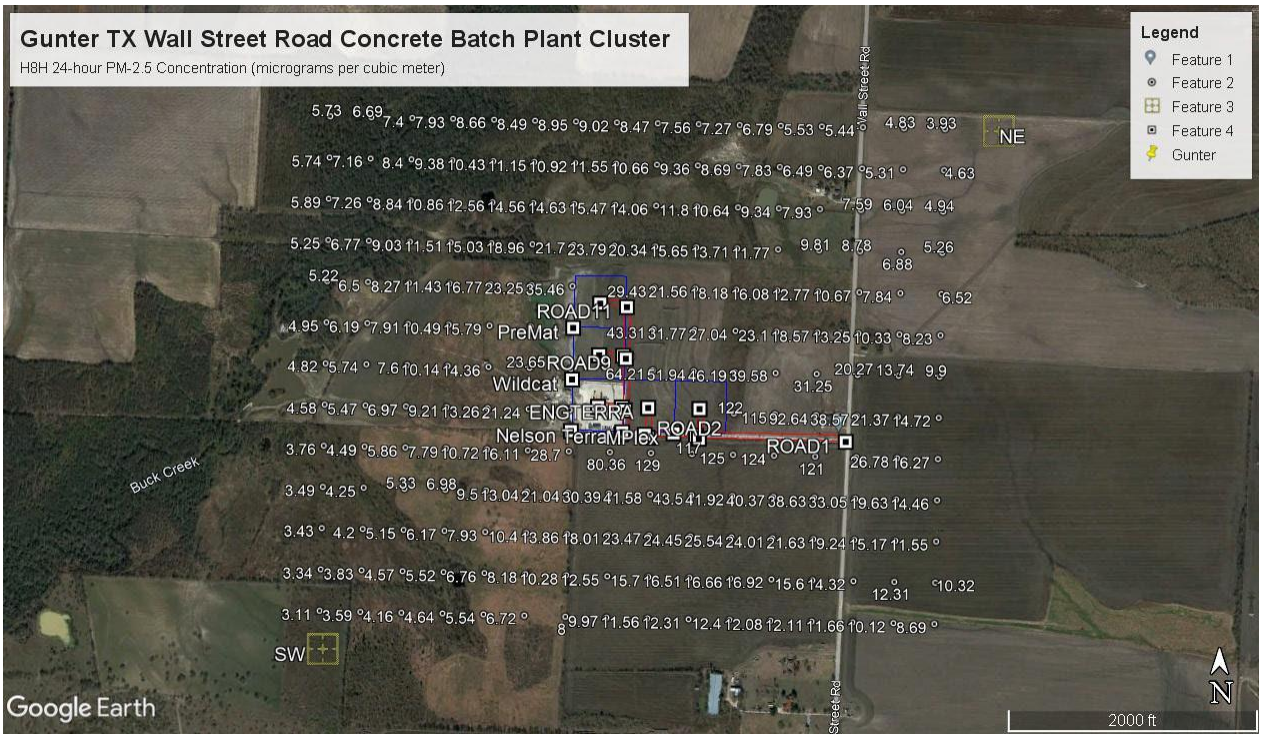
Dispersion modeling predicted that the H2H 24-hour average PM_{10} concentration would be 1509.4 $\mu g/m^3$. For comparison, PM_{10} NAAQS for the 24-hour averaging period is 150 $\mu g/m^3$. The geographic distribution of PM_{10} concentrations overlayed on Google Earth has been provided in Figure 3. The figure shows the modeled H2H 24-hour average PM_{10} concentration plotted at each receptor. Readers with an electronic copy of the document may zoom in on the image to provide greater clarity.

Figure 3
Wall Street Road Concrete Batch Plant Cluster
H2H 24-hour PM_{10} Concentrations ($\mu g/m^3$)



Dispersion modeling predicted that the H8H 24-hour average $PM_{2.5}$ concentration would be 129.4 $\mu g/m^3$. For comparison, $PM_{2.5}$ NAAQS for the 24-hour averaging period is 35 $\mu g/m^3$. The geographic distribution of $PM_{2.5}$ concentrations overlayed on Google Earth has been provided in Figure 4. The figure shows the modeled H8H $PM_{2.5}$ 24-hour average concentration plotted at each receptor. Readers with an electronic copy of the document may zoom in on the image to provide greater clarity.

Figure 4
Wall Street Road Concrete Batch Plant Cluster
H8H 24-hour PM_{10} Concentrations ($\mu g/m^3$)



The modeling predicted that both the PM_{10} and $PM_{2.5}$ NAAQS in the vicinity of the concrete batch plant cluster would be exceeded by a very wide margin. The modeled PM_{10} concentration exceeded the NAAQS by about a factor of 10 and the modeled $PM_{2.5}$ concentration exceeds the NAAQS by about a factor of 3 to 4. The modeling results also suggested that the fugitive dust from truck traffic along the access road from Wall Street Road would be the primary cause of the predicted NAAQS violations.

4.2 Nitrogen Dioxide (NO_2)

Table 3 summarizes the concrete batch plant cluster AERMOD dispersion modeling results for NO_2 and compares the results to the applicable NAAQS. Dispersion modeling results are presented for the 1-hour average using the highest 8th highest (H8H) modeled concentration. This approach for selecting the design value matches the form of the NAAQS. The NO_2 1-hour average NAAQS is based on the 98th percentile of the daily maximum concentration and the H8H concentration represents the 98th percentile when a one-year period is considered.

The modeled impacts in Table 3 were for the modeled emission sources, which included only the 1,000 hp diesel-fired generator engine allowed under the Standard Permit. No other NOx emission sources at the concrete batch plant were considered, such as NOx combustion emissions from the large number of trucks entering/leaving the batch plat cluster. All of the truck traffic would be concentrated along the access road from Wall Street Road. Also, a background concentration has not been added to these results.

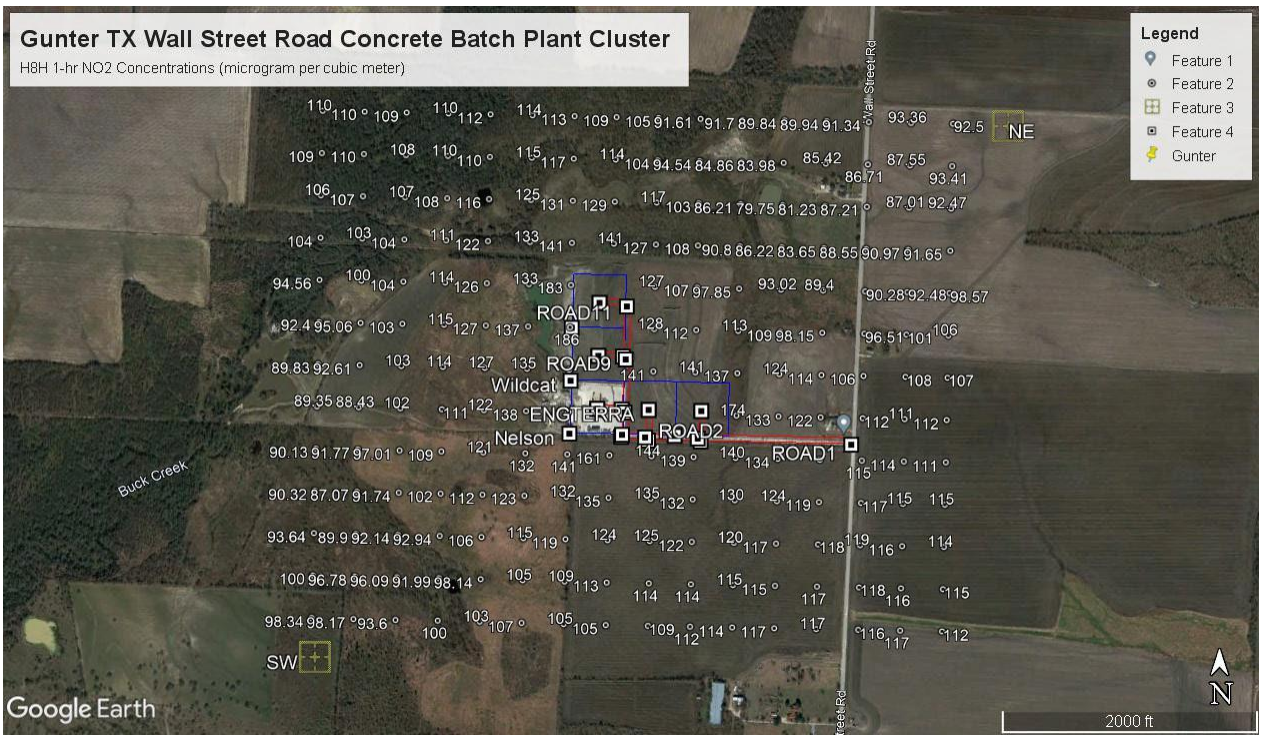
Only the 1-hour average NO_2 concentrations have been reported because the emission calculations were representative of the worst-case emissions with all engines operating at the maximum capacity identified the TCEQ Standard Permit, e.g.,1,000 hp.

Table 3
Predicted NO_2 Concentrations
Gunter TX Wall Street Road Concrete Batch Plant Cluster

Pollutant	Averaging Period	Rank	Model Concentration Prediction	PRIMARY NAAQS
			($\mu g/m^3$)	($\mu g/m^3$)
NO_2	1-Hour Average	H8H	208.4	188

Dispersion modeling predicted that the H8H 1-hour average NO_2 concentration would be 208.4.4 $\mu g/m^3$. For comparison, NO_2 NAAQS for the 1-hour averaging period is 188 $\mu g/m^3$. The geographic distribution of NO_2 concentrations overlayed on Google Earth is provided in Figure 5. The figure shows the modeled H8H NO_2 1-hour average concentration plotted at each receptor. Readers with an electronic copy of the document may zoom in on the image to provide greater clarity.

Figure 5
Wall Street Road Concrete Batch Plant Cluster
H8H 1-hour NO_2 Concentrations ($\mu g/m^3$)



4.3 Discussion/Conclusions

A dispersion modeling study has been conducted for emissions associated with a cluster of five adjacent concrete batch plants located near Gunter, TX. Dispersion modeling was conducted using the AMS/EPA Regulatory Model (AERMOD) Version 21112. AERMOD was executed as per 40 CFR 51 Appendix W and used all regulatory default model inputs. The dispersion modeling analysis was prepared by Air Resource Specialists, Inc. (ARS) of Fort Collins, Colorado.

The modeling results indicated exceedances of the applicable National Ambient Air Quality Standards (NAAQS) for all pollutants (PM_{10}, $PM_{2.5}$ and NO_2). Therefore, the dispersion modeling study concludes that the Texas Air Quality Standard Permit for Concrete Batch Plants (Effective Date September 22, 2021) is not protective of the NAAQS when multiple concrete batch plants are located in close proximity to one another.

ATTACHMENT 1

Emission Information

Gunter Concrete Batch Plant Cluster Modeling

Concrete Batch Plant Data

Plant Size			300 cu yd/hr	6,000 cu yd/day	150 cu yd/hr	6,000 cu yd/day
Average Delivery	7.85	cu yd/truck	38.22	trucks/hr	19.11	trucks/hr
	15.7	ton/truck	764.33	trucks/day	458.60	trucks/day
Truck Empty Wt	18	ton				
Truck Wt Full	33.7	ton				
Average	25.85	ton				
Raw Materials						
Cement	491	lb/cu yd				
Cement Supplement	73	lb/cu yd				
SUM	564	lb/cu yd	169200	lbs/hr	84600	lbs/hr
			84.6	ton/hr	42.3	ton/hr
			1692	ton/day	1015.2	ton/day
Raw Material Deliveries @ 25 ton/load			67.68	trucks/day	40.608	trucks/day

Emissions Data	AP-42 Section 11.12 Concrete Truck Loading				300 cu yd/hr	6,000 cu yd/day		150 cu yd/hr	
					lb/hr	lb/day	g/sec	lb/hr	g/sec
	PM_{10} (lb/hr or lb/day)	Uncontrolled	0.31	lb/ton	26.23	524.52	2.76	13.11	1.65
		Controlled	0.0263	lb/ton	2.22	44.50	0.23	1.11	0.14
	$PM_{2.5}$ (lb/hr or lb/day)	Uncontrolled	0.05	lb/ton	4.23	84.60	0.44	2.12	0.27
		Controlled	0.003945	lb/ton	0.33	6.67	0.035	0.17	0.021

Emissions based on weight of cement and cement supplement as per AP-42

$PM_{2.5}$ calculated from $PM_{2.5}$-to-PM_{10} ratios taken from AP-42, Table 11.12-3

Gunter Concrete Batch Plant Cluster Modeling

Access Roads

Segment	Segment Length			Traffic (Trucks/Day)				Emissions (lb/day)		Control	PM_{10} Model Input (lb/hr)		$PM_{2.5}$ Model Input (lb/hr)	
	meters	ft	miles	Concrete	Raw Materials	Total	VMT/day	Uncontrolled	Controlled	Factor	lb/hr	grams/sec	lb/hr	grams/sec
1	357	1171	0.22	3208	281	3489	774.0	1341	1341.43	0	55.89	7.05	5.59	0.70
2	62	203	0.04	458	40	498	19.2	33	8.31	75	0.35	0.04	0.03	0.004
3	125	410	0.08	2750	241	2991	232.3	403	402.65	0	16.78	2.12	1.68	0.21
4	62	203	0.04	458	40	498	19.2	33	8.31	75	0.35	0.04	0.03	0.004
5	62	203	0.04	2292	201	2493	96.0	166	166.46	0	6.94	0.87	0.69	0.09
6	125	410	0.08	2292	201	2493	193.6	336	335.61	0	13.98	1.76	1.40	0.18
7	62	203	0.04	764	67	831	32.0	55	13.87	75	0.58	0.07	0.06	0.007
8	125	410	0.08	1528	134	1662	129.1	224	223.74	0	9.32	1.18	0.93	0.12
9	62	203	0.04	764	67	831	32.0	55	13.87	75	0.58	0.07	0.06	0.007
10	125	410	0.08	764	67	831	64.5	112	111.87	0	4.66	0.59	0.47	0.06
11	62	203	0.04	764	67	831	32.0	55	13.87	75	0.58	0.07	0.06	0.007

Emissions Factor - AP42

Control Factor 75% applied to traffic on-site (Segments 2, 4, 7, 9 & 11)

Equation E = k * (s/12)^a * (w/3)^b

Constant (k)	1.5	AP-42 PM-10 Factor
Constant (k)	0.15	AP-42 PM-2.5 Factor
Silt Content (s)	4.8	%
Vehicle Wt	25.85	tons
Constant (a)	0.9	AP-42 PM-10 Factor
Constant (b)	0.45	AP-42 PM-10 Factor

E Factor (PM_{10}) E	1.733197	lb/VMT
Factor ($PM_{2.5}$)	0.17332	lb/VMT

From: Linda Hunter
To: tceqamnp
Subject: Air monitor
Date: Saturday, May 21, 2022 9:55:36 AM

I would like to request an air monitor in Gunter. We have 14 batch plants currently permitted with 6 operating right now.

From:	Linda Hunter
To:	tceqamnp
Subject:	Air monitor
Date:	Saturday, May 21, 2022 9:59:29 AM

I would like an air monitor for Gunter Texas. We have 6 batch plants operating with 8 more permitted.

Don and Linda Hunter
1273 Wall Street Road
Gunter Texas 75058
903-814-2687

From:	Midlothian Breathe
To:	tceqamnp
Subject:	public comments on annual air monitoring network plan draft
Date:	Friday, May 20, 2022 8:49:51 PM
Attachments:	Prevailing Winds and Pollution Sources.pptx

1. Given that prevailing winds are usually from the south/southeast (see attached), we ask that you move the Midlothian OFW (C52/A137) monitor to the north of all of our main point sources of emissions in Midlothian. If it could be positioned north and east of Ash Grove, it would much more often be downwind of Ash Grove as well as La Farge Holcim, Martin Marietta and Gerdau Steel.

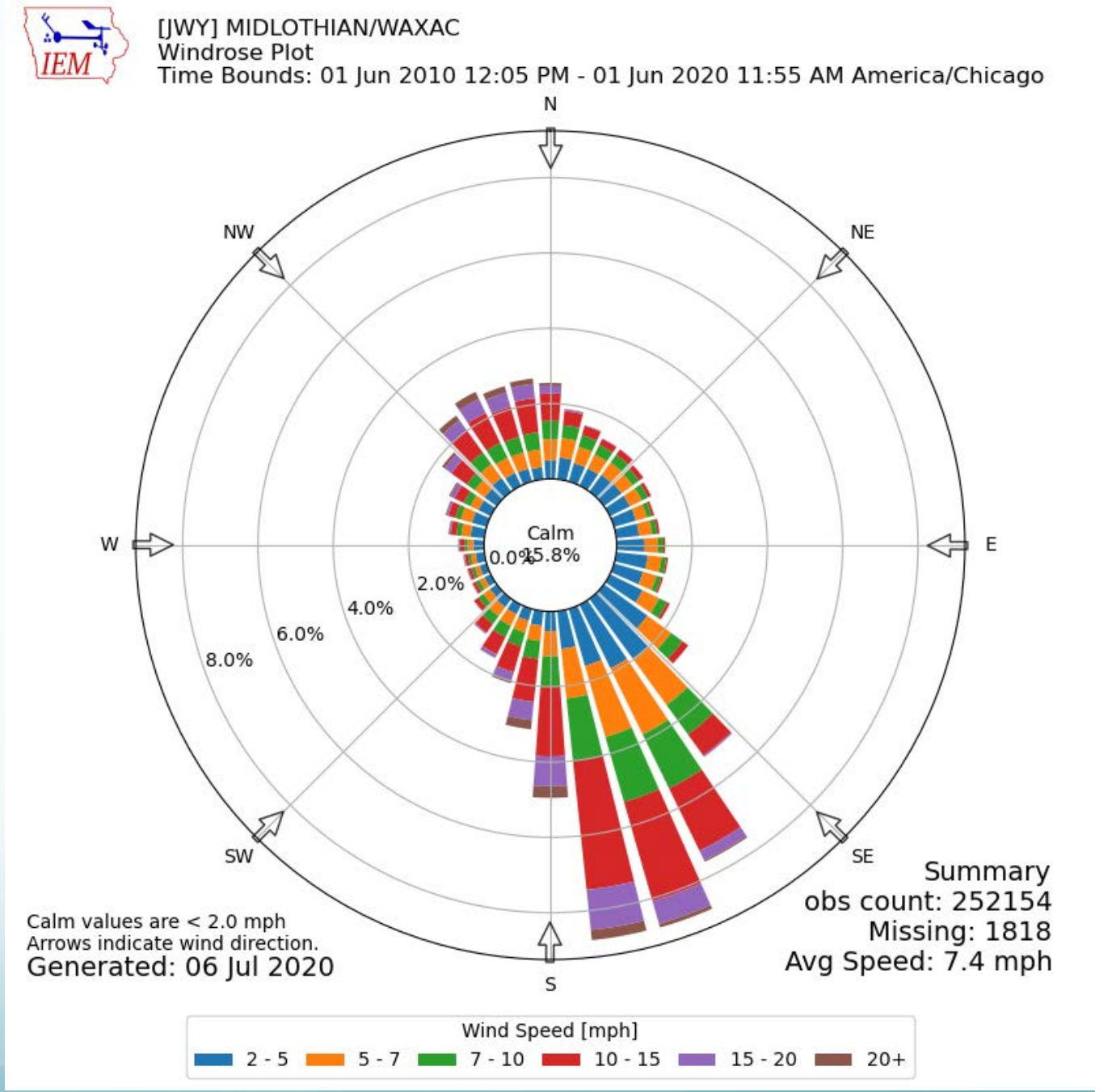
2. It is not acceptable to leave us without a working monitor for as long as a year, particularly when LaFarge Holcim Midlothian was recently given permission to increase PM emissions to levels dangerously close to current federal limits. Of additional concern is that our warm spring has already led to several days of high ozone and PM levels, as indicated in other parts of the DFW metroplex. We need an alternate monitor placed immediately to make sure we can promptly identify if/when our community is being exposed to unsafe air quality and so the contributing industries can be appropriately regulated.

3. Given that LaFarge Holcim Midlothian is the #1 polluter in all of North TX, emitting more pollutants than the 5 next largest industries COMBINED, we feel that at least one additional air monitor is needed for our community. We would like to see one installed to the Northeast of LaFarge Holcim and Ash Grove and another one to their Northwest to most accurately capture ambient air quality under the usual prevailing windstream.

Sincerely,

Laura Hunt
Director Midlothian Breathe

Pollution Sources Indicated by Letters and Yellow Pins



MIDLOTHIANBREATHE

From:	Becky Bornhorst
To:	tceqamnp
Subject:	2022 AIr Monitoring Network Plan
Date:	Saturday, May 21, 2022 3:08:42 PM

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re: Midlothian, Texas air monitoring

I live downwind of the heavy industry in Midlothian, Texas and I ask that my comments be considered in your above referenced plan.

1. Given that prevailing winds are usually from the south, we ask that you move the monitor to the north of all of our main point sources of emissions in Midlothian. If it could be positioned north and east of Ash Grove, it would much more often be downwind of Ash Grove as well as La Farge Holcim, Martin Marietta and Gerdau Steel.

2. It is not acceptable to leave us without a working monitor for as long as a year, particularly when LaFarge Holcim Midlothian was recently given permission to increase PM emissions to levels dangerously close to current federal limits. We need an alternate monitor placed immediately to make sure we can promptly identify if/when our community is being exposed to unsafe air quality.

3. Given that LaFarge Holcim Midlothian is the #1 polluter in all of North TX, emitting more pollutants than the 5 next largest industries COMBINED, we feel that at least one additional air monitor is needed for our community. We would like to see one installed to the Northeast of LaFarge Holcim and Ash Grove and another one to their Northwest to most accurately capture ambient air quality under the usual prevailing windstream.

Respectfully submitted,
Rebecca Bornhorst
1405 Indian Creek Drive
DeSoto, TX 75115

From:	Jackee Cox
To:	tceqamnp
Subject:	Better placement of air quality monitors in Fort Worth needed to improve air quality in DFW - Help me breathe
Date:	Monday, May 23, 2022 10:52:01 AM

It is my understanding the TCEQ plans to put its air quality monitors in Midlothian UPWIND of the cement plants that make breathing dangerous for everyone downwind. I ask that you place the monitor downwind of the dangerous pollutions sources. To do otherwise suggests that you are deliberately indifferent to the work of improving our knowledge of and ability to response to dangerous conditions. Please implement these suggestions:

1. Given that prevailing winds are usually from the south, we ask that you move the monitor to the north of all of our main point sources of emissions in Midlothian. If it could be positioned north and east of Ash Grove, it would much more often be downwind of Ash Grove as well as La Farge Holcim, Martin Marietta and Gerdau Steel.
2. It is not acceptable to leave us without a working monitor for as long as a year, particularly when LaFarge Holcim Midlothian was recently given permission to increase PM emissions to levels dangerously close to current federal limits. We need an alternate monitor placed immediately to make sure we can promptly identify if/when our community is being exposed to unsafe air quality.
3. Given that LaFarge Holcim Midlothian is the #1 polluter in all of North TX, emitting more pollutants than the 5 next largest industries COMBINED, we feel that at least one additional air monitor is needed for our community. We would like to see one installed to the Northeast of LaFarge Holcim and Ash Grove and another one to their Northwest to most accurately capture ambient air quality under the usual prevailing windstream.

Thank for your help in this matter, as it is urgently needed. Sincerely, Jeralynn Jackee Cox, 6212 Reddenson Drive Fort Worth Texas 76132. phone: 936-676-6881

From: Deanna Mitchell
To: tceqamnp
Subject: LafargeHolcim air pollution
Date: Monday, May 23, 2022 8:43:29 PM

To whom it may concern,
1. Given that prevailing winds are usually from the south, we ask that you move the monitor to the north of all main point sources of emissions in Midlothian. If it could be positioned north and east of Ash Grove, it would more often be downwind of Ash Grove as well as LaFargeHolcim, Martin Marietta and Gerdau Steel.
2. It is not acceptable to leave a community without a working monitor for as long as a year, particularly when LaFargeHolcim, Midlothian was recently given permission to increase PM emissions to levels dangerously close to current federal limits. We need an alternate monitor placed immediately to make sure we can promptly identify if/when a community is being exposed to unsafe air quality.
3. Given that LaFargeHolcim, Midlothian is the #1 polluter in all of North TX, emitting more pollutants (over 7,100 tons in 2019) than the 5 next largest industries COMBINED, we feel that at least one additional air monitor is needed for our community. We would like to see one installed to the Northeast of LaFargeHolcim and Ash Grove and another one to their Northwest to most accurately capture ambient air quality under the usual prevailing windstream.

Please let me know if you have any questions.

Thanks,

Deanna L. Mitchell

From:	Linda Baker
To:	tceqamnp
Subject:	Midlothian OFW Monitor
Date:	Monday, May 23, 2022 4:17:57 PM

As the agency tasked with protecting public health, TCEQ has disappointed once again by decommissioning our single air quality monitor to place it FURTHER AWAY from local polluters.

MIDLOTHIAN BREATHE COMMENT:

1. Given that prevailing winds are usually from the south/southeast, we ask that you move the Midlothian OFW (C52/A137) monitor to the north of all of our main point sources of emissions in Midlothian. If it could be positioned north and east of Ash Grove, it would much more often be downwind of Ash Grove as well as LaFargeHolcim, Martin Marietta and Gerdau Steel.

2. It is not acceptable to leave us without a working monitor for as long as a year, particularly when LaFargeHolcim Midlothian was recently given permission to increase PM emissions to levels dangerously close to current federal limits. Of additional concern is that our warm spring has already led to several days of high ozone and PM levels, as indicated in other parts of the DFW metroplex. We need an alternate monitor placed immediately to make sure we can promptly identify if/when our community is being exposed to unsafe air quality and so the contributing industries can be appropriately regulated.

3. Given that LaFargeHolcim Midlothian is the #1 polluter in all of North Texas, emitting more pollutants than the 5 next largest industries COMBINED, we feel that at least one additional air monitor is needed for our community. We would like to see one installed to the northeast of LaFargeHolcim and Ash Grove and another one to their northwest to most accurately capture ambient air quality under the usual prevailing windstream.

Thank you

Sent from Mail for Windows

From:	Sharon Richey
To:	tceqamnp
Subject:	Please help! We need better air monitoring from TCEQ!
Date:	Monday, May 23, 2022 9:57:04 PM

As prevailing winds are usually from the south, we ask that you move the monitor to the north of all of our main point sources of emissions in Midlothian. If it could be positioned north and east of Ash Grove, it would much more often be downwind of Ash Grove as well as La Farge Holcim, Martin Marietta and Gerdau Steel.

It is unreasonable and inexcusable to leave us without a working monitor for as long as a year, particularly when LaFarge Holcim Midlothian was recently given permission to increase PM emissions to levels dangerously close to current federal limits. We need an alternate monitor placed immediately to make sure we can promptly identify if/when our community is being exposed to unsafe air quality.

Inasmuch as LaFarge Holcim Midlothian is the #1 polluter in all of North TX, emitting more pollutants than the 5 next largest industries COMBINED, at least one additional air monitor is needed for our community. We would like to see one installed to the Northeast of LaFarge Holcim and Ash Grove and another one to their Northwest to most accurately capture ambient air quality under the usual prevailing windstream.

Please! Do more to protect the citizens subjected to breathing the air here in North Texas!

Sharon Richey
4900 Vega Ct West
Ft Worth, Texas 76133

From:	Linda Hanratty
To:	tceqamnp
Subject:	Air Monitoring in Midlothian, Texas
Date:	Monday, May 23, 2022 2:15:19 PM

Please restore the air monitor in Midlothian, Texas, immediately, and place the monitor downwind from the Ash Grove and La Farge Holcim cement plants. Any other action is a dereliction of your duty to monitor air quality from these major air polluters that endanger health in Midlothian and the greater Dallas-Fort Worth area. Your mission as the TECQ is to protect the health and safety of Texas residents. Please fulfill this mission.

Linda Hanratty
4236 Oak Park Ct.
Fort Worth, Texas

From:	Morgan Flores
To:	tceqamnp
Subject:	Midlothian TX
Date:	Friday, May 20, 2022 6:00:33 PM

Please move our monitor downwind instead of upwind from the plants. This will allow us to have a more accurate reading and better assist us living in a healthy environment.

Thank you,
Morgan Flores

Sent from my iPhone

From: Doreen Geiger
To: tceqamnp
Subject: Air Monitor
Date: Monday, May 23, 2022 12:18:49 PM

Place the air monitor DOWNWIND of the Holcim Concrete Plant, NOT UPWIND !

From: Dylan Voisard
To: tceqamnp
Subject: AirQuality Monitoring Concerns for Midlothian
Date: Monday, May 23, 2022 11:40:03 AM

Hi TECQ,

I was informed that air quality monitoring may soon be changing for cement/steel facilities in Midlothian area. I have parents and friends who live here that will be directly effected by any slack in air quality regulation.

I would think that the priority of our institutions would be to protect public health. Yet I have heard that the plants have been increasing their air pollution. I hope that the best scientific practices will be followed here and not allow industry to burden the local environment with externalities.

I stand with Midlothian Breathe on their suggestions regarding the air quality monitoring placement/equipment as I think this is a major health hazard for residents of Midlothian and surrounding areas. If the air quality monitors are placed incorrectly from what I understand, their measurements will be under reporting the true levels of pollution from these facilities. In my opinion that would be a crime.

Please do the right thing and make sure we are placing people's long term health above quick profits.

From:	Jane Voisard
To:	tceqamnp
Subject:	Want better placement of monitor Midlothian OFW C52/A137
Date:	Monday, May 23, 2022 12:15:41 PM

As the agency tasked with protecting public health, TCEQ has disappointed once again by decommissioning our single air quality monitor to place it FURTHER AWAY from local polluters. The monitor on Old Fort Worth Road was already placed upwind of our largest polluters (overwhelmingly the prevailing winds here blow from S/SE to N/NW...data from your windroses). This intended move takes the monitor another mile away from Ash Grove and, more importantly, LaFargeHolcim, the #1 polluter in North Texas and the largest polluter in our area (exceeding all other local pollutant emitters *combined*).
As scientists, you know that adequate air quality monitoring requires both upwind AND downwind data collection. Our area deserves both, but knowing the history of TCEQ, I'm sure you will cite expenses or some other reason to remain with one monitor only. If that's the case, the monitor needs to be placed downwind of Ash Grove and Holcim.
In the past, you have listed the location as adequate based on Holcim's claims that its onsite readings are lower than the readings at the old Fort Worth Road location. However, the citizen's network of PurpleAir sensors consistently shows higher readings downwind of Holcim than those sensors placed near the TCEQ monitor.
Of note as well: The EPA is projected to lower the NAAQS cap for PM in the coming years. I doubt it's a coincidence that the single source of publicly available official air quality information is now removed (supposedly due to upcoming construction activity in the area) AND is not required to be reinstalled until March 2023. That's a free ticket for local industry to ramp up pollutant emissions during the time they feel they have left. Once the cap is lowered, local industry will be forced to take stricter public health action—because numbers show we're already hovering close to non-attainment, even with inadequate upwind monitoring.

TCEQ, public comment is not the same as public interaction. There is no real back and forth input. Often, public comment is just a required step you take before you extend prepared defenses of your real partnership with industry. But I'll ask anyway. Please do your job to protect citizens. We realize the products that our local industry produces are valuable, but industry also has a responsibility to the public, whether it's using more updated pollution control devices, different production methods or less dirty fuel. **At the *very least*, you can start by addressing the inadequate placement of the Midlothian monitor, moving it into the prevailing wind stream—way before March 2023.** Without that action, you've colluded with industry and stripped the public of valid safeguards that should be protecting our health.

Jane Voisard
Midlothian resident

From:	Jane Voisard
To:	tceqamnp
Subject:	Need for responsible air quality monitoring in Midlothian TX
Date:	Monday, May 23, 2022 10:14:49 AM
Attachments:	PC_42x23_b0b8242c-4d08-45a3-b02a-f6b27a880b15.png pcomm25+_9df63a5b-71ec-432d-88b8-c295deda29dc.png

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TCEQ sides solely with industry once again. The single monitor on Old Fort Worth Road (Midlothian OFW C52/A137) has been out of commission recently—and local industry seems to be responding judged by some significantly higher PM levels registered on the citizens' network of PurpleAir monitors. The reason the TCEQ monitor isn't operating? It's being moved FURTHER AWAY from our local sources of pollution. And that move doesn't have to be completed until March 2023, leaving the vulnerable Midlothian community without publicly accessible official data on air quality for almost a year.

If TCEQ is indeed responsive to public health issues, the monitor needs to be located downwind of LaFargeHolcim, the biggest pollutant emitter in North Texas...and the overall largest polluter in the Midlothian area (of all other major pollutant emitters in this area combined). TCEQ windroses show that winds blow *predominantly* from S/SE toward N/NW. I had already planned to protest its current placement, which is out of the prevailing windstream. Now, the offense if even greater. The "plan" is to move it one mile further south of its already inadequate location.

As scientists, you know that adequate air monitoring requires both upwind and downwind data. It's obvious that the TCEQ lip service to public health continues. **If the insistence is that there is only one monitor in our area, it should be placed in the prevailing windstream. And this should happen immediately.**

Past "justification" for the placement is that Holcim claims its onsite emissions are far less than readings at the Old Fort Worth Road location. However, PurpleAir monitors have shown consistently *higher readings downwind* of Holcim and Ash Grove than in the areas closest to the former monitor.

Also of note: EPA PM caps are predicted to be lowered in coming years, which would immediately place our local industry in non-attainment since this area is already hovering close to those levels currently, even with inadequate upwind monitoring. Curious that the single monitor is down now...a free ticket for local industry to pump up its hazardous emissions during the timeframe they feel they have left before they're forced to take public health action.

TCEQ do your job. As an agency, you won't even interact with the public except to extend prepared defenses for your real partnership with industry. Yes, we need products produced by industry, but we also need industry to be responsible for what they produce, whether it's better pollution control devices, alternative production methods or modified fuel sources. But let's start with more responsible air quality monitoring—an action that you can make happen now.

Jane Voisard
Midlothian resident

Jane Voisard
Consultant

PartnerComm, Inc.
Winner of 85 IABC Gold Quills
2021 Large Agency of the Year

From: Janet M
To: tceqamnp
Subject: Comments on the TCEQ 2022 Air Monitoring Network plan
Date: Monday, May 23, 2022 6:30:18 PM

RE: Comments on TCEQ 2022 Air Monitoring Network plan

I have recently learned that Tarrant County Texas has seriously bad air quality per EPA criteria. In addition, the pollution gas wells emit so close to neighborhood schools and daycare facilities, puts young children at risk. Texas has the greatest air quality risk with over 5.3 million living within a Threat Radius (0.5 miles of oil/gas wells, compressors and processors emitting pollution), by Tarrant County is the worst county in Texas with 1 million people in a Threat Radius and 267,000 children under 18. Tarrant County has over 6,515 oil & gas wells, compressors and processors. And I have not even identified the increase in vehicular traffic on Tarrant county roads.

Based on the above information alone, TCEQ should be making it a priority to monitor Tarrant County air quality. I am extremely disappointed to read that there are no plans in the 2022 report to plan to add air monitoring stations in Tarrant County to monitor the worsening air quality. There is such rapid growth and vehicular traffic in the county in addition to the fracking wells, not to mention other industrial pollution. The TCEQ should perform their mission to keep the public safe, and ensure that the citizens of Tarrant County have monitors installed to check our air quality.

The one station that was south of Tarrant county, was located on 2725 Old Fort Worth Road has been taken down due to new construction development in this area. It is not acceptable as the plan states to move that monitoring station one mile further south of that location. Given that prevailing winds are usually from the south, we ask that you move the monitor to the north of the main point sources of emissions in Midlothian. If it could be positioned north and east of Ash Grove, it would much more often be downwind of Ash Grove as well as La Farge Holcim, Martin Marietta and Gerdau Steel.

It is also not acceptable to not have a working monitor for as long as a year, particularly when LaFarge Holcim Midlothian was recently given permission to increase PM emissions to levels dangerously close to current federal limits. We need an alternate monitor placed immediately to make sure we can promptly identify if/when our community is being exposed to unsafe air quality.

In addition, as stated above Tarrant County needs air monitoring, at least one additional air monitor is needed. We would like to see one installed in the industrial southeast side of Fort Worth near the Stop Six area.

Thank you,

Janet Mattern
6662 St Andrews Rd
Fort Worth, TX 76132

From:	Joshua Smith
To:	tceqamnp
Cc:	David Baake
Subject:	Sierra Club Comments on TCEQ 2022 Air Monitoring Network Plan
Date:	Tuesday, May 24, 2022 3:50:30 PM
Attachments:	2022.5.24.Final Sierra Club Comments on TCEQ 2022 monitoring network plan.pdf Ex. 3 Harrington Station Power Plant TX - Evaluation of Compliance with the 1-hour NAAQS for SO2 - FINAL - 18sep20.pdf Ex. 2 - Martin Lake Generating Station TX - Evaluation of Compliance with the 1-hour NAAQS for SO2 - FINAL - 23sep19.pdf Ex. 1 Commonwealth LNG - Cameron Parish, Louisiana - Evaluation of Compliance with the 1-hour NAAQS for NO2 - FINAL - 24may22.pdf

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Please accept the attached comments and exhibits on TCEQ's 2022 Air Monitoring Network Plan.

If you have any questions, or we can provide any additional information, please do not hesitate to contact us.

Thank you,
Joshua Smith
Staff Attorney
Sierra Club Environmental Law Program
2101 Webster St., Suite 1300
Oakland, CA 94612
(415)977-5560
(510)208-3140 (fax)
(503)484-7194 (cell)

I check e-mail infrequently. For urgent matters, please call.

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May 24, 2022

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
P.O. Box 13087
Attention: Holly Landuyt,
MC-165
Austin, Texas 78711-3087

tceqamnp@tceq.texas.gov

Submitted via email

Re: Public comment and public hearing request on proposed 2022 Annual Monitoring Network Plan by Sierra Club

On behalf of our members and supporters who live, work, and recreate in Texas, Sierra Club respectfully submits these comments regarding the Texas Commission on Environmental Quality ("TCEQ") proposed 2022 Annual Monitoring Network Plan.

Because the proposed 2022 Annual Monitoring Network Plan is a revision to Texas's State Implementation Plan, it should be subject to notice and comment rulemaking. Sierra Club requests that Texas Commission on Environmental Quality ("TCEQ") remand the proposal, publish the plan in both English and Spanish, and allow the public to provide additional comment on the agency's network plan through the notice and comment rulemaking process. Further, Sierra Club requests that TCEQ hold public hearings in Houston and El Paso.

While Sierra Club appreciates the fact that TCEQ has proposed some new monitoring sites, there is a pressing need for many additional monitoring stations across Texas. Due to concentrated industrial operations and persistent unauthorized emissions, Houston communities urgently need enhanced volatile organic compound air quality monitoring. Other Houston communities face historic pollution that is little understood, in part, because of a lack of air quality data. Similarly, west Texas communities know they are subject to ozone and sulfur dioxide pollution but lack air quality data to protect their health and to require stronger protections from polluting industries.

Communities along the Gulf Coast, including in the Corpus Christi area, the Rio Grande Valley, and Beaumont-Port Arthur areas are facing new air quality challenges as oversupply of oil and gas has fueled a petrochemical and liquified natural gas ("LNG") industry expansion. These communities deserve to know what

is in the air, too.

Impressive growth in San Antonio and El Paso has exacerbated ozone, carbon monoxide, and nitrogen dioxide pollution – these Texas communities need more air quality data, too. Lastly, staggering sulfur dioxide emissions across Texas pose a serious public health threat that warrants not just enhanced monitoring, but a reconsideration of Texas' sulfur dioxide modeling. We are urging TCEQ to address the lack of monitoring in communities where oil and gas drilling – the "upstream" oil and gas industry – continue to flare and vent air pollution at unprecedented and dangerous levels.

Sierra Club urges TCEQ not simply to look at federal standards, which provide mere minimum criteria, but also pressing public health threats to assess the air quality monitoring needs of all Texans.

COMMENTS OF SIERRA CLUB ON 2022 ANNUAL MONITORING NETWORK PLAN

I. CLEAN AIR ACT BACKGROUND.

A. Texas must maintain an air quality monitoring network.

The federal Clean Air Act ("CAA" or "Act") requires Texas to establish and maintain an air quality monitoring network. This monitoring plan must be included in the applicable State Implementation Plan ("SIP"). 42 U.S.C. § 7410(a)(2)(B). Texas's network must meet three criteria: "(a) Provide air pollution data to the general public in a timely manner … (b) Support compliance with ambient air quality standards and emissions strategy development … (c) Support for air pollution research studies…" 40 C.F.R. Part 58 App. D ¶ 1.1.

Crucially, monitoring data are used to determine whether areas are in compliance with National Ambient Air Quality Standards ("NAAQS"). 40 C.F.R. Part 58 App. A ¶ 1.1(a). The U.S. Environmental Protection Agency ("EPA") has established NAAQS for only six criteria pollutants: ozone (O_3), particulate matter ($PM_{2.5}$ and PM_{10}), carbon monoxide (CO), lead (Pb), sulfur dioxide (SO_2) and nitrogen dioxide (NO_2). To determine whether an area meets a NAAQS, EPA compares monitoring data to the NAAQS. 40 C.F.R. Part 58 App. D ¶ 1.1(b). Areas that fail to meet a NAAQS are subject to more stringent public health protections under the Act. For example, monitoring data demonstrate that the Houston area failed to meet its deadline for the 2008 ozone standard. 83 Fed. Reg. 56,781 (Nov. 14, 2018). As a result, more major sources of ozone-forming pollution in Houston will have to obtain federal operating permits, and these polluters will have to reduce their ozone-forming emissions or secure offsets to more than offset the new pollution they will emit. 42 U.S.C. §§ 7503, 7511a.

Each year, Texas must demonstrate compliance with federal minimum monitoring requirements. 40 C.F.R. § 58.10(a)(1), (b). The monitoring network plan must include detailed information about the network's design, including the exact location of each monitor in the network, how each monitor operates, and proposed changes to individual monitors. 40 C.F.R. § 58.10(b)(1)-(5), Part 58 App. D. EPA determines whether the plan meets minimum network design criteria, and the Regional Administrator may require additional information. 40 C.F.R. § 58.10(a)(1). EPA also has authority to order changes to a plan. 40 C.F.R. § 58.14(b). Plans that propose new monitoring sites or other modifications, like the TCEQ plan here, must be approved or denied by the Regional Administrator within 120 days of submission. 40 C.F.R. §§ 58.10(a), (e), 58.11(c), 58.14. Thus, after this comment period, TCEQ must submit the plan to EPA for authorization.

Federal regulations prescribe only minimum design criteria for State and Local Area Monitoring Stations ("SLAMS") networks to monitor for criteria pollutants, leaving room for states to establish enhanced air monitoring as areas in their states may require. *See* 40 C.F.R. § 58.1; *see also* 40 C.F.R. Part 58 App. D ¶¶ 4.1-4.8.1 (establishing "Pollutant-Specific Design Criteria" for monitoring networks). SLAMS networks are a collection of devices in various locations that sample the ambient air (or outdoor air) to detect the level of a particular pollutant.[1] The design of a monitoring network—the number of monitors, their specific placement, how frequently they take samples—is critical to getting accurate and representative results. *See generally* 40 C.F.R. Part 58 App. D (establishing mandatory "Network Design Criteria for Ambient Air Quality Monitoring"). Because different pollutants and standards are especially sensitive to particular design criteria, such as the choice of monitor location, EPA provides monitoring network design guidance documents.[2] In part, the purpose of the network is "to

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[1] A map of the Texas air monitoring network is available here: https://tceq.maps.arcgis.com/apps/webappviewer/index.html?id=ab6f85198bda483a997a6956a8486539.

[2] *See*, e.g., EPA, Guidance for Network Design and Optimum Site Exposure for PM2.5 and PM10 at 2-7 (1997) ("A PM sampler location, especially its proximity to local sources, can play a large role in its ability to assess spatial variability and source contributions") (available at: https://www3.epa.gov/ttn/amtic/files/ambient/pm25/network/r-99-022.pdf); *see also* EPA, Guidance for Using Continuous Monitors in $PM_{2.5}$ Monitoring Networks at 6-1 to 6-2 (1998) (discussing the difference between Community Representative or "CORE" $PM_{2.5}$ monitors located where people live, work and play in comparison to hot spot monitor sites "located near an emitter with a microscale or middle-scale zone of influence" and Special Purpose Monitors ("SPMs") "used to understand the nature and causes of excessive concentrations measured at [CORE] or hot spot compliance monitoring sites.") (available at: https://www3.epa.gov/ttnamti1/files/ambient/pm25/r-98-012.pdf); *see also* EPA,

provide support to the [SIP], national air quality assessments, and *policy decisions*." 40 C.F.R. § 58.2(a)(5) (emphasis added). Thus, network design and operating procedures are critical to assessing compliance with the public health goals of the Clean Air Act and for state and regional air quality planning efforts.

Apart from Act compliance, there are other uses for air quality data that call on Texas to enhance its monitoring network for the protection of public health. Federal regulations envision members of the public making use of publicly available air quality data—the regulations themselves require data dissemination in urban centers, 40 C.F.R. § 58.50, and EPA maintains daily reports via AirNow, available at https://airnow.gov/.[3] Because air quality data from Texas's network is publicly available near real-time,[4] it is crucial to community groups responding to disaster, such as the recent ITC and KMCO fires in the Houston area.

B. The public process afforded to the proposed Monitoring Network Plan violates the Clean Air Act.

TCEQ's proposed Monitoring Network Plan is a SIP revision that should be subject to notice and comment rulemaking. The CAA and its implementing regulations make it clear that a State's monitoring plan is part of its SIP.[5] Because an update to the monitoring plan is a SIP revision, federal law requires TCEQ to provide notice and undertake a public hearing before promulgating the plan. *See Hall v. EPA*, 273 F.3d 1146, 1162 (9th Cir. 2001) ("The Act requires that SIP revisions 'be adopted by the State after reasonable notice and public hearing.'") (quoting 42 U.S.C. § 7410(l)).

Photochemical Assessment Monitoring Stations Implementation Manual at 2-6 (1994) ("Site selection is one of the most important tasks associated with monitoring network design and must result in the most representative location to monitor the air quality conditions being assessed.") (available at: https://www3.epa.gov/ttn/amtic/files/ambient/pams/b93-051a.pdf).

[3] AirNow data is also shared with and broadcast by major media outlets that disseminate air quality forecasts to individuals. *See* https://www.airnow.gov/index.cfm?action=ani.airnowUS (AirNow "[d]istributes air quality forecasts and data with The Weather Channel, USA Today, CNN, weather service providers, NOAA National Weather Service").

[4] TCEQ, AutoGC Data by Day by Site (all parameters), available at: https://www.tceq.texas.gov/cgi-bin/compliance/monops/agc_daily_summary.pl.

[5] *See* 42 U.S.C. § 7410(A)(2)(b) (each SIP must "provide for establishment and operation of . . . systems . . . necessary to . . . monitor, compile, and analyze data on ambient air quality"); 40 C.F.R. § 51.17(b)(1)-(6) (each SIP "shall include a description of the . . . proposed air quality surveillance system, which shall set forth," among other things: the exact location of the monitors; how each monitor operates; and the timetable for installing any equipment needed to complete the monitoring system").

On its webpage, TCEQ solicits public comment for the proposed Plan but does not explain whether it will respond to comments or make changes in response to any comments. It also appears that TCEQ did not and will not hold any public meetings or hearings to explain this Plan to the public. "[N]otice and comment helps to prevent mistakes, because agencies receive more input and information before they make a final decision." *Ivy Sports Medicine v. Burwell*, 767 F.3d 81, 87 (D.C. Cir. 2014).

Indeed, not only is notice and comment for the Plan required by law and a basic value of American administrative law, TCEQ's lack of outreach continues to disenfranchise Texas communities long deprived of proportionate representation in environmental regulation, including native and non-English speaking communities who are deprived of critical information about air quality and public health by TCEQ's arbitrary refusal to publish air quality monitoring data and the monitoring plan itself in Spanish and other languages. As discussed below, many low-income communities and communities of color throughout Texas suffer from poor air quality and would benefit from greater air quality monitoring in their area. However, due to TCEQ's failure to publish notice and conduct public outreach regarding its proposed Plan—again, including its failure to publish this basic information in Spanish—Texans in these communities may be wholly unaware of Texas' air quality monitoring network or that it changes every year.

Sierra Club requests that TCEQ remand this Plan and revise it through notice and comment rulemaking. Further, that TCEQ hold a public hearing, with Spanish interpretation services available, in Houston or El Paso to afford the public an opportunity to ask questions about the Plan of TCEQ staff responsible for its creation and implementation.

II. PUBLIC HEALTH WARRANTS ADDITIONAL AIR QUALITY MONITORING IN HOUSTON AND SURROUNDING COMMUNITIES.

A. We support TCEQ's recent placement of monitors for $PM_{2.5}$ and PM_{10} in the Houston area, but more are needed.

Sierra Club supports TCEQ's plan to deploy new $PM_{2.5}$ monitors in the Houston area, including new monitors in Houston Bayland Park, the Fifth Ward, Westhollow, and the Pleasantville neighborhood.[6] We urge the agency to work with the City of Houston, Harris County, and the U.S. EPA to install lower cost community monitors throughout Houston. Additional community monitors can play a key role in providing communities an early warning, and can help regulators take action against polluters. Moreover, we encourage the agency to install additional federal reference method or federal equivalence method monitors in the Houston area, for the reasons discussed below.

As discussed in the 2020 monitoring comments submitted by some of the organizations submitting these comments, there are several areas of Houston with high concentrations of particulate pollution that still have no EPA federal reference monitors. EPA requires that "monitoring stations or sites must be sited to represent area-wide air quality," and be placed in "an area of expected maximum concentration" however, there is currently no monitor in this area. 40 C.F.R. Part 58 App. D. Although we support TCEQ's addition of monitors in Bayland Park, the Fifth Ward, Westhollow, and the Pleasantville neighborhood, $PM_{2.5}$ ambient concentration data and the population density data in west Houston make clear that additional monitors are needed.

The maps below show the annual growth of a $PM_{2.5}$ plume in western Houston from 2013, through 2014, and to 2015.This analysis was conducted by the Environmental Defense Fund, using an ensemble analysis that made it possible to identify air pollution in western Houston even though there were no FRM monitors in the area.[7] At the time EDF conducted the analysis in 2020, the 2015 data was the most recent available. Recent emissions in the area have only increased.

As noted in our previous comments, the $PM_{2.5}$ concentrations in western Houston appear to be from secondary formation of NOx emissions, which are being transported from industrial and marine sources around the Houston Ship Channel,

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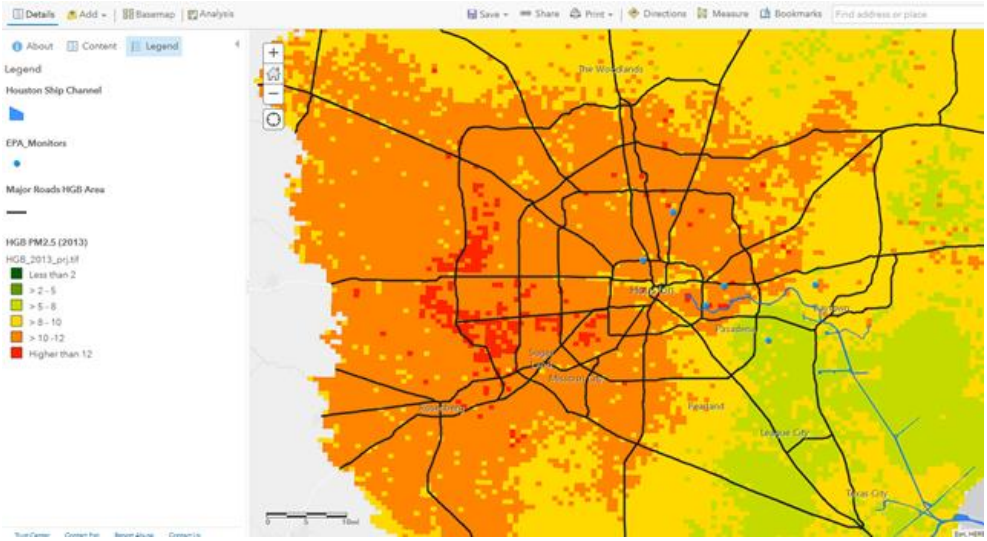
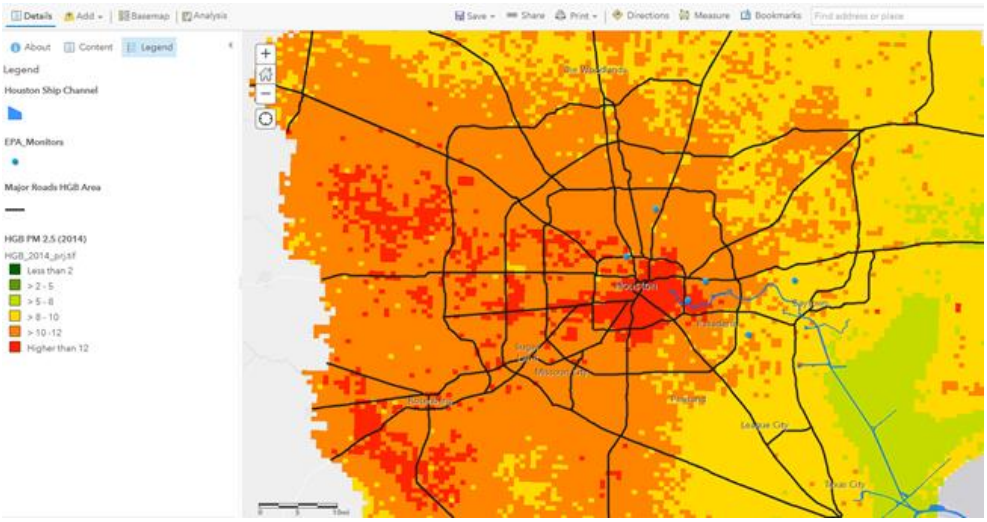
[6] 2022 Proposed Monitoring Network Plan at 25.

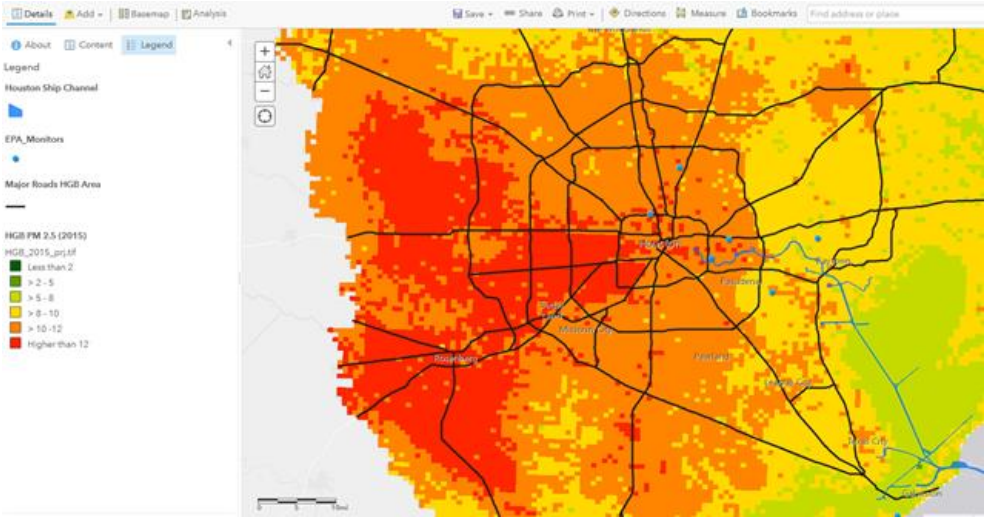
[7] To conduct the assessment, EDF used $PM_{2.5}$ ambient concentration data from an EPA funded peer reviewed study that estimated daily $PM_{2.5}$ concentrations at a resolution of 1 km x 1 km for 2000 to 2015. Qian Di, et al. *An ensemble-based model of $PM_{2.5}$ concentration across the contiguous U.S. with high spatiotemporal resolution.* Environment International 130 (2019) 104909. The study combined estimates from three different model types: 1) neural network, 2) random forest and 3) gradient boosting. Each model was run nationwide and each used a unique combination of FRM $PM_{2.5}$ monitoring, EPA CMAQ, land-use, satellite and other data. A regression was performed comparing the results of each model against FRM monitors and then a weighted average was calculated for each 1km by 1km tract.

U.S. EPA. Science in Action. *Community Multiscale Air Quality (CMAQ) Modeling System*. Office of Research and Development. (Aug. 2019), available at: https://www.epa.gov/sites/production/files/2018-10/documents/cmaq_factsheet_.pdf.

along with diesel vehicles and construction equipment, however, more research is needed.



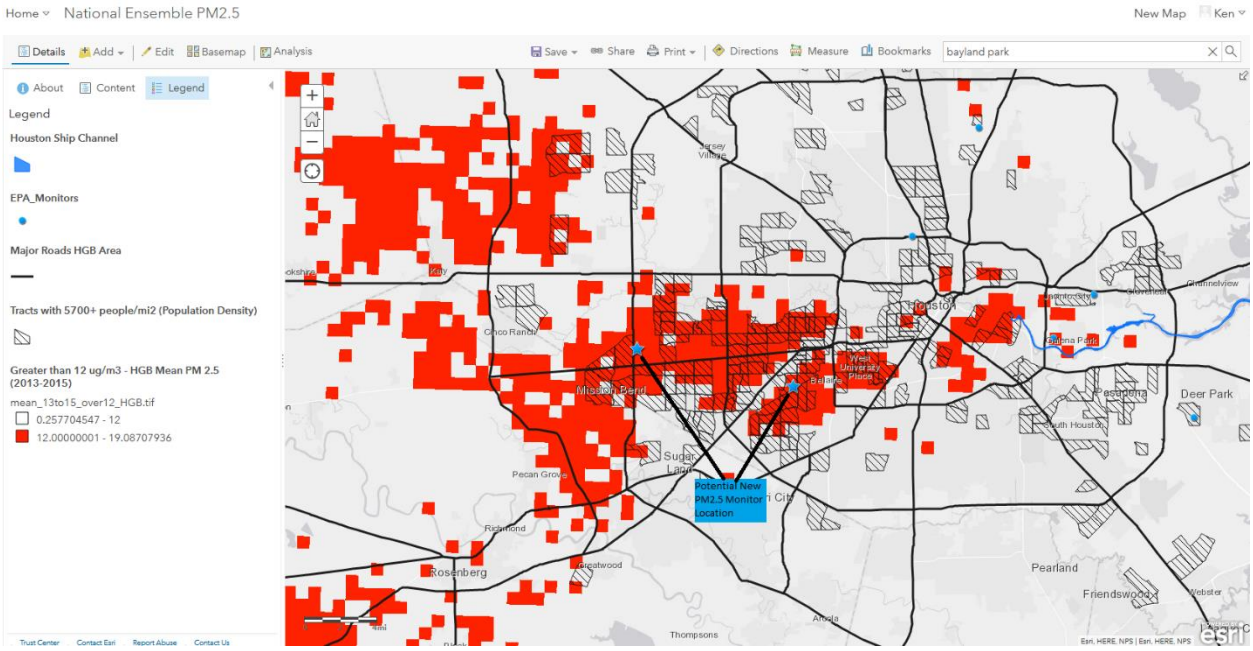




These elevated levels of $PM_{2.5}$ have major health and economic consequences for residents of Houston. Particulate pollution is made up of small toxic airborne particles like dust, soot, and liquid particles, or aerosols. Most particulate pollution in Houston is from the chemical and petroleum industry, power generation, and diesel vehicles and construction equipment. These toxic particles penetrate deep into the lungs and are linked to heart attacks, lung disease, strokes, asthma, cancer, and can lead to early death. This pollution is particularly dangerous for young people – studies show that $PM_{2.5}$ exposure can impair childhood lung development. A recent analysis found that the elevated levels of $PM_{2.5}$ in Houston were responsible for more 5,200 premature deaths, and more than $49 billion in economic damages in 2015.

Moreover, as reflected in the maps above, there are currently no FRM $PM_{2.5}$ monitors (blue dots) in central and western Houston where average annual $PM_{2.5}$ concentrations exceeded 12.0 ug/m3 NAAQS for 2013-15 (shaded red areas). In other words, the current FRM $PM_{2.5}$ monitors are not properly located in areas of maximum $PM_{2.5}$ concentration.

Nor are the current monitors located in areas with significant population density. The next map overlays areas in Houston where $PM_{2.5}$ is greater than 12.0ug/m3 and where population density is greater than 5,700 people per square mile.[8] As can be seen in the map, there are no existing FRM $PM_{2.5}$ monitors (blue dots) in central or western Houston where $PM_{2.5}$ is greater than 12.0ug/m3 and population density is greater than 5,700 people per square mile.



[8] We chose 5,700 people/mi^2 because ArcGIS identified it as a "Natural Break" in the population.

While we appreciate and support TCEQ's proposal to add monitors in Bayland Park, the Fifth Ward, Westhollow, and the Pleasantville neighborhood, we believe additional monitors are needed in the western and central parts of Houston. In addition, funding is needed to conduct a speciation/source apportionment study to understand what is causing these particulate matter concentrations, and to develop an action plan to reduce the sources of emissions. It is also critical that existing FRM $PM_{2.5}$ monitors be maintained in their current location.

B. TCEQ should install additional monitors in the Houston Ship Channel area.

The Commission has a duty "to protect the public from cumulative risks in areas of concentrated operations" and "give priority to *monitoring* and enforcement in areas in which regulated facilities are concentrated." Tex. Water Code § 5.130 (emphasis added). The Houston area is home the Houston Ship Channel – an area of concentrated operations. There is a compelling need for additional VOC monitors along the Houston Ship Channel. Recent data demonstrate that there are likely systematic underreporting errors with existing air emissions reporting at facilities along the Channel. For example, testing for VOCs and benzene along the Channel, researchers found far higher emissions levels than the estimates produced and reported by the operators themselves.[9] In fact, the study found that VOC emissions were 41% higher than emissions inventories reported, and benzene emissions were 94% higher.[10] This means that operators along the Channel are exceeding their permitted limits, and communities are paying the price with their health.

The problem of unauthorized emissions is not evenly distributed; some communities along the Channel are exposed to far greater pollution than others. Recent data demonstrate a greater total emissions burden from unauthorized emissions borne by Manchester, Pasadena, Deer Park, and Baytown—all along the Channel.[11] When compared to other Channel communities, Manchester exhibited far greater emissions density, meaning that it is a Channel community at greatest

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[9] Daniel Hoyt & Loren H. Raun, Measured and Estimated Benzene and Volatile Organic Carbon (VOC) Emissions at a Major U.S. Refinery/Chemical Plant: Comparison and Prioritization, 65 J AIR & WASTE MGMT. ASS'N 1020, 1021 (2015), available at: https://www.tandfonline.com/doi/pdf/10.1080/10962247.2015.1058304?needAccess=true.

[10] *Id.* at 1029.

[11] Sustainable Systems Research, LLC, Vulnerability and Stationary Source Pollution in Houston at 25 (Feb. 8, 2019).

vulnerability from its surrounding industrial polluters.[12] Indeed, a 2016 study found 26 Risk Management Plan facilities sited within Manchester.[13]

Daily unauthorized emissions are compounded by the steady stream of preventable plant disasters at Channel facilities. For example, the recent ITC fire in Deer Park exposed local residents to unhealthy levels of benzene.[14] TCEQ there relied on the air monitoring network for data. In Harvey's wake, a tank at Valero's refinery also released benzene and dozens of other pollutants into Manchester, but not due to hurricane damage— Valero's storage tank had previously failed an inspection and should have been decommissioned.[15] Chronic allowable emissions exceedances render the TCEQ air permit review process incapable of protecting public health because the technical assumptions upon which air permits are issued likely greatly underestimate actual pollution levels. As such, enhanced VOC monitoring in Houston Ship Channel communities is necessary to fill this regulatory gap.

Sierra Club requests that TCEQ place additional VOC monitors along the Houston Ship Channel because of the staggering number of air polluting facilities there. Currently, there are no VOC monitors along the Channel on the southbound side of IH 610. Here, Sierra Club recommends that TCEQ place a VOC monitor at or near J.R. Harris Elementary School—a public school where nearly all of the children are racial minorities and over two-thirds of the students are English Language Learners. Sierra Club would also like to see additional monitoring in Manchester, Pasadena, Deer Park, and Baytown.

III. TCEQ MUST INCREASE MONITORING OF OZONE POLLUTION IN THE GREATER SAN ANTONIO AREA.

A. Ozone is a serious public health problem in the Greater San Antonio Area.

San Antonio is currently violating the 2015 ozone NAAQS. San Antonio's unhealthy air quality has consequences for the more than 1.9 million Texans who

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[12] *Id.* at 25.

[13] Union of Concerned Scientist & Texas Environmental Justice Advocacy Services, Double Jeopardy in Houston, Acute and Chronic Chemical Exposures Pose Disproportionate Risks for Marginalized Communities at 19 (Oct. 2016), available at https://www.ucsusa.org/sites/default/files/attach/2016/10/ucs-double-jeopardy-in-houston-full-report-2016.pdf.

[14] TCEQ, High levels of benzene detected at ITC fire site (Mar. 21, 2019), available at: https://www.tceq.texas.gov/news/releases/high-levels-of-benzene-detected-at-itc-fire-site.

[15] TCEQ, Investigation Report, Valero Energy Partners LP, Investigation No. 1408309 (Oct. 5, 2017 to Nov. 15, 2017).

live in Bexar County, including approximately 505,510 children and 106,686 adults suffering from asthma.[16] Recent epidemiological studies suggest that even modest reductions in ozone levels, which could be achieved by reducing pollution from a handful of large sources, would save hundreds of millions of dollars in avoided public health costs, premature deaths, and lost work and school days in the San Antonio area. Indeed, a recent report, conducted using an EPA-approved modeling platform, concluded that compliance with the 2015 ozone NAAQS would prevent 24 premature deaths each year in Bexar County alone, resulting in approximately $220,000,000 in avoided public health costs.[17] The study also estimated that a modest drop in ozone levels would prevent over 38,000 lost school and work days annually in the San Antonio area. *Id.*

B. Additional monitoring is necessary to ensure San Antonio's smog problem is resolved in a prompt and cost-effective manner.

On July 25, 2018, EPA designated Bexar County as a non-attainment area for the 2015 ozone NAAQS. 83 Fed. Reg. 35,136. EPA designated Atascosa, Comal, and Guadalupe Counties as attainment/unclassifiable, even though EPA determined that these three counties were responsible for approximately 31 percent of the total ozone precursor emissions in the San Antonio area, that air-flow modeling showed air moving from these counties to violating monitors in Bexar County on exceedance days, and that these counties had no ozone monitors of their own, and thus might themselves be violating the NAAQS.

Although EPA's decision to designate those counties as attainment/unclassifiable was ultimately upheld by the Fifth Circuit Court of Appeals, TCEQ should add additional ozone monitors in the San Antonio area. TCEQ's monitoring network must be designed to "[p]rovide air pollution data to the general public in a timely manner" and "[s]upport compliance with ambient air quality standards and emissions strategy development." 40 C.F.R. Pt. 58, App. D, Section 1 (a), (b). Monitoring sites "*must* be capable of informing managers about . . . air pollution transported into and outside of a city or region." *Id.*, Section 1.1.1. Sites must also be designed "to determine the impact of significant sources or source categories on air quality." *Id.*

To support these goals, and to ensure that emission control strategies designed for the greater San Antonio area *solve* the region's smog problem—rather than simply causing industries to migrate from Bexar County to areas that are currently designated as attainment—TCEQ should add ozone monitors in surrounding counties. At minimum, monitors should be added in New Braunfels—

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[16] https://www.lung.org/our-initiatives/healthy-air/sota/city-rankings/states/texas/bexar.html.

[17] https://www.sanantonio.gov/Portals/0/Files/Sustainability/OzoneHealth/final-report.pdf.

to ensure that the approximately 300,000 people who live in Guadalupe and Comal counties have localized air quality data. Adding an additional monitor in New Braunfels is especially appropriate given that Comal County had the second highest growth rate of any county in the United States between 2017 and 2018, increasing by 5.4 percent.[18]

In addition, TCEQ should add an additional monitor north of the San Miguel Electric Plant, to help evaluate this plant's impact on Bexar County's ozone levels. According to EPA's 2014 National Emission Inventory, this 500 MW coal-fired power plant is responsible for nearly 2,400 tons of NOx a year. Consistent with its obligation to "determine the impact of significant sources or source categories on air quality," TCEQ should install an ozone monitor north of the San Miguel plant to help assess the impact of this plant on Bexar County's air quality.

IV. TCEQ MUST ADD ADDITIONAL MONITORS IN THE PERMIAN BASIN

Applying 40 C.F.R. Part 58, App. D, TCEQ is required to operate, at minimum, one ozone monitor in the Midland-Odessa CSA. In fact, more than one ozone monitoring site is required to achieve basic monitoring objectives.

A. Because the Midland-Odessa MSA Has a Population Greater than 350,000, Table D-2 Requires TCEQ to Operate At Least One Ozone Monitor There.

The Midland-Odessa CSA is one of the fastest growing regions in the United States.[19] According to the Texas Demographic Center, Midland had a population of 193,408 in 2020, while Odessa had a population of 193,408.[20] Accordingly, the combined population of this metropolitan area is 378,249.

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[18] *See New Census Bureau Estimates Show Counties in South and West Lead Nation in Population Growth* (Apr. 18, 2019), available at: https://www.census.gov/newsroom/press-releases/2019/estimates-county-metro.html.

[19] New Census Bureau Estimates Show Counties in South and West Lead Nation in Population Growth (Apr. 18, 2019), https://www.census.gov/newsroom/press-releases/2019/estimates-county-metro.html (from 2017 to 2018, Midland experienced the greatest percentage growth in of any metropolitan area in the nation—growing by 4.3 percent—while Odessa grew by 3.2 percent).

[20] See TCEQ 2020 Five-Year Ambient Monitoring Network Assessment at 20 (citing data from Texas Demographic Center), https://www.tceq.texas.gov/assets/public/compliance/monops/air/annual_review/historical/2020-5yrAAMNA.pdf.

Sources in the region—primarily from oil and gas production—are emitting significant amounts of pollution. For many pollutants, emissions of TCEQ Region 7 (which includes Midland-Odessa) rival or exceed emissions from Texas's largest metropolitan areas:[21]

Region (All Sources)	**VOC (tons per year)**	**NOx (tons per year)**
R7-Midland	362,139	85,550
R4-DFW	157,840	123,979
R12-Houston	175,802	132,696
R13-San Antonio	96,083	67,327

As these data show, the Midland-Odessa area is responsible for more VOC emissions than Dallas-Fort Worth and Houston *combined*. Midland-Odessa also emits more NOx than San Antonio, the seventh largest city in the United States.

In fact, Midland-Odessa's emissions are likely much greater than reflected here; researchers have found that emissions from oil-and-gas operations in the Permian Basin are dramatically underreported. Researchers have found that Permian Basin emissions of both VOCs and NOx are dramatically underreported. For example, Yuzhong Zhang et al. (2020)[22] analyzed satellite observations of the Permian Basin from 2018–2019 and found that methane emissions from oil and natural gas production were more than two times greater than bottom-up inventory-based estimates. Since VOCs are co-emitted with methane, this study implies that operators are releasing more than twice as much VOC pollution as they are reporting. Flaring—a significant source of NOx pollution—is also grossly underreported. Willyard et al. (2019)[23] compared self-reported data on the amount of gas vented or flared in the Eagle Ford and Permian Basins with satellite imagery radiant heat measurements, and found that operators were flaring about twice as much as they were reporting.

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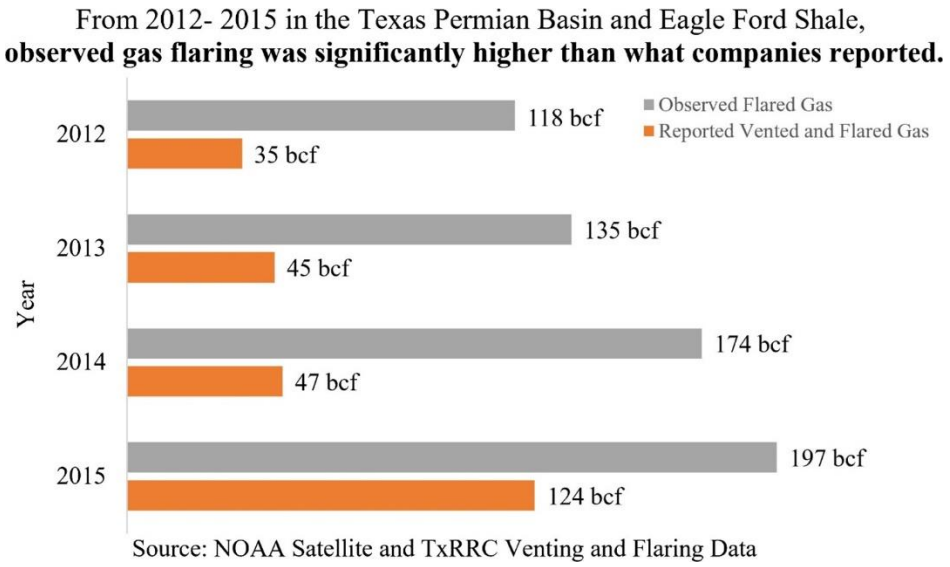
[21] *Id.* at Tables 10, 31, 58, & 74.
[22] Quantifying Methane Emissions from the Largest Oil-Producing Basin in the United States from Space, SCIENCE ADVANCES, https://advances.sciencemag.org/content/6/17/eaaz5120.
[23] Katherine Ann Willyard, Gunnar W. Schade, Flaring in two Texas shale areas: Comparison of bottom-up with top-down volume estimates for 2012 to 2015, 691 SCIENCE OF THE TOTAL ENVIRONMENT, Volume 241 (2019) https://doi.org/10.1016/j.scitotenv.2019.06.465.



This study indicates that estimates of NOx emissions that are based on operator reported activities may significantly understate emissions.

Midland and Odessa are unquestionably part of the same metropolitan area, and should be treated as such for purposes of air quality monitoring network design. Together, the Midland-Odessa CSA includes three counties—Martin, Midland, and Ector Counties—which have an area of about 2,700 square miles. Odessa's north-east border (near Mission Blvd) is about 3 miles away from the Midland airport—which is incorporated within the city limits of Midland. About 20 miles separate the centers of each city. Under longstanding EPA regulations, Midland and Odessa are included in the same Intrastate Air Quality Control Region. *See* 40 C.F.R. § 81.137.

Where a metropolitan area is divided into multiple MSAs, EPA regulations require regulators to consider the entire CSA for purposes of designing the air quality monitoring network. *See* 40 C.F.R. Part 58, App. D, § 4.1(b) ("Within an O_3 network, *at least one O_3 site for each MSA, or CSA if multiple MSAs are involved,* must be designed to record the maximum concentration for that particular metropolitan area.") (emphasis added). Here, although the U.S. Census Bureau has characterized Midland-Odessa as a CSA, it is clear that the two cities comprise a single metropolitan area. The combined population of the CSA exceeds the threshold above which an ozone monitor is required under Table D-2. Accordingly, under section 4.1(b), TCEQ must operate "at least one O_3 site for . . . [the] CSA" for the purpose of "record[ing] the maximum concentration for that particular metropolitan area."

Any other result would be arbitrary and capricious. Other metropolitan areas that span much greater areas are treated as a single unit for the purpose of

Table D-2. The Houston MSA spans nine counties and has an area of 9,444 square miles. One can drive for 110 miles along I-10 (from Sealy to Winnie) without leaving the MSA. The Dallas-Fort Worth-Arlington MSA is over 9,000 square miles. About 30 miles separate downtown Dallas from downtown Fort Worth, yet the two cities are treated as one unit for air quality monitoring purposes. The San Antonio MSA includes eight counties and has an area of 7,340 square miles. It would be arbitrary and capricious to treat these large urban conglomerations as single units under Table D-2, while refusing to do the same for the much smaller Midland-Odessa CSA.

B. The 2021 Plan Unlawfully Ignores Regulatory Language Providing that the Total Number of Ozone Monitors *Must Exceed* the Minimum Required by Table D-2.

40 C.F.R. Part 58, App. D, § 1.1.2 provides that "[t]he total number of monitoring sites . . . *will be substantially higher* than these minimum requirements provide" (emphasis added). Similarly, section 4.1 provides that "[t]he total number of ozone sites needed to support the basic monitoring objectives of public data reporting, air quality mapping, compliance, and understanding ozone-related atmospheric processes *will include* more sites than the minimum number required in Table D-2." (emphasis added).

Installing at least one ozone monitor in Midland-Odessa is necessary to meet basic monitoring objectives of public data reporting, air quality mapping, compliance, and understanding ozone-related atmospheric processes. There are hundreds of thousands of people living in the Midland-Odessa area who have no idea whether the air they are breathing is safe. Indeed, there are no ozone monitors at all in the Midland-Odessa-San Angelo Intrastate Air Quality Control Region established by C.F.R. § 81.137. With no ozone monitors, it is impossible for the State of Texas to fulfill its responsibility for assuring that the ozone NAAQS "will be achieved and maintained within each air quality control region" in the state. 42 U.S.C. § 7407(a).

The lack of any ozone monitors in Midland-Odessa is particularly troubling, given the likelihood that the area is exceeding the ozone NAAQS. As explained, the Midland-Odessa area is responsible for more VOC emissions than Dallas-Fort Worth and Houston *combined*. It is likely this tremendous pollution load is affecting local air quality. Ozone levels have risen dramatically throughout west Texas and southern New Mexico since 2016. Monitors that have fallen out of attainment with the ozone NAAQS since 2016 include Carlsbad and Carlsbad Caverns National Park, in New Mexico. The 2018–2020 design values for Carlsbad and Carlsbad Caverns National Park were 78 ppb and 75 ppb, respectively. EPA,

OZONE DESIGN VALUES, 2020; *Ozone Exceedances Monitored in National Parks*, NAT'L PARK SERV. (May 24, 2021), https://www.nps.gov/subjects/air/ozone-exceed.htm. Even Guadalupe Mountains National Park ("Guadalupe")—an area so isolated that visitors must drive 35 miles to reach the nearest gas station—is now on the verge of violating the NAAQS after reporting seven ozone exceedances in 2020 and four exceedances in 2021. *See Ozone Exceedances Monitored in National Parks*. Guadalupe, which lies about 150 miles west of Midland-Odessa, had never experienced a single exceedance day before 2019. *See id.*

Further, the best estimate of Midland-Odessa's air quality comes from the ozone monitor in Hobbs, New Mexico. This is the nearest ozone monitor to Midland-Odessa, and like Midland-Odessa, it is located in the Permian Basin region. The most recent, 3-year design value for the Hobbs monitor is 0.068 ppm—97 percent of the 2015 eight-hour ozone NAAQS.[24] It is likely that Midland-Odessa's air quality is similar or worse. Applying 40 C.F.R. Part 58, App. D, it is clear that multiple ozone monitors are needed in the Midland-Odessa area to serve basic monitoring objectives.

C. TCEQ must monitor and model sulfur dioxide emissions in the Permian Basin.

Last year, in our May 21, 2019, Comments on TCEQ's 2019 AMNP, we presented you with the unrefuted fact that, according to TCEQ's Emission Events data, Permian Basin operators reported more than 27 million pounds, or 13,500 tons, of sulfur dioxide emissions from flaring sour gas. We also provided you with a report showing that these unauthorized releases of SO_2 likely cause and contribute to exceedances of EPA's health-based sulfur dioxide NAAQS (1-hour standard) in Ector County.[25] The nearest SO_2 monitor is about 60 miles from Odessa, Ector County.[26] Thus, the existing monitoring network is plainly inadequate to assess SO_2 levels in Ector County, to say nothing of other portions of the Permian Basin. TCEQ must model SO_2 levels in Ector County and the remainder of the Permian Basin and install monitors at expected SO_2 hotspots to serve the purposes of air pollution monitoring. If those modeling and monitoring efforts reveal violations of the

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[24] https://www.epa.gov/sites/default/files/2021-05/o3_designvalues_2018_2020_final_05_11_21.xlsx.
[25] *See* Envtl. Integrity Project, Sour Wind in West Texas at 2, 10-12 (May 9, 2019), available at: https://www.environmentalintegrity.org/wp-content/uploads/2019/05/West-Texas-Air-Pollution-Report-5.9.19.pdf.
[26] *Id* at 2, 9.

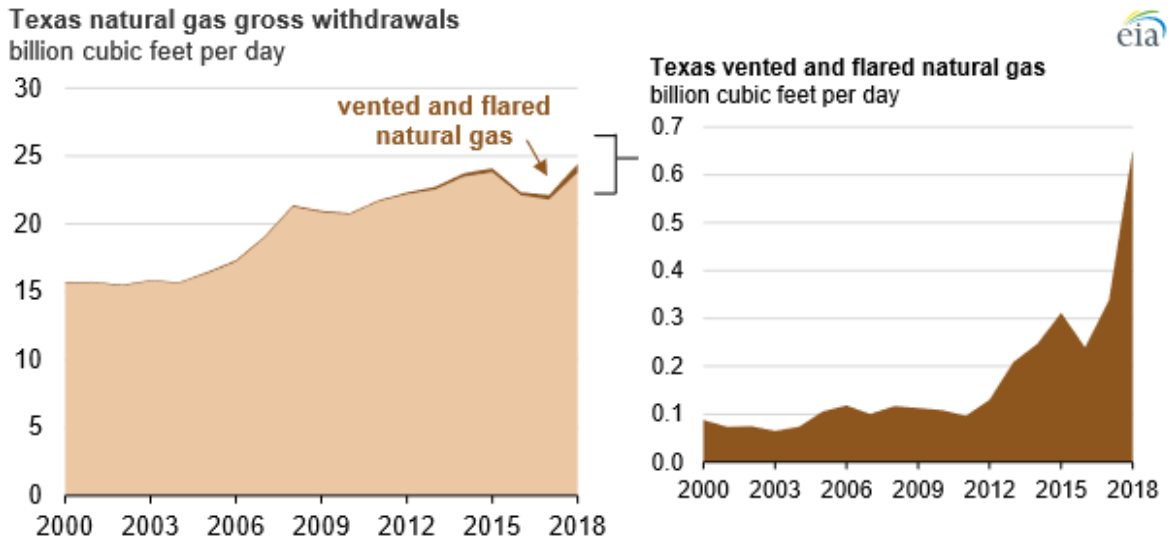
NAAQS, TCEQ must take action to fix them, including requesting designation as nonattainment if the data so show.

In addition to the TCEQ Emission Event data, sources under the Texas Railroad Commission's ("RRC") jurisdiction release even more air pollution. Based on the most recent available data from the Texas Railroad Commission, oil and gas drillers likely flared more than 48,000 TONS of sulfur dioxide into the air. We urge the TCEQ to revise the Plan to include monitoring of air quality around oil and gas production, where rampant flaring and venting is well-documented. The current oil bust only heightens the need for monitoring.

D. Railroad Commission flaring data reinforces the need for enhanced Sulfur Dioxide monitors in the Permian Basin.

Currently, there is only one SO_2 monitor in Big Spring Texas and one PM Monitor in Odessa. There are no ozone monitors in the area despite the relatively large population, vast truck traffic and oil and gas activities. While we believe the most immediate need are additional VOC, SO_2 and Hydrogen Sulfide monitors, placing an ozone monitor in the Odessa-Midland area and an additional PM monitor are also important.

According to the U.S. Energy Information Administration, in 2018, vented and flared gas from oil and gas wells in Texas reached over 0.65 Bcf/d, nearly double the 2017 level:



Source: U.S. E.I.A.[27]

This rise in flared and vented gas tracks the rise in the Texas Railroad

[27] https://www.eia.gov/todayinenergy/detail.php?id=42195

Commission's granting of flaring permits (or Rule 32 flaring exceptions). Flaring permits approved by RRC increased from slightly more than 300 in fiscal year 2010 to nearly 5,500 in fiscal year 2018. As Texas Railroad Commissioner Ryan Sitton has documented, oil and gas producers are currently flaring gas roughly at levels similar to those seen in the 1950s.[28]

The current oil bust that is a result of over-production and that has now been severely compounded by the Covid-19 pandemic, makes monitoring in the oil and gas production regions of Texas all the more urgent. All the publicly available data for 2020 indicate that flaring at upstream oil and gas sites has not yet declined. In fact, TCEQ-regulated operators in the Permian Basin continue to file Emission Events reports which show continued flaring as a result of upsets and unplanned maintenance. At the same time, Railroad Commission-regulated sources continue to seek exceptions to that agency's flaring rules as a matter of routine practice.

Moreover, air monitoring in the oil and gas fields will be even more important during a severe oil bust, because air pollution could increase as cash-strapped operators defer maintenance and lay off workers. In addition, we now face heightened risk from volatile organic compounds and hydrogen sulfide emissions resulting from leaks and from orphaned and abandoned wells.

Therefore, we now have an even greater need for monitoring in the oil and gas producing areas than we did last year, as emissions from leaks (venting) and abandoned wells are expected to rise while flaring is still a major source of emissions.

As you know, TCEQ requires operators to report their annual point source emissions inventories. But oil and gas drillers who are regulated by the Railroad Commission do not report directly to TCEQ. Instead, oil and gas drillers report the annual amount of gas that is vented or flared at each oil and gas lease to the Railroad Commission, and then TCEQ obtains this data and uses it to develop area source emission estimates. These emissions are required to be included in the State's Emissions Inventory, and are also included in the State Implementation Plan for achieving and maintaining the national ambient air quality standards.

TCEQ reports detailing the oil and gas emissions estimates, i.e., TCEQ's upstream oil and gas "area source" emissions estimates do not include sulfur dioxide emissions from the RRC-regulated flares. TCEQ's estimates do include emissions from other, much smaller sources at well sites, including drilling rig engines, tanks, and other equipment. But emissions from the flares themselves –

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[28] *See* Table 1, page 3, available at: https://www.rrc.state.tx.us/media/56420/sitton-texas-flaring-report-q1-2020.pdf.

the source of most combustion pollution in the oil fields – is not included in the TCEQ's emissions estimates.

To demonstrate the magnitude of the oil and gas well flaring emissions that TCEQ has not considered in drafting the 2020 Annual Monitoring Network Plan, we reviewed the most recent available RRC flare data, which covered the period from October 2018 through September 2019,[29] for the Railroad Commission's District 8 (which covers a portion of the Permian Basin including Ector and Midland Counties. We relied on the Railroad Commission's Hydrogen Sulfide Fields Concentrations Listings for an average hydrogen sulfide concentration per field.[30] We acknowledge that we do not have access to the industry data that TCEQ and the Railroad Commission have, notably the hydrogen sulfide content of all the gas flared, which drives the sulfur dioxide emissions estimates. Therefore, our emission estimates rely on the Railroad Commission's published Fields Concentrations Listings for an average hydrogen sulfide concentration per field. Should TCEQ, RRC, or industry object to our methodology, we welcome your critique and invite you to provide your estimate of sulfur dioxide emissions from these oil and gas well flares. We assumed 98% conversion of hydrogen sulfide to sulfur dioxide, which is commonly used in the industry, although we acknowledge that 100% destruction of hydrogen sulfide is typically expected.

We used the following standard engineering calculations to determine how much hydrogen sulfide and sulfur dioxide oil and gas drillers emitted in the Railroad Commission District 8 over the one-year study period:

Flared Calculations:[31]

$$\boldsymbol{tons\ H_2S} = \frac{field\ concentration\ H_2S\ ppm}{1{,}000{,}000\ ppmv} \times Volume\ Vented\ (MCF) \times 1{,}000\ \left(\frac{scf}{MCF}\right) \times \frac{34.1\ molar\ weight\ H_2S\ \frac{lb}{lb-mol}}{379.3\frac{scf}{mol}} \times \frac{ton}{2{,}000\ lb} \times 0.02\ (gas\ not\ combusted)$$

[29] TX RRC Production Report Queries, available at: http://webapps.rrc.texas.gov/PR/publicQueriesMainAction.do.
[30] TX RRC Hydrogen Sulfide (H2S) Fields & Concentrations Listings, available at: https://www.rrc.state.tx.us/oil-gas/research-and-statistics/field-data/h2s/.
[31] *Id.*

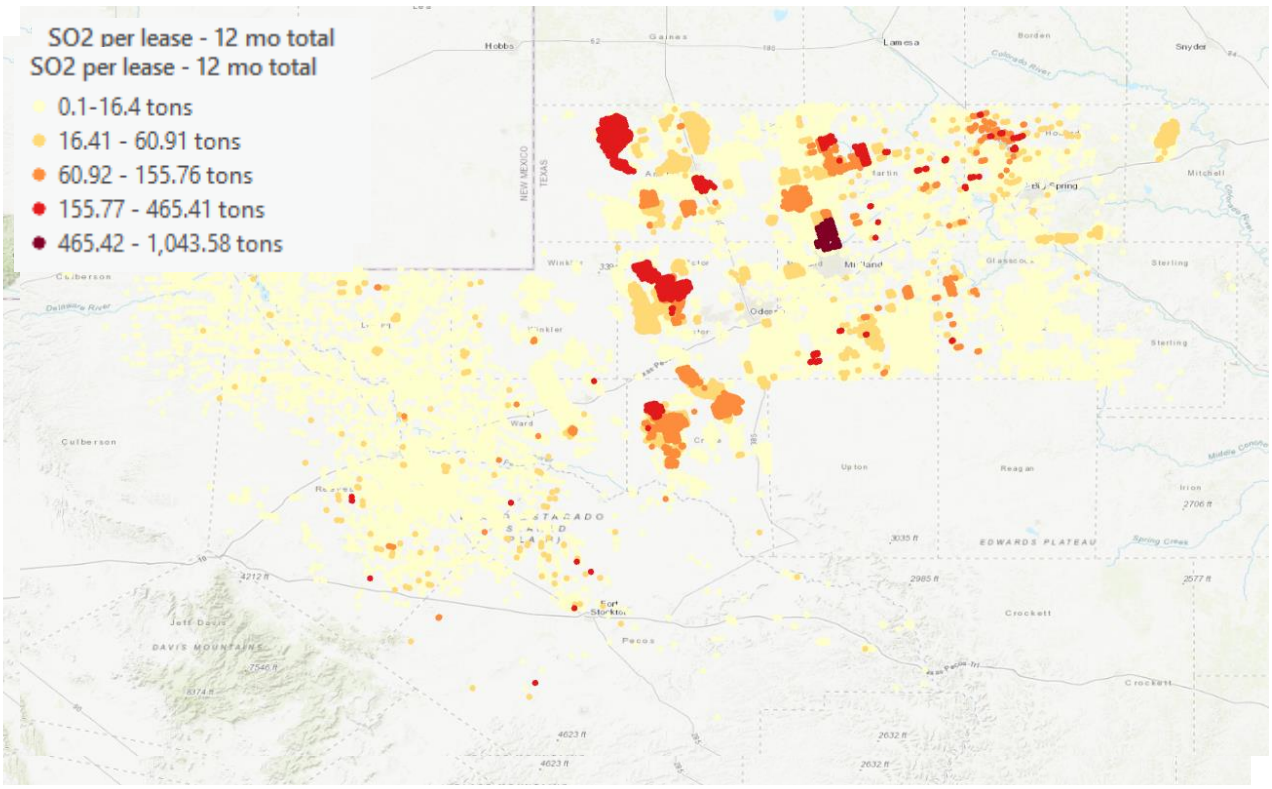
$$\boldsymbol{tons\ SO_2} = \frac{field\ concentration\ H_2S\ ppm}{1{,}000{,}000\ ppmv} \times Volume\ Vented\ (MCF) \times 1{,}000\ \left(\frac{scf}{MCF}\right) \times \frac{34.1\ molar\ weight\ H_2S\ \frac{lb}{lb-mol}}{379.3\frac{scf}{mol}} \times \frac{64.1\ molar\ weight\ SO_2\ \frac{lb}{lb-mol}}{34.1\ molar\ weight\ H_2S\ \frac{lb}{lb-mol}} \times \frac{ton}{2{,}000\ lb} \times 0.98\ (gas\ combusted)$$

Vented Calculation:[32]

$$\boldsymbol{tons\ H_2S} = \frac{field\ concentration\ H_2S\ ppm}{1{,}000{,}000\ ppmv} \times Volume\ Vented\ (MCF) \times 1{,}000\ \left(\frac{scf}{MCF}\right) \times \frac{34.1\ molar\ weight\ H_2S\ \frac{lb}{lb-mol}}{379.3\frac{scf}{mol}} \times \frac{ton}{2{,}000\ lb}$$

Based on these calculations using the publicly available data, oil and gas operators in RRC District 8 flared roughly 141 BCF of gas between October 2018 and September 2019, and vented about 3,213 thousand cubic feet during that period. Flaring this much gas, much of it high in hydrogen sulfide content, would have resulted in an estimated 48,459 tons of SO_2 and 1,466 tons of H_2S. Venting and flaring on oil and gas leases located in Martin and Howard counties likely resulted in the highest estimated emissions of SO_2 and H_2S, as shown in the following map:

[32] TCEQ, Air Permits Division, New Source Review (NSR) Emission Calculations, available at: https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emiss_calc_flares.pdf.



This new information demonstrates that oil and gas drillers regulated by the Texas Railroad Commission flared even more pollution than the TCEQ-regulated sources that report Emission Events.

We appreciate that the TCEQ has to make hard choices about where to measure air quality in Texas. As Texas now faces its most recent – and hopefully the last – oil bust, we urge you to take action to protect air quality in the oil and gas producing regions of the state. Permian Basin residents, especially, need your protection due to the massive and dangerous emissions of sulfur dioxide and hydrogen sulfide prevalent in that region.

V. TCEQ SHOULD INSTALL ADDITIONAL MONITORS IN EL PASO.

Western Refining Company, L.P., recently obtained TCEQ's approval to *double* the allowable amount of hydrogen cyanide emissions from its fluidized catalytic cracking unit. Residents of neighboring communities are currently being exposed to HCN emissions in amounts that can be expected to cause significant public health impacts. Modeling conducted in connection with Western Refining's application shows numerous exceedances of the one-hour Effects Screening Level for HCN at the fenceline directly north of the Sambrano neighborhood. To our knowledge, no health impact study has been conducted for members of this

neighborhood, but this modeling raises serious concerns about potential health impacts on residents. TCEQ should require Western Refining to implement real-time emissions monitoring at the fence-line, so that residents and emergency personnel can be alerted of emissions exceedances in time to take appropriate response measures. TCEQ should also require Western Refining to conduct a health impact study of the Sambrano neighborhood to determine if residents are suffering adverse health effects as a result of HCN or other emissions.

TCEQ should also deploy a near-road NO_2/CO monitor at Zavala Elementary School. EPA regulations require "one near-road NO_2 monitoring station in each [core-based statistical area] with a population of 1,000,000 or more persons to monitor a location of expected maximum hourly concentrations sited near a major road with high [annual average daily traffic] counts . . . ." 40 C.F.R. Part 58, App. D, Section 4.3.2(a). In selecting the appropriate site for this station, a monitoring agency must rank all road segments and "identify[] a location or locations adjacent to those highest ranked road segments, considering fleet mix, roadway design, congestion patterns, terrain, and meteorology, where maximum hourly NO_2 concentrations are expected to occur . . . ." *Id.* If there are multiple acceptable candidates, the agency "shall consider the potential for population exposure" as a tie-breaking factor. *Id.* The monitor should be designed to reflect "the maximum expected NO_2 concentration . . . [at] the microscale." *Id.*, section 4.3.5(a). A CO monitor must generally be collocated with any near-road NO_2 site. *Id.*, section 4.2(b).

El Paso does not currently have a near-road monitoring station, and TCEQ lists the required number of near-road monitors as zero in Appendix D of this proposal. TCEQ has misread the regulations. The El Paso-Las Cruces CBSA, which includes El Paso and Hudspeth Counties, Texas, and Dona Ana County, New Mexico, has a population in excess of 1,000,000.[33] This understates the population using this area, however, as many residents of Ciudad Juarez (a city with over 1.3 million residents) use the roadways near Zavala. At minimum, TCEQ must install one near-road monitor in this CBSA.

A natural candidate for such a monitor would be Zavala Elementary School. The school is located directly adjacent to the Interstate 110 spur, which connects Interstate 10 with the Cordova International Bridge. This spur has an AADT value of 70,997 in 2017, while I-10 itself—less than a mile away—had an AADT value of over 175,000.[34] Heavy-duty trucks—many of which are Mexican-domiciled and thus

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[33] https://www.epa.gov/sites/production/files/2017-12/documents/nm_tsd_final.pdf at page 15; https://www2.census.gov/geo/maps/metroarea/stcbsa_pg/Feb2013/cbsa2013_TX.pdf

[34] http://www.arcgis.com/home/webmap/viewer.html?url=https://services.arcgis.com/KTcxiTD9dsQw4r7Z/ArcGIS/rest/services/TxDOT_AADT_Annuals_viewer/FeatureSe

not compliant with U.S. emission standards—often idle on this spur for an extended period of time. Monitoring the emissions at this location would provide important data to residents in the Chamizal community who are concerned about the impact of these vehicle emissions on their children.

VI. TCEQ MUST INSTALL ADDITIONAL NO_2 MONITORS TO THE ORANGE COUNTY AREA TO ADDRESS THE RAPID EXPANSION OF LIQUIFIED NATURAL GAS AND OTHER INDUSTRIAL FACILITIES.

The Gulf Coast of Texas has for several years experienced a rapid expansion of industrialization. Many areas along the Gulf already experience the consequences of disproportionately high pollution levels. More recently, the expansion of existing and proposed liquified natural gas terminals along the Gulf coast have increased levels of harmful nitrogen dioxide ("NO_2"). NO_2 is part of a group of highly reactive nitrogen oxides, which can cause or worsen respiratory diseases such as asthma. Short-term exposure to NO_2 has also been linked to increased asthma-related hospital admissions and emergency department (ED) visits in children and adults), particularly among children and the elderly.[35] Nitrogen oxides are also a precursor for ground-level ozone or smog. Smog is created when nitrogen oxides and volatile organic compounds ("VOCs") such as industrial air pollution that contains benzene react in the presence of sunlight.

While ambient NO_2 concentrations are often elevated near important sources of NOx emissions, such as major roadways, electric generating units, and other large sources, the highest measured ambient concentrations in a given urban area may not always occur immediately adjacent to those sources.[36] Accordingly, and as EPA explained in the final NO2 NAAQS Rule, it is important to "locate monitors near heavily trafficked roadways in large urban areas and in other locations where *maximum* NO_2 concentrations can occur."[37] Given the nature of NO_2, it is important that TCEQ carefully evaluate the optimal NO2 monitor locations to capture both the highest measured concentrations, and to inform and protect communities that are disproportionately impacted by NO_2 emissions from fossil fuel burning industry.

More specifically, industrial source emissions—in particular, the build out of LNG infrastructure—along the Gulf Coast have or will soon increase dramatically since TCEQ's five-year monitoring plan review in 2020. For example, at least seven LNG facilities and compressor stations have been permitted just across the Texas border in Louisiana, but are not yet built: Cameron LNG, Calcasieu Pass LNG, Sabine Pass LNG, the Delfin Onshore Compressor Station, the Driftwood Pipeline

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[35] 83 Fed. Reg. 17,226, 17,269 (Apr. 18, 2018)

[36] *Id*. at 17,231.

[37] *Id*. at 17,227 (emphasis added).

Gillis Compressor Station, the East Calcasieu Compressor Station, and the Starks Compressor Station. In addition, four other LNG facilities have been proposed in the area: Commonwealth LNG, Magnolia LNG, Driftwood LNG, and Lake Charles LNG. As reflected in the attached modeling report, Modeling Comments of *Steven Klafka, P.E., BCEE, Wingra Engineering, S.C.,* Commonwealth LNG Commonwealth Parish, Louisiana, Evaluation of Compliance with the 1-hour NAAQS for NO_2 (Mar. 18, 2022) ("Klafka Report"), these additions will contribute air pollution in addition to existing sources in the Orange County, Texas area. Thus, Orange County has, and will continue to experience more, significant air emissions in the near future, and it is imperative for protection of public health and welfare that LDEQ ensure the air monitoring network is sufficient to evaluate local compliance with the NAAQS.

Despite this extensive industrial buildout, TCEQ's 2022 monitoring plan includes the bare minimum number of monitors in the Orange County area. Federal regulations require Texas to install and operate more than the minimum number of monitors if necessary to achieve monitoring network objectives. 40 C.F.R. § Pt. 58, App. D § 1.1.2 ("The total number of monitoring sites that will serve the variety of data needs will be substantially higher than these minimum requirements provide."). Yet, Orange County has only one monitor in the region to measure harmful NO_2.

As demonstrated in the attached air dispersion modeling report, which was conducted using EPA's approved AERMOD dispersion modeling platform, Texas's monitoring plan for NO_2 is insufficient to demonstrate compliance with the NAAQS, for several reasons. ***First***, as reflected in the attached report, which includes both proposed and permitted sources in Orange County, Texas and Cameron and Calcasieu Parishes in Louisiana, there are clear and persistent exceedances of the maximum 1-hour NO_2 standard in and around Orange County, Texas.[38] Indeed, areas of Orange County are predicted to exceed ***500 μg/m³*** including background, well above the 188 μg/m³ standard.[39] As reflected in the Klafka Report, the

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[38] The 1-hour NO_2 NAAQS takes the form of a three-year average of the 98th percentile of the annual distribution of daily maximum 1-hour concentrations, which cannot exceed 100 parts per billion (ppb).[38] Compliance with this standard was verified using USEPA's AERMOD air dispersion model, which produces air concentrations in units of μg/m³. The 1-hour NO_2 NAAQS of 100 ppb equals 188 μg/m³, and this is the value used for determining whether modeled impacts exceed the NAAQS. The 98th percentile of the annual distribution of daily maximum 1-hour concentrations corresponds to the eighth-highest value at each receptor for a given year.

[39] Ex. 1, Modeling Comments of *Steven Klafka, P.E., BCEE, Wingra Engineering, S.C.,* Commonwealth LNG Commonwealth Parish, Louisiana, Evaluation of Compliance with the 1-hour NAAQS for NO_2 (Mar. 18, 2022) ("Klafka Report")

continuing, rapid expansion of liquefied natural gas infrastructure is a significant source of those emissions. Although some of these sources are outside of TCEQ's jurisdiction, the agency has an obligation to coordinate with other states that may be causing unhealthy air conditions in Texas to develop emissions reductions strategies necessary to ensure attainment of the NAAQS.[40] Texas should also more carefully examine and comment on proposed permits in Louisiana that are likely to impact Texas air quality.[41] And if Louisiana fails to impose limitations on sources with the state, Texas should explore other opportunities for compelling Louisiana to reduce NO_2 emissions that affect Texas air quality.[42]

While some of the pollution impacting Orange County is from Louisiana sources, Texas sources are also responsible for a significant share of that pollution. If air quality monitoring and modeling continues to demonstrate violations of the standard,[43] TCEQ must take steps to redesignate those areas as being in nonattainment with the NO_2 NAAQS. 40 C.F.R. § 51.1205(d); *see also* 30 Tex. Admin. Code § 101.21 ("The National Primary and Secondary Ambient Air Quality Standards as promulgated pursuant to section 109 of the Federal Clean Air Act, as amended, will be enforced throughout all parts of Texas."). At a minimum, TCEQ must take appropriate action, including requiring adoption of enforceable emission limits to ensure attainment of the NAAQS in Orange County, or recommend that EPA redesignate the areas to nonattainment.

Second, TCEQ's monitoring plan fails to demonstrate that the current NO_2 monitors are placed in a location and manner that captures the peak predicted emissions concentrations, as required by EPA regulations.[44] EPA regulations require TCEQ to place monitors in a location that will capture the peak pollution concentrations caused by a particular source.[45] The attached modeling, which was conducted according to agency protocol and used recent actual and proposed emission for several permitted sources, demonstrates that TCEQ failed to site monitors in locations with the highest predicted concentration of SO_2 pollution from the respective sources. By way of example, air dispersion modeling conducted according to EPA's NO_2 modeling protocol demonstrates that TCEQ's NO_2 monitor

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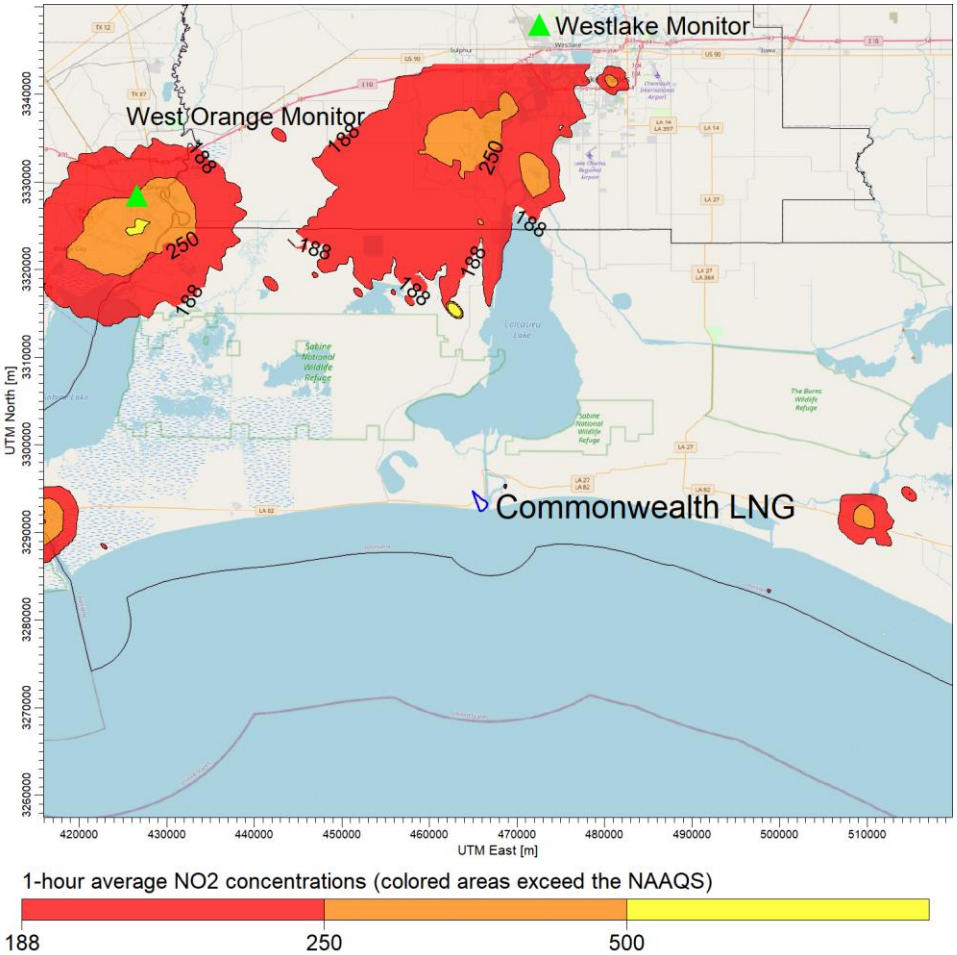
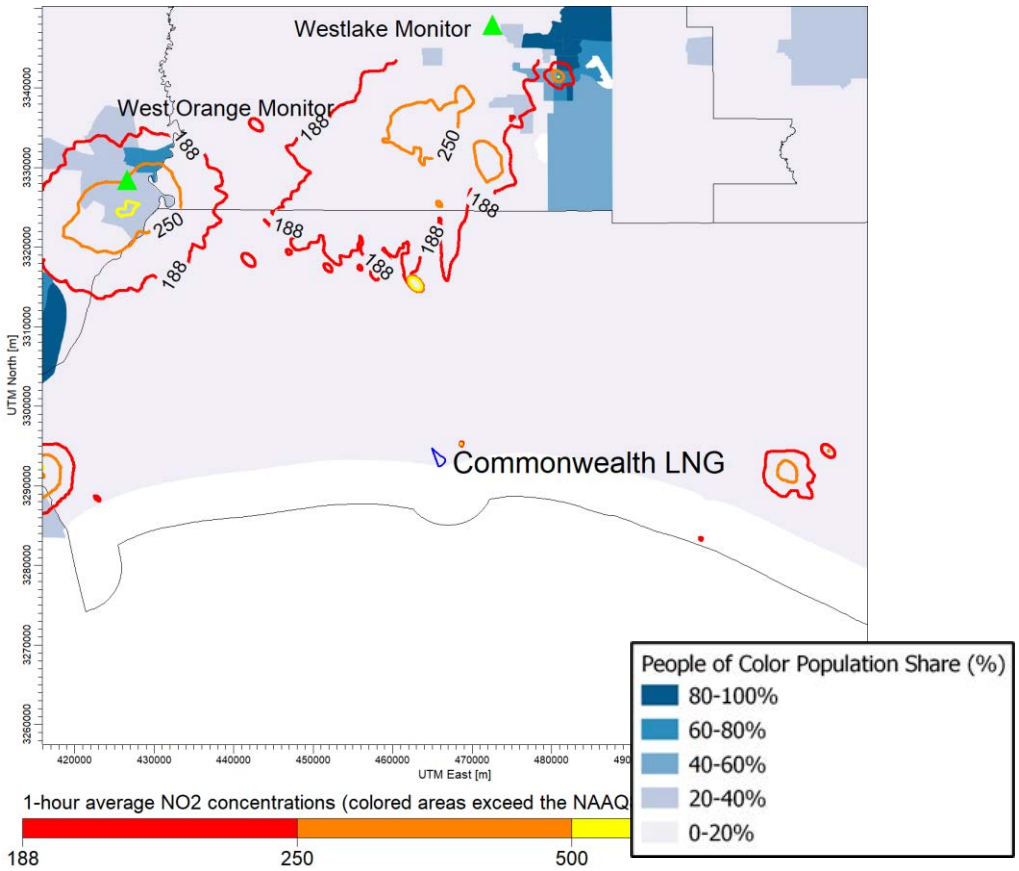
[40] 42 U.S.C. §§ 7410, 7426.
[41] 42 U.S.C. § 7426(a).
[42] *Id*. § 7426(b).
[43] EPA has clarified that air quality modeling—the use of modeling techniques, databases or computer models to assess impacts to the National Ambient Air Quality Standards—is sufficient and appropriate for demonstrating attainment or nonattainment with the NAAQS. Mem. from Scott Mathias, Director Air Quality Policy Division, EPA, to Regional Air Division Directors Re: Use of Modeling Techniques to Demonstrate General Conformity for Ozone (O_3), Fine Particulate Matter ($PM_{2.5}$) and Nitrogen Dioxide (NO_2) (Nov. 13, 2020).
[44] 40 C.F.R. Pt. 58 App. D ¶ 1.1.
[45] *Id*.

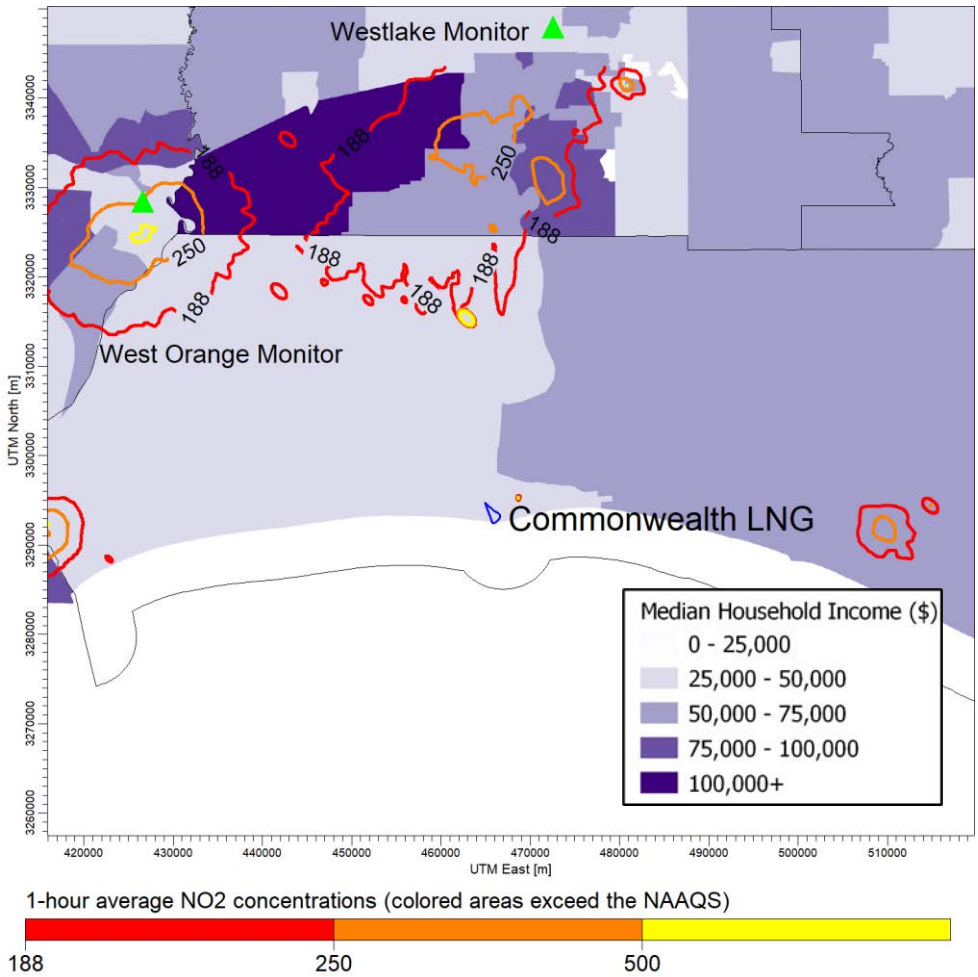
placement for the Orange County area does *not* capture peak predicted impacts in the area. Instead, the modeling demonstrates that the highest NO_2 concentrations are in significantly different areas than the existing monitor. *Compare* Ex. 1 at 3, Figure 3, *with* 2022 Air Monitoring Plan App'x B at B-37 (location of the West Orange monitor).



Finally, the proper placement of NO2 monitors in Orange County is not simply a box-checking exercise—it is critically important for vulnerable communities that have been historically and disproportionately impacted by pollution. As reflected in the attached Klafka report, and in the figure below, the Orange County communities most impacted by harmful NO2 pollution are disproportionately communities of color.



As reflected in the following figure, those same communities are also economically disadvantaged, with median incomes well below the surrounding areas.



Sierra Club also urges TCEQ to install additional air quality monitors in those areas to properly characterize ambient air quality and to inform the affected communities.

VII. TCEQ'S SO_2 MONITORING NETWORK IS INSUFFICIENT TO SUPPORT COMPLIANCE WITH THE 1-HOUR SO_2 NAAQS.

To reflect the most current science on SO_2 impacts, in 2010, EPA set the new ambient standard at 75 ppb (196 µg/m3) as an hourly average.[46] Due both to its shorter averaging time (1-hour versus 24-hour) and significantly lower allowable concentration (75 ppb versus 140 ppb), the new standard is considerably more stringent than the prior SO_2 NAAQS. In adopting the 1-hour SO_2 NAAQS, EPA recognized the "strong source-oriented nature of SO_2 ambient impacts." 75 Fed. Reg. at 35,370. Unlike regional pollution problems, short term SO_2 air pollution problems are caused by single sources and occur in the near vicinity of that source. Thus, EPA concluded that the appropriate methodology for purposes of determining

[46] 40 C.F.R. § 50.17(a); Primary NAAQS for Sulfur Dioxide, 75 Fed. Reg. 35,520, 35,520-21 (June 22, 2010).

compliance, attainment, and nonattainment with the new NAAQS is *modeling*, since it would be virtually impossible to site sufficient monitors around each individual source of SO_2 pollution. *See* 75 Fed. Reg. at 35,551 (describing dispersion modeling as "the most technically appropriate, efficient, and readily available method for assessing short-term ambient SO_2 concentrations in areas with large point sources."). EPA also determined in the final SO_2 NAAQS rule that it did "not expect monitoring to become the primary method by which ambient concentrations are compared to the new 1-hour SO2 NAAQS."[47]

Aside from the difficulties EPA has recognized are inherent in using monitoring to determine compliance with the SO_2 NAAQS at each individual source in the country, Texas's monitoring and modeling plan is insufficient to demonstrate compliance with the NAAQS, for several reasons.

First, TCEQ's proposed SO_2 monitoring network is inadequate to determine whether some of the largest pollution sources are causing unhealthy levels of SO_2. EPA's Data Requirements Rule ("DRR") requires TCEQ to provide data to characterize air quality around many major sources of SO_2.[48] In particular, the rule requires the state to characterize the air quality around sources that emit 2,000 tons per year (tpy) or more of SO_2 and that are not located in an area already designated nonattainment. Using that threshold, 25 Texas sources—which, together, emit more sulfur dioxide than all of the sources in Arkansas, Louisiana, Oklahoma, Arizona, Colorado, Kansas, New Mexico, and Mississippi, *combined*—are subject to the Data Requirements Rule.[49] Nevertheless, TCEQ operates SO_2 ambient air monitors in the vicinity of only nine of those plants.[50] And four of them—Big Brown, Monticello, Sandow, and J.T. Deely—have ceased operations. By focusing on a subset of sources that is responsible for only a fraction of Texas's staggering SO_2 emissions, TCEQ undermines the core purposes of EPA's monitoring regulations: provide the public with accurate data on air pollution.[51]

Second, the agency's 2020 monitoring plan also fails (as did the 2020 plan) to demonstrate that the current SO_2 monitors are placed in a location and manner that captures the peak predicted emissions concentrations, as required by EPA

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[47] 75 Fed. Reg. at 35,551.
[48] Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard (NAAQS), 80 Fed. Reg. 51,052 (Aug. 21, 2015) (codified at 40 C.F.R. § 51, Subpart BB).
[49] 2020 Air Monitoring Network Plan, App'x F, Sulfur Dioxide Ongoing Data Requirements Annual Report.
[50] TCEQ has SO2 monitors near Harrington, Gibbons Creek, Big Brown, Martin Lake, Welsh, J.K. Spruce, J.T. Deely, Monticello, and Sandow.
[51] 40 C.F.R. Pt. 58 App. D ¶ 1.1.

regulations.[52] By way of example, air dispersion modeling conducted according to EPA's SO_2 modeling protocol demonstrates that TCEQ's monitoring placements for the Martin Lake power plant does *not* capture peak predicted impacts from that source. Instead, the modeling demonstrates that the highest SO_2 concentrations—concentrations that violate the 2010 SO_2 NAAQS—caused by emissions from Martin Lake are in significantly different areas than the existing monitors. *Compare* Ex. 2 at 1-2 *with* 2022 Air Monitoring Plan App'x B at B-40 (location of the Martin Lake monitor at 32.2778 N, -94.5708 W). Indeed, air dispersion modeling indicates that location of peak impacts from Martin Lake are more than a half mile from TCEQ's location. Similarly, air dispersion modeling conducted according to EPA protocol demonstrates that the location of peak impacts for the Harrington power plant is also approximately a half mile away from TCEQ's monitor location. *Compare* Ex. 3 at 3-4 *with* 2019 Air Monitoring Plan App'x B at B-2 (location of the Harrington monitor at 35.3165 W, -101.7418 N). EPA regulations require TCEQ to place monitors in a location that will capture the peak pollution concentrations caused by a particular source.[53] The attached modeling, which EPA concluded was conducted according to agency protocol and used recent actual emissions,[54] demonstrates that TCEQ failed to site monitors in locations with the highest predicted concentration of SO_2 pollution from the respective sources.

Third, even if TCEQ correctly sited its SO_2 monitors in locations with the highest predicted concentration of SO_2 pollution (and it did not), the agency's own *monitoring* data indicates that air quality at multiple monitors located near very large coal-burning power plants is regularly exceeding the health-based SO_2 NAAQS. TCEQ's own EPA-approved monitoring data, for example, demonstrates unequivocally that the design value for the air quality monitor near Martin Lake is violating the 2010 standard.[55] Despite those violations, TCEQ continues to insist through federal court litigation that EPA's nonattainment designation for that area should be vacated, putting the surrounding communities at risk. TCEQ's continued resistance to taking firm steps to clean up the air around Martin Lake is inconsistent with the agency's own data and its mission. TCEQ must take appropriate action, including requiring adoption of enforceable emission limits to ensure attainment of the 2010 SO_2 NAAQS near Martin Lake. Sierra Club also urges TCEQ to install additional air quality monitors in those areas to properly characterize ambient air quality near both Martin Lake and Harrington to inform the affected communities.

Finally, for the sources that did rely on modeling to demonstrate compliance

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[52] *Id.* at ¶ 1.1(c).
[53] *Id.* at ¶ 1.1.
[54] *See generally* 81 Fed. Reg. 89,870 (Dec. 13, 2016).
[55] https://www.epa.gov/sites/default/files/2021-05/so2_designvalues_2018_2020_final_05_24_21.xlsx

with the NAAQS under the Data Requirements Rule, TCEQ has failed to properly address increases in emissions or explain how the area is meeting the NAAQS. In its Sulfur Dioxide Ongoing Data Requirements Annual Report, TCEQ notes that total SO2 pollution from the San Miguel Electric Plant, W.A. Parish Electric Generating Station, and Coleto Creek Power Station have increased significantly since 2019.[56] Under 40 C.F.R. §51.1205(b), TCEQ is required to provide EPA with an assessment of the cause of such emissions increase and a recommendation as to " whether additional modeling is needed to characterize air quality in any area to determine whether the area meets or does not meet the 2010 SO2 NAAQS." Although TCEQ acknowledges the emissions increases, the agency asserts that no further evaluation is needed because "the original designation modeling evaluated higher average emissions" for W.A Parish and Coleto Creek. Since higher emissions were evaluated, the original designation modeling provides "reasonable assurance" that the areas continue to meet the 2010 one-hour SO2 primary NAAQS. For San Miguel, TCEQ acknowledges that recent average emissions exceed the levels used for designation modeling by 151 tons per year, but the agency asserts that "this small increase of approximately 1.7 percent of SO2 emissions would not be expected to change the attainment/unclassifiable designation determined from the original modeling."[57]

That conclusory explanation for refusing to conduct additional modeling or monitoring is insufficient. As an initial matter, the modeling analyses supporting the original area designations for W.A. Parish, Coleto Creek, and San Miguel are not actually in TCEQ's monitoring network rulemaking record. Moreover, those air dispersion modeling analyses do not actually reflect total annual emissions for any of the three plants. Instead, the reports reflect emission rates that each company evaluated to demonstrate compliance with the *hourly* standard.

In any event, even if the earlier modeling evaluated higher total annual emissions for each plant, that does not ensure compliance with the *one-hour* NAAQS. In setting the 2010 standard, EPA explicitly recognized that short-term exposure to SO2 concentrations above 75 ppb were harmful to human health. Accordingly, the 2010 standard imposes a shorter averaging time (1-hour versus 24-hour), which is designed to protect against dangerous short-term exposure. TCEQ's facile observation that total annual emissions are lower than those modeled period does not adequately protect the surrounding communities against periods of high utilization and the associated concentration of SO_2 pollution from these essentially uncontrolled coal plants. And TCEQ's reference to total annual emissions does not ensure—nor is it even relevant to—compliance with the *hourly* standard. TCEQ should conduct additional modeling, based on the most-recent three years of actual

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[56] 2020 Air Monitoring Network Plan, App'x F, Sulfur Dioxide Ongoing Data Requirements Annual Report.
[57] *Id.*

hourly emissions and meteorological data to ensure compliance with the NAAQS at San Miguel, W.A. Parish, and Coleto Creek. Alternatively, the agency should impose more stringent emissions limitations under 40 C.F.R. § 1204 to ensure compliance with the standard.

VIII. CONCLUSION

For the reasons discussed above, TCEQ's 2020 monitoring plan is inadequate and will not properly characterize peak pollution concentrations in many of the most vulnerable communities across the state. To protect the health of Texas citizens, TCEQ must enhance its air monitoring network as discussed above. Sierra Club further requests that Texas Commission on Environmental Quality ("TCEQ") remand the proposal, publish the plan in both English and Spanish, and allow the public to provide additional comment on the agency's network plan through the notice and comment rulemaking process.

Thank you for the opportunity to comment. If you have any questions or need additional information, please do not hesitate to contact us.

Respectfully submitted,

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Harrington Station Power Plant

Amarillo, Texas

Evaluation of Compliance with the 1-hour NAAQS for SO_2

September 18, 2020

Conducted by:

Steven Klafka, P.E., BCEE

Wingra Engineering, S.C.

Madison, Wisconsin

1. Introduction

Wingra Engineering, S.C. was hired by the Sierra Club to conduct an air modeling impact analysis to confirm that the Harrington Station Power Plant located in Amarillo, Texas is causing monitored exceedances of the 1-hour sulfur dioxide (SO_2) national ambient air quality standard (NAAQS), and to identify the likely extent of those exceedances.[1] This document describes the results and procedures for evaluating the extent and concentration of SO_2 impacts from Harrington Station Power Plant.

The dispersion modeling analysis predicted ambient air concentrations for comparison with the 1-hour SO_2 NAAQS. The modeling was performed using the most recent version of AERMOD, AERMET, and AERMINUTE, with data provided to the Sierra Club by regulatory air agencies and through other publicly-available sources as documented below. The analysis was conducted in adherence to all available USEPA guidance for evaluating source impacts on attainment of the 1-hour SO_2 NAAQS via aerial dispersion modeling, including the AERMOD Implementation Guide; USEPA's Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard, August 23, 2010; modeling guidance promulgated by USEPA in Appendix W to 40 CFR Part 51; USEPA's March 2011 Modeling Guidance for SO_2 NAAQS Designations;[2] and, USEPA's August 2016 SO_2 NAAQS Designations Technical Assistance Document.[3]

To improve the accuracy of this modeling analysis, it incorporates the following procedures:

a) The most current versions of the AERMOD modeling system v. 19191 were used for the analysis.

b) Actual hourly emission rates were used for the modeling analysis. Because emission rates from the facility's continuous emissions monitoring system (CEM) were not publicly available, this report relies on hourly emissions data from EPA's *Clean Air Markets Program Database (CAMD)* for the 2017-19 period.[4]

c) Stack parameters including location, height, diameter and temperature were obtained from the annual survey compiled by the U.S. Energy Information Administration.[5] Stack locations were verified using aerial photographs, air modeling EPA conducted for evaluating the facility's impacts under the Clean Air Act's regional haze program,[6] and a modeling protocol

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[1] On May 5, 2020, EPA determined that the 2017-2019 design value for the Amarillo Xcel El Rancho monitor AQS Site ID 483751077 is 114 ppb.
[2] http://www.epa.gov/scram001/so2_modeling_guidance.htm
[3] https://www.epa.gov/sites/production/files/2016-06/documents/so2modelingtad.pdf
[4] http://ampd.epa.gov/ampd/
[5] http://www.eia.gov/electricity/data/eia860/
[6] Technical Support Document Our Strategy for Assessing which Units are Subject to BART for the Texas Regional Haze BART Federal Implementation Plan (BART Screening TSD), November 2016.

provided to TCEQ earlier this year for evaluating SO_2 emissions from the Harrington Station.[7]

d) Since actual hourly SO_2 emissions were used for the modeling analysis, hourly stack exit velocities and temperatures were also employed. This approach is recommended by USEPA[8] and has been used for prior modeling analyses to determine compliance with the NAAQS. Actual hourly stack flow rates, exit velocities and temperatures from the facility CEM were not publicly available. These were instead estimated based on information available for Harrington Station using the following steps: Step 1) The hourly heat input and exhaust flow rates provided by USEPA for 2012-14 period in its Emissions Modeling Clearinghouse were used to calculate a standard cubic feet (scf) per mmbtu ratio for each of the units at Harrington Station. For Units 061B, 062B and 063B, the calculated ratios were 15,267, 14,617, and, 15,096, respectively. Step 2) These flow to heat input ratios were applied to the hourly heat input for the 2017-19 period provided by the USEPA CAMD to determine the hourly flow rates. Step 3) The temperature calculated for each hour was applied to the flow rate in standard cubic feet for each hour to determine the flow rate in actual cubic feet. Stack exit temperatures at 100% and 50% load were provided by the USEIA annual power plant survey. For Units 061B, 062B and 063B, these temperatures were: 326 and 263 ºF; 313 and 250 ºF; and, 300 and 240 ºF, respectively. All loads below 50% were assumed to have the same temperature as 50% load. Between 50% and 100% load, the temperature was assumed to increase proportionally with load. The % load for each hour was calculated from the heat input provided in the USEPA CAMD.

e) The downwash effects of nearby buildings and structures were used for the modeling analysis. Photographs of Harrington Station show the three boiler stacks are relatively short and likely affected by downwash effects from nearby buildings and structures. No building dimensions were publicly available. To incorporate downwash effects, these dimensions were estimated using aerial and facility photographs.

f) Concurrent meteorology for the 2017-19 period were used for the modeling analysis. These were processed using the current version of AERMET following similar procedures used by TCEQ for the meteorology data it provides for modeling analyses. As recommended by TCEQ for Potter County, meteorology data for the Amarillo International Airport were used for the analysis.

g) The background SO_2 concentration used for the modeling analysis is the lowest design value for the 2017-19 period from all ambient monitors in Texas. This is the concentration of 1.8

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[7] AER, Modeling Protocol, Southwestern Public Service Company Harrington Station Power Plant in Potter County Texas, Task 3: Site-Specific Modeling Protocols for the 2010 One-Hour SO_2 NAAQS, February 7, 2020.
[8] USEPA, SO_2 NAAQS Designations Modeling Technical Assistance Document, August 2016 (Draft).

ppb or 4.7 µg/m^3 which was measured at the Milam County monitor identified as the Rockdale John D. Harper Road Monitor located at 3990 John D Harper Road (Coordinates: 30.569534, -97.076294). It has USEPA ID #483311075. Based on measured actual hourly emissions, stack temperatures, and variable stack velocities Harrington Station is estimated to cause SO_2 concentrations which exceed the 1-hour NAAQS under all scenarios. Harrington Station is predicted to exceed the NAAQS regardless of the background concentration used for this analysis.[9]

2. Compliance with the 1-hour SO_2 NAAQS

2.1 1-hour SO_2 NAAQS

The 1-hour SO_2 NAAQS takes the form of a three-year average of the 99th percentile of the annual distribution of daily maximum 1-hour concentrations, which cannot exceed 75 parts per billion (ppb).[10] Compliance with this standard was verified using USEPA's AERMOD air dispersion model, which produces air concentrations in units of µg/m^3. The 1-hour SO_2 NAAQS of 75 ppb equals 196.2 µg/m^3, and this is the value used for determining whether modeled impacts exceed the NAAQS.[11] The 99th percentile of the annual distribution of daily maximum 1-hour concentrations corresponds to the fourth-highest value at each receptor for a given year.

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[9] There are two monitors in Potter County. The Amarillo 24th Avenue monitor has ID #483751025 and is located in Amarillo at 4205 NE 24th Avenue (Coordinates: 35.236736, -101.787405) approximately 7.8 km southwest of Harrison State. The Amarillo Xcel El Rancho monitor has ID #483751077 and is located in Amarillo at Folsom and El Rancho Roads (Coordinates: 35.316500, -101.741800) approximately 2.0 km northeast of Harrington Station. Based on prevailing wind directions, the Amarillo 24th Avenue monitor is generally upwind of the plant and the Amarillo Xcel El Rancho monitor is downwind of the plant. Neither monitor was used to obtain a background concentration due to likely influence from SO_2 emissions from Harrington Station.

[10] USEPA, Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard, August 23, 2010.

[11] The ppb to µg/m^3 conversion is found in the source code to AERMOD v. 19191, subroutine Modules. The conversion calculation at 25 °C is 75/0.3823 = 196.2 µg/m^3. This conversion has been used for consistency with prior modeling reports. While USEPA has recently converted the 75 ppb standard to 196.5 µg/m^3, the alternative USEPA concentration does not change the conclusions of this report.

2.2 Modeling Results

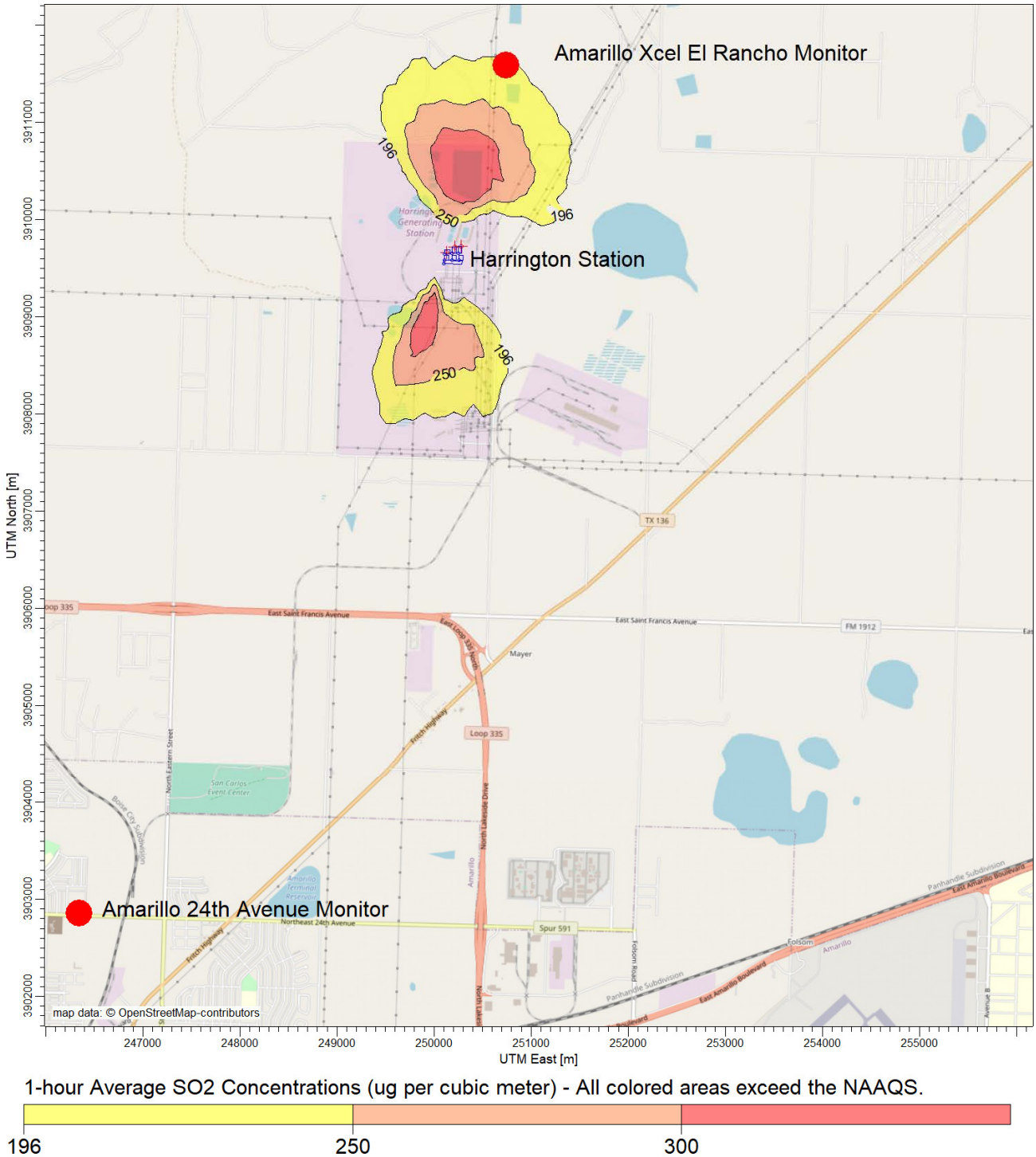
Modeling results for Harrington Station are summarized in Tables 1.

Table 1 - SO_2 Modeling Results for Harrington Station

Emission Rates	Averaging Period	99th Percentile 1-hour Daily Maximum (µg/m³)				Complies with NAAQS?
		Impact	Background	Total	NAAQS	
Actual 2017-19	1-hour	385.9	4.7	390.6	196.2	No

Figure 1 shows the full extent of predicted exceedances of the 1-hour NAAQS for SO_2, the locations of the two monitoring stations and Harrington Station.

Figure 2 shows the highest predicted exceedances close to Harrington Station.



1-hour Average SO2 Concentrations (ug per cubic meter) - All colored areas exceed the NAAQS.

196 250 300

Figure 1 – Regional View of NAAQS Exceedances for 2017-19 Period

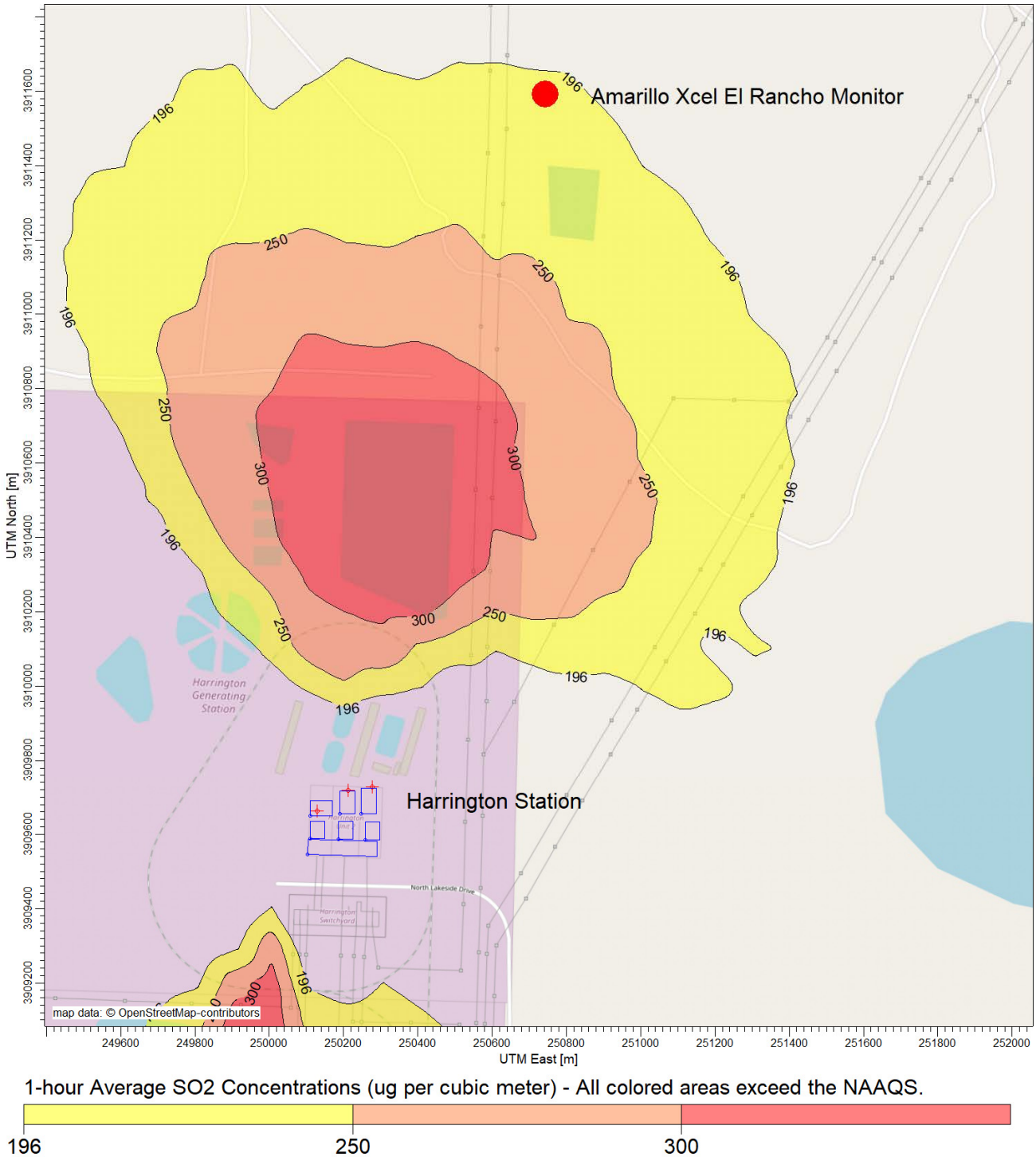


Figure 2 – Close-up View of NAAQS Exceedances for 2017-19 Period

2.3 Comparison with Ambient Monitoring Measurements

Predicted Concentration at Monitor Location - For the 2017-19 period, the downwind Amarillo Xcel El Rancho monitor located 2.0 km northeast from Harrington Station measured a design value of 298.2 $\mu g/m^3$, well above the 1-hour NAAQS for SO2 of 196.2 $\mu g/m^3$. The modeling analysis predicted a design value of 201.9 $\mu g/m^3$ at this monitor location, approximately 96.3 $\mu g/m^3$ and 32% less than the actual monitored value. This suggests the modeling analysis is under-predicting the impacts of SO_2 emission from Harrington Station.

Predicted Maximum Concentration - The maximum design value predicted by the modeling analysis is 390.6 $\mu g/m^3$. This occurs approximately 1.6 km southeast of the Amarillo Xcel El Ranch monitor. This suggests the Amarillo Xcel El Rancho monitor is not located where the maximum impacts of SO_2 emissions from Harrington Station occur.

2.4 Conservative Modeling Assumptions

A dispersion modeling analysis requires the selection of numerous parameters which affect the predicted concentrations. Some were selected which under-predict facility impacts.

Assumptions used in this modeling analysis which likely under-estimate concentrations include the following:

- Hourly stack exit velocity and temperature as measured by the facility CEM were not publicly available. Instead these were estimated using publicly available information. If the actual exit velocities and temperatures are lower than those estimated for this analysis, the modeled concentrations would be conservatively low.
- Dimensions of facility buildings and structures were not publicly available. Instead these were estimating using publicly available photographs. If the actual dimensions are larger than those estimated for this analysis, the modeled concentrations would be conservatively low.
- To evaluate the full extent and concentration of impacts caused by Harrington Station, it is recommended that USEPA obtain building parameters, actual values for hourly emissions, exit velocities, and temperatures from the CEM measurements collected at Harrington Station, and incorporate those inputs into AERMOD. As noted, the use of actual hourly temperature and exit velocity would likely result in decreased plume dispersion and higher modeled impacts over a larger geographic area.

3. Modeling Methodology

3.1 Air Dispersion Model

The modeling analysis used the most recent version of USEPA's AERMOD program, v. 19191. AERMOD, as available from the Support Center for Regulatory Atmospheric Modeling (SCRAM) website, was used in conjunction with a third-party modeling software program, *AERMOD View*, sold by Lakes Environmental Software.

3.2 Control Options

The AERMOD model was run with the following control options:

- 1-hour average air concentrations
- Regulatory defaults
- 1.5 meter flag pole receptor height

An evaluation was conducted to determine if the modeled facility was located in a rural or urban setting using USEPA's methodology outlined in Section 7.2.3 of the Guideline on Air Quality Models.[12] For urban sources, the URBANOPT option is used in conjunction with the urban population from an appropriate nearby city and a default surface roughness of 1.0 meter. Methods described in Section 4.1 were used to determine whether rural or urban dispersion coefficients were appropriate for the modeling analysis.

3.3 Output Options

The AERMOD analysis was based on recent meteorological data. The modeling analysis was conducted using sequential meteorological data from the 2017-19 period. Consistent with USEPA's Modeling Guidance for SO_2 NAAQS Designations, AERMOD provided a table of fourth-high 1-hour SO_2 impacts concentrations consistent with the form of the 1-hour SO_2 NAAQS.[13]

Please refer to Table 1 for the modeling results.

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[12] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, November 9, 2005.
[13] USEPA, Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards, Attachment 3, March 24, 2011, pp. 24-26.

4. Model Inputs

4.1 Geographical Inputs

The air dispersion modeling analysis used a coordinate system for identifying the geographical location of emission sources and receptors. These geographical locations are used to determine local characteristics (such as land use and elevation), and also to ascertain source to receptor distances and relationships.

The Universal Transverse Mercator (UTM) NAD83 coordinate system was used for identifying the easting (x) and northing (y) coordinates of the modeled sources and receptors.

The facility was evaluated to determine if it should be modeled using the rural or urban dispersion coefficient option in AERMOD. A GIS was used to determine whether rural or urban dispersion coefficients apply to a site. Land use within a three-kilometer radius circle surrounding the facility was considered. USEPA guidance states that urban dispersion coefficients are used if more than 50% of the area within 3 kilometers has urban land uses. Otherwise, rural coefficients are used.[14]

USEPA's AERSURFACE v. 20060 was used to develop the meteorological data for the modeling analysis. This model was also used to evaluate surrounding land use within 3 kilometers of Harrington Station. Based on the output from the AERSURFACE, approximately 6% of surrounding land use around the station was of urban land use types including Types 22, 23 and 24 which are Low, Medium and High Intensity Development.

This is less than the 50% value considered appropriate for the use of urban dispersion coefficients. Based on the AERSURFACE analysis, it was concluded that the rural option would be used for the modeling summarized in this report. Please refer to Section 4.5.3 for a discussion of the AERSURFACE analysis.

4.2 Emission Rates and Source Parameters

Actual hourly emission rates were used for the modeling analysis. Emission rates from the facility continuous emissions monitoring system (CEM) were not publicly available. These were instead obtained from EPA's Clean Air Markets Program Database (CAMD) for the 2017-19 period.

Stack parameters including location, height, diameter and temperature were obtained from the annual survey compiled by the U.S. Energy Information Administration. Stack locations were

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[14] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, November 9, 2005, Section 7.2.3.

verified using aerial photographs, air modeling EPA conducted for evaluating the facility's impacts under the Clean Air Act's regional haze program, and a modeling protocol provided to TCEQ earlier this year for evaluating SO_2 emissions from the Harrington Station.

Hourly stack exit velocities and temperatures were used for the modeling analysis. Actual hourly stack flow rates, exit velocities and temperatures from the facility CEM were not publicly available. These were instead estimated based on information available for Harrington Station.

Table 2 – Facility Stack Parameters

Facility	Harrington Station		
Stack	S01 (061B)	S02 (062B)	S03 (063B)
Description	Unit 1	Unit 2	Unit 3
X Coord. [m]	250129.00	250211.82	250277.97
Y Coord. [m]	3909662.00	3909718.89	3909727.94
Base Elevation [m]	1085.7	1084.93	1084.82
Release Height [m]	76.2	91.44	91.44
Inside Diameter [m]	5.7912	5.7912	5.7912
Gas Exit Temperature [°K]	Hourly Values		
Gas Exit Velocity [m/s]			
Actual Emission Rate [g/s]			

4.3 Building Dimensions and GEP

The downwash effects of nearby buildings and structures were used for the modeling analysis. Photographs of Harrington Station show the three boiler stacks are relatively short and likely affected by downwash effects from nearby buildings and structures. No building dimensions were publicly available. To incorporate downwash effects, these dimensions were estimated using aerial and facility photographs.

4.4 Receptors

For Harrington Station, three receptor grids were employed:

1. A 100-meter Cartesian receptor grid centered on the station and extending out 5 kilometers.
2. A 500-meter Cartesian receptor grid centered on the station and extending out 10 kilometers.
3. A 1,000-meter Cartesian receptor grid centered on the station and extending out 50 kilometers. 50 kilometers is the maximum distance accepted by USEPA for the use of the

AERMOD dispersion model.[15]

To reflect a representative inhalation level, a flagpole height of 1.5 meters was used for all modeled receptors. Although EPA has, in the past, expressed concern about using a elevated receptor height, it does not materially affect the outcome of the modeling.

Elevations for Receptor Grid #1 receptors were obtained from National Elevation Dataset (NED) GeoTiff data. GeoTiff is a binary file that includes data descriptors and geo-referencing information necessary for extracting terrain elevations. These elevations were extracted from 1 arc-second (30 meter) resolution NED files. The software program AERMAP v. 18081 is used for these tasks.

4.5 Meteorological Data

To ensure the accuracy of the modeling analysis, recent meteorological data for the 2017-19 period were prepared using the USEPA's program AERMET which creates the model-ready surface and profile data files required by AERMOD. Required data inputs to AERMET included surface meteorological measurements, twice-daily soundings of upper air measurements, and the micrometeorological parameters surface roughness, albedo, and Bowen ratio. One-minute ASOS data were available so USEPA methods were used to reduce calm and missing hours.[16] The USEPA software program AERMINUTE v. 15272 is used for these tasks.

This section discusses how the meteorological data was prepared for use in the 1-hour SO_2 NAAQS modeling analyses. The USEPA software program AERMET v. 19191 is used for these tasks.

4.5.1 Surface Meteorology

Surface meteorology was obtained for Amarillo International Airport located near the Harrington Station. Integrated Surface Hourly (ISH) data for the 2017-19 period were obtained from the National Climatic Data Center (NCDC). The ISH surface data was processed through AERMET Stage 1, which performs data extraction and quality control checks.

4.5.2 Upper Air Data

Upper-air data are collected by a "weather balloon" that is released twice per day at selected locations. As the balloon is released, it rises through the atmosphere, and radios the data back to the

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[15] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, Section A.1.(1), November 9, 2005.
[16] USEPA, Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards, Attachment 3, March 24, 2011, p. 19.

surface. The measuring and transmitting device is known as either a radiosonde, or rawindsonde. Data collected and radioed back include: air pressure, height, temperature, dew point, wind speed, and wind direction. The upper air data were processed through AERMET Stage 1, which performs data extraction and quality control checks.

For Harrington Station, the concurrent 2017-19 upper air data from twice-daily radiosonde measurements obtained at the most representative location were used. This location was the measurement station at the Amarillo International Airport. These data are in Forecast Systems Laboratory (FSL) format and were downloaded in ASCII text format from NOAA's FSL website.[17] All reporting levels were downloaded and processed with AERMET.

4.5.3 AERSURFACE

AERSURFACE is a program that extracts surface roughness, albedo, and daytime Bowen ratio for an area surrounding a given location. AERSURFACE uses land use and land cover (LULC) data in the U.S. Geological Survey's National Land Cover Dataset to extract the necessary micrometeorological data. The current version of AERSURFACE v. 20060. It was used with National Land Cover Database for 2016 including land cover, canopy and impervious surfaces.

AERSURFACE was used to develop surface roughness, albedo, and daytime Bowen ratio values in a region surrounding the meteorological data collection site. AERSURFACE was used to develop surface roughness in a one-kilometer radius surrounding the data collection site. Bowen ratio and albedo were developed for a 10-kilometer by 10-kilometer area centered on the meteorological data collection site. These micrometeorological data were processed for seasonal periods using 30-degree sectors.

The meteorological data for each year were processed separately. This allowed the level of precipitation suitable for each year to be process by AERSURFACE. For the years processed, 2017, 2018 and 2019, the levels of precipitation were Wet, Dry and Wet, respectively. These were based on annual levels for the Amarillo International Airport.18 For all years, winter months were assumed to have no continuous snow cover.

4.5.4 Data Review

Missing meteorological data were not filled as the data file met USEPA's 90% data completeness requirement.[19] The AERMOD output file shows there were 1.1% missing data across the entire

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[17] Available at: http://esrl.noaa.gov/raobs/
[18] https://www.ncdc.noaa.gov/cdo-web/search
[19] USEPA, Meteorological Monitoring Guidance for Regulatory Modeling Applications, EPA-454/R-99-05, February 2000, Section 5.3.2, pp. 5-4 to 5-5.

2017-19 meteorological period.

To confirm the representativeness of the airport meteorological data, the surface characteristics of the airport data collection site and the modeled source location were compared. Since the Longview Texas Regional Airport is located close to Harrington Station, this meteorological data set was considered appropriate for this modeling analysis. [20] Additionally, this weather station provided high quality surface measurements, and had similar land use, surface characteristics, terrain features and climate.

Finally, TCEQ provides pre-processed meteorological data suitable for modeling for each county.[21] For Potter County, TCEQ recommends using data from the same surface and upper air stations used for this modeling analysis. The TCEQ data were not used for this project because TCEQ staff recommended processing the three years required for this project with AERMET.

5. Background SO_2 Concentrations

Background concentrations were determined consistent with USEPA's Modeling Guidance for SO_2 NAAQS Designations.[22, 23] To preserve the form of the 1-hour SO_2 standard, based on the 99th percentile of the annual distribution of daily maximum 1-hour concentrations averaged across the number of years modeled, the background fourth-highest daily maximum 1-hour SO_2 concentration was added to the modeled fourth-highest daily maximum 1-hour SO_2 concentration.[24]

The background SO_2 concentration used for the modeling analysis is the lowest design value for the 2017-19 period from all ambient monitors in Texas. This is the concentration of 1.8 ppb or 4.7 $\mu g/m^3$ which was measured at the Milam County monitor identified as the Rockdale John D. Harper Road Monitor located at 3990 John D Harper Road (Coordinates: 30.569534, -97.076294). It has USEPA ID #483311075.

6. Reporting

All files from the programs used for this modeling analysis are available to regulatory agencies. These include analyses prepared with AERSURFACE, AERMET, AERMAP, and AERMOD.

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[20] USEPA, AERMOD Implementation Guide, March 19, 2009, pp. 3-4.
[21] Texas Commission on Environmental Quality, Meteorological Data for Air Dispersion Modeling, https://www.tceq.texas.gov/permitting/air/nav/datasets.html Last updated April 29, 2020.
[22] USEPA, Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards, Attachment 3, March 24, 2011, pp. 20-23.
[23] USEPA, SO_2 NAAQS Designations Modeling Technical Assistance Document, August 2016, DRAFT.
[24] USEPA, Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard, August 23, 2010, p. 3.

Commonwealth LNG

Cameron Parish, Louisiana

Evaluation of Compliance with the 1-hour NAAQS for NO_2

May 24, 2022

Conducted by:

Steven Klafka, P.E., BCEE

Wingra Engineering, S.C.

Madison, Wisconsin

1. Introduction

Wingra Engineering, S.C. was hired by the Sierra Club to conduct an air modeling impact analysis to determine if large emission sources were causing exceedences of the 1-hour nitrogen dioxide (NO_2) national ambient air quality standard (NAAQS) in Cameron Parish, Louisiana. This document describes the procedures and results for the evaluation of 926 individual sources of NO_2 located in Cameron Parish and adjacent parishes and county in Louisiana and Texas.

The dispersion modeling analysis predicted ambient air concentrations for comparison with the 1-hour NO_2 NAAQS. The modeling was performed using the most recent version of AERMOD, AERMET, and AERMINUTE, with data provided to the Sierra Club by regulatory air agencies and through other publicly-available sources. The analysis was conducted following all available USEPA guidance for evaluating source impacts on attainment of the 1-hour NO_2 NAAQS via aerial dispersion modeling. This guidance included: the AERMOD Implementation Guide; modeling guidance promulgated by USEPA in Appendix W to 40 CFR Part 51; USEPA's September 30, 2014 memorandum, Clarification on the Use of AERMOD Dispersion Modeling for Demonstrating Compliance with the NO_2 National Ambient Air Quality Standard [1], USEPA's March 1, 2011 memorandum, Additional Clarification Regarding Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 NAAQS[2], and USEPA's June 28, 2010 memorandum, Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 NAAQS[3].

To comply with the Prevention of Significant Deterioration (PSD) requirements of the Clean Air Act, TRC Environmental Corporation (TRC) conducted an air quality modeling study on behalf of the Commonwealth LNG liquefied natural gas facility in Cameron Parish, Louisiana.[4] Commonwealth LNG submitted that modeling report to the Louisiana Department of Environmental Quality (DEQ) in October 2021 as part of the PSD permit application. The enclosed modeling analysis updates that evaluation, and provides additional comments.

TRC conducted an analysis to determine if regional sources, including the proposed Commonwealth LNG project, complied with the 1-hour NAAQS for NO_2. The results of the 1-hour NO2 cumulative modeling results were presented in Table 6.2 of the TRC report. The analysis predicted exceedances of the NAAQS. TRC concluded that the Commonwealth project did not contribute significantly to the predicted NAAQS exceedences, so conducted no further evaluation of the predicted NAAQS exceedences.

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[1] https://www.epa.gov/sites/production/files/2020-10/documents/no2_clarification_memo-20140930.pdf
[2] https://www.epa.gov/sites/production/files/2020-10/documents/additional_clarifications_appendixw_hourly-no2-naaqs_final_03-01-2011.pdf
[3] https://www.epa.gov/sites/production/files/2020-10/documents/clarificationmemo_appendixw_hourly-no2-naaqs_final_06-28-2010.pdf
[4] TRC Environmental Corporation, Class II Modeling Report in Support of Part 70 (Title V) Operating Permit and Prevention of Significant Deterioration Permit for Commonwealth LNG, Cameron, Louisiana, October 2021.

It should be noted that the TRC analysis for NAAQS compliance only considered receptor locations where the Commonwealth project was predicted to have a significant impact. Therefore, all locations where violations of the NAAQS may occur would not have been identified.

The enclosed modeling analysis used the same input files as the TRC analysis and were obtained from DEQ. It utilized the same information as accepted by DEQ for the PSD permit application for the Commonwealth LNG project. This information is as follows:

1. Latest version of AERMOD (v21112) with the regulatory default option in the rural mode;

2. Surface and upper-air meteorological data collected at the National Weather Service (NWS) station at the Lake Charles Regional Airport in Lake Charles, LA for the period 2015-2019 to generate AERMOD-ready meteorological data. These data were processed using the most recent version of AERMET (v21112);

3. A fixed background NO_2 concentration was obtained from the ambient monitoring station (Monitor ID 48-361-1001) located in West Orange, Texas.

4. Tier-2 Ambient Ratio Method (ARM2) method to predict the conversion of NO_x to NO_2; and,

5. Regional source inventory of 926 sources of NO_x emissions including the proposed Commonwealth LNG project.

The purpose of this new analysis was to determine the full extent of NAAQS exceedences in Cameron Parish as well as adjacent parishes and counties. For this reason, two change were made to the original modeling files:

1) the modeling domain was extended to the full 50-kilometer distance approved by USEPA for use by AERMOD. This new receptor grid was centered Commonwealth LNG facility.

2) the TRC modeling analysis removed approximately 400 acres of land around Commonwealth LNG from consideration for compliance with the NAAQS. While this land may be owned by the company, there was no description of a fence or other measures that would be employed to preclude public access to the property. Therefore, the updated modeling analysis included receptors on this property.

2. Modeling Results

2.1 1-hour NO_2 SIL and NAAQS

The significant impact level or SIL for NO_2 for the 1-hour averaging period is 7.5 µg/m^3. This is based on the average of the maximum 1-hour concentrations for each year using five years of meteorology.

The 1-hour NO_2 NAAQS takes the form of a three-year average of the 98th percentile of the annual distribution of daily maximum 1-hour concentrations, which cannot exceed 100 parts per billion (ppb).[5] Compliance with this standard was verified using USEPA's AERMOD air dispersion model, which produces air concentrations in units of µg/m^3. The 1-hour NO_2 NAAQS of 100 ppb equals 188 µg/m^3, and this is the value used for determining whether modeled impacts exceed the NAAQS. The 98th percentile of the annual distribution of daily maximum 1-hour concentrations corresponds to the eighth-highest value at each receptor for a given year.

2.2 Commonwealth LNG Facility and Comparison with the Significant Impact Level

The 1-hour average SIL for NO_2 is 7.5 µg/m^3. If emissions from the Commonwealth LNG facility are predicted to exceed the SIL, the facility is obligated to determine if its emissions combined with those from other regional sources comply with the NAAQS for NO_2. The 2021 analysis by TRC determined that the Commonwealth LNG facility exceeded the SIL so included a NAAQS compliance analysis.

The modeling for comparison with the SIL was updated for the enclosed analysis. The Commonwealth LNG facility was predicted to have a maximum 1-hour average impact of 37.7 µg/m^3. Since this exceeds the SIL, a NAAQS compliance analysis would be required.

Figure 1 shows the extent in which the Commonwealth LNG facility exceeds the 1-hour SIL of 7.5 µg/m^3 for NO_2. The SIL was predicted to be exceeded in both Cameron and Calcasieu Parishes. The maximum distance to a SIL exceedance is 40 km.

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[5] USEPA, Additional Clarification Regarding Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 NAAQS, March 2, 2011.

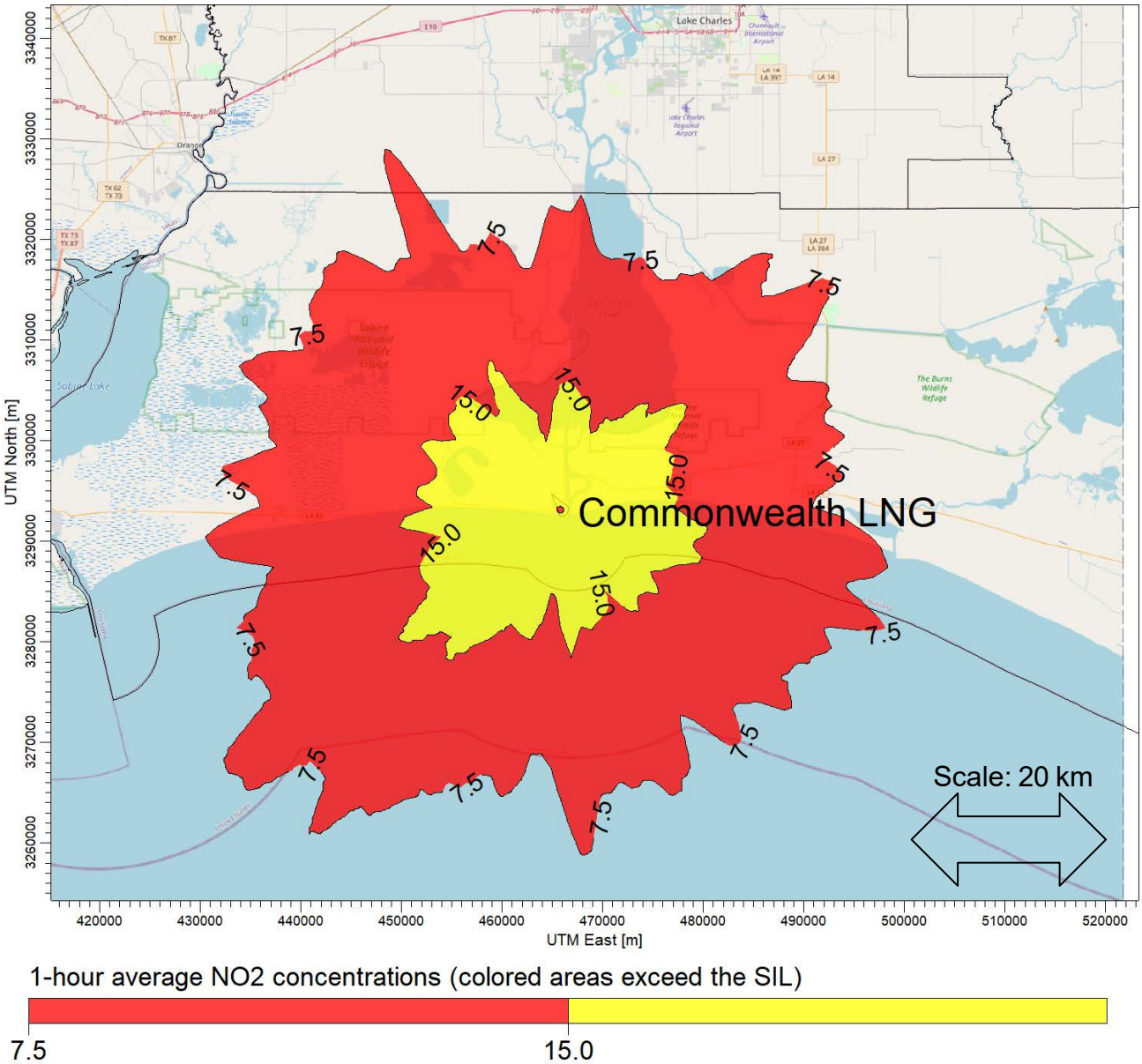

Figure 1 – Exceedences of the 1-hour Average NO_2 SIL by Commonwealth LNG

Table 1 provides the highest Cameron LNG concentrations which exceed the 1-hour SIL. These are the 5-year average of the 1-hour maximum concentrations for unique locations and hours.

Table 1 - Commonwealth LNG Maximum Impacts Exceeding 1-hour Average SIL of 7.5 µg/m³

X	Y	Average	NO_2 Concentration (µg/m³)
463766	3293009	1-HR	37.7
463666	3293009	1-HR	37.6
463766	3293109	1-HR	37.6
463866	3293009	1-HR	37.6
463866	3293109	1-HR	37.6
463666	3293109	1-HR	37.5
463566	3293009	1-HR	37.4
463966	3293109	1-HR	37.4
463966	3293009	1-HR	37.4
463566	3293109	1-HR	37.4

2.3 Compliance with the 1-hour NO_2 NAAQS

The TRC modeling analysis predicted a maximum impact of 229 µg/m³ including background. This exceeded the NAAQS of 188 µg/m³. The greatest distance to receptors exceeding the NAAQS was 39 kilometers.

After expanding the size of the receptor grid and number of receptors, the updated modeling analysis predicted a maximum impact of 1,537 µg/m³ including background. This again exceeded the NAAQS of 188 µg/m³. The greatest length of the area exceeding the NAAQS was 50 kilometers, the full extent of the modeling domain. NAAQS exceedences were predicted to occur in Cameron and Calcasieu Parishes in Louisiana, and in Orange and Jefferson Counties in Texas.

Figure 2 shows the full extent of predicted exceedances of the 1-hour NAAQS for NO_2. Boundaries of parishes in Louisiana and counties in Texas are show in black.

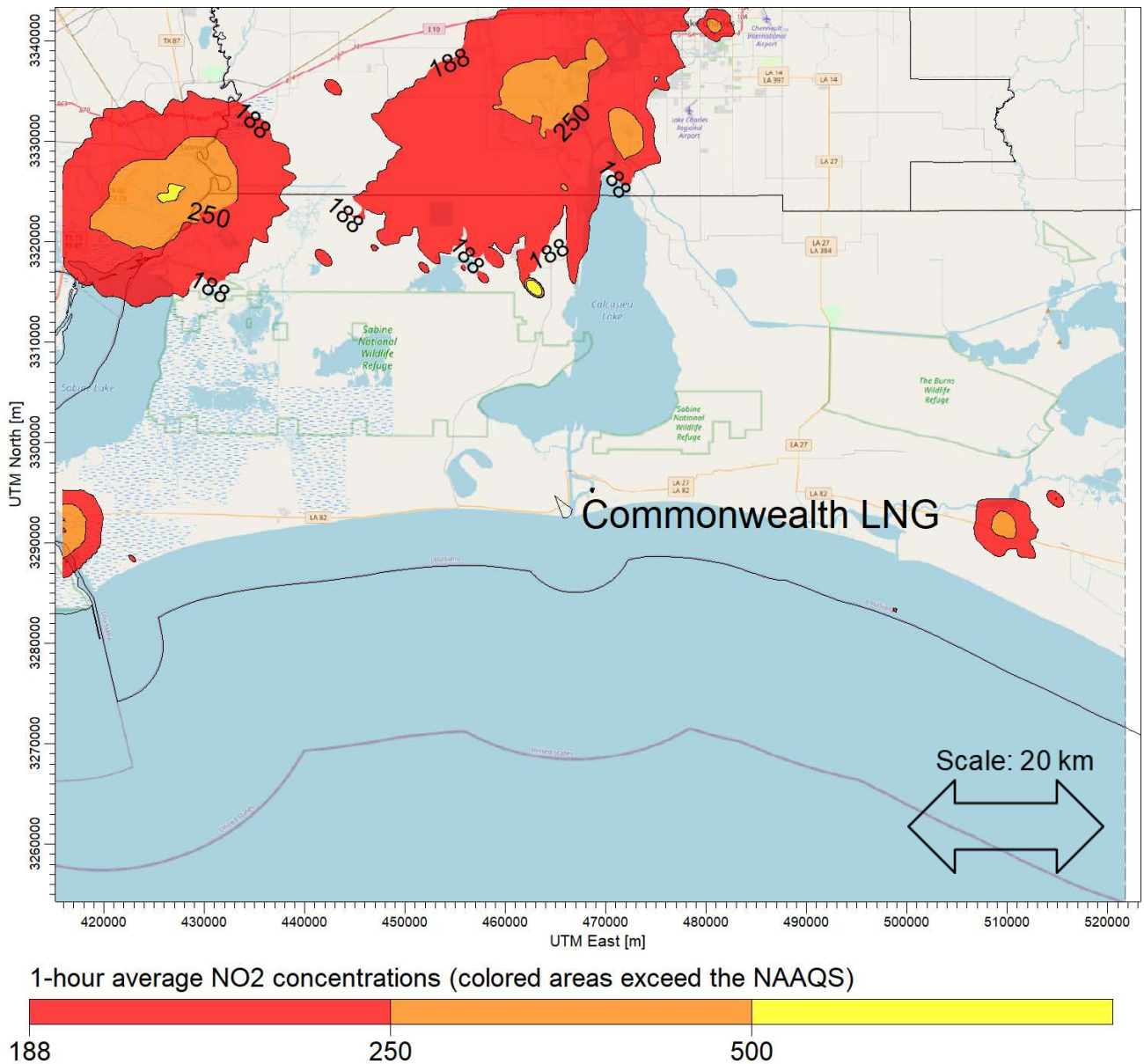

Figure 2 – NAAQS Exceedences by Commonwealth LNG and Regional Sources

2.4 Comparison of Modeling Results and Ambient Monitoring Sites

In the modeling domain there are two existing ambient monitoring sites for NO_2. These are the Westlake Site (Site ID # 22-019-0008) in Louisiana and West Orange Site (Site ID # 48-361-1001) in Texas.

Figure 3 shows the location of the two existing monitoring sites for NO_2 in relation to the areas where the updated modeling study predicted exceedences of the 1-hour NAAQS. The existing monitoring site in Louisiana is not located in the areas with predicted exceedences of the NAAQS. Additional monitors are needed to determine compliance with the NAAQS in these areas predicted to exceed the NAAQS.

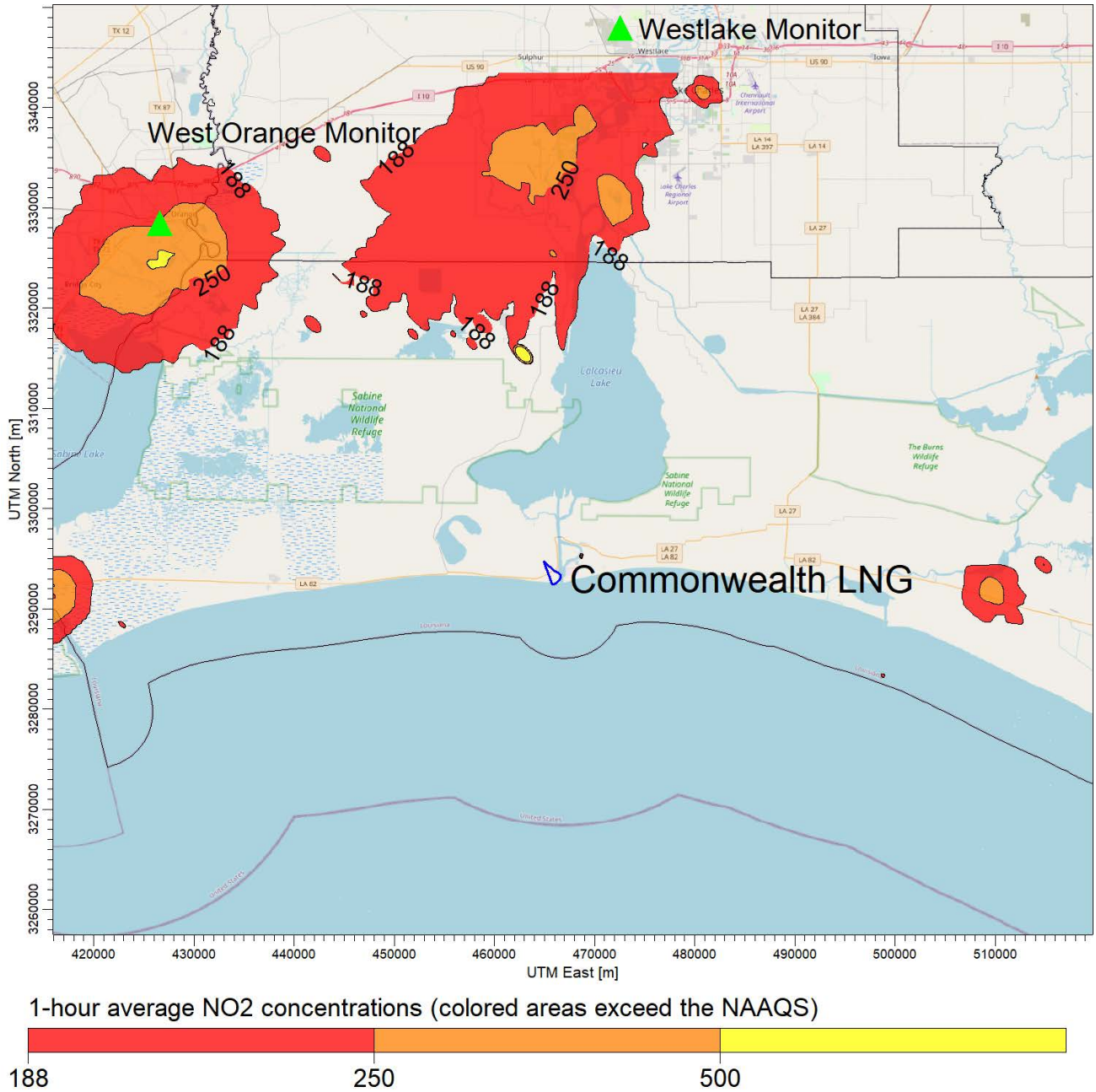

Figure 3 - NO_2 Monitor Locations and Predicted NAAQS Exceedences

Figure 4 shows the location of the two existing monitoring sites for NO_2 in relation to the areas where the updated modeling study predicted exceedences of the 1-hour NAAQS. To evaluate the environmental justice (EJ) impacts of the NAAQS exceedences, the base map for this figure provides the percent people of color in each census tract. The gradations of people of color in the population of each census tract are 0-20% (lightest shade), 20-40%, 40-60%, 60-80%, 80-100% (darkest shade). The existing monitor site in Louisiana is not located in census tracts with a higher percentage of people of color. Additional monitors are needed to determine compliance with the NAAQS in these areas and evaluate EJ impacts.

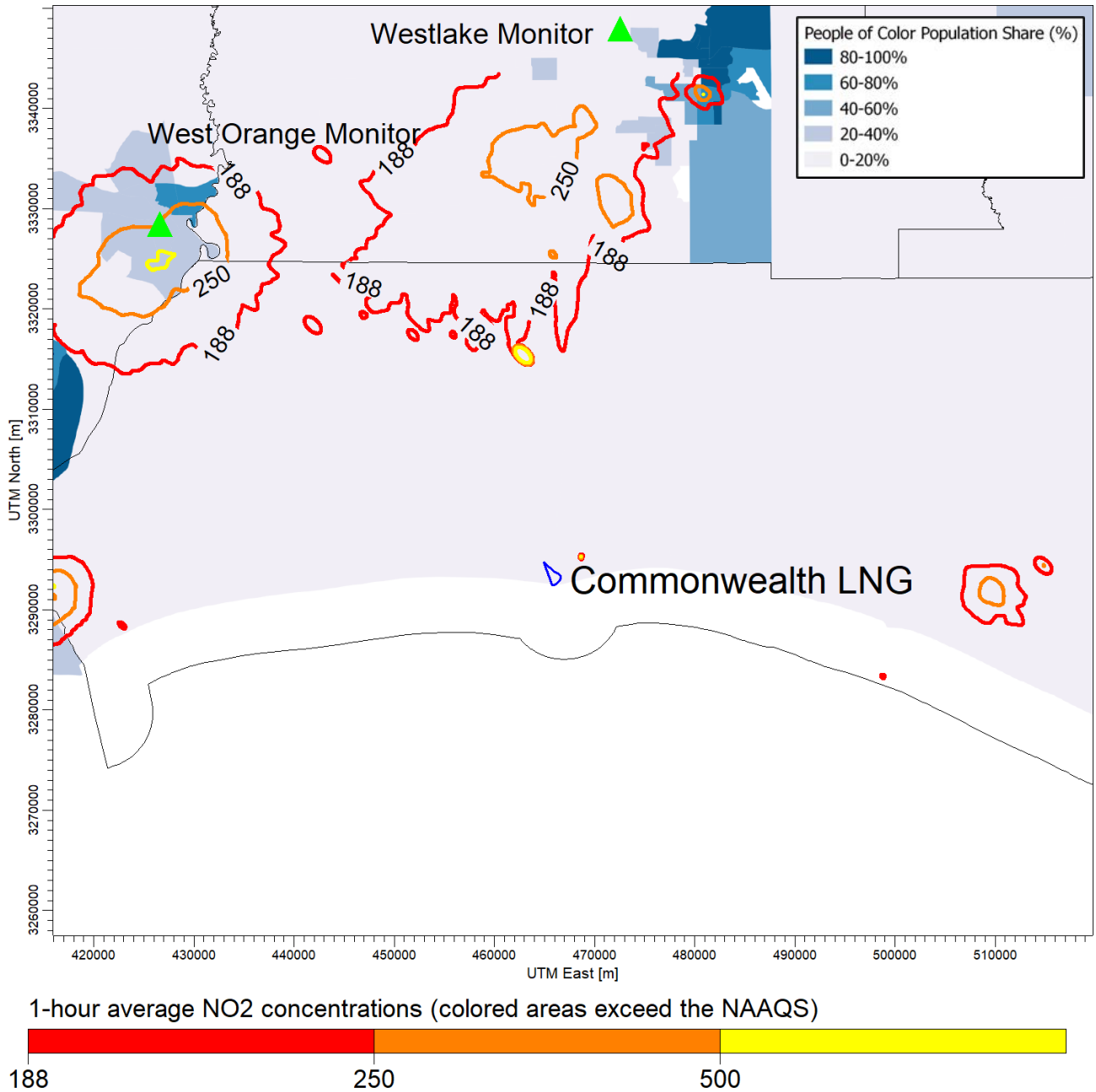

Figure 4 – NO_2 Monitor Locations, Predicted NAAQS Exceedences & People of Color

Figure 5 shows the location of the two existing monitoring sites for NO_2 in relation to the areas where the updated modeling study predicted exceedences of the 1-hour NAAQS. To evaluate the EJ impacts of the NAAQS exceedences, the base map for this figure provides the income levels of residents in each census tract in increments of $25,000 per year. Existing monitor sites are not located in lowest income census tracts. Additional monitors are needed to determine compliance with the NAAQS in the lowest income areas and evaluate EJ impacts.

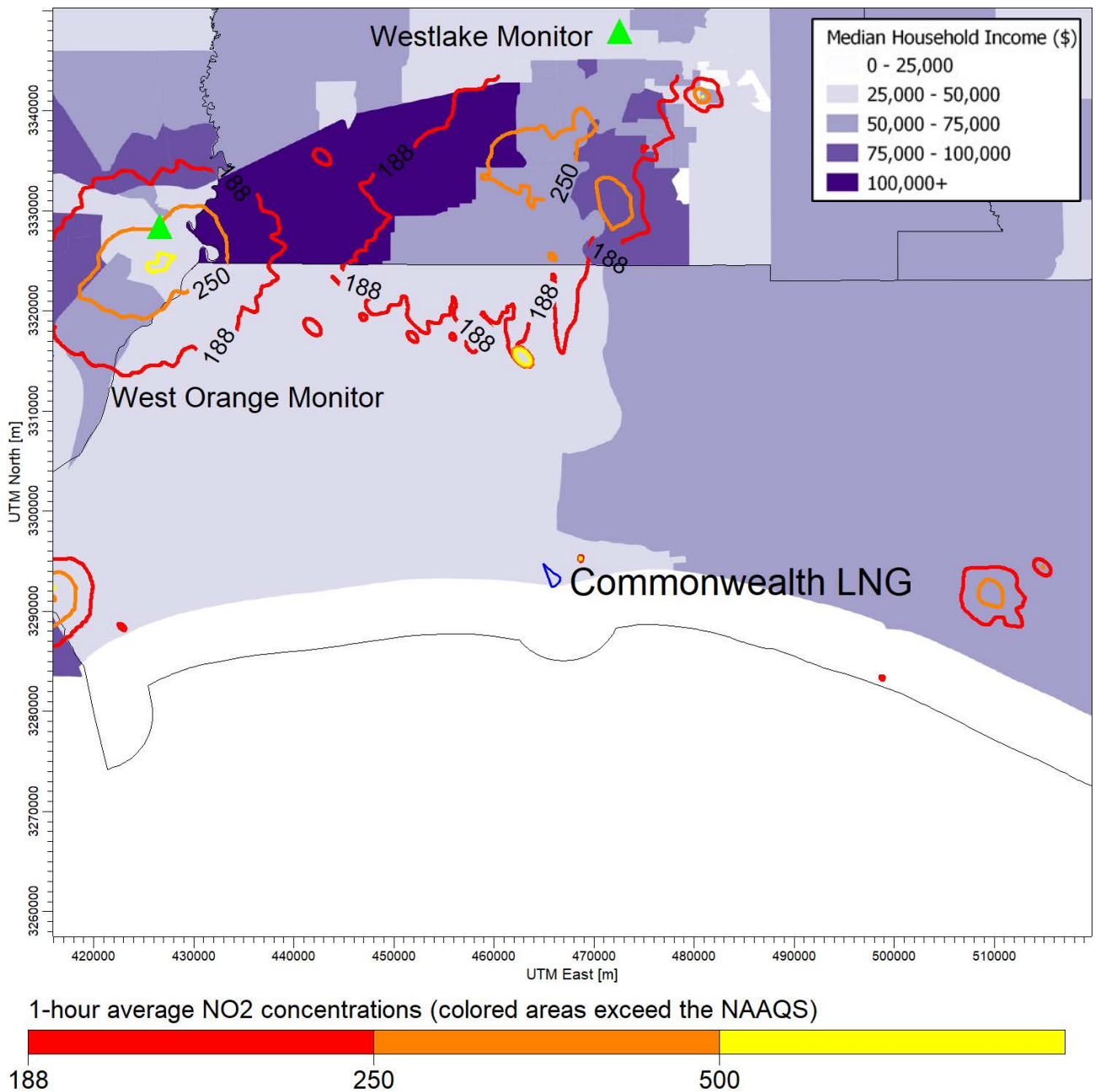

Figure 5 - NO_2 Monitor Locations, Predicted NAAQS Exceedences & Household Income Levels

2.5 Conservative Modeling Assumptions

The modeling results presented in the report may under-estimate NO2 concentrations for the following reasons:

1) The inventory of regional emission sources included substitutions for rates and stack parameters if these were missing or considered inappropriate. These substitutions may underestimate the air quality impact of these sources.

2) The 50-kilometer receptor grid was centered on the Commonwealth LNG facility. Emission sources are located throughout this grid and may individually be culpable for NAAQS exceedences. The receptor grid would need to be centered on each source to fully determine if the source is capable of exceeding the NAAQS.

3) The downwash effect of buildings and structures was evaluated only for the proposed Commonwealth LNG project. It was not considered for the other regional sources. The consideration of downwash may increase in the predicted impacts of the regional sources.

3. Modeling Methodology

3.1 Air Dispersion Model

The modeling analysis used the most recent version of USEPA's AERMOD program, v. 21112. AERMOD, as available from the Support Center for Regulatory Atmospheric Modeling (SCRAM) website, was used in conjunction with a third-party modeling software program, *AERMOD View*, sold by Lakes Environmental Software.

3.2 Control Options

The AERMOD model was run with the following control options:

- 1-hour average air concentrations
- Regulatory defaults

In its October 2021 modeling report, TRC conducted an evaluation to determine if the modeled facility was located in a rural or urban setting using USEPA's methodology outlined in Section 7.2.3 of the Guideline on Air Quality Models.[6] For urban sources, the URBANOPT option is used in conjunction with the urban population from an appropriate nearby city and a default surface roughness of 1.0 meter. Methods described in Section 4.1 were used to determine whether rural or urban dispersion coefficients were appropriate for the modeling analysis.

3.3 Output Options

The AERMOD analysis was based on recent meteorological data. The modeling analysis was conducted using sequential meteorological data from the 2015-19 period. Consistent with USEPA's guidance for evaluation compliance with the NO_2 NAAQS, AERMOD was used to provide a table of eighth-high 1-hour NO_2 impacts concentrations consistent with the form of the 1-hour SO_2 NAAQS.

Please refer to Section 2.0 for the modeling results.

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[6] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, November 9, 2005.

4. Model Inputs

4.1 Geographical Inputs

The air dispersion modeling analysis used a coordinate system for identifying the geographical location of emission sources and receptors. These geographical locations are used to determine local characteristics (such as land use and elevation), and also to ascertain source to receptor distances and relationships.

The Universal Transverse Mercator (UTM) NAD83 coordinate system was used for identifying the easting (x) and northing (y) coordinates of the modeled sources and receptors. Commonwealth LNG and Cameron Parish are located in UTM Zone 15.

The facility was evaluated to determine if it should be modeled using the rural or urban dispersion coefficient option in AERMOD. A GIS was used to determine whether rural or urban dispersion coefficients apply to a site. Land use within a three-kilometer radius circle surrounding the facility was considered. USEPA guidance states that urban dispersion coefficients are used if more than 50% of the area within 3 kilometers has urban land uses. Otherwise, rural dispersion coefficients are appropriate.[7]

The October 2021 modeling report, TRC evaluated the use of urban vs rural dispersion coefficients. It concluded that rural coefficients were appropriate. A similar approach with rural dispersion coefficients was used for the analysis presented in this report.

4.2 Emission Rates and Source Parameters

The emissions and stack parameters for the 926 sources included in the modeling analysis are summarized in the October 2021 modeling report submitted by TRC to DEQ. Non-Commonwealth source information was obtained by TRC from the DEQ Emissions Reporting and Inventory Center.[8] Additionally, stack parameters for major sources in Texas were obtained by TRC through a Public Information Request to the Texas Commission of Environmental Quality. Procedures for assembling the regional source inventory, as well as all modeling procedures, were described in the October 2021 modeling report submitted by TRC to DEQ.

4.3 Downwash

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[7] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, November 9, 2005, Section 7.2.3.

[8] https://business.deq.louisiana.gov/Eric/EricHome

The downwash effect of buildings and structures was considered for only the proposed Commonwealth LNG project. Downwash effects for other regional sources was not considered.

4.4 Receptors

Three receptor grids were employed:

1. A 100-meter Cartesian receptor grid centered on Commonwealth LNG and extending out 5 kilometers.
2. A 500-meter Cartesian receptor grid centered on Commonwealth LNG and extending out 10 kilometers.
3. A 1,000-meter Cartesian receptor grid centered on Commonwealth LNG and extending out 50 kilometers. 50 kilometers is the maximum distance accepted by USEPA for the use of the AERMOD dispersion model.[9]

A flagpole height of 1.5 meters was <u>not</u> used for all modeled receptors.

Elevations for receptors were obtained from National Elevation Dataset (NED) GeoTiff data. GeoTiff is a binary file that includes data descriptors and geo-referencing information necessary for extracting terrain elevations. These elevations were extracted from 1 arc-second (30 meter) resolution NED files. The USEPA software program AERMAP v. 18081 is used for these tasks.

4.5 Meteorological Data

The same meteorological data used for the October 2021 TRC modeling analysis was used for the updated modeling analysis presented in this report. Surface and upper-air meteorological data collected at the National Weather Service (NWS) station at the Lake Charles Regional Airport in Lake Charles, LA for the period 2015-2019 to generate AERMOD-ready meteorological data. These data were processed using the most recent version of AERMET (v. 21112).

Procedures used for processing of the meteorological data would have been evaluated and approved by DEQ as part of the PSD air permit application review process.

4.5.1 Surface Meteorology

Surface meteorology was obtained for Lake Charles Regional Airport in Lake Charles located approximately 41 km northeast the Commonwealth LNG project.

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[9] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, Section A.1.(1), November 9, 2005.

4.5.2 Upper Air Data

Upper-air data are collected by a "weather balloon" that is released twice per day at selected locations. As the balloon is released, it rises through the atmosphere, and radios the data back to the surface. The measuring and transmitting device is known as either a radiosonde, or rawindsonde. Data collected and radioed back include: air pressure, height, temperature, dew point, wind speed, and wind direction. The upper air data are processed through AERMET Stage 1, which performs data extraction and quality control checks.

Concurrent 2015-2019 upper air data from twice-daily radiosonde measurements obtained at the most representative location were used. This location was the Lake Charles Regional Airport measurement station.

4.5.3 AERSURFACE

AERSURFACE is a program that extracts surface roughness, albedo, and daytime Bowen ratio for an area surrounding a given location. AERSURFACE uses land use and land cover (LULC) data in the U.S. Geological Survey's National Land Cover Dataset to extract the necessary micrometeorological data. The current version of AERSURFACE v. 20060. It was used by TRC with National Land Cover Database for 2016 including land cover, canopy and impervious surfaces.

4.5.4 Data Review

Missing meteorological data were not filled as the data file met USEPA's 90% data completeness requirement.[10] The AERMOD output file shows there were 1.0% missing data across the entire 2015-19 meteorological period.

5. Background NO_2 Concentrations

A fixed 1-hour average background NO_2 concentration was obtained from the ambient monitoring station (Monitor ID 48-361-1001) located in West Orange, Texas.

6. Reporting

All files from the programs used for this modeling analysis are available to regulatory agencies.

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[10] USEPA, Meteorological Monitoring Guidance for Regulatory Modeling Applications, EPA-454/R-99-05, February 2000, Section 5.3.2, pp. 5-4 to 5-5.

Martin Lake Steam Electric Station

Tatum, Texas

Evaluation of Compliance with the 1-hour NAAQS for SO_2

September 23, 2019

Conducted by:

Steven Klafka, P.E., BCEE

Wingra Engineering, S.C.

Madison, Wisconsin

1. Introduction

Wingra Engineering, S.C. was hired by the Sierra Club to conduct an air modeling impact analysis to identify and confirm that certain large emission sources are likely causing exceedences of the 1-hour sulfur dioxide (SO_2) national ambient air quality standard (NAAQS). This document describes the results and procedures for an updated evaluation of the Martin Lake Steam Electric Station located in Tatum, Texas. This analysis supplements a March 31, 2016 evaluation prepared on behalf of the Sierra Club. Using the most recent version of AERMOD then available, and based on measured actual hourly emissions and variable exit velocities from the 2013-15 period, and a conservative background concentration, that modeling estimated that the Martin Lake Generating Station caused SO_2 concentrations which exceed the 1-hour NAAQS, with the three-year average of the 99th percentile 1-hour daily maximum impact of 249.3 $\mu g/m^3$ in ambient areas outside the facility. Assuming no background contribution from any other source, the model predicted Martin Lake, by itself, caused ambient air quality levels exceeding the NAAQS—that is, a three-year average of the 99th percentile 1-hour daily maximum impact of 244.1 $\mu g/m.^3$

To address recent comments the U.S. EPA provided on that March 31, 2016 Modeling Report,[1] this supplemental analysis incorporates the following changes and updates:

a) The most current versions of the AERMOD modeling system v. 18081 were used for the analysis. The March 31, 2016 Modeling Report used the most recently available version of AERMOD at the time.

b) Actual hourly emission rates were obtained from EPA's Air Markets Program Database for 2016 through 2018. The March 31, 2016 Modeling Report used the most recent three years of actual emissions data, which, at the time, was 2013 through 2015.

c) Modeling inputs were obtained from the March 2016 report, *Characterization of 1-Hour SO_2 Concentrations in the Vicinity of the Martin Lake Steam Electric Station*, prepared by AECOM for Luminant Generation Company LLC, the owner and operator of the Martin Lake power plant. Based on Luminant's data, this report includes the following updated or refined inputs:

    i. <u>Stack location, height, and diameters.</u> In the March 31, 2016 Modeling Report, stack locations were obtained from facility permits and prior modeling files provided by the Texas Commission on Environmental Quality. The stack

[1] *See Error Correction of the Area Designations for the 2010 1-Hour Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard (NAAQS) in Freestone and Anderson Counties, Rusk and Panola Counties, and Titus County in Texas,* 84 Fed. Reg. 43,757 (Aug. 22, 2019), EPA Docket No. EPA-HQ-OAR-2014-0464.

locations and diameters were then verified using aerial photographs. This report uses stack location, height, and diameters from AECOM's analysis.

ii. Specific building locations and dimensions. In the March 31, 2016 Modeling Report, no building dimensions were publicly available, so downwash was not included. The availability of the building locations and dimensions, taken from AECOM's report allowed for evaluation of aerodynamic downwash. As shown below, these inputs have negligible impacts on modeled design values.

iii. Updated hourly emission rates, stack temperatures and stack exit velocities. The March 31, 2016 Modeling Report used actual hourly emissions, and estimated variable hourly exit velocities derived from flow rate and heat input information provided by USEPA Clearinghouse and CAMD databases. Because stack temperature data was not publicly available, the March 31, 2016 Modeling Report used a constant temperature obtained from a prior modeling study for regional haze. These input parameters were updated based on actual measurements.

iv. Hourly CEM Measurements. For this report, the actual hourly emission rates, stack temperatures and stack exit velocities for the 2013-2015 period were obtained from the station continuous emissions monitoring (CEM) system, as reported by AECOM. This report used AECOM's hourly CEM temperature measurements during 2013-15 to derive an average stack outlet temperature for each of the three units. The report then assumes this average temperature for modeling the 2016-18 period. These average temperatures were 352, 358 and 355 °K, respectively. These were significantly less than the 449 °K temperature conservatively used for the 2016 Sierra Club report.

v. Derivation of Exit Velocity Based on CEM Measurements. The hourly CEM measurements for the 2016-18 are not publicly available. Exit velocities for 2013-15 from the CEM measurements were combined with concurrent heat input obtained from the USEPA Air Markets Program Data to derive a relationship between exhaust gas flow rate and heat input for the three units.[2] This value of 16,359 standard cubic feet per mmbtu heat input was applied to the hourly heat input for each unit from the USEPA Air Markets Program Data during the 2016-18 period to determine hourly exit velocities during 2016-18.

[2] https://ampd.epa.gov/ampd/

vi. As reflected below, the use of Luminant's actual variable exit velocity and temperature (as provided by AECOM) demonstrate significant increases in total concentration. In other words, the lower actual stack temperatures and exit velocities result in decreased dispersion and higher modeled impacts.

d) Updated meteorological data for the 2013 to 2018 period were obtained from the surface station at the Longview Texas Regional Airport.

e) To address prior concerns about consideration of recent land use surrounding the airport, the beta version of AERSURFACE v. 19039 was used with National Land Cover Database for 2011 including land cover, canopy and impervious surfaces. In Section 2.3 it is shown that use of the 2011, rather than the original 1992 land use files, slightly reduced the predicted impacts.

f) The analysis was conducted using two modeling receptors grids. Receptor Grid #1 which included all locations around the Martin Lake Generating Station accessible by the general public. Receptor Grid #2 was obtained from the 2016 modeling analysis conducted by AECOM on behalf of Luminant and excludes locations that Luminant assumed to be unavailable for placement of an ambient monitor. The results show maximum modeled concentrations are not on Luminant property. Nevertheless, the report includes a separate receptor grid to address EPA's concern about modeling locations outside the facility fence line or on publicly-accessible land.

g) The background concentration was updated to the lowest value measured at ambient monitors in the State of Texas, for the 2016-2018 period. This was the monitor located in Travis County. This background input is likely conservative and underestimates total concentrations; in any event, the tables below reflect impacts without any background concentrations, making clear that Martin Lake, by itself, causes emissions that exceed 196.2 $\mu g/m^3$.

h) To address EPA's concerns regarding the March 31, 2016 Modeling Report's use of a 1.5 meter flagpole receptor height to reflect a representative inhalation level, this report does not use an elevated flagpole height.

i) To address EPA's concerns about the size of the receptor grid in Sierra Club's March 31, 2016 Modeling Report, this report uses a 25 kilometer grid.[3] The use of different sized

[3] The March 31, 2016 Modeling Report used a receptor grid extending out 50 kilometers, which is the maximum distance accepted by USEPA for the use of the AERMOD dispersion model. USEPA, Revision to the Guideline on Air

receptor grids is irrelevant because, as the modeling demonstrates, all of the maximum impacts are well within 25 kilometers of the plant.

j) Updated modeling results were obtained for four 3-year periods: 2013-2015, 2014-2016, 2015-2017 and 2016-2018.

The dispersion modeling analysis predicted ambient air concentrations for comparison with the 1-hour SO_2 NAAQS. The modeling was performed using the most recent version of AERMOD, AERMET, and AERMINUTE, with data provided to the Sierra Club by regulatory air agencies and through other publicly-available sources as documented below. The analysis was conducted in adherence to all available USEPA guidance for evaluating source impacts on attainment of the 1-hour SO_2 NAAQS via aerial dispersion modeling, including the AERMOD Implementation Guide; USEPA's Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard, August 23, 2010; modeling guidance promulgated by USEPA in Appendix W to 40 CFR Part 51; USEPA's March 2011 Modeling Guidance for SO_2 NAAQS Designations;[4] and, USEPA's August 2016 SO_2 NAAQS Designations Technical Assistance Document.[5]

Based on measured actual hourly emissions, stack temperatures, and variable stack velocities the Martin Lake Generating Station is estimated to cause SO_2 concentrations which exceed the 1-hour NAAQS under all scenarios.

2. Compliance with the 1-hour SO_2 NAAQS

2.1 1-hour SO_2 NAAQS

The 1-hour SO_2 NAAQS takes the form of a three-year average of the 99th percentile of the annual distribution of daily maximum 1-hour concentrations, which cannot exceed 75 parts per billion (ppb).[6] Compliance with this standard was verified using USEPA's AERMOD air dispersion model, which produces air concentrations in units of $\mu g/m^3$. The 1-hour SO_2 NAAQS of 75 ppb equals 196.2 $\mu g/m^3$, and this is the value used for determining whether modeled impacts exceed the NAAQS.[7] The 99th percentile of the annual distribution of daily maximum 1-hour concentrations

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Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, Section A.1.(1), November 9, 2005.

[4] http://www.epa.gov/scram001/so2_modeling_guidance.htm

[5] https://www.epa.gov/sites/production/files/2016-06/documents/so2modelingtad.pdf

[6] USEPA, Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard, August 23, 2010.

[7] The ppb to $\mu g/m^3$ conversion is found in the source code to AERMOD v. 18081, subroutine Modules. The conversion calculation at 25 °C is 75/0.3823 = 196.2 $\mu g/m^3$. This conversion has been used for consistency with prior modeling reports. While USEPA has recently converted the 75 ppb standard to 196.5 $\mu g/m^3$, the alternative USEPA concentration does not change the conclusions of this report.

corresponds to the fourth-highest value at each receptor for a given year.

2.2 Modeling Results

Modeling results for Martin Lake Generating Station are summarized in Tables 1 and 2. Table 1 provides the modeling results using Receptor Grid #1. Table 2 provides the modeling results using Receptor Grid #2. Under either scenario, based on measured actual emissions, the Martin Lake Generating Station is estimated to create downwind SO_2 concentrations which exceed the 1-hour NAAQS in ambient areas outside the facility's property and on publicly-accessible lands and rights-of-way.

"Actual" represents the emissions which occurred during each hour of the 2013-18 period. The March 31, 2016 Modeling Report used actual hourly emissions and variable exit velocity, based on flow rate and heat input information provided by USEPA Clearinghouse and CAMD databases. Because stack temperature data was not publicly available, the March 31, 2016 Modeling Report conservatively estimated a constant temperature.

To address "limitations" EPA recently identified regarding the March 31, 2016 Modeling Report, this report uses refined hourly emissions, stack temperature and exit velocities. Actual emission measurements were taken from two sources:

- Hourly CEM measurements provided with supporting modeling files for the March 2016 report, *Characterization of 1-Hour SO_2 Concentrations in the Vicinity of the Martin Lake Steam Electric Station*, prepared by AECOM for Luminant Generation Company LLC.

- USEPA, *Clean Air Markets Program Data (CAMD)*

Refined inputs were obtained from the March 2016 report, *Characterization of 1-Hour SO_2 Concentrations in the Vicinity of the Martin Lake Steam Electric Station*, prepared by AECOM for Luminant Generation Company LLC. This information was not publicly available for the previous March 31, 2016 Modeling Report conducted by Wingra Engineering. Based on the AECOM report, this report used the following updated inputs: 1) stack location, height, and diameter; 2) building locations and dimensions; and 3) hourly emission rates, stack temperatures and stack exit velocities for the 2013-15 period.

<u>1) Specific stack location, height, and diameters.</u>

In the March 31, 2016 Modeling Report, Stack locations were obtained from facility permits and prior modeling files provided by the Texas Commission on Environmental Quality. The stack locations and diameters were then verified using aerial photographs. This report uses <u>stack location,</u>

height, and diameters from AECOM's analysis. Any discrepancy has negligible impacts on modeled design values.

2) Building locations, dimensions, and downwash.

In the March 31, 2016 Modeling Report, no building dimensions were publicly available, so downwash was not included. The availability of specific building locations and dimensions, as provided by AECOM, allowed for evaluation of aerodynamic downwash. As shown below, however, downwash effects were insignificant.

3) Adjustments to hourly emission rates, stack temperatures and stack exit velocities.
As noted, the March 31, 2016 Modeling Report used actual hourly emissions and estimated variable hourly exit velocities based on flow rate and heat input information provided by USEPA Clearinghouse and CAMD databases. Because stack temperature data was not publicly available, the March 31, 2016 Modeling Report conservatively estimated a constant temperature.

For this supplemental report, the actual hourly emission rates, stack temperatures, and stack exit velocities for 2013-15, were derived from the station continuous emissions monitoring (CEM) system, as reported by AECOM, and from USEPA Clearinghouse and CAMD databases for the period of 2016-18

Actual hourly emissions. For the years 2013 through 2015, this report uses actual hourly CEM emission rates, as reported by AECOM. Because Sierra Club does not have access to subsequent year of Luminant's CEM data, actual hourly emissions were taken from USEPA's *Clean Air Markets Program Database*.[8]

Actual hourly temperatures. Similarly, for the years 2013 through 2015, this report used the actual hourly CEM temperature measurements from AECOM. Those CEM measurements were then used to derive an average stack outlet temperature for each of the three units, which was used for modeling the years 2016, 2017, and 2018. These temperatures were 352, 358 and 355 °K, respectively, which this report uses for the years 2016-18. These were significantly less than the 449 °K temperature used for the 2016 Sierra Club report.

Actual exit velocities. For the years 2013 through 2015, this report used the actual hourly CEM measurements of exit velocity, as reported by AECOM. To derive exit velocities for 2016 through 2018, the hourly CEM measurements of exit velocities for 2013-15 were combined with concurrent heat input obtained from the USEPA Air Markets Program Data to derive a relationship between exhaust gas flow rate and heat input for the three units. This value of 16,359 standard cubic feet per mmbtu heat input was applied to the hourly heat input for each unit during the 2016-18 period

[8] http://ampd.epa.gov/ampd/

obtained from the USEPA Air Markets Program Data to determine the hourly exit velocity. As reflected below, the use of Luminant's own actual emissions, temperature, and exit velocity data (as provided by AECOM for 2013-15 and applied to 2016-18 EPA CAMD data) demonstrate significant increases in total predicted SO_2 concentration. This is likely due to lower actual stack temperatures and exit velocities, which result in decreased dispersion and higher modeled impacts than the constant temperature used in the March 31, 2016 Modeling Report.

Air quality impacts in Texas are based on a background concentration of 7.8 µg/m^3. This is the 2016-18 design value for Austin, Texas—the lowest measured background concentration in the state.[9] This is the most recently available design value. *See* Section 5 for further discussion of the background concentrations used for this analysis.

As shown in Table 1, the use of refined actual hourly emission, temperature, exit velocity, and building downwash parameters (derived from AECOM's modeling files) for the 2013-15 period increases the total design value concentrations from Martin Lake from 244.1 to 393.8 µg/m^3 relative to Sierra Club's March 31, 2016 Modeling Report. This increase is likely due to the use of actual hourly stack temperatures and exit velocities based on the AECOM's reported CEM measurements from the Martin Lake station, instead of the values which were extrapolated from the USEPA Air Markets Program Data for the March 31, 2016 Modeling Report. The average temperatures for the 2013-15 period were calculated to be 352, 358 and 355 °K, respectively. These are significantly less than the 449 °K temperature used for the 2016 Sierra Club report. The lower plume temperatures would provide less dispersion of the emissions. Additionally, the lower plume temperatures would decrease the flow rate and exit velocity, again providing less dispersion and therefore increasing the estimated SO_2 design value concentrations caused by the power plant.

Table 1 - SO_2 Modeling Results for Martin Lake Generating Station (Receptor Grid #1)

Emission Rates	Averaging Period	99th Percentile 1-hour Daily Maximum (µg/m^3)				Complies with NAAQS?
		Impact	Background	Total	NAAQS	
Actual 2013-15	1-hour	393.8	7.8	401.6	196.2	No
Actual 2014-16	1-hour	312.8	7.8	320.6	196.2	No
Actual 2015-17	1-hour	225.6	7.8	233.4	196.2	No
Actual 2016-18	1-hour	252.0	7.8	259.8	196.2	No

Due to EPA concerns about the March 31, 2016 Modeling Report's treatment of the Luminant "fenceline," the analysis was conducted using two modeling receptors grids. Table 1 (Receptor Grid

[9] https://www.epa.gov/air-trends/air-quality-design-values

#1) includes all locations around the Martin Lake Generating Station accessible by the general public. Table 2 (Receptor Grid #2) uses a receptor grid obtained from the 2016 modeling analysis conducted by AECOM on behalf of Luminant and excludes locations assumed to be unavailable for placement of an ambient monitor. As the results from Receptor Grid #1 show (see Figure 1), the maximum modeled concentrations are not on Luminant property in any event.

Table 2 - SO_2 Modeling Results for Martin Lake Generating Station (Receptor Grid #2)

Emission Rates	Averaging Period	99th Percentile 1-hour Daily Maximum (µg/m³)				Complies with NAAQS?
		Impact	Background	Total	NAAQS	
Actual 2013-15	1-hour	388.7	7.8	396.5	196.2	No
Actual 2014-16	1-hour	311.0	7.8	318.8	196.2	No
Actual 2015-17	1-hour	209.2	7.8	217.0	196.2	No
Actual 2016-18	1-hour	238.4	7.8	246.2	196.2	No

Figure 1 shows the extent of NAAQS violations based on actual hourly emissions for the 2013-15 period using Receptor Grid #1. The greatest impact occurs 2.4 kilometers west-southwest of the station, outside the property boundary for the power plant. Modeled SO_2 concentrations as high as 350 µg/m^3 occur on public rights of way to the north, west and southwest of the plant.

Figure 2 shows the extent of NAAQS violations based on actual hourly emissions for the 2013-15 period using Receptor Grid #2. The greatest impact occurs 2.7 kilometers west-southwest of the station, outside the property boundary for the power plant. Modeled SO_2 concentrations as high as 350 µg/m^3 occur on public rights of way to the north and west of the plant. This figure also identifies the receptor locations for Receptor Grid #2 to show areas excluded from consideration.

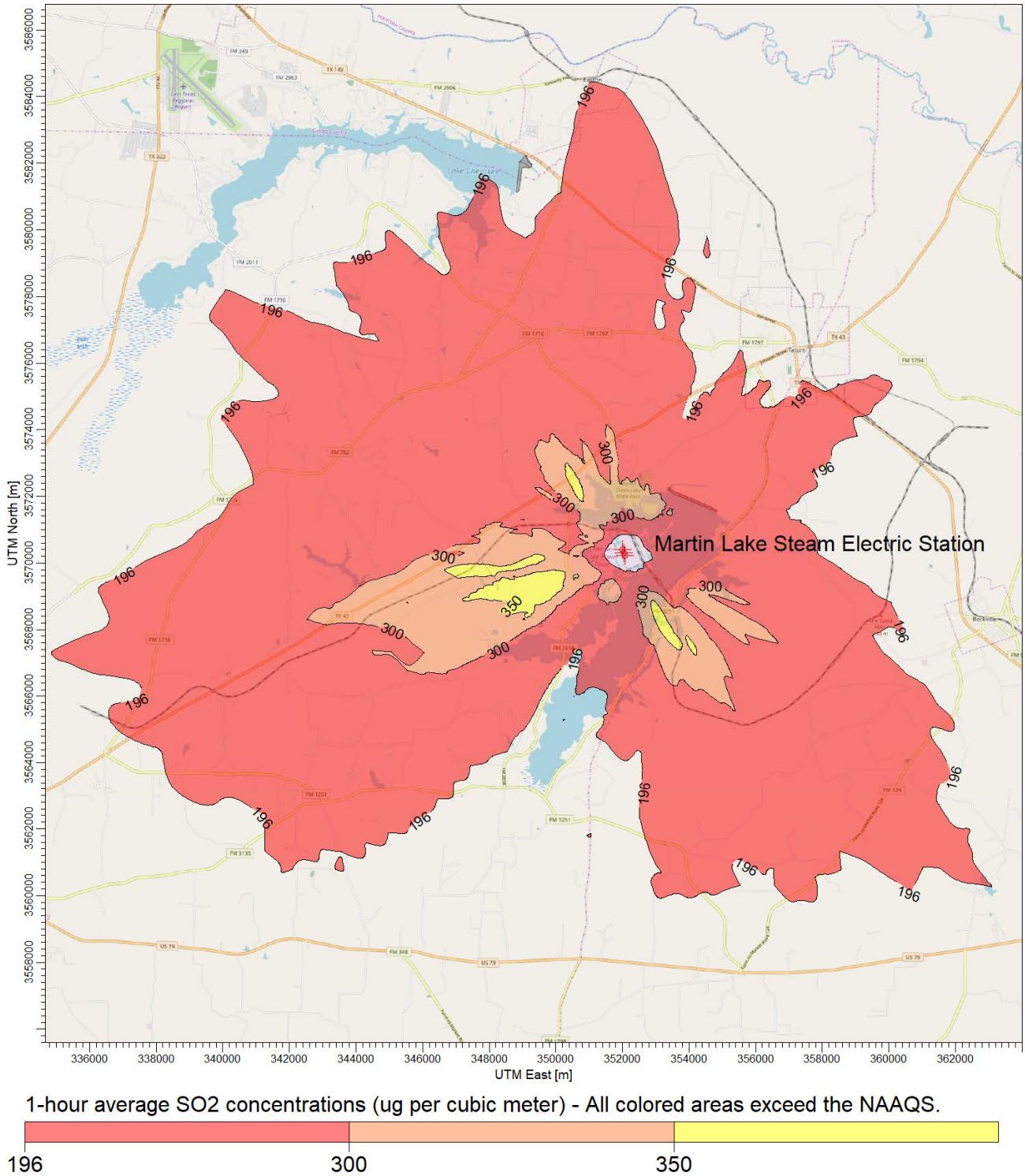

Figure 1 - Impacts Based on Receptor Grid #1 and Hourly Emissions for the 2013-15 Period

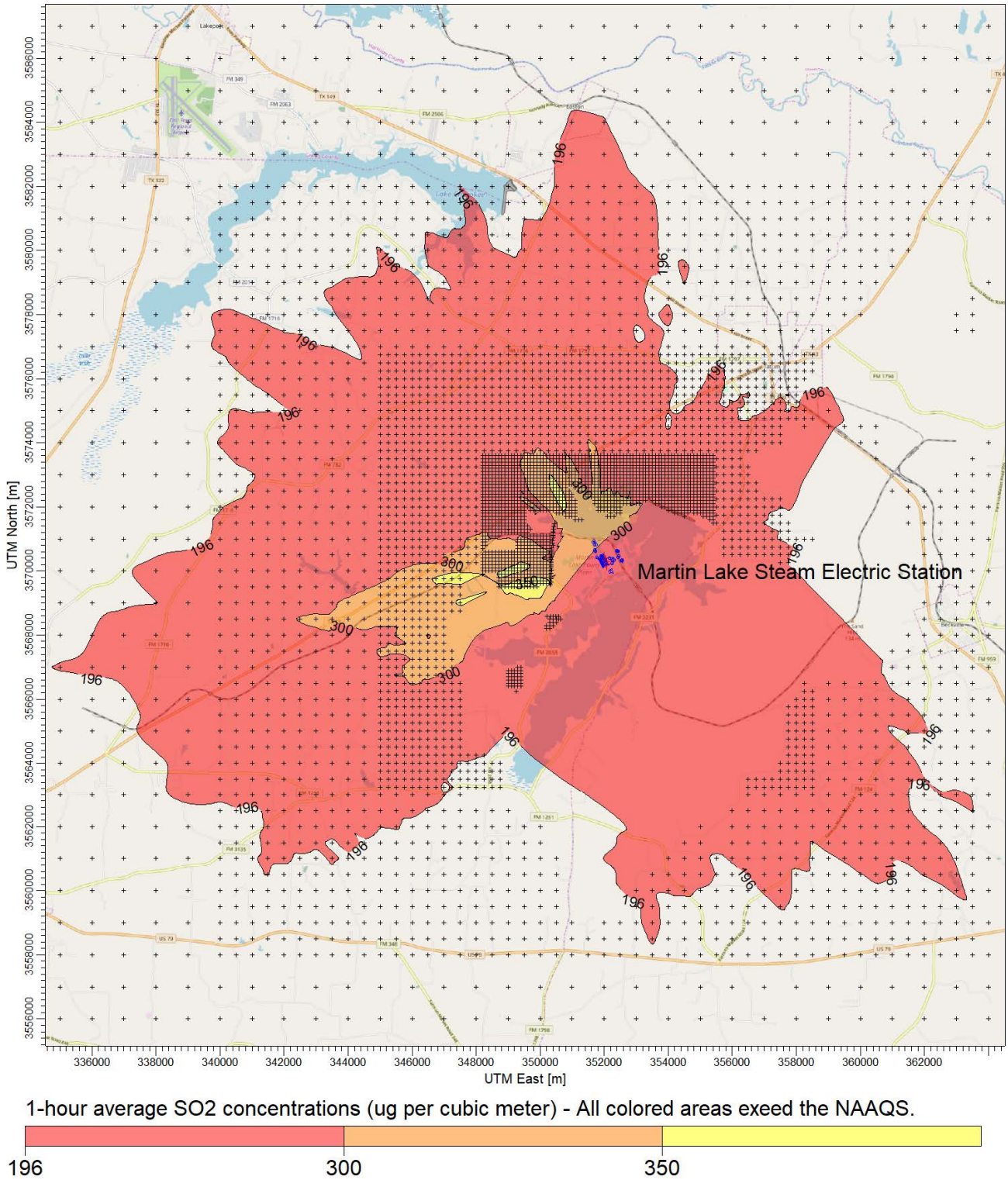

Figure 2 - Impacts Based on Receptor Grid #2 and Hourly Emissions for 2013-15 Period

2.3 Evaluation of Modeling Assumptions

USEPA provided comments on several assumptions used for the March 31, 2016 Modeling Report. These comments included: 1) failure to address downwash from buildings and structures; 2) use of non-default flagpole receptors; and, 3) use of older (i.e. 1992) LULC land use files to process the meteorological data. A separate modeling analysis was conducted for the 2013-15 period to determine influence of each these assumptions on the modeling results. For each analysis, only the specific modeling assumption was changed.

Additionally, to determine the effect of using the on-site CEM measurements, the modeling analysis was re-run using the original hourly stack emissions, temperature and exit velocity file from the March 31, 2016 Modeling Report. This had been developed from the USEPA CAMD database since the CEM measurements were not publicly available at the time.

The results of this analysis of modeling assumptions are presented in Table 3. The change in the modeling results compared to the current results is provided for each assumption. The following conclusions can be reached:

1. The incorporation of downwash did not affect the modeling results, presumably since the facility stacks are too tall to be influenced by surrounding structures. The current analysis does incorporate downwash but this change is not expected to affect the current modeling results.

2. The use of a 1.5-meter flagpole receptor height to simulate the breathing zone of individuals increased the modeling results by only 0.05%. Flag pole receptors were not used for the current analysis so any associated increase is not included in the current modeling results.

3. The use of older 1992 land use files to developed the meteorological data increased the modeling results 1%. More recent 2011 land use files were used to used to prepare the meteorological data so any increase associated with the 1992 files is not included in the current modeling results.

4. Lastly, use of the original hourly stack emissions, temperature and exit velocity file from the March 2016 Modeling Report, which were derived using EPA Air Market Database and Clearing house data, reduced the modeling results by 40%, relative to the use of Luminant's CEM data from 2013-2015 (as provided by AECOM). With the adjustments described in points 1 through 3 immediately above, the modeling results for 2013-2015 were slightly lower than those originally predicted in 2016. These results are reflected in the last row of Table 3, captioned CAMD data. This analysis supports the assumption that the higher modeling results presented in the current modeling analysis are due to the use of the actual CEM measurements from the Martin Lake Steam Electric Station. It is likely that the lower temperatures and exit

velocities in these measurements reduce dispersion and increase the predicted SO_2 impacts.

5. The March 2016 report, *Characterization of 1-Hour SO_2 Concentrations in the Vicinity of the Martin Lake Steam Electric Station*, prepared by AECOM for Luminant Generation Company LLC, was performed using a combination of modeling techniques which were not approved by USEPA. These included AERLIFT and AERMOIST. AERLIFT is an AECOM-developed procedure to account for the merging of adjacent stack plumes. AERMOIST is a pre-processor which incorporates the effect of a moist plume by adjusting the input stack temperature data. The CEM measurements for plume temperature and exit velocity from Martin Lake were pre-processed for input to AERMOD. Reviewing the input files before and after pre-processing, the two programs increased the plume temperature and exit velocity. These changes to the input file are expected to improve dispersion. This may explain the reduced SO_2 concentration predicted by AECOM for the 2013-15 period - 187.94 $\mu g/m^3$ for the facility alone. The analysis presented in this report used the original CEM measurements with adjustment and predicted a facility alone impact for the same period of 393.8 $\mu g/m^3$.

Table 3 - SO_2 Modeling Results for Martin Lake Generating Station

Modeling Assumption	Averaging Period	99th Percentile 1-hour Daily Maximum ($\mu g/m^3$)				Change from Current Analysis
		Impact	Background	Total	NAAQS	
Original	1-hour	393.8	7.8	401.6	196.2	0%
No Downwash	1-hour	393.8	7.8	401.6	196.2	0%
Flagpole Receptors	1-hour	394.0	7.8	401.8	196.2	+ 0.05%
1992 LULC	1-hour	399.4	7.8	407.2	196.2	+ 1%
CAMD Hourly File	1-hour	232.6	7.8	240.4	196.2	- 40%

2.4 Comparison with Ambient Monitoring Measurements

An ambient monitor for SO_2 began operation on November 1, 2017 approximately 1.9 kilometers north of the station in Martin Creek Lake State Park.[10] It is identified by EPA as Site Number 484011082. Based on the modeling analysis presented in this report and the March 31, 2016 Modeling Report, the monitor is <u>not</u> located where the station has its maximum air quality impacts. However, to evaluate the accuracy of the current modeling results, this report compares the modeled 2018 results with the ambient measurements from the Martin Lake monitor.

[10] https://www17.tceq.texas.gov/tamis/index.cfm?fuseaction=report.view_site&siteAQS=484011082

A full year of 1-hour average ambient monitor measurements was obtained for 2018.[11] A modeling analysis was conducted for the same year to estimate maximum 1-hour average concentrations at the monitor location. A comparison of the modeling results and monitor measurements is provided in Table 4.

In general, there is reasonable agreement between the modeling results and the ambient monitor measurements. The maximum, average and standard deviation concentrations were relatively similar. The number of hours during 2018 predicted to exceed the NAAQS of 196.2 µg/m^3 were also similar. The measured maximum values were higher than the modeled results. This comparison suggests the modeling results are representative of measurements that would be obtained from an ambient monitor.

Table 4 - Comparison of Measured and Modeled SO_2 Concentrations During 2018

Parameter	Ambient Monitor	Modeling Results
Maximum (µg/m^3)	418	313
Average (µg/m^3)	6	5
Standard Deviation (µg/m^3)	20	23
Hours exceeding NAAQS	14	15

2.5 Conservative Modeling Assumptions

A dispersion modeling analysis requires the selection of numerous parameters which affect the predicted concentrations. For this, several parameters were selected which under-predict facility impacts.

Assumptions used in this modeling analysis which likely under-estimate concentrations include the following:

- Use of estimated stack temperature and exit velocity for the 2016 to 2018 period. Modeling results for the 2013-15 using CEM measurements for hourly temperatures and exit velocities suggest impacts are greater using actual rather than estimated temperatures and velocities.
- No consideration of off-site sources. As noted in Sierra Club's September 11, 2015 Modeling Report, including other nearby sources of SO_2, such as the H.W. Pirkey Power Plant in Hallsville, Texas, will increase the predicted impacts in the area surrounding Martin Lake.
- Air quality impacts are based on a background SO_2 concentration of 7.8 µg/m3, which is the lowest measured background concentration in the state. Given the proximity to other major

[11] https://aqs.epa.gov/aqsweb/airdata/download_files.html

sources of SO_2, the actual background concentration may be higher. Moreover, as reflected in the tables above, even assuming zero background SO_2 concentration, Martin Lake, by itself, causes ambient air quality levels exceeding the NAAQS for each of the 3-year periods during 2013 to 2018.

3. Modeling Methodology

3.1 Air Dispersion Model

The modeling analysis used the most recent version of USEPA's AERMOD program, v. 18081. AERMOD, as available from the Support Center for Regulatory Atmospheric Modeling (SCRAM) website, was used in conjunction with a third-party modeling software program, *AERMOD View*, sold by Lakes Environmental Software.

3.2 Control Options

The AERMOD model was run with the following control options:

- 1-hour average air concentrations
- Regulatory defaults

An evaluation was conducted to determine if the modeled facility was located in a rural or urban setting using USEPA's methodology outlined in Section 7.2.3 of the Guideline on Air Quality Models.[12] For urban sources, the URBANOPT option is used in conjunction with the urban population from an appropriate nearby city and a default surface roughness of 1.0 meter. Methods described in Section 4.1 were used to determine whether rural or urban dispersion coefficients were appropriate for the modeling analysis.

3.3 Output Options

The AERMOD analysis was based on recent meteorological data. The modeling analyses was conducted using four separate periods of sequential meteorological data: 2013-2015, 2014-2016, 2015-2017, and 2016-2018. Consistent with USEPA's Modeling Guidance for SO_2 NAAQS Designations, AERMOD provided a table of fourth-high 1-hour SO_2 impacts concentrations consistent with the form of the 1-hour SO_2 NAAQS.[13]

Please refer to Tables 1 and 2 for the modeling results.

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[12] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, November 9, 2005.
[13] USEPA, Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards, Attachment 3, March 24, 2011, pp. 24-26.

4. Model Inputs

4.1 Geographical Inputs

The air dispersion modeling analysis used a coordinate system for identifying the geographical location of emission sources and receptors. These geographical locations are used to determine local characteristics (such as land use and elevation), and also to ascertain source to receptor distances and relationships.

The Universal Transverse Mercator (UTM) NAD83 coordinate system was used for identifying the easting (x) and northing (y) coordinates of the modeled sources and receptors.

The facility was evaluated to determine if it should be modeled using the rural or urban dispersion coefficient option in AERMOD. A GIS was used to determine whether rural or urban dispersion coefficients apply to a site. Land use within a three-kilometer radius circle surrounding the facility was considered. USEPA guidance states that urban dispersion coefficients are used if more than 50% of the area within 3 kilometers has urban land uses. Otherwise, rural dispersion coefficients are appropriate.[14]

USEPA's AERSURFACE v. 19039 was used to develop the meteorological data for the modeling analysis. This model was also used to evaluate surrounding land use within 3 kilometers of the station. Based on the output from the AERSURFACE, approximately 9% of surrounding land use around the airport was of urban land use types including Types 22, 23 and 24 which are Low, Medium and High Intensity Development.

This is less than the 50% value considered appropriate for the use of urban dispersion coefficients. Based on the AERSURFACE analysis, it was concluded that the rural option would be used for the modeling summarized in this report. Please refer to Section 4.5.3 for a discussion of the AERSURFACE analysis.

4.2 Emission Rates and Source Parameters

The modeling analyses only considered SO_2 emissions from the facility. Off-site sources were not considered. Stack parameters used for the modeling analysis are summarized in Table 4.

Model inputs were obtained from the March 2016 report, *Characterization of 1-Hour SO2 Concentrations in the Vicinity of the Martin Lake Steam Electric Station*, prepared by AECOM for

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[14] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, November 9, 2005, Section 7.2.3.

Luminant Generation Company LLC. Inputs included: 1) stack location, height and diameter; 2) building locations and dimensions; and 3) hourly emission rates, stack temperatures and stack exit velocities for the 2013-15 period. The availability of the building locations and dimensions allowed for evaluation of aerodynamic downwash. The hourly emission rates, stack temperatures and stack exit velocities were derived from the station continuous emissions monitoring (CEM) system.

The hourly CEM measurements of temperature for operating hours for each unit during 2013-2015 were used to derive an average stack outlet temperature for each of the three units. This average temperature was then used for modeling the 2016-2018 period. These temperatures were 352, 358 and 355 °K, respectively. These were significantly less than the 449 °K temperature used for the 2016 Sierra Club report.

The hourly CEM measurements of exit velocities for 2013-2015 were combined with concurrent heat input obtained from the USEPA Air Markets Program Data to derive a relationship between exhaust gas flow rate and heat input for the three units. This value of 16,359 standard cubic feet per mmbtu heat input was applied to the hourly heat input for each unit during the 2016-2018 period obtained from the USEPA Air Markets Program Data to determine the hourly exit velocity.

Table 4 – Facility Stack Parameters

Facility	Martin Lake		
Stack	S01	S02	S03
Description	Unit 1	Unit 2	Unit 3
X Coord. [m]	351999	352041	352084
Y Coord. [m]	3570400	3570309	3570217
Base Elevation [m]	95.01	95.01	95.01
Release Height [m]	137.77	137.77	137.77
Inside Diameter [m]	7.01	7.01	7.01
Gas Exit Temperature [°K] [15]	352	358	355
Gas Exit Temperature [°K]	Hourly Values		
Gas Exit Velocity [m/s]			
Actual Emission Rate [g/s]			

4.3 Building Dimensions and GEP

Building locations and dimensions were obtained from the March 2016 report, C*haracterization of 1-Hour SO2 Concentrations in the Vicinity of the Martin Lake Steam Electric Station*, prepared by AECOM for Luminant Generation Company LLC. The availability of the building locations and dimensions allowed for evaluation of aerodynamic downwash.

[15] Fixed exit temperatures were only used for the 2016-18 period.

4.4 Receptors

For Martin Lake Generating Station, two receptor grids were employed. Receptor Grid #1 included all locations around the Martin Lake Generating Station accessible by the general public. The 13,061 receptors distributed as follows:

1. A 100-meter Cartesian receptor grid centered on Martin Lake Generating Station and extending out 5 kilometers.
2. A 500-meter Cartesian receptor grid centered on Martin Lake Generating Station and extending out 10 kilometers.
3. A 1,000-meter Cartesian receptor grid centered on Martin Lake Generating Station and extending out 25 kilometers. The March 31, 2016 Modeling Report used a receptor grid extending out 50 kilometers, which is the maximum distance accepted by USEPA for the use of the AERMOD dispersion model.[16] To address EPA's concerns about the size of the receptor grid, this report uses a 25 kilometer grid. The use of different sized receptor grids is irrelevant because, as the modeling demonstrates, all of the maximum impacts are well within 25 kilometers of the plant.

Elevations for Receptor Grid #1 receptors were obtained from National Elevation Dataset (NED) GeoTiff data. GeoTiff is a binary file that includes data descriptors and geo-referencing information necessary for extracting terrain elevations. These elevations were extracted from 1 arc-second (30 meter) resolution NED files. The USEPA software program AERMAP v. 18081 is used for these tasks.

Receptor Grid #2 was obtained from the 2016 modeling analysis conducted by AECOM on behalf of Luminant. The 14,893 receptors extend out 50 kilometers from the station but exclude locations assumed to be unavailable for placement of an ambient monitor.

4.5 Meteorological Data

To ensure the accuracy of the modeling analysis, recent meteorological data for the 2013-2018 period were prepared using the USEPA's program AERMET which creates the model-ready surface and profile data files required by AERMOD. Required data inputs to AERMET included surface meteorological measurements, twice-daily soundings of upper air measurements, and the micrometeorological parameters surface roughness, albedo, and Bowen ratio. One-minute ASOS

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[16] USEPA, Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions, Appendix W to 40 CFR Part 51, Section A.1.(1), November 9, 2005.

data were available so USEPA methods were used to reduce calm and missing hours.[17] The USEPA software program AERMINUTE v. 15272 is used for these tasks.

This section discusses how the meteorological data was prepared for use in the 1-hour SO_2 NAAQS modeling analyses. The USEPA software program AERMET v. 18081 is used for these tasks.

4.5.1 Surface Meteorology

Surface meteorology was obtained for Longview Texas Regional Airport located near the Martin Lake Generating Station. Integrated Surface Hourly (ISH) data for the 2013-2018 period were obtained from the National Climatic Data Center (NCDC). The ISH surface data was processed through AERMET Stage 1, which performs data extraction and quality control checks.

4.5.2 Upper Air Data

Upper-air data are collected by a "weather balloon" that is released twice per day at selected locations. As the balloon is released, it rises through the atmosphere, and radios the data back to the surface. The measuring and transmitting device is known as either a radiosonde, or rawindsonde. Data collected and radioed back include: air pressure, height, temperature, dew point, wind speed, and wind direction. The upper air data were processed through AERMET Stage 1, which performs data extraction and quality control checks.

For Martin Lake Generating Station, the concurrent 2013-2018 upper air data from twice-daily radiosonde measurements obtained at the most representative location were used. This location was the Shreveport, Louisiana measurement station. These data are in Forecast Systems Laboratory (FSL) format and were downloaded in ASCII text format from NOAA's FSL website.[18] All reporting levels were downloaded and processed with AERMET.

4.5.3 AERSURFACE

AERSURFACE is a program that extracts surface roughness, albedo, and daytime Bowen ratio for an area surrounding a given location. AERSURFACE uses land use and land cover (LULC) data in the U.S. Geological Survey's National Land Cover Dataset to extract the necessary micrometeorological data. The current version of AERSURFACE v. 13016, is designed to use 1992 LULC files. To account for recent land use surrounding the airport, the beta version of AERSURFACE v. 19039 was used with National Land Cover Database for 2011 including land cover, canopy and impervious surfaces.

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[17] USEPA, Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards, Attachment 3, March 24, 2011, p. 19.
[18] Available at: http://esrl.noaa.gov/raobs/

AERSURFACE was used to develop surface roughness, albedo, and daytime Bowen ratio values in a region surrounding the meteorological data collection site. AERSURFACE was used to develop surface roughness in a one-kilometer radius surrounding the data collection site. Bowen ratio and albedo were developed for a 10-kilometer by 10-kilometer area centered on the meteorological data collection site. These micrometeorological data were processed for seasonal periods using 30-degree sectors. Seasonal moisture conditions were considered average with winter months having no continuous snow cover.

4.5.4 Data Review

Missing meteorological data were not filled as the data file met USEPA's 90% data completeness requirement.[19] The AERMOD output file shows there were 0.9% missing data across the entire 2013-18 meteorological period.

To confirm the representativeness of the airport meteorological data, the surface characteristics of the airport data collection site and the modeled source location were compared. Since the Longview Texas Regional Airport is located close to Martin Lake Generating Station, this meteorological data set was considered appropriate for this modeling analysis.[20] Additionally, this weather station provided high quality surface measurements, and had similar land use, surface characteristics, terrain features and climate.

Finally, TCEQ provides pre-processed meteorological data suitable for modeling for each county.[21] For Rusk County, TCEQ recommends using data from the same surface and upper air stations used for this modeling analysis. The TCEQ data were not used for this project because they had not been processed using the latest versions of USEPA modeling software.

5. Background SO_2 Concentrations

Background concentrations were determined consistent with USEPA's Modeling Guidance for SO_2 NAAQS Designations.[22, 23] To preserve the form of the 1-hour SO_2 standard, based on the 99th percentile of the annual distribution of daily maximum 1-hour concentrations averaged across the number of years modeled, the background fourth-highest daily maximum 1-hour SO_2 concentration

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[19] USEPA, Meteorological Monitoring Guidance for Regulatory Modeling Applications, EPA-454/R-99-05, February 2000, Section 5.3.2, pp. 5-4 to 5-5.
[20] USEPA, AERMOD Implementation Guide, March 19, 2009, pp. 3-4.
[21] Texas Commission on Environmental Quality, Meteorological Data for Refined Screening with AERMOD, http://www.tceq.texas.gov/permitting/air/modeling/aermod-datasets.html, Last updated November 22, 2013.
[22] USEPA, Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards, Attachment 3, March 24, 2011, pp. 20-23.
[23] USEPA, SO_2 NAAQS Designations Modeling Technical Assistance Document, August 2016, DRAFT.

was added to the modeled fourth-highest daily maximum 1-hour SO_2 concentration.[24] The background concentration was based on the lowest 2016-2018 design value measured by the ambient monitors located in Texas.[25] This was 7.8 µg/m^3 as measured by the monitor located in Travis County. The design values for prior years were slightly higher.

The original 2016 modeling analysis performed by Wingra Engineering used a background concentration from the El Paso, Texas monitoring station for the 2012-14 period. For that time period, it was the lowest reported design value in the state. For the 2016-18 period, this monitor was no longer in operation.

Aside from the Martin Lake monitor which began operation in 2017, the next closest monitor to the facility is the monitor at Longview (USEPA ID#481830001). It is 18.5 kilometers northwest the facility. The 2016-18 design value from this monitor is 96.8 µg/m^3. The design value from this monitor was not used for the background concentration to avoid double-counting impacts from the Martin Lake Steam Electric Station.

For the current analysis, exceedences of the 1-hour NAAQS for SO_2 were predicted regardless of the assumed background concentration.

6. Reporting

All files from the programs used for this modeling analysis are available to regulatory agencies. These include analyses prepared with AERSURFACE, AERMET, AERMAP, and AERMOD.

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[24] USEPA, Applicability of Appendix W Modeling Guidance for the 1-hour SO_2 National Ambient Air Quality Standard, August 23, 2010, p. 3.
[25] http://www.epa.gov/airtrends/values.html

From:	Caroline Crow
To:	tceqamnp
Cc:	Amy Dinn; Natasha Bahri; Chase Porter
Subject:	Draft 2022 Annual Monitoring Network Plan - Comments submitted by LSLA on behalf of Represented Communities
Date:	Tuesday, May 24, 2022 2:23:05 PM
Attachments:	2022-05-24_TCEQ AMNP 2022 - FINAL.pdf

Good afternoon,

Attached are comments on the Draft 2022 Annual Monitoring Network Plan.

These comments are submitted by Lone Star Legal Aid on behalf of the following represented entities: Port Arthur Community Action Network, Westry Mouton Project, Super Neighborhood 47, Super Neighborhood 48 Trinity Gardens / Houston Gardens, Super Neighborhoods 49 / 50, Pleasantville Area Super Neighborhood 57, Progressive Fifth Ward Community Association, Prince Square Civic Association, and Citizens for Clean Air and Clean Water.

Thank you.

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May 24, 2022

VIA EMAIL tceqamnp@tceq.texas.gov
Texas Commission on Environmental Quality
P.O. Box 13087
Attention: Holly Landuyt, MC-165
Austin, Texas 78711-3087

Re: TCEQ's Draft 2022 Annual Monitoring Network Plan

Dear Sirs:

On behalf of its respective clients identified below and their represented communities, Lone Star Legal Aid (LSLA) submits these comments to the Texas Commission on Environmental Quality (TCEQ) regarding TCEQ's Draft 2022 Annual Monitoring Network Plan (2022 AMNP). LSLA's clients would appreciate a prompt response to the comments from TCEQ and the United States Environmental Protection Agency (EPA) and hope these comments are reflected in the final version of the 2022 Air Monitoring Network Plan for Texas.

I. INTRODUCTION

LSLA's mission is to protect and advance the civil legal rights of the millions of Texans living in poverty by providing free advocacy, legal representation, and community education to ensure equal access to justice. LSLA's service area encompasses one-third of the State of Texas, including 72 counties in the eastern and Gulf Coast regions of the state. LSLA's Environmental Justice team focuses on the right to the fair distribution of environmental benefits and burdens and the right to equal protection from environmental hazards. LSLA advocates for these rights on behalf of impacted individuals and communities in LSLA's service area. These comments are submitted on behalf of the following low-income individuals and the environmental justice communities and residents represented by these individual and organizational clients: Port

Arthur Community Action Network, Westry Mouton Project, Super Neighborhood 47, Super Neighborhood 48 Trinity Gardens / Houston Gardens, Super Neighborhoods 49 / 50, Pleasantville Area Super Neighborhood 57, Progressive Fifth Ward Community Association, Prince Square Civic Association, and Citizens for Clean Air and Clean Water.

II. REPRESENTED COMMUNITIES

A. Port Arthur Community Action Network

The Port Arthur Community Action Network (PACAN) is a not-for-profit community-based organization in the West Port Arthur neighborhood of Port Arthur that mobilized in the immediate aftermath of Hurricane Harvey to address a slew of environmental releases and problems associated with the storm. The organization was responsible for hosting disaster relief legal clinics for the citizens of Port Arthur and advocated for a more effective response to the storm by local governmental authorities. In addition, PACAN has and remains active in reviewing, commenting, and challenging air permit applications in the West Port Arthur area that would compound existing issues with air and water quality in the neighborhood and larger city. PACAN is also active in commenting on statewide and federal plans regarding environmental protection and regulation, including several iterations of TCEQ's Annual Monitoring Network Plan. PACAN is committed to improving the quality of life of residents in Port Arthur, Texas.

B. Westry Mouton Project

The Westry Mouton Project (WMP) is a not-for-profit community-based organization in that serves the Beaumont, Texas area. WMP's primary focus is on Beaumont's east side, which is historically, and remains, a lower-income, largely African-American community. The east side is bisected by major highways, railways, the Port of Beaumont, and numerous large industrial facilities. WMP focuses on ensuring Beaumont's youth are provided with a healthy environment, broadly understood, to develop and succeed in life. WMP's work includes a summer camp for local young girls and working with at-risk youth to teach them how to find job opportunities. WMP also works to improve the natural environment in Beaumont so it can provide the area's youth with clean air and clean water, and so that WMP can ensure the health consequences of pollution do not affect their development and ability to succeed. WMP has previously commented on the 2021 Air Monitoring Network Plan and has performed other advocacy to support a healthy environment for Beaumont's youth.

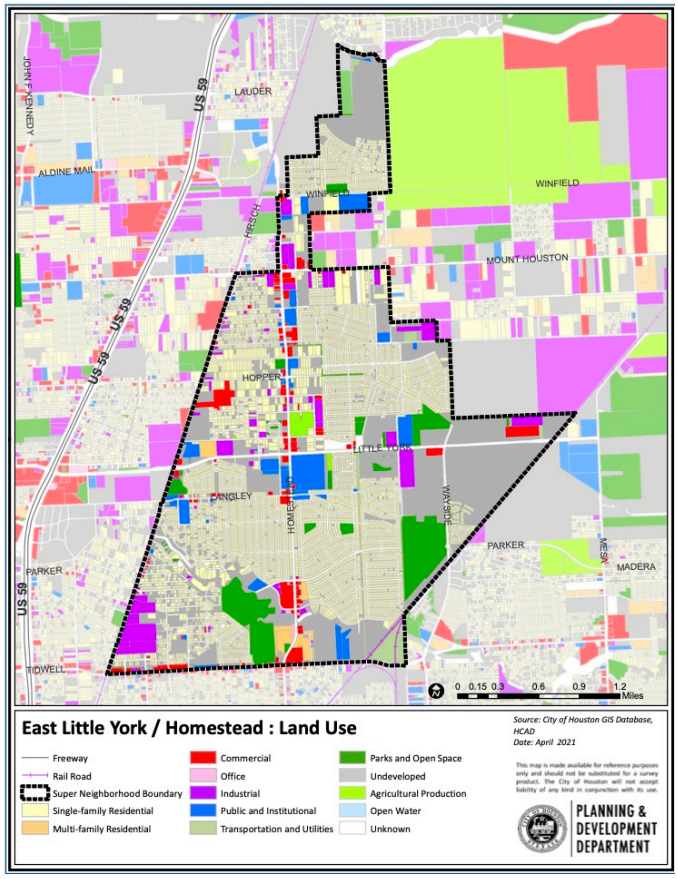
C. Super Neighborhood 47 – East Little York / Homestead

Within the City of Houston, a super neighborhood is a geographically designated area where residents, civic organizations, institutions, and businesses work together to identify, plan, and set priorities to address the needs and concerns of their community. The boundaries of each super neighborhood rely on major physical features, such as bayous or freeways, to group together contiguous communities that share common physical characteristics, identity or infrastructure.

Super Neighborhood 47 (SN 47) shares boundaries to the south with Super Neighborhood 48, and boundaries to the East with Super Neighborhood 49 / 50. While much of Super Neighborhood 47 is residential, the edges of the community are increasingly industrial, and industrial operations are also scattered throughout the neighborhood. Super Neighborhood has a rail line at its Eastern edge, and US Highway 59 is not far from its Western border.

SN 47 shares classic environmental justice features, like industry encroachment and resulting compromised air quality. This community is 59.6% African American, 7.6% Hispanic, and 36% White, and 55% of this community lives at below 200% of federal poverty guidelines.

Figure 1: Super Neighborhood 47 Land Use Map[1]

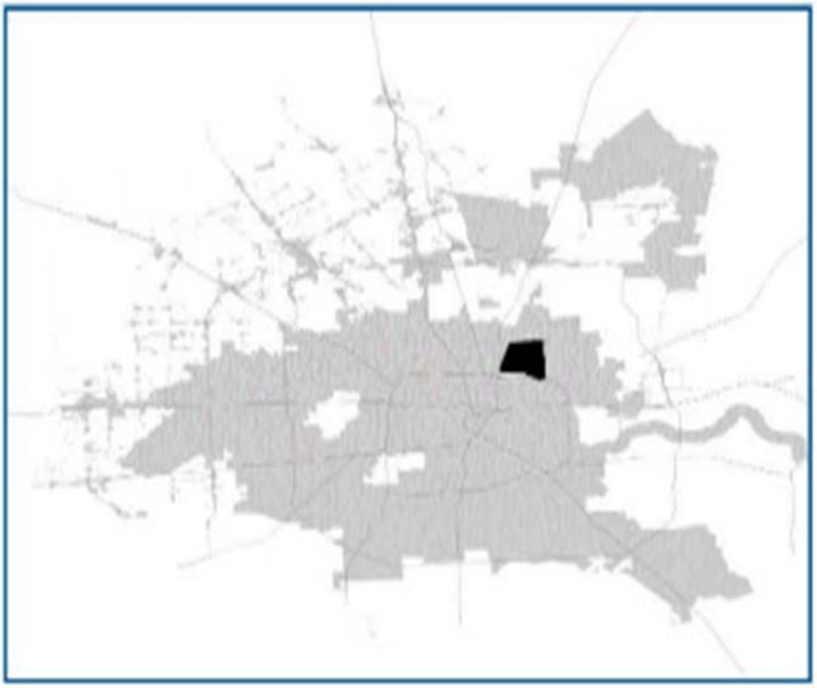


[1] SN 47 Land Use Map available at: https://www.houstontx.gov/planning/Demographics/2019%20Council%20District%20Profiles/East%20Little%20York_Final.pdf.

D. Super Neighborhood 48 – Houston Gardens / Trinity Gardens

Super Neighborhood 48 "Trinity / Houston Gardens" takes its name from two communities: Trinity Gardens and Houston Gardens in Houston, Texas, also known as the "Gardens." The City of Houston defines the area known as Super Neighborhood 48 by the geographic boundary shown below, which is within City Council District B and comprises 4,395 acres (6.87 sq. miles) in the Northeastern part of the City of Houston, Texas:

Figure 2: Location of Super Neighborhood 48 in Northeast Houston



E. Super Neighborhood 49 / 50 – East Houston & Settegast

Super Neighborhood 49/50 is made up of East Houston and Settegast. These two neighborhoods are also in Northeast Houston.

East Houston is adjacent to McCarty Road Landfill, a Harris County landfill, and a major industrial park, Railwood. The positioning of this community between these industrial operations and waste sites makes it a particularly vulnerable community to pollution and degraded air quality. This community is majority African American.

Settegast is about 8 miles from downtown Houston and sits outside of Loop 610, and Settegast is a predominantly African American community. The Settegast community is surrounded by interstates and industrial users—610 to the south, Highway 90 to the east, and Union Pacific Railroad intermodal terminal to the west. The eastern portion of Settegast also shares its eastern boundary with two of Harris County's active landfills, McCarty Road Landfill

and Ralston Road landfill. Settegast is also subject to particularly poor air quality resulting from its industrial neighbors.

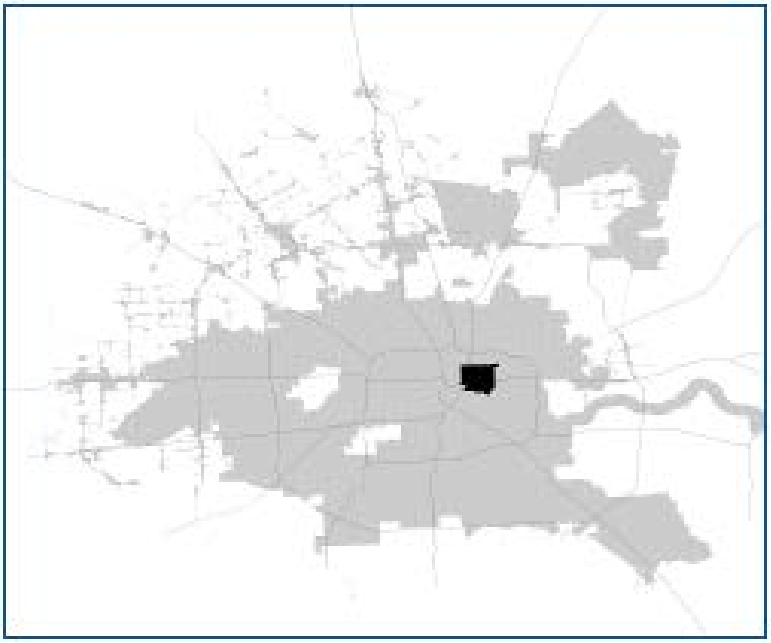
F. Pleasantville Area Super Neighborhood 57

Pleasantville Area Super Neighborhood 57 is an organization in Houston, Texas representing individuals, civic clubs, and businesses located within two neighborhoods close to the Houston Ship Channel. Pleasantville was developed after World War II and remains a historic, predominantly African American community. Given its proximity to port-related activities, Super Neighborhood 57 (SN 57) and other community groups in the area like Achieving Community Tasks Successfully (ACTS) are extremely focused on environmental justice issues and air quality in the area. Recently, the neighborhood installed one of the first community-led air monitoring programs in the country.

G. Progressive Fifth Ward Community Association

Progressive Fifth Ward Community Association (Progressive Fifth Ward) is an incorporated community association serving the Greater Fifth Ward of Houston, also known as Super Neighborhood 55 (SN 55). The City of Houston defines Greater Fifth Ward by the geographic boundary shown below in **Figure 3**, which comprises 3,192 acres (4.99 sq. miles) in the Northeastern part of the City of Houston, Texas:

Figure 3: Location of Greater Fifth Ward in Northeast Houston



As a community association, Progressive Fifth Ward's purposes include: promoting civic engagement of residents, encouraging improvements in the appearance of public and private

properties in the area, and taking concerted actions in matters pertaining to the welfare of residents in the neighborhood. Progressive Fifth Ward has been and remains active in efforts to combat local sources of pollution within the community and highlighting these issues to governmental entities.

H. Prince Square Civic Association

Prince Square Civic Association (Prince Square) is another civic association recognized by the City of Houston, which also serves Greater Fifth Ward. Its purpose is to ensure a platform for individuals within the boundaries of the subdivision to improve their quality of life. Like its neighboring association Progressive Fifth Ward, Prince Square has been and remains active in efforts to combat local sources of pollution within the community and highlighting these issues to fellow residents and governmental entities.

I. Citizens for Clean Air & Clean Water

Citizens for Clean Air & Clean Water (CCACW) was formed to educate Freeport residents about environmental issues and to advocate for solutions to protect and improve air and water quality. To accomplish this, CCACW holds community meetings to raise awareness about potentially harmful air and water pollution events in Freeport. The group communicates with TCEQ and other state and local governmental entities to remain up to date on the latest developments in the area. CCACW continues to engage with the public participation component of the environmental permitting process by submitting comments, and engaging in hearings on air, water, and waste permits, and submitting comments, like these, on air monitors in the region. The goal of the group is to encourage protection of public health through compliance with permitting schemes and environmental laws.

III. PLACEMENT OF AIR MONITORS IN ENVIRONMENTAL JUSTICE COMMUNITIES

Environmental justice is an ongoing struggle to remedy environmental discrimination in this country. The EPA defines environmental justice as follows:

> Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EPA has this goal for all communities and persons across this Nation. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.[2]

[2] EPA, Environmental Justice-Related Terms As Defined Across the PSC Agencies (05/13/2013), available at https://www.epa.gov/sites/production/files/2015-02/documents/team-ej-lexicon.pdf.

The EPA defines "fair treatment" as ensuring "that no group of people should bear a disproportionate burden of environmental harms and risks, including those resulting from the negative environmental consequences of industrial, governmental, and commercial operations of programs and policies."[3]

Environmental discrimination and the uneven spread of environmental harms and risks have historically been evident in the process of selecting and building environmentally hazardous sites, including waste disposal, manufacturing, and energy production facilities. The locations of busy roads and railroads follow a similar pattern. The siting of such hazardous infrastructure in communities of color and/or low-income communities has had a disproportional negative impact on the overall health and well-being of those communities. West Port Arthur, the east side of Beaumont, Houston's Fifth Ward, the Pleasantville Area, Northeast Houston, and Freeport all have been recognized as environmental justice communities by the EPA and other organizations working for social and economic change.

TCEQ must recognize the inclusion of "government…programs and policies" in the definition of fair treatment. A well designed and inclusive air monitoring program can be an effective tool to identifying and alleviating risks and harms. An air monitoring program which does not sufficiently monitor the many air pollutants released into environmental justice communities has the potential to perpetuate the challenges faced by those communities. In other words, TCEQ should view the 2022 AMNP as an important opportunity to fulfill TCEQ's obligations under Title VI of the Civil Rights Act of 1964 as well as basic tenets equal protection.

LSLA's clients note here that in their past advocacy, TCEQ has consistently explicitly declined to perform any type of environmental justice analysis when implementing its programs and policies. For example, in response to comments filed in regard to the 2019 iteration of the Annual Monitoring Network Plan, TCEQ responded that "[c]omments regarding environmental justice issues are…outside the scope of the AMNP"[4] and otherwise declined to respond to environmental justice concerns raised by both LSLA's clients and other commenters. LSLA's clients urge TCEQ to recognize that:

(1) TCEQ *always* has an obligation under the law to ensure its programs and policies do not have discriminatory effects;
(2) air monitoring is a vital piece of protecting Texas' most burdened communities and thus environmental justice cannot be kept at arm's length from this plan; and,
(3) the significant and increased presence of air pollution sources near low-income communities and people of color requires a proportionate increased presence of comprehensive air monitoring in those same communities.

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[3] *Id.*
[4] TCEQ, 2019 Annual Monitoring Network Plan with Response to Public Comments, available at https://www.tceq.texas.gov/assets/public/compliance/monops/air/annual_review/historical/2019-AMNP.pdf.

On the latter point, LSLA's clients recognize there are many monitors in the Beaumont-Port Arthur and Houston-Galveston-Brazoria metropolitan areas, but LSLA submits these comments on its clients' behalf to show there are still holes in the network resulting in the potential to miss air pollution from many of Texas' largest pollution sources, such as the communities adjacent to the Houston Ship Channel like Pleasantville and East Houston communities. In short, the location and type of air monitors located in the represented communities are not fully proportionate to the presence of the many types of air pollution emitted into those communities.

Holes in the draft 2022 AMNP are particularly acute and potentially harmful to the regions' environmental justice communities, including Northeast Houston, Pleasantville, Beaumont's east side, and Port Arthur's west side. First, not all monitoring stations are monitoring for all criteria pollutants, so the actual number of monitors does not guarantee all pollutants are being sufficiently monitored in a particular area based on the types of pollutants generated in that area. Second, there are not enough monitors within the communities for people to know if, where they attend school, work, and otherwise live their lives, they are being impacted by emissions from facilities that are clustered in and around their respective neighborhoods. Third, there should be more of an effort to make the information reported from monitors more accessible to the public for real time events as well as a stronger mobile monitoring system that can be deployed in the event of emergencies so that the public can be aware of what risks there are to public health during an event.

In each of the represented communities, there are also historic considerations regarding the siting choices of hazardous facilities that should be recognized and considered by TCEQ as it produces the final 2022 AMNP. A report from 2015 stated that hazardous waste, treatment, and disposal facilities "may be sited in locations that are both disproportionately nonwhite at the time of siting and are already undergoing demographic changes."[5] Demographic changes typically attract hazardous sites rather than minority groups being drawn to areas around hazardous sites. Regardless of how proximity of industry and people of color developed, it is important for TCEQ to recognize and consider potential health impacts from air pollution on the represented "fence line" communities.

Communities should be able to easily access information on the toxic emissions coming from industrial facilities. Communities should also be able to easily access information about the emissions' health hazards. There are several key limitations on TCEQ's existing monitoring technology: (1) it is not recorded in real time; (2) it does not identify sources of the pollution; and (3) it only measures emissions at the fence line as opposed to requiring monitoring systems in the actual communities. Real time information will reveal spikes in emissions, how long they lasted, and where they are coming from. Because stationary monitors do not move, and are at a set height, they do not pick up all pollutants and will likely miss many upset events which have a direct impact on public health. In addition to providing daily, real time monitoring of the

[5] Paul Mohai and Robin Saha, 2015 Environmental Research Letters, 10, 115008, available at https://iopscience.iop.org/article/10.1088/1748-9326/10/11/115008/pdf.

(serious) every day emissions in industrial areas, the air monitoring network should be prepared and able to measure emissions related to major events, such as the March 17, 2019 International Terminals Company (ITC) disaster in Deer Park and which impacted air quality across Houston for at least a week, the April, 2017 industrial fire at German Pellets in Port Arthur and which burned and smoldered for almost three months, and the November 27, 2019 explosion at the Texas Petroleum Chemical Group's (TPC) Port Neches facility, which impacted individuals in Port Neches, Beaumont, and across northern Jefferson County for a number of days. Ms. Young, President of the Westry Mouton Project, herself clearly recounts the day TPC exploded—she was preparing for Thanksgiving with her family—and having difficulties breathing in the aftermath of that emergency.

TCEQ must realize where its monitoring program is insufficient given the number and size of industrial facilities and the many potential threats to human health associated with them, both every day as well as during emissions upsets, fires, or other disasters. The following comments provide some specific details about LSLA's clients' communities and the bases for analyzing monitoring deficiencies in other similarly situated neighborhoods.

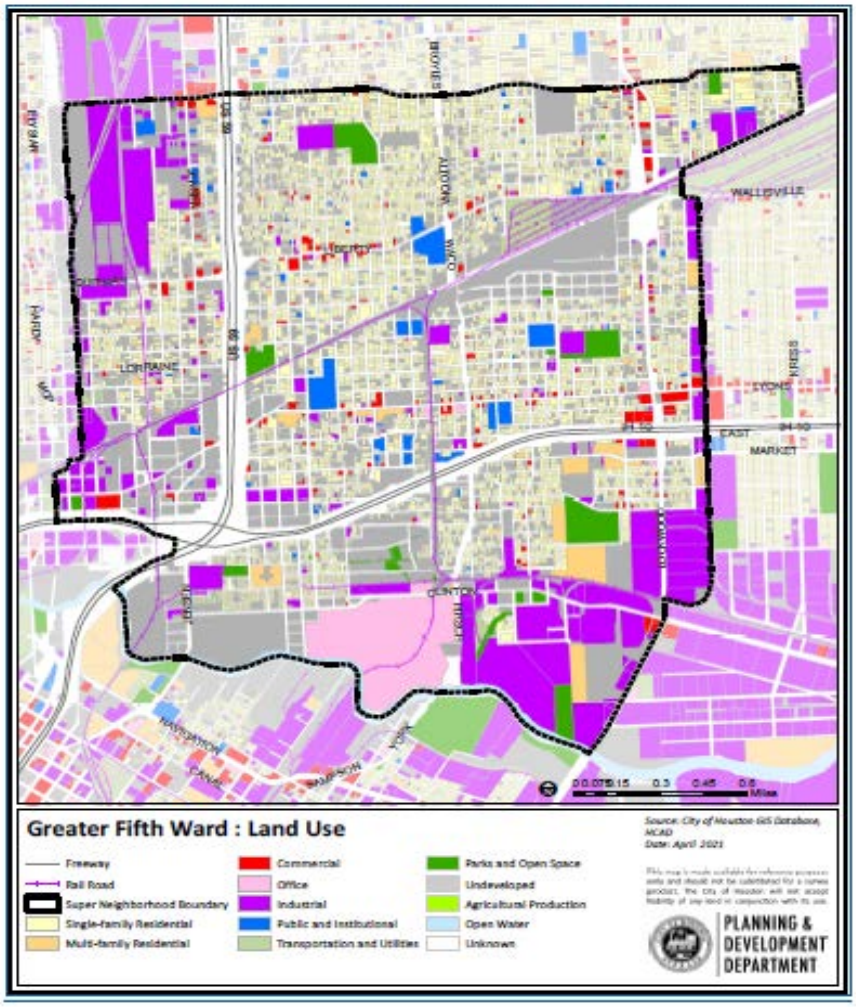
A. Fifth Ward – Houston, Texas

As Progressive Fifth Ward and Prince Square both serve the Fifth Ward area, they submit these combined comments in response to the draft 2022 AMNP with respect to the placement of air monitors in their community.

Fifth Ward is a neglected and low-income minority community, with 94% of the population identifying as either Black or Hispanic.[6] It is one of Houston's residential neighborhoods with substantial industrial land use surroundings, as shown below in purple in **Figure 4**:

[6] City of Houston Planning & Development Department Super Neighborhood Resource Assessment available at http://www.houstontx.gov/planning/Demographics/2019%20Council%20District%20Profiles/Greater_FifthWard_Final.pdf.

Figure 4. Land Use within the boundaries of Fifth Ward[7]



Industrial uses include the inundation of concrete batch plants (CBPs). The table below lists CBPs affecting Fifth Ward:

Table 1. Concrete Batch Plants Affecting Fifth Ward

Concrete Batch Plant	**Location within Fifth Ward**
Texas Concrete Enterprise	3506 Cherry St. (77026)
Texas Concrete Enterprise	3508 Cherry St. (77026)
Cemtech Concrete Ready Mix Inc.	3116 Jensen Rd. (77026)
Texas Concrete Ready Mix	3315 Carr St. (77026)

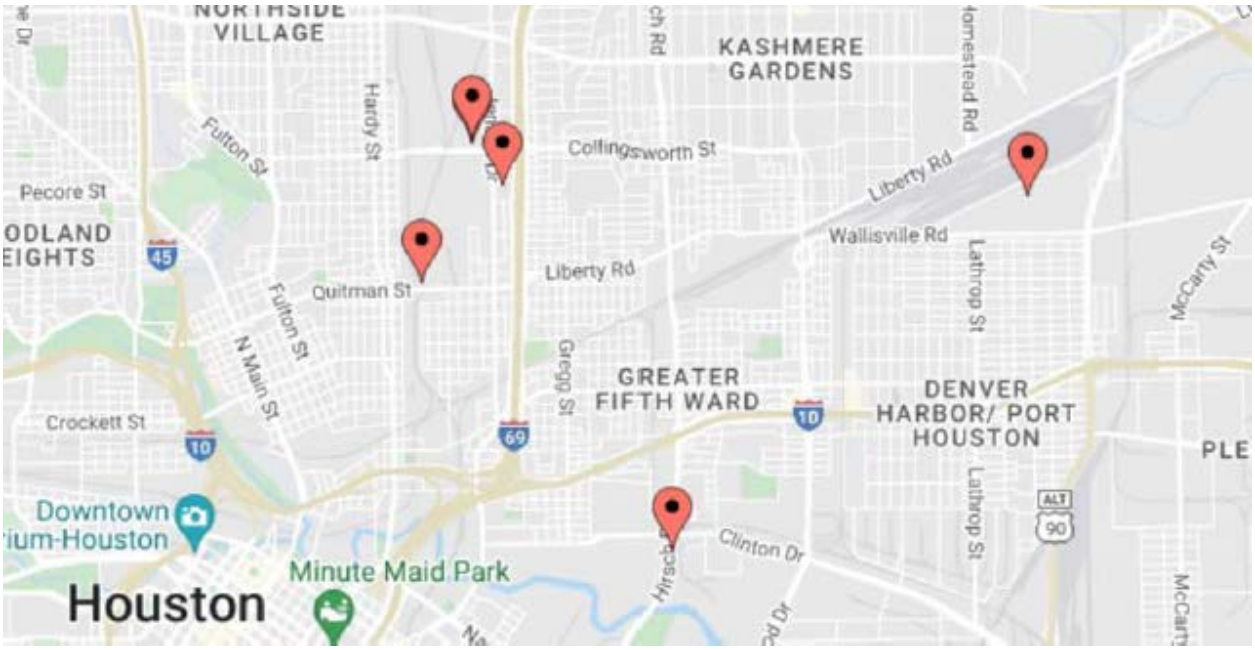
Metal recycling facilities are also disproportionately located in or around the Fifth Ward The table below lists recycling facilities affecting Fifth Ward:

[7] *Id.*

Table 2. Metal Recycling Facilities Affecting Fifth Ward

Metal Recycling Facility	Location within Fifth Ward
Derichebourg Recycling USA	7501 Wallisville Rd. (77020)
CMC Recycling	2015 Quitman St. (77026)
Sims Metal	90 Hirsch Rd. (77020)

Figure 5: Map of Industrial Sites Affecting Fifth Ward[8]



As the map in **Figure 5** above demonstrates, there are several industrial sites near Fifth Ward, which is highly burdensome for a community of less than 5 square miles. Both CBPs and metal recycling facilities are known emitters of air pollutants, including particulate matter, crystalline silica, lead, and other VOCs. When inhaled, these pollutants can cause a range of health issues, including respiratory and cardiovascular diseases. With a dense population of approximately 20,000, or 4,000 people per square mile[9], it is imperative that the proposed monitors are placed in locations that accurately reflect the community's dire situation with respect to air pollution caused by these industries.

Progressive Fifth Ward and Prince Square are particularly concerned about their most sensitive populations, such as children and older adults. In 2019, the City of Houston determined 25% of Fifth Ward's population was under 17 years, and 11% of the population was

[8] Map created by inputting information from Tables 1 & 2 into https://batchgeo.com/.
[9] City of Houston, Resource Assessment available at http://www.houstontx.gov/planning/Demographics/2019%20Council%20District%20Profiles/Greater_FifthWard_Final.pdf.

65 year or older.[10] Several schools, day care centers, and senior centers are all located in proximity to culprits of toxic air pollutants. For example, Sims Metal recycling facility is approximately only 1 mile from East Orange Ame Church Day Care, Phillis Wheatley High School, and YES Prep Secondary School. Both Cemtech Concrete Ready Mix and CMC Recycling are a little over 1 mile from Dogan Elementary School. These industrial facilities are also close to JW Peavy Senior Center and Community Fellowship's Senior Citizens Center, both within the Fifth Ward area.

Progressive Fifth Ward and Prince Square are further concerned about individuals with health issues that are both brought on and further exacerbated by the industrial polluters in the community. For example, both EJ Screen and the Houston Health Department (HHD) confirm that Fifth Ward falls within the worst 25% of neighborhoods in Texas with respect to prevalence of asthma in adults, a health condition in which a person's air passages become inflamed, and the narrowing of the respiratory passages makes it difficult to breathe.[11] Nearly 11% of all adults in the Fifth Ward area have been told by a healthcare provider that they currently have asthma.[12] Similarly, Fifth Ward falls within the worst 25% of neighborhoods in Texas with respect to prevalence of coronary heart disease in adults, with more than 8% of adults receiving a diagnosis of heart disease.[13] The proposed air monitoring should ensure that the concerns regarding these sensitive populations are adequately addressed.

Progressive Fifth Ward and Prince Square appreciate that their community is now acknowledged by TCEQ as a site in need of air monitoring. For the first time, the 2022 AMNP proposes a PM_{10} Federally Equivalent Methods (FEM) continuous monitor, a $PM_{2.5}$ FEM continuous monitor, a canister to measure VOCs every sixth day, and meteorological monitors to measure wind speed, wind direction, and outdoor temperatures, all within Fifth Ward. Numerous residents and advocates of Fifth Ward submitted comments on TCEQ's AMNPs in 2020 and 2021, therefore Progressive Fifth Ward and Prince Square commend TCEQ's attention to these concerns in deploying air monitors within the area.

While the monitors are expected to be deployed within the next seven months in December 2022, the sites for them are yet to be determined as of the release of the draft plan. Therefore, Progressive Fifth Ward and Prince Square seek more details regarding the process TCEQ undergoes in determining sites for air monitors and urge TCEQ to consider their community's geography, land use, and demographics in these determinations. They also request an update from TCEQ regarding the proposed locations of each monitor to the extent any decisions have been made since the release of the 2022 AMNP. Additionally, the community believes TCEQ should consider monitoring Fifth Ward for lead exposure in light of the sources of lead present in the area.

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[10] *Id.*
[11] Data compiled using https://www.houstonstateofhealth.com/tiles/index/display?alias=neighborhood.
[12] *Id.*
[13] *Id.*

Progressive Fifth Ward and Prince Square also note that prior to TCEQ's proposal of FEM monitoring in Fifth Ward, the City of Houston initiated limited community air monitoring in the area. The City of Houston installed a Clarity air monitor to evaluate $PM_{2.5}$, and this monitor is mere steps from Texas Concrete Ready Mix, a BARC animal shelter, and near a local park.[14]

Table 3. $PM_{2.5}$ from Clarity Monitor Near Fifth Ward—3300 Carr St. (77026)[15]

Date	**$PM_{2.5}$** (mg/m^3)
December 29, 2021	29 mg/m^3
January 16, 2022	25 mg/m^3
February 1, 2022	24 mg/m^3
March 1, 2022	23 mg/m^3
April 12, 2022	25 mg/m^3
May 7, 2022	21 mg/m^3

The data obtained over the last 6 months further demonstrates the need for monitoring industrial sites, such as concrete batch plants, located in residential communities. Accordingly, Progressive Fifth Ward and Prince Square reiterate their appreciation of TCEQ's commitment to air monitoring in Fifth Ward and request an update from TCEQ regarding the proposed locations of each monitor to the extent any decisions have been made since the release of the draft 2022 AMNP. In light of the number of metal recycling facilities surrounding the community, these groups also request TCEQ consider placing a lead monitor in the area.

B. Pleasantville Area – Houston, Texas

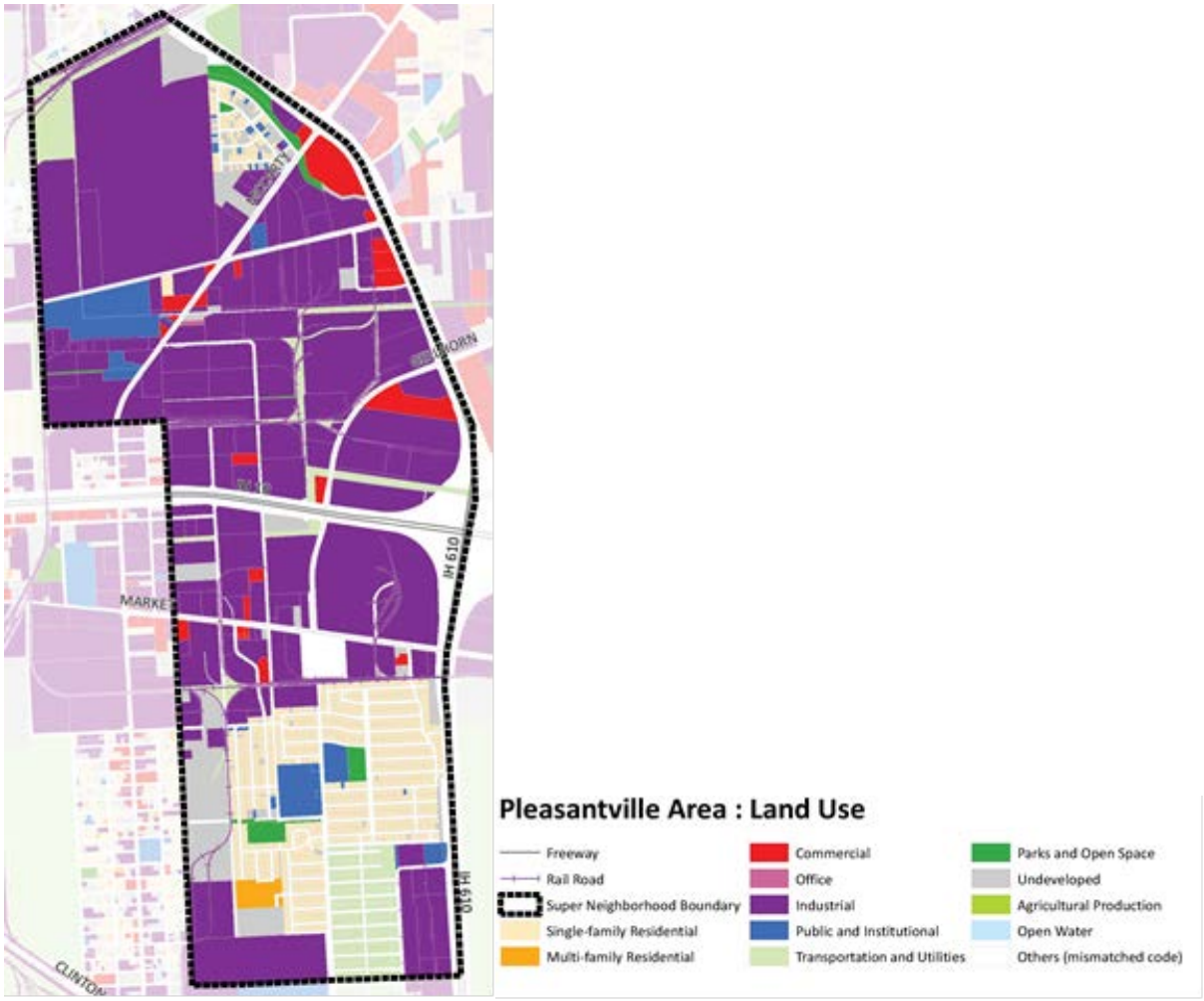
The Pleasantville Area, designated as part of Houston Super Neighborhood 57 (SN 57), includes many industrial areas, as well as two distinct residential areas. Groveland Terrace is a small residential area in the north, and south of Interstate 10 (East Freeway) is the Pleasantville subdivision. The high homeownership rate and strong neighborhood identity in Pleasantville has staved off deterioration even as the residential area has been surrounded by warehouses and industries.

The Pleasantville neighborhood is predominantly Black / African American and Latino / Hispanic, with 64% of Pleasantville Elementary School's 301 students identified as Black / African American, 34% as Latino/Hispanic, and 2% as white or mixed race. Ninety-five percent of Pleasantville Elementary students qualify for free or reduced-price lunch and 15% are learning as English as a second language.

A map created by the City of Houston Planning and Development Department of the Pleasantville Area Super Neighborhood 57 and the related land usage in the area is shown below:

[14] Brewster Park.
[15] Data available at https://openmap.clarity.io/.

Figure 6: Land Use in the Pleasantville Area[16]



As shown in the map above, most of the land use in the SN 57 is industrial. There are a few pockets of single-family residential properties found in the Super Neighborhood boundaries: Groveland Terrace, at the northern end of the Super Neighborhood, and Pleasantville in the southern part. Despite the industrial presence in the neighborhood, the single-family homes in this area are no less deserving of protections from contamination caused by their industrial neighbors. Air monitoring is critical to ensure that the air they breathe is not contaminated with pollution from the ship channel facilities and truckyards nearby.

Along with ACTS (Achieving Community Tasks Successfully), Super Neighborhood 57 has advocated for air monitoring within its borders because of the proximity to the Houston Ship Channel and various port-related activities. These organizations have worked to implement community-led air monitoring program in the neighborhood with at least one continuous air

[16] *See* Land Use Map, available at https://www.houstontx.gov/planning/Demographics/2019%20Council%20District%20Profiles/Pleasantville_Final.pdf.

monitor installed in 2020 utilizing funding through available through the Environmental Defense Fund.

Super Neighborhood 57 is glad the TCEQ has recognized the need for more air monitoring in the Pleasantville Area in the 2022 AMNP. Although the monitor location for the new proposed monitor has not been disclosed as part of the published plan, the group is excited about the Agency's stated commitment to install a monitor for $PM_{2.5}$ in the Pleasantville Area by December 31, 2022. This type of monitor for the area will help the community assess its exposure to particulate matter from the industrial build out in the area, particularly truck traffic along Loop 610 related to port operations nearby. Although this monitor is a good step, the group is also advocating for the TCEQ to add at least one more additional VOC monitor in the area to capture emissions from the nearby Houston Ship Channel that are likely impacting the health of the neighborhood.

C. Northeast Houston – Houston, Texas

For purposes of these comments, Northeast Houston Neighborhoods refers to several super neighborhoods, including Super Neighborhood 47, Super Neighborhood 48, and Super Neighborhood 49 / 50. These communities submit the following comments and concerns detailed below on the draft 2022 AMNP.

One of the threats to the quality of life in Northeast Houston is the proliferation of concrete batch plants. TCEQ has already permitted more than one concrete batch plant for every square mile in this community. In fact, two of the concrete batch plants are located next to each other on Homestead Road and operated by the same company, Texas Concrete Ready Mix. Recent air pollution monitoring observed within the boundaries of the neighborhood exemplifies the cumulative impacts resulting from TCEQ's failure to consider environmental injustice in various neighborhoods in Northeast Houston, including but not limited to Super Neighborhood 47, Super Neighborhood 48, and Super Neighborhoods 49 / 50 (Northeast Houston Neighborhoods).

In May 2021, TCEQ installed a state-run air monitor at the edge of Super Neighborhood 48 to measure certain constituents—like coarse and fine particulate matter.[17] The monitor is located at 7330 ½ N. Wayside Drive, Houston, TX 77028 (North Wayside Monitor).[18] The North Wayside Monitor began measuring $PM_{2.5}$ using Federally Equivalent Methods (FEM) on May 4, 2021.[19] Since this monitor was installed, the $PM_{2.5}$ readings have consistently exceeded NAAQS standards.[20] According to TCEQ, the readings from the North Wayside Monitor exceed the

[17] TCEQ, Annual Air Monitoring Network Plan (Jul. 1, 2021) at 17.
[18] *Id.*
[19] *Id.*
[20] "2012 PM2.5 NAAQS: Primary Annual Standard: 12.0 micrograms per cubic meter (µg/m3); Secondary Annual Standard: 15.0 µg/m3; Primary and Secondary 24-Hour Standard: 35 µg/m3; 2012 PM10 NAAQS: Primary and Secondary Standard 15.0 µg/m3. On December 18, 2020, the EPA published a final rule retaining the primary and secondary standards for both PM2.5 and PM10." TCEQ Presentation to Houston-Galveston Area Council Houston

NAAQS standard for $PM_{2.5}$, averaging at 12.5.[21] Based on the data from the North Wayside Monitor, TCEQ has begun to identify individual members of industry in hopes of resolving the current NAAQS violations that are significantly burdening the Northeast Houston Neighborhoods' air quality and throwing the region out of compliance. TCEQ identified several industrial users responsible for the problem, including the following sources all located within 2 miles of the North Wayside Monitor:

1. Gold Star Metals (0.12 miles E)
2. Invictus Transport (0.13 miles NE)
3. XLR8 Truck Lines (0.20 miles NE)
4. Five Star Ready Mix (0.37 miles NE)
5. Texas Concrete Ready Mix (1.4 miles SW)
6. Texas Concrete Ready Mix (1.4 miles SW)
7. Queen Ready Mix (1.75 miles SE)
8. Union Pacific Rail Yard (0.40 miles SW-W)

Further burdening the air quality in these environmental justice communities are the easily permitted aggregate and concrete facilities. Four of the sources identified by TCEQ in the list above are concrete batch plants in the immediate area. Because the current standard permit for concrete batch plants specifically exempts CBPs from emissions limitations and the batch plants cluster in communities of color, it is significantly deteriorating air quality in these overburdened areas—as evidenced by the NAAQS exceedances.

According to the TCEQ's February 2022 presentation to the Houston Galveston Area Council PM Advance Committee, there are 24 *registered* aggregate production operations in Harris County[22]—not to mention all the potentially unregistered aggregate facilities. In addition to these 24 aggregate operations, the number of concrete batch plants has grown from approximately 135 permitted concrete batch plant operations in 2019 to approximately 180 bath plants in 2021.[23] These batch plants are disproportionately located in Northeast Houston.[24] Ensuring that there is adequate monitoring in the Northeast Houston Neighborhoods is important to determine not only whether these facilities are in compliance with the permits and but also monitor the impacts on human heath in this area resulting from the number of facilities already permitted in the Northeast Houston Neighborhoods.

Also among the above-listed facilities is a metal recycler, Gold Star Metals, estimated to be only .12 miles from the North Wayside Monitor. According to a research project conducted by the University of Texas Health and other partners, metal air pollution was evaluated near

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PM Advance Committee, "Houston North Wayside Particulate Matter" (Feb. 7, 2022). (hereinafter "TCEQ HGAC PM2.5 Presentation").

[21] TCEQ, North Wayside Monitor Update May 2021-January 2022, (Feb. 8, 2022) at 3.

[22] TCEQ HGAC PM2.5 Presentation at 14.

[23] Houston-Galveston-Brazoria (HGB) $PM_{2.5}$ Advance Path Forward Update (2021) at 31.

[24] Houston-Galveston-Brazoria (HGB) $PM_{2.5}$ Advance Path Forward Update (2019) at 36-37.

CMC Metal Recycling located at 2015 Quitman Street, Houston, TX 77026.[25] This study rated the Hazard Index (HI) created from the metal emissions at this site and found that the HI for developing nasal irritation and upper respiratory distress ranged from 0.4 to 1.6. The HI for developing bronchitis, lung inflammation and difficulty breathing ranged from 0.4 to 1.6. And, generally, the study found: "the risks for diseases other than cancer would decrease if metal air pollution decreases; the risks would increase if metal air pollution increases."[26] Taking this study as true, and applying to similarly situated communities in Northeast Houston where there are many more metal facilities, including: Gold Star Metals, Steel Castings, Hydril Premium Connections, Modern Welding Co Houston Plant, and Mauser Corp—these Northeast Neighborhoods are legitimately concerned about their air quality. Further, all of these metal facilities are located near to the North Wayside Monitor, which has documented NAAQS exceedances for $PM_{2.5}$. Because the North Wayside Monitor does not currently evaluate other concerning pollutants, the Northeast Neighborhoods represented in these comments encourage TCEQ to also collect metal emissions data at the North Wayside monitor so that the adjacent communities can understand the health impacts of living near facilities with metal emissions.

Additionally, there are other concerning industrial operations within five miles from the North Wayside Monitor, including the following:

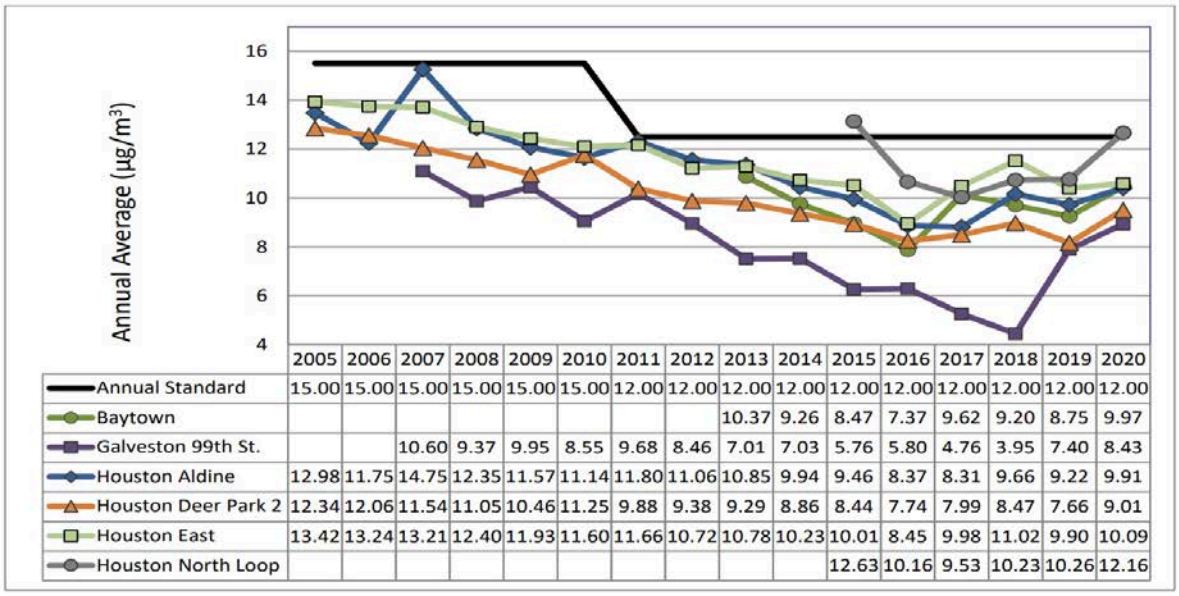
1. McCarty Road Landfill
2. Longhorn Glass Plant
3. Anheuser Busch Houston Brewery
4. 69th Street Wastewater Treatment Plant
5. Owens Corning
6. Greens Bayou Electric Generating Station
7. Whispering Pines Landfill
8. McCarty Road Landfill Gas Recovery Facility
9. Johns Manville
10. Magellan Pipeline Terminals East Houston Tank Farm

And, while perhaps values of $PM_{2.5}$ were trending below the NAAQS, more recently there has been a clear uptick in values exceeding NAAQS:

[25] 2018 MAPPS Report, Fifth Ward/Northside near CMC Recycling, UT Health, (Oct. 2018) at 4-6.
[26] *Id.* at 5.

Figure 7: Preliminary Averages for HGB showing an uptick in $PM_{2.5}$ Values[27]

Preliminary Annual $PM_{2.5}$ Averages for HGB Region Regulatory Monitors[6]



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Annual Standard	15.00	15.00	15.00	15.00	15.00	15.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
Baytown									10.37	9.26	8.47	7.37	9.62	9.20	8.75	9.97
Galveston 99th St.			10.60	9.37	9.95	8.55	9.68	8.46	7.01	7.03	5.76	5.80	4.76	3.95	7.40	8.43
Houston Aldine	12.98	11.75	14.75	12.35	11.57	11.14	11.80	11.06	10.85	9.94	9.46	8.37	8.31	9.66	9.22	9.91
Houston Deer Park 2	12.34	12.06	11.54	11.05	10.46	11.25	9.88	9.38	9.29	8.86	8.44	7.74	7.99	8.47	7.66	9.01
Houston East	13.42	13.24	13.21	12.40	11.93	11.60	11.66	10.72	10.78	10.23	10.01	8.45	9.98	11.02	9.90	10.09
Houston North Loop											12.63	10.16	9.53	10.23	10.26	12.16

[5] A "design value" for an area is a statistic that is compared to the National Ambient Air Quality Standards (NAAQS) to determine the attainment status of the area. An areas value is calculated using an arithmetic mean of the annual $PM_{2.5}$ averages for three consecutive years at each regulatory monitor. If an area has more than one regulatory monitor, the monitor with the highest value sets the design value for the area (EPA, 2014).
[6] All values within this chart are certified. Only the data from these regulatory monitors will be used by EPA for attainment demonstration purposes. Source:: TCEQ Source: TCEQ Source: TCEQ TAMIS Database - http://www17.tceq.texas.gov/tamis/

While these communities are encouraged that a single monitor was deployed to serve all these Northeast communities, the results of this monitor are deeply concerning. Further, four Super Neighborhoods with increasing industrial encroachment in predominately residential subdivisions covering 25.74 sq. miles only have one monitor in the region to understand the quality of the air they are breathing. The one community monitor at North Wayside evaluating only (PM_{10}, $PM_{2.5}$, Ozone, Wind & Temperature) is insufficient to assess emissions from multiple different industrial facilities.

Even among community-run and City-run air monitoring programs, there are very few monitors deployed in this highly industrialized 25+ square mile residential area.[28] In fact, Settegast is devoid of monitors, and the Northern portions of SN 47 are also lacking community monitors. More importantly, state-run monitors are critical in this area where $PM_{2.5}$ is problematic to document elevated levels because when communities voice concerns to TCEQ or other authorities based on elevated readings on monitors, they are told that because the monitors are not TCEQ or EPA regulated air monitors, these readings are unreliable. As a result, the communities' valid concerns often remain unaddressed.

[27] Houston-Galveston-Brazoria (HGB) $PM_{2.5}$ Advance Path Forward Update (2021) at 10.
[28] Community Air Monitoring Program initiated by Air Alliance Houston located one Purple Air monitor at 5807 Little York Houston, Texas 77016. City of Houston has one Clarity monitor in Trinity/Kashmere Gardens area and at the Northeast Multi-Service Center at 9720 Spaulding St. Houston, TX 77016.

Given the number and scope of industrial users near the North Wayside Monitor, and the uptick in $PM_{2.5}$ values, the Northeast Houston Neighborhoods additionally request (i) a VOC cannister, (ii) metal emissions monitoring; and (iii) an additional State-run monitor that tests for speciated values of PM_{10}, $PM_{2.5}$ to also be deployed in Northeast Houston where these industrial facilities have congregated.

D. The West Port Arthur Neighborhood

West Port Arthur, also known as the Westside of Port Arthur, is a residential neighborhood that is predominately a low-income, community of color. The neighborhood is bisected and surrounded by major industrial facilities, many of which are among Texas' largest polluters of criteria pollutants. **Figure 8**, below, shows a satellite image of the West Port Arthur neighborhood. The residential areas of West Port Arthur are clearly bordered by the Port of Port Arthur to the east, major refineries and other heavy industrial facilities to the south, and bisected by more major facilities to the west. It is important to note that while historic core of West Port Arthur is on the left half of the image, West Port Arthur includes and PACAN serves those who live west of the large Motiva complex seen in the image. These neighborhoods to the west often are overlooked and are particularly underserved due to their isolation caused by industrial expansion around West Port Arthur.

Figure 8. Satellite Image of Residential and Industrial West Port Arthur

Figure 9 shows the prevalence of people of color in Port Arthur. **Figure 10** shows the Black population in Port Arthur, specifically. **Figure 11** shows the prevalence of households below the poverty level in Port Arthur. Together, these show the level of poverty and high concentration of minority residents in West Port Arthur. On each figure, the general location of West Port Arthur is marked with a "star." TCEQ has a duty, under the nation's civil rights laws, to ensure these vulnerable minority neighborhoods are not discriminated against by TCEQ's air monitoring scheme, even if the discrimination is unintentional.

Figure 9. People of Color in Port Arthur[29]

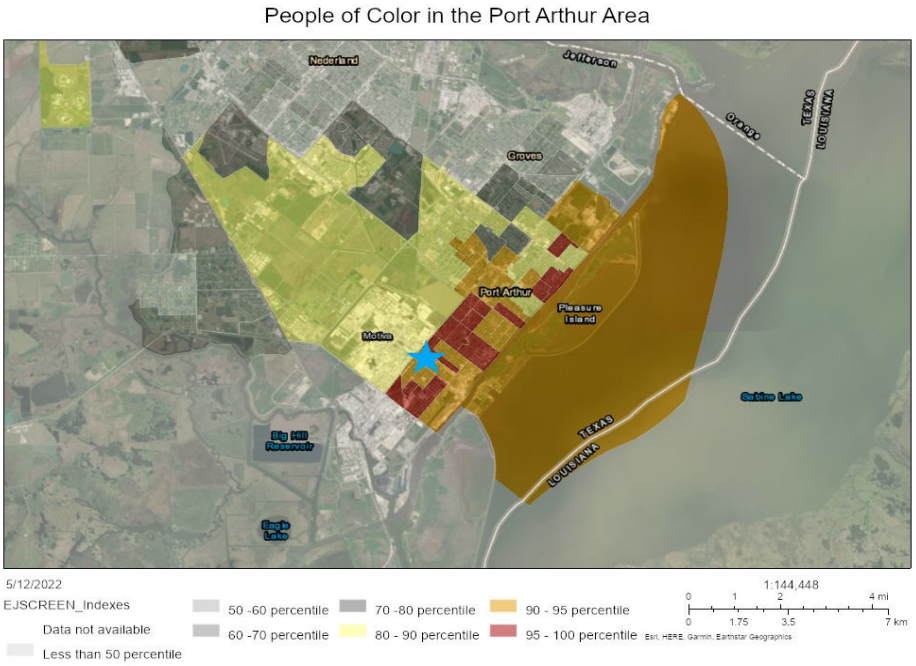
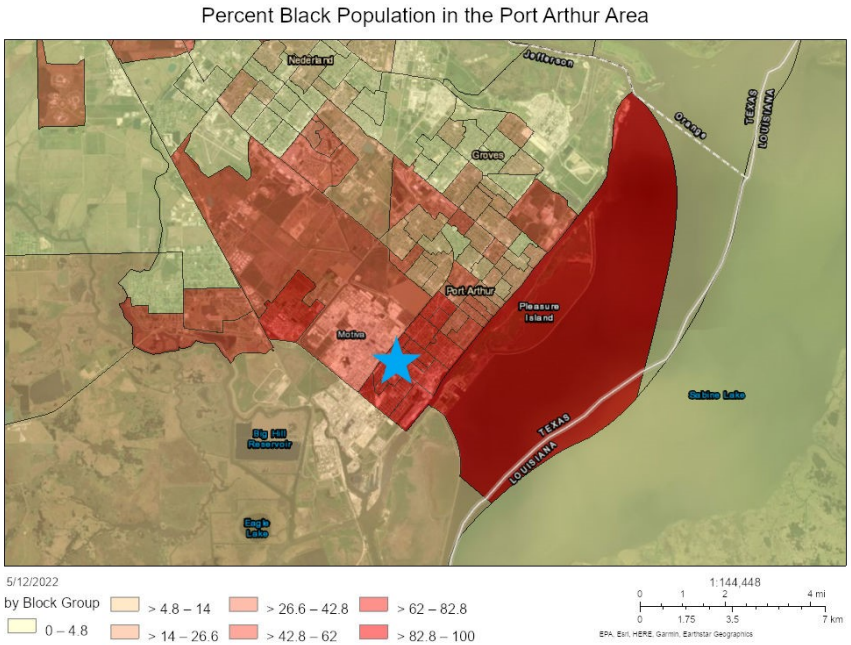
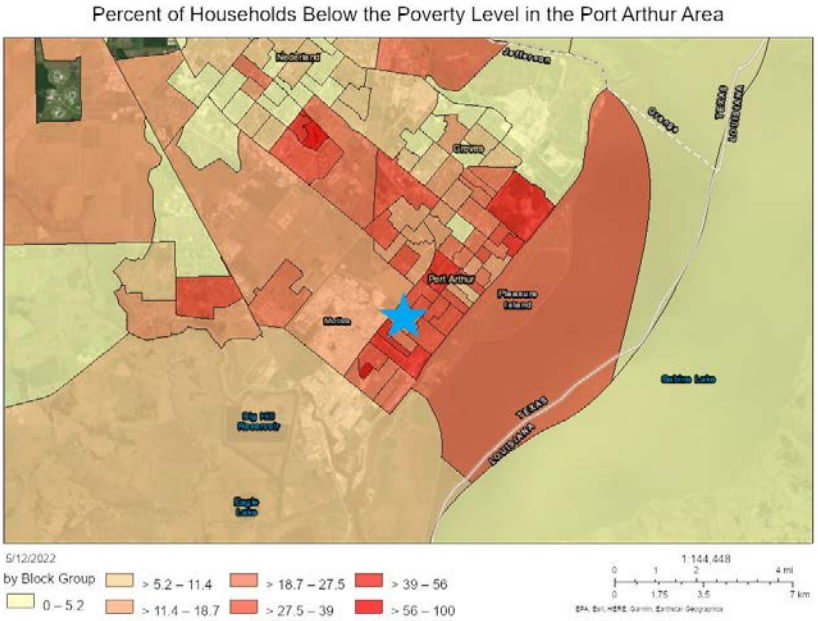


Figure 10. Black Population in Port Arthur[30]



[29] EPA, Environmental Justice Screening Mapping Tool; available at: https://ejscreen.epa.gov/mapper/.
[30] *Id.*

Figure 11. Households Below the Poverty Level in Port Arthur[31]



Today, the West Port Arthur neighborhood suffers from excessive releases of smog-causing toxic air pollution due the area's large number of refineries, petrochemical plants, and other heavy industrial facilities. Port Arthur and larger Jefferson County suffer from many well-documented health disparities. According to the University of Wisconsin's Population Health Institute, Jefferson County has poor "health outcomes" and poor "health factors" relative to the rest of Texas.[32] Specifically, for Jefferson County:

- 2021 Overall Health Outcomes were 178th out of 243 ranked counties.
- 2021 Overall Health Factors were 213th out of 243 ranked counties.

Jefferson County fairs poorly among the two sub-components of the overall health outcomes ranking:

- 2021 Length of Life ranking was 177th out of 243 ranked counties.
- 2021 Quality of Life ranking was 178th out of 243 ranked counties.

Within the overall health factors ranking, Jefferson County also fares poorly:

- 2021 Health Behaviors ranking was 207th out of 243 ranked counties.

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[31] *Id.*

[32] University of Wisconsin Population Health Institute, School of Medicine and Public Health, County Rankings, available at https://www.countyhealthrankings.org/app/texas/2022/rankings/jefferson/county/factors/overall/snapshot.

- 2021 Social & Economic Factors ranking was 223rd out of 243 ranked counties.
- 2021 Physical Environmental Ranking was 230th out of 243 ranked counties.

However, Jefferson County has the 50th ranked clinical care situation in Texas. That the county's health outcomes are so poor, despite having relatively decent access to healthcare shows the serious nature of the health challenges the county faces.

Notably, Jefferson County's worst ranking comes in "physical environment." This is based substantially on Jefferson County's air and water quality—highlighting the health challenges presented by air quality in the county. Premature death data and preventable hospital stay data highlight that health challenges are most acute for Jefferson County's Black residents.

Table 4. Potential Life Lost Rate in Beaumont-Port Arthur by Race

Race	Potential Life Lost Rate
Asian	3,600
Black	13,000
Hispanic	4,200
White	9,600

Table 5. Preventable Hospital Stays in Beaumont-Port Arthur by Race

Race	Preventable Hospital Stays
Asian	2,411
Black	7,228
Hispanic	4,174
White	4,513

The United States Centers for Disease Control and Prevention (CDC) has collected significant health data showing residents of the Beaumont-Port Arthur metro area suffer from negative overall health situations. According to the CDC's most recent Behavioral Risk Factor Surveillance System (BRFSS) Prevalence & Trends Data available for the Beaumont-Port Arthur area (roughly Jefferson County)[33]:

- 25.8% of residents report their overall health status is fair to poor.
- 6.4% of residents report their overall health is poor.

Beaumont-Port Arthur ranks near the bottom of all measured Texas metro areas in overall health. CDC's data shows Beaumont-Port Arthur fares poorly with respect to multiple

[33] CDC, Behavioral Risk Factor Surveillance System, Prevalence and Trends Data, available at https://www.cdc.gov/brfss/brfssprevalence/.

chronic health problems which are known to be caused or exacerbated by air pollution. Perhaps most notably, Beaumont-Port Arthur's residents suffer from very high rates of asthma:

- 9.3% of Beaumont-Port Arthur residents currently have asthma, which ranks 14 out of 16 ranked Texas metropolitan areas. At least 17.1% have had asthma at some point in their lives, which ranks 17 out of 18 ranked metropolitan areas.

Figure 12, below, shows asthma rates in the Port Arthur area. West Port Arthur has notably high rates of asthma relative to the rest of the area. Two census tracts in the heart of Port Arthur's Westside are in the 97th and 98th percentile nationally.

Figure 12. Prevalence of Asthma in the Port Arthur Area[34]

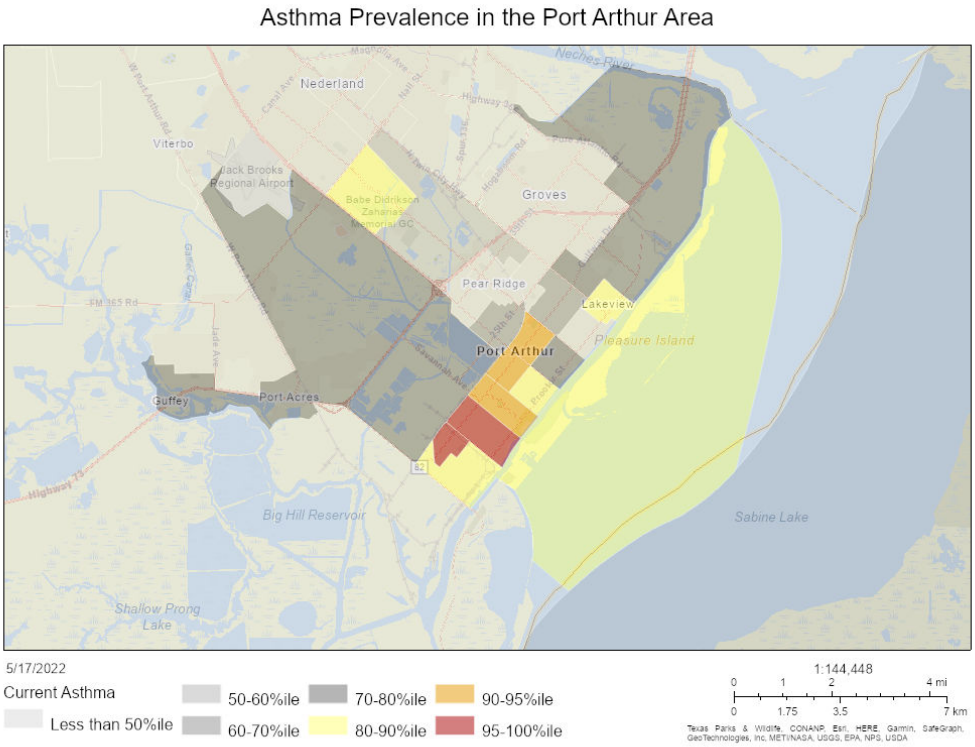
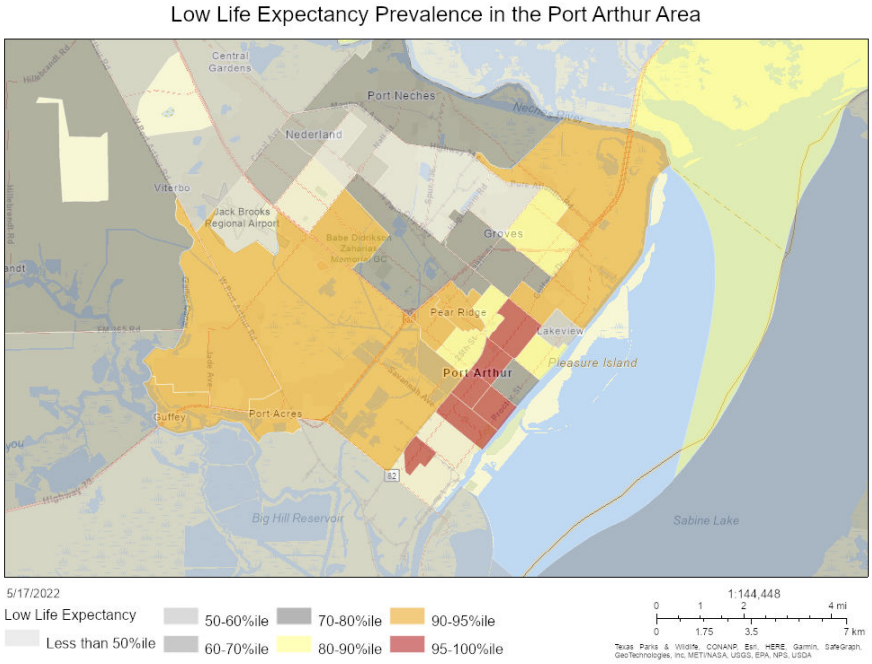


Figure 13 shows the prevalence low life expectancy in the Port Arthur area. Like asthma, West Port Arthur faces an acute challenge with regards to life expectancy. This captures the overall and ultimate challenge faced on the Westside—numerous health challenges, many tied to air pollution, cause incredibly high rates of premature death. West Port Arthur has some of the lowest life expectancies in the entire nation. Life expectancies in some tracts are less than 68 years, which places them in the 99.5 percentile nationally. Note that areas of West Port Arthur which appear white on the map do not report high life expectancies, but rather show as "no data reported."

[34] EPA, Environmental Justice Screening Mapping Tool; available at: https://ejscreen.epa.gov/mapper/.

Figure 13. Prevalence of Low Life Expectancy in the Port Arthur Area[35]



According to the EPA's most recent release of the National Emissions Inventory (NEI), there were at least 23 carbon monoxide (CO) emitters, 14 lead (Pb) emitters, 23 nitrogen dioxide (NO_2 or NO_x) emitters, 23 particulate matter 10 (PM_{10}) emitters, 23 particulate matter 2.5 ($PM_{2.5}$) emitters, 24 sulfur dioxide (SO_2) emitters, and 26 volatile organic compounds (VOC) emitters in Port Arthur itself, plus a number near Port Arthur in places such as Sabine Pass whose emissions enter the Port Arthur air shed as the area's prevailing winds blow pollutants from south to north. In each of these categories, Port Arthur is home to some of the state's largest emitters. Port Arthur's multiple large refineries and chemical plants are among the highest VOC, NOx, CO, and PM emitters in the state. Oxbow Calcining, discussed below in more depth, is one of the state's largest SO_2 and Pb emitters, and is uniquely located immediately adjacent to a large urban area. Not only are high amounts of these pollutants being emitted into Port Arthur's air shed, but also these pollutants are precursors to ozone (O_3).

While PACAN acknowledges that Port Arthur's city limits include five air monitors within the TCEQ's network, the proximity of so much major air pollution to a vulnerable and susceptible environmental justice community pose exceptional risks that require exceptional levels of air monitoring to ensure protection from poor air quality. The air pollution in and around Port Arthur, no doubt, directly contributes to the area's poverty, environmental and community degradation, and the significant public health challenges discussed above.

[35] *Id.*

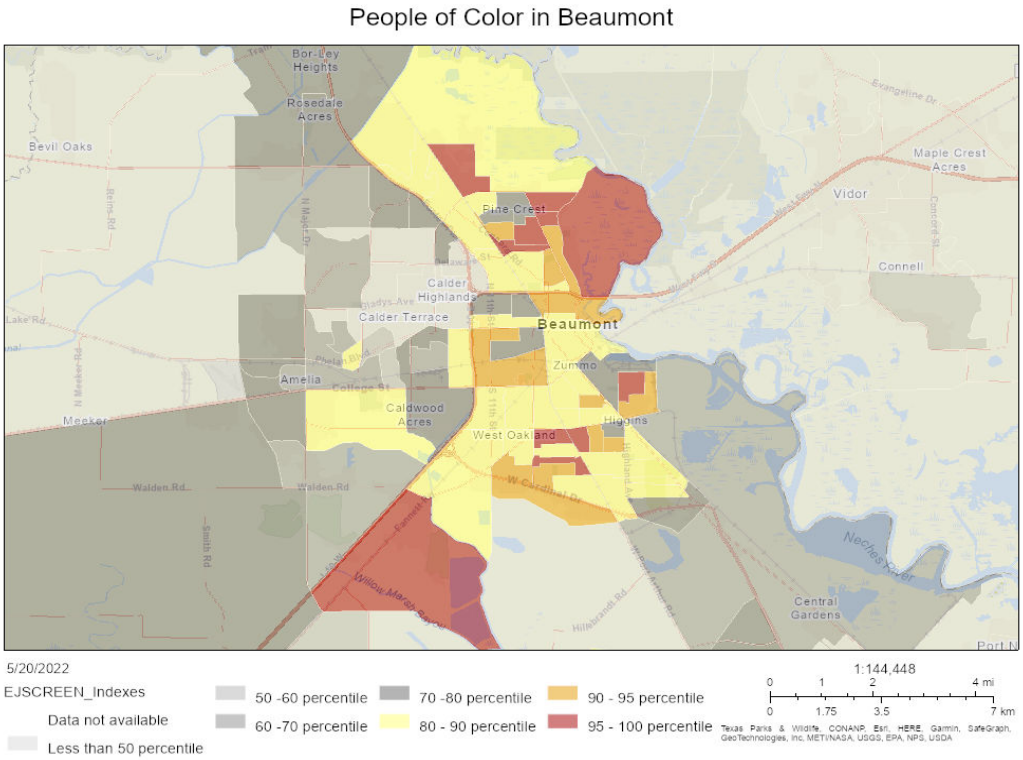
As described in more depth below, TCEQ should make several additions to the air monitoring network in and around Port Arthur to ensure compliance with the NAAQS, ensure compliance with civil rights laws, and ensure the local community fully understands what is in its air.

E. The east side of Beaumont, Texas

Beaumont's east side faces many health challenges similar to those described for West Port Arthur. It has high asthma rates, low life expectancy, and faces other health disparities, described below. The information for the Beaumont-Port Arthur area provided in the previous section applies to the east side of Beaumont, as well, and should be considered when designing the air monitoring network in Beaumont. Like West Port Arthur, TCEQ must ensure the air monitoring scheme does not unintentionally discriminate against the minority population on Beaumont's east side. As described below, the area is home to some of Texas' most significant polluters, but TCEQ has provided for limited monitoring of the local air shed.

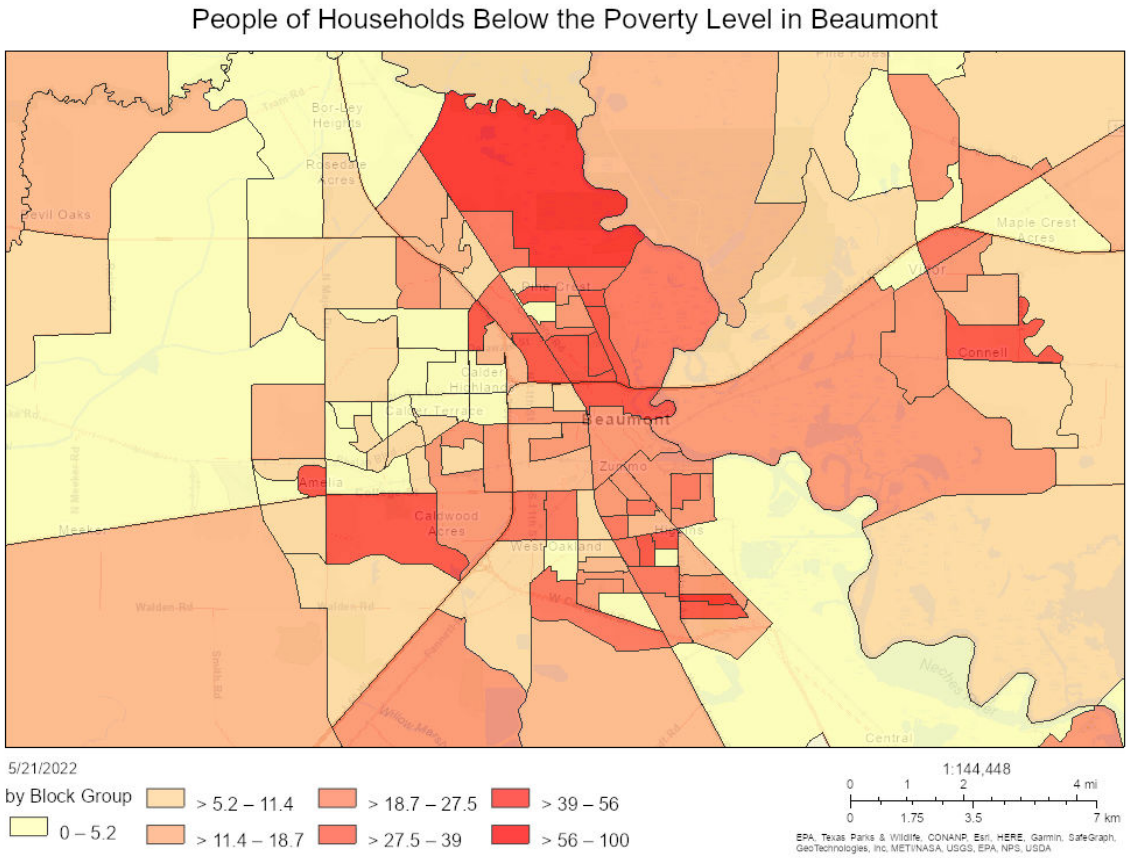
Beaumont's east side can roughly be defined as the portion of town east of Interstate 10 and US Highway 96. In the center of Beaumont, Interstate 10 cuts directly through Beaumont's east side. **Figure 14** shows the prevalence of people of color in Port Arthur.

Figure 14. People of Color in Beaumont[36]



[36] *Id.*

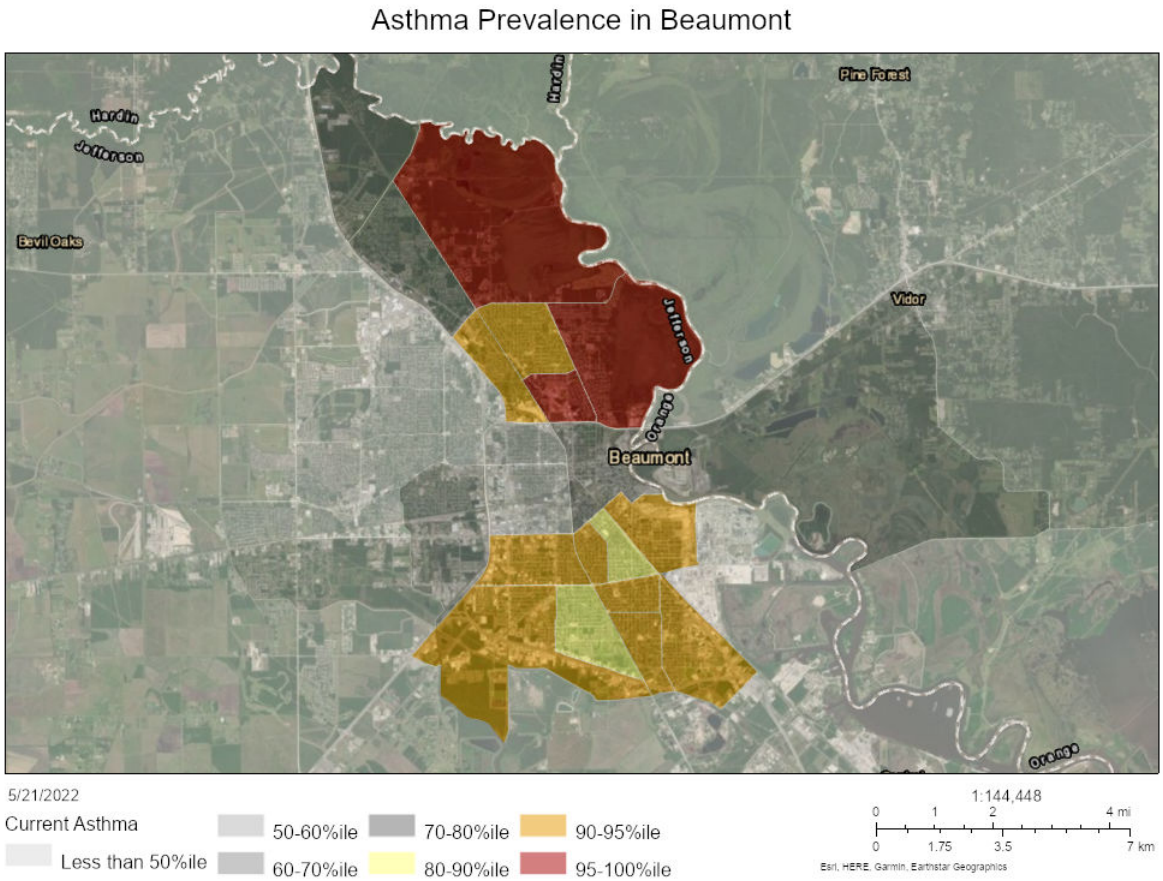
Figure 15. Households Below the Poverty Level in Beaumont[37]



As described above, the Beaumont-Port Arthur area suffers from high rates of asthma. And, in Beaumont, those areas with especially high rates are almost all located on the east side. **Figure 16** shows the prevalence of asthma in the Beaumont area. Most of the east side is in the 90th percentile or higher nationally with regards to asthma prevalence among adults. Beaumont's northeast side is within the 96th percentile nationally.

[37] *Id.*

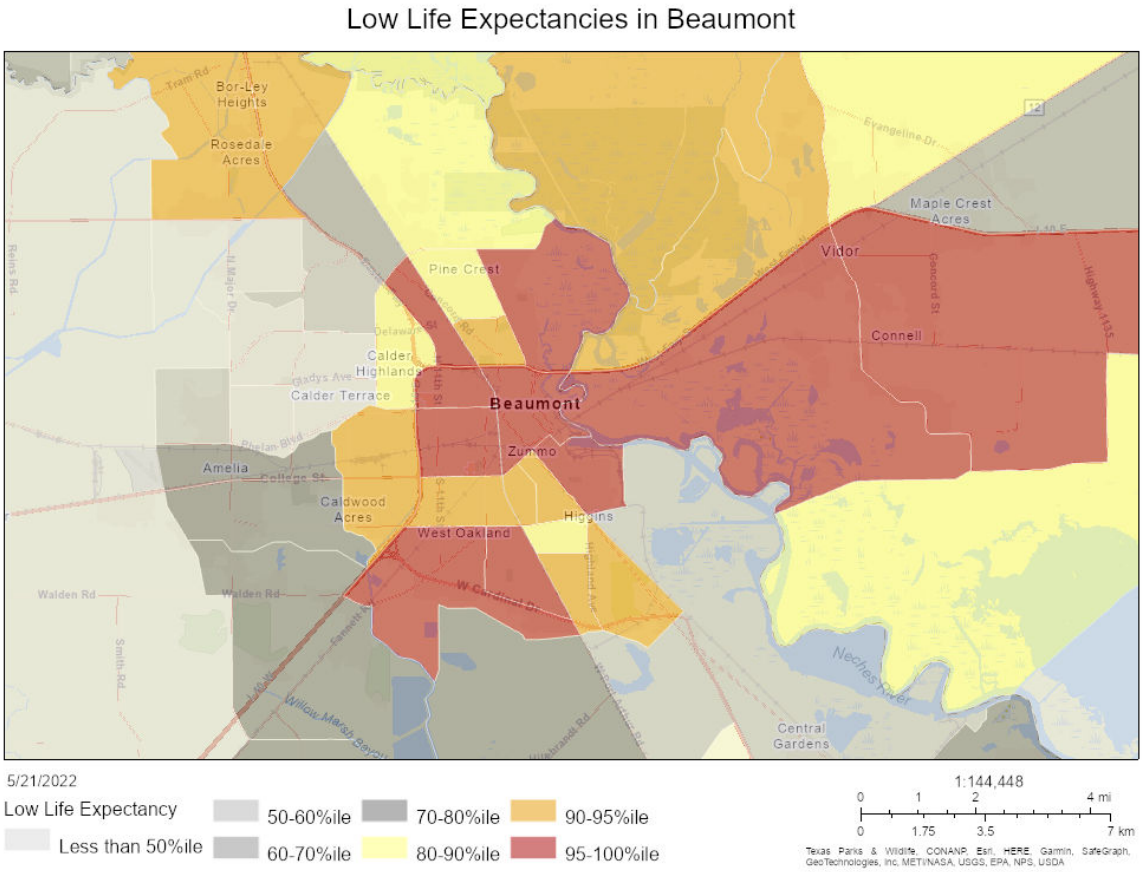
Figure 16. Prevalence of Asthma in Beaumont[38]



Beaumont's east side also suffers from low life expectancy—life expectancies across the east side are among the worst in the entire United States. Much of the east side is among the 95th percentile or higher in the United States for low life expectancy. **Figure 17** shows life expectancies across the Beaumont area.

[38] *Id.*

Figure 17. Prevalence of Low Life Expectancy in Beaumont[39]



Despite many health challenges faced by vulnerable and susceptible populations in Beaumont and despite the presence of the Port of Beaumont, many heavy industrial facilities, and the busy I-10 corridor, there are only two air monitors in the TCEQ's air monitoring network plan. These monitors include:

Table 6. Regulatory Air Monitors in Beaumont

Name of Monitor	Location	Air Pollutants Monitored
Beaumont Mary	598 Craig St., Beaumont, TX 77701	Hydrogen Sulfide Volatile Organic Compounds
Beaumont Downtown	1086 Vermont Ave., Beaumont, TX 77705	Nitrogen Oxides Ozone Sulfur Dioxide Volatile Organic Compounds

[39] *Id.*

These two monitors, together, and are not sufficient or well placed to best protect the local community. With only two monitors, Beaumont, a city that has over 100,000 residents and is over 85 square miles cannot be comprehensively monitored. Further, and importantly, the Beaumont Mary monitor—the monitor located in central, urban Beaumont—only monitors 2 pollutants. The Beaumont Downtown monitor monitors more pollutants. However, it is not located in downtown Beaumont, but rather on the south end of the city. While it may pick up emissions from the south and southeast of its location, the Beaumont Downtown air monitor is not well positioned to pick up emissions from industry actually located within Beaumont. Nor is it well located to pick up emissions from the largest emitters in the area. The prevailing winds in Beaumont come from the south and southwest, but the Beaumont Downtown monitor is in south Beaumont, meaning it will not pick up emissions from inside Beaumont. And, some of the area's largest polluters are north of the monitor.

Figure 18. Prevailing Winds in Beaumont[40]

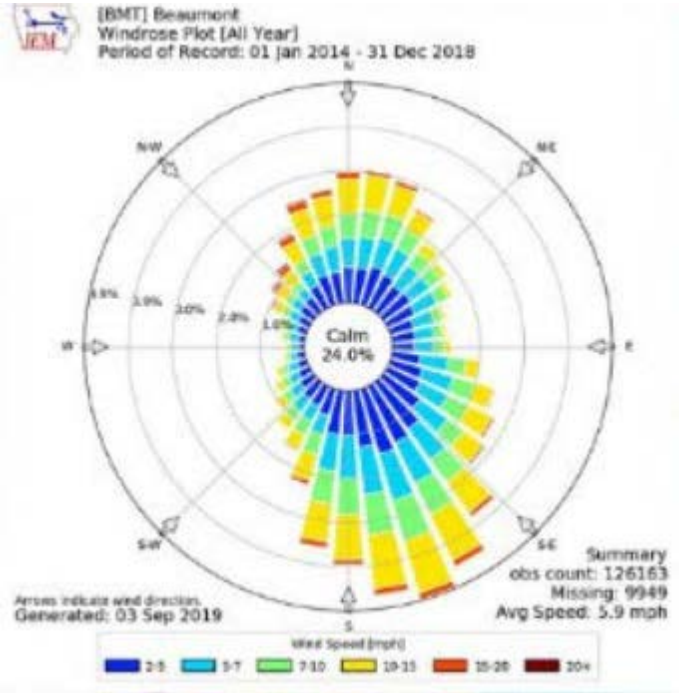
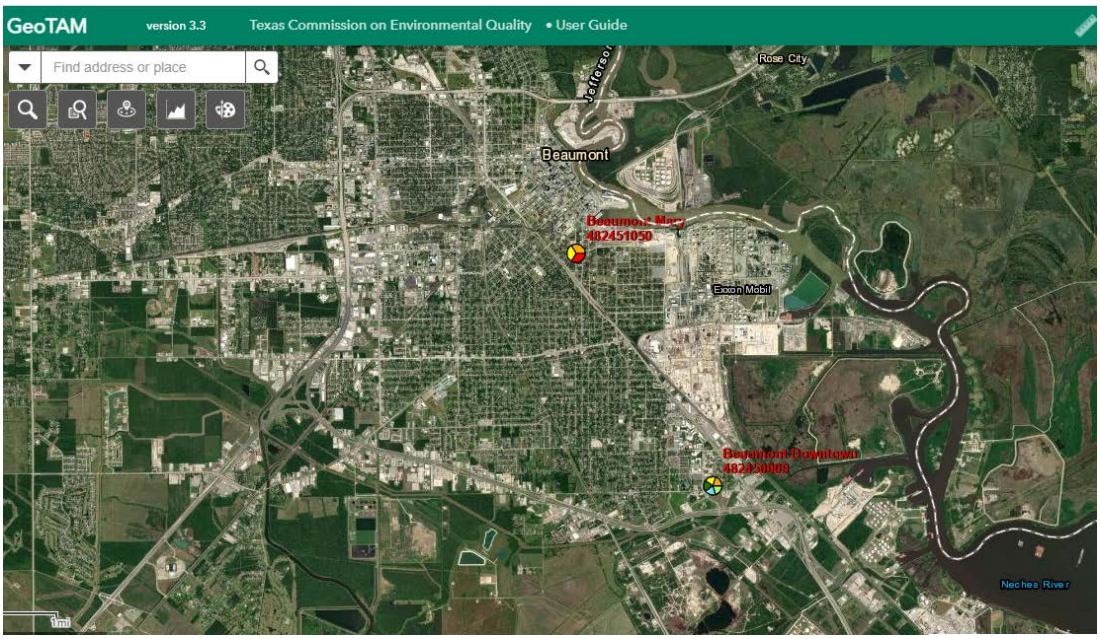


Figure 19 is a screenshot from the TCEQ's GeoTAM viewer showing the location of the Beaumont Mary and Beaumont Downtown monitors. Residential Beaumont can be seen north of the Downtown monitor—and that much of the area south of that monitor is more rural or industrial. Further, the sprawling ExxonMobil complex—a major source of numerous pollutants—is seen and labeled on the map. It is well north of the Beaumont Downtown monitor. Other major industry and the Port of Beaumont can also be seen north of the Beaumont Downtown Monitor. The Beaumont Mary monitor is the only monitor located to

[40] TCEQ, 2020 Five Year Ambient Monitoring Network Assessment at 37, available at https://www.tceq.texas.gov/assets/public/compliance/monops/air/annual_review/historical/2020-5yrAAMNA.pdf.

capture emissions from that heavily industrialized area, yet the Beaumont Mary monitor has very limited capabilities.

Figure 19. Location of Regulatory Monitors in Beaumont on a Satellite Image of South Beaumont[41]



TCEQ's Air Monitoring Network Plan is, in many ways, focused on county level population. This approach can lead to the situation in Beaumont: a large, vulnerable area with major polluters has become a notable hole in TCEQ's air monitoring scheme. More monitors, or more capabilities at the Beaumont Mary monitor, are necessary to ensure TCEQ best complies with air monitoring regulations, ensure the area's air quality is accurately monitored, and to help protect the many vulnerable residents on Beaumont's east side.

F. Freeport, Texas

Freeport, Texas is a small industrial city on the Gulf Coast located in Brazoria County, Texas. A large percentage of Freeport's approximately 12,169 residents are minorities: over 64% are of Hispanic descent, while another 14% identify as Black or African American. Freeport has a higher minority population than 82% of American communities. Freeport is also in the 82nd percentile nationally for the proportion of low-income residents, with a per capita income of $19,277 and 55% of the population classified as low-income. Thirty-five percent of residents have less than a high school education, which is worse than 93% of American communities. And 10% are linguistically isolated, well above the national average of 4%. Freeport residents are closer to facilities handling hazardous waste than 92% of American communities.

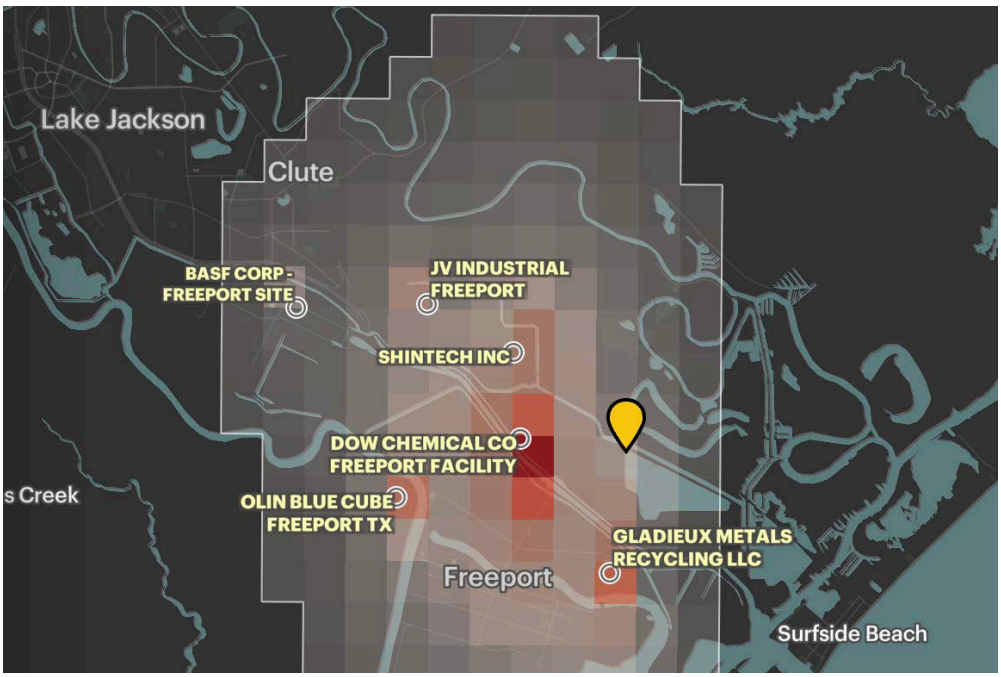
[41] https://www.tceq.texas.gov/airquality/monops.

Freeport residents also rank highly in proximity to Superfund sites, since nearly the entire population lives within five miles of the GulfCo Marine Maintenance Superfund site. GulfCo Marine Maintenance was the site of barge cleaning operations for three decades and became a Superfund site when evidence revealed that hazardous substances were migrating from the site and posing a threat to nearby drinking water supplies and downstream sensitive environments. And, Freeport residents are closer to facilities that discharge water pollution than 98% of American communities. Not only is water pollution a problem, but air quality remains a major concern.

This combination of a high concentration of minority and low-income residents in conjunction with a high concentration of large industrial polluters is indicative of an environmental justice community. In Freeport, as along much of the Texas gulf coast, minority and low-income populations continue to bear a wildly disproportionate burden of the toxic pollution from the state's petrochemical industry, while being denied a share in the economic prosperity that the industry has brought to other parts of the state.

ProPublica's recent study on cancer causing industrial air pollution in the United States, identified Freeport as a hot spot.[42] This analysis reviewed five years of modeled EPA data and identified more than 1,000 toxic hot spots across the country.[43] The map below illustrates the facilities in Freeport, Texas, and the dark red spots denote the most problematic areas.

Figure 20: Pro Publica Map of Facilities in Freeport, TX that Emit Toxic Chemical Emissions[44]



[42] Al Shaw and Lylla Younes, The Most Detailed Map of Cancer-Causing Industrial Air Pollution in the U.S., Pro Publica, (Nov. 2, 2021 updated Mar. 15, 2022); available at: https://projects.propublica.org/toxmap/
[43] *Id.*
[44] *Id.*

The major facilities contributing to toxic air emissions in Freeport include:

- Gladieux Metals Recycling: (responsible for emitting Cobalt compounds, Arsenic compounds and Nickel compounds); contributes to **47.3%** of the estimated ***excess*** cancer risk in Freeport;
- Nalco Champion: (responsible for emitting Ethylene oxide, Formaldehyde, Propylene oxide and 3 more carcinogens); contributes to 40.9% of the estimated ***excess*** cancer risk in Freeport; and
- Dow Chemical (responsible for emitting Ethylene oxide, Butadiene, 1,3-, Dichloroethane, 1,2- and 40 more carcinogens); contributes to 11% of the estimated ***excess*** cancer risk in Freeport.[45]

Dow is an additionally problematic facility. According to the Texas Attorney General's (OAG) lawsuit against Dow in 2021[46], the OAG alleges that the Dow Plant has experienced "continuing problems associated with errors and equipment malfunctions resulting in emissions events that emit unauthorized contaminants into the environment."[47] And, during 2016-2021, TCEQ entered six administrative orders against Dow for air emission violations.[48]

While Dow remains an ongoing air quality concern, the Gladieux Facility (f/k/a Gulf Chemical and Metallurgical) also has a sordid criminal environmental history that continues to cause the local Freeport community ongoing concerns about metal emissions in the air. Especially because in 2005, the area around the Gladieux Facility was added to the Air Pollutant Watchlist as a result of elevated short-term Arsenic, Cobalt, Nickel, and Vanadium levels, which exceeded their respective air monitoring comparison values (AMCVs).[49] AMCV is a collective term used to describe chemical-specific air concentrations used to evaluate air monitoring data that are set to protect human health and welfare. Short-term AMCVs are based on data concerning acute health effects, odor potential, and acute vegetation effects.

TCEQ defined a large area where short-term exposure from this air pollution may cause respiratory symptoms and worsen existing medical conditions. As shown on the following map as Figure 21, this area covers nearly the entire city of Freeport.

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[45] Al Shaw and Lylla Younes, The Most Detailed Map of Cancer-Causing Industrial Air Pollution in the U.S., Pro Publica, (Nov. 2, 2021 updated Mar. 15, 2022); available at: https://projects.propublica.org/toxmap/

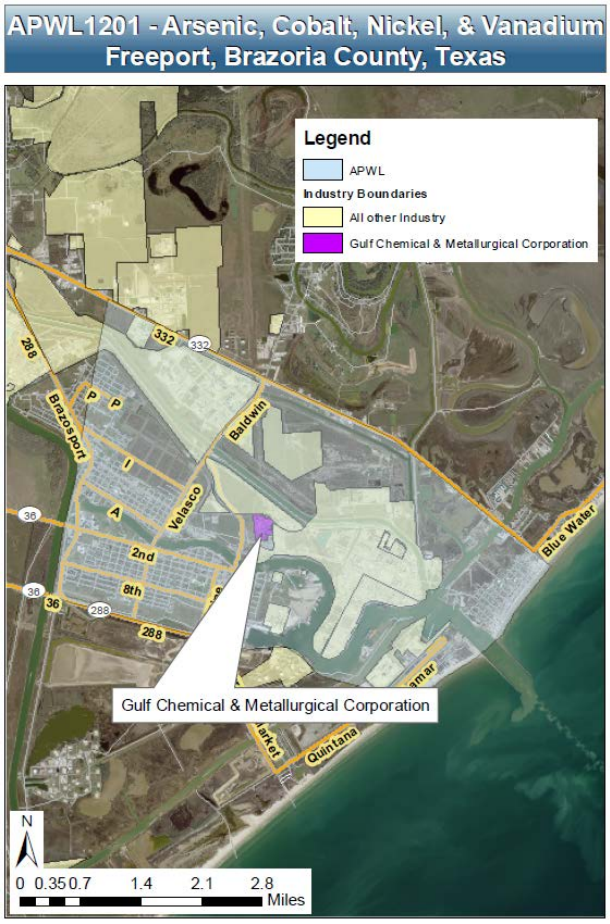
[46] Cause No. D-1-GN-21-002123, State of Texas v. Dow Chemical Company, Travis County District Court, 250th Judicial District; Original Petition and Application for Injunctive relief (May 10, 2021) at 8.

[47] *Id.*

[48] *See*, Orders entered into the following dockets: Docket No. 2014-1053-AIR-E on May 23, 2015; Docket No. 2014-1881-AIR-E on Oct. 1, 2015; Docket No. 2015-1242-AIR-E on Jul. 13, 2016; Docket No. 2015-1671-AIR-E on Nov. 8, 2016; Docket No. 2017-0378-AIR-E on Feb. 27, 2018; and Docket No. 2016-1940-AIR-E on May 30, 2018.

[49] *See* TCEQ's Air Pollutant Watch List Area Map of 1201, Freeport, Texas .

Figure 21: TCEQ Air Pollutant Watchlist Map showing all of Freeport affected.



Gladieux purchased the Gulf Chemical facility out of bankruptcy in 2017, and the facility is not yet fully operational. As the TCEQ issues Gladieux more permits to begin and expand its operations in Freeport, the community remains concerned about metal emissions and about SO_2 emissions in the community. The community is especially concerned because Gladieux has applied for permits with de minimis air emission limits, and the facility does not yet (and may not be required to) have a Title V permit which would identify facility-wide emissions.

Freeport is additionally already home to the Freeport LNG terminal. This LNG terminal emits tons of pollutants, like sulfur dioxide, which can damage lungs. [50]

While metal emissions and SO_2 emissions are a major concern, Freeport, specifically, has significant ozone concerns as well. Accordingly, CCACW is advocating for the existing historic Clute monitor to additionally monitor for ozone pollution. As detailed below, with the region's

[50] Environmental Integrity Project, Troubled Waters for LNG: The COVID-19 Recession and Overproduction derail Dramatic Expansion of Liquefied Natural Gas Terminals (Oct. 5, 2020); available at: https://environmentalintegrity.org/wp-content/uploads/2020/10/LNG-REPORT-10.5.20.pdf

pending re-designation from "serious" nonattainment to "severe," Freeport has growing concerns about whether there is adequate monitoring in the region to capture accurate ozone measurements. There are an unusually high number of pipelines in the area, and the town is bordered on one side by Dow Chemical and BASF plants. These plants are both major suppliers of polyurethane raw materials and systems—which contribute major emissions that increase ozone pollution. According to local residents, the air in Freeport, and all of Brazoria County, will often irritate residents' eyes on a windy day—other times there are noxious chemical clouds. All of these industries contribute to ozone pollution, and the community is concerned that the additional ozone monitoring is needed with thoughtful placement. The community is requesting that the historic Clute monitor (EPA site number: 48-039-1003) located at 426 Commerce Street, Clute, Texas 77531 that previously measured ozone be reinstated, given the EPA's interest in re-designating the region from "serious" to "severe."

Because of the foregoing industrial operations, CCACW supports the TCEQ's recommendation to change the Freeport South Avenue I to add the state data for $PM_{2.5}$, SO_2, and speciated metals to the federal air monitor network designation effective December 31, 2022. And, CCACW requests that ozone monitoring be reinstated at the Clute monitor to adequately evaluate the region's compliance with NAAQS.

IV. COMMENTS ON REGULATORY NETWORK REVIEW

Beginning in the 1970s, EPA developed the National Ambient Air Quality Standards (NAAQS) for six principal air pollutants which can be harmful to public health and the environment, including carbon monoxide (CO), lead (Pb), nitrogen oxides (NO_2 or NO_x), ozone (O_3), particle pollution (PM, including $PM_{2.5}$ and PM_{10}), and sulfur dioxide (SO_2). EPA often refers to these pollutants as "criteria pollutants" because allowed levels are set using human health or environmental criteria. The NAAQS include primary and secondary standards for maximum concentrations of these criteria pollutants measured and averaged across various time periods. Because even relatively brief exposures to certain concentrations of one or more of these six pollutants can be harmful, the NAAQS utilize averaging times as low as 1-hour.

TCEQ's Annual Monitoring Plans describe how TCEQ will place air monitors meant to measure concentrations of the six NAAQS. While LSLA's clients acknowledge TCEQ has "more than double the monitors required by federal rule", the sheer number of monitors does not ensure TCEQ is adequately monitoring all six criteria pollutants across the state and best protecting the people of Texas from NAAQS violations. Rather, TCEQ must ensure monitors—no matter how many there are—are placed where they will best capture emissions and concentrations where people live. And, TCEQ must ensure monitors are capable of measuring the appropriate criteria pollutants all hours of the day, on all days of the year. The following comments made on behalf of LSLA's clients are offered on specific criteria pollutants and one non-criteria pollutant, hydrogen cyanide (HCN), in order to help TCEQ improve the 2022 AMNP and ensure Texans are best protected from emissions.

A. Nitrogen Dioxide

Nitrogen dioxide and other nitrogen oxides can harm airways in the human respiratory system.[51] Exposures over only short periods to elevated concentrations of NO2 can "aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms…hospital emissions and visits to emergency rooms."[52] Exposure over long periods to NO_2 and NO_x contributes to the development of asthma and increases risks of respiratory infections.[53] The American Lung Association summarizes harmful health effects of NO_2 as:

- Increased inflammation of the airways;
- Worsened cough and wheezing;
- Reduced lung function;
- Increased asthma attacks;
- Greater likelihood of emergency department and hospital admissions;
- Cardiovascular harm;
- Low birth weights;
- Increased risk of premature death;
- Likely cause of asthma in children;
- Likely cause of lung cancer.[54]

TCEQ includes in its plan 4 NO_x monitors in the Beaumont-Port Arthur area to monitor the area's many major sources of NO_x. For the reasons outlined below, commenters WMP and PACAN do not believe the NO_x system as designed is sufficient and appropriate for monitoring in the area. Specifically, the RA-40 NO_x monitor at Nederland High School is not appropriately located to protect the area's sensitive and vulnerable populations. A NO_x monitor should be moved to, or an additional NO_x monitor should be placed at the Beaumont Mary monitoring location. Further, a NO_x monitor should be located at the Port Arthur West monitoring location.

TCEQ has located a NO_x monitor at Jefferson County's Nederland High School in accordance with Title 40, CFR Part 58 Appendix D, Section 4.3.4 with the purpose of protecting susceptible and vulnerable populations. (This air monitor is currently offline and proposed to be moved about 0.3 miles from Nederland High School to a new location on 17th Street and will be named Nederland 17th Street.) While Jefferson County and the Beaumont-Port Arthur area has a large population susceptible and vulnerable to the harms of NO_x and the placement of an "RA-40" monitor very much appropriate in the area, there are more appropriate locations in Jefferson County.

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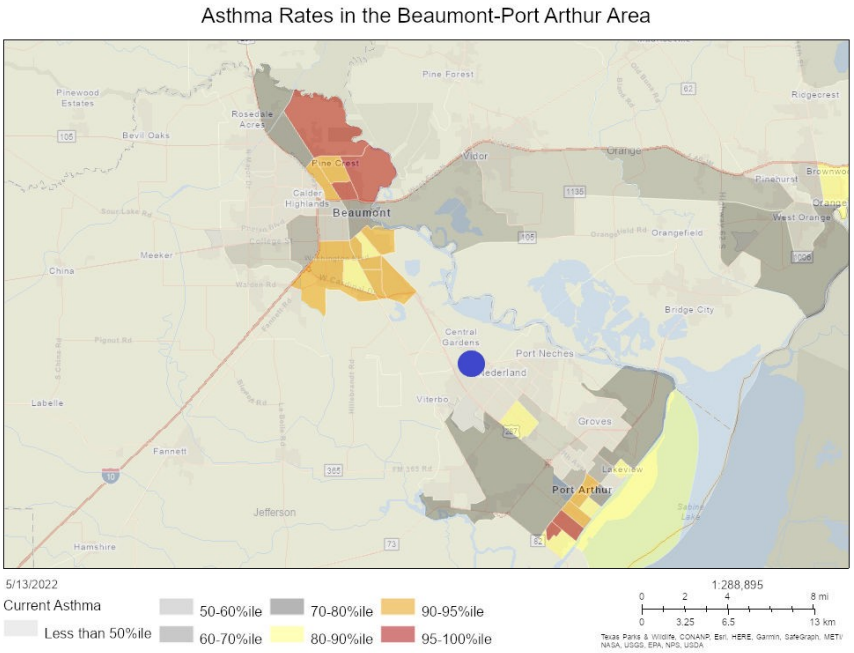
[51] https://www.epa.gov/no2-pollution/basic-information-about-no2
[52] *Id.*
[53] *Id.*
[54] https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/nitrogen-dioxide

As noted, NO_x is known to both cause and exacerbate asthma, among other respiratory diseases. The Nederland 17th Street monitor is located in an area with relatively *low* rates of asthma and located particularly far away from areas with *high* rate of asthma. **Figure 22** shows asthma rates in Beaumont-Port Arthur. The location of the Nederland 17th Street monitor is marked with a blue circle.

Figure 22. Prevalence of Asthma Across the Beaumont-Port Arthur Area and Location of the Proposed Nederland 17th Street Air Monitor[55]

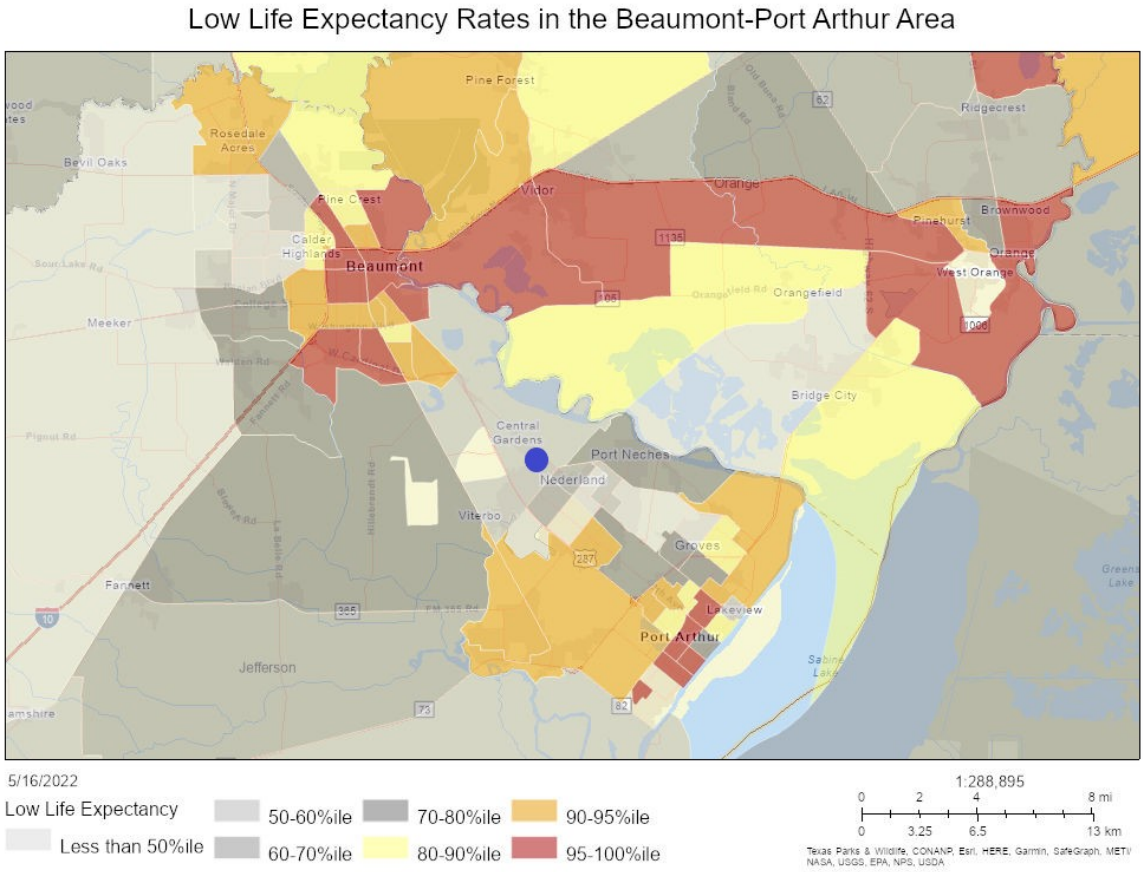


The highest rates of asthma in the area, by far, are located on Beaumont's east side and in West Port Arthur. The two census tracts in red in West Port Arthur are approximately 8.25 miles from the Nederland 17th Street monitor. The three census tracts in red in Beaumont are 9 or more miles from the Nederland 17th Street monitor. These census tracts are all within the 95th percentile nationally as far as asthma prevalence among adults. The census tract where the monitor is located, and those around the monitor, are in the 60th percentile or below.

Also, as noted, NO_x is correlated with premature death. Like asthma rates, the Nederland 17th Street monitor is located in an area with relatively *low* rates of premature death and located far away from areas with exceptionally *high* rates of premature death. **Figure 23** shows low life expectancy rates in the area, with the Nederland 17th Street monitor marked with a blue circle. Like asthma rates, it is clear that the Nederland 17th Street monitor is located in an area without particularly high rates of low life expectancy while West Port Arthur and Beaumont's east side face some of the largest challenges the entire country.

[55] https://ejscreen.epa.gov/mapper/

Figure 23. Low Life Expectancy Prevalence Across the Beaumont-Port Arthur Area and Location of the Proposed Nederland 17th Street Air Monitor[56]



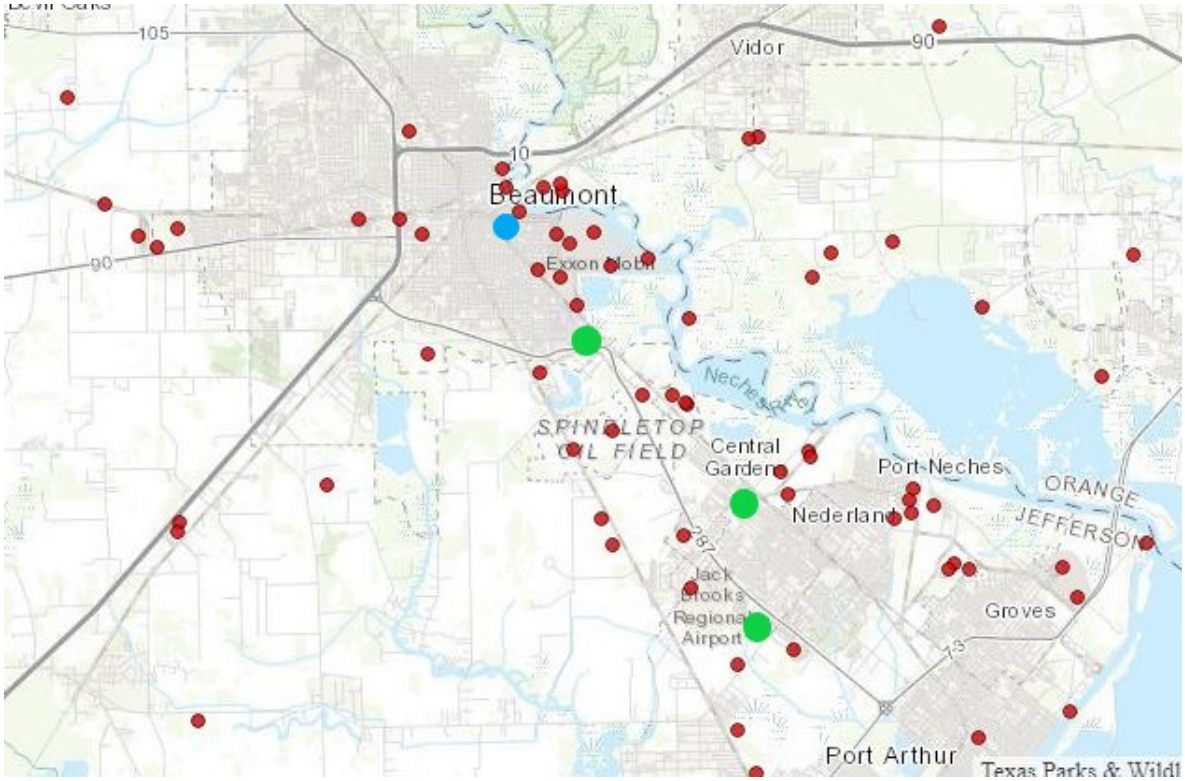
NO_x is, as explained, associated with numerous other health challenges which are more severe on Beaumont's east side and in West Port Arthur than they are in the area around the Nederland 17th Street location. The Black population of Beaumont-Port Arthur, which largely lives on Beaumont's east side and in West Port Arthur, suffers from particularly high rates of health challenges. For example, as described in the community profiles earlier in these comments, the Black population of Beaumont-Port Arthur suffers from particularly high rates of preventable hospital stays and low. An air monitor, or air monitors, meant to protect the area's vulnerable and susceptible population must be located in a position to protect that population. The Nederland 17th Street location is not well located to protect that population.

In addition to not being located where the population has well-documented health challenges of which NO_x is a likely contributor, the Nederland 17th Street monitor is not located near the area's highest concentrations of NO_x emitters. The monitor is also not located near the area's highest NO_x emitters.

[56] EPA, Environmental Justice Screening Mapping Tool; available at: https://ejscreen.epa.gov/mapper/.

Based on the location of vulnerable and susceptible populations and the location of NO_x emitters, the Beaumont Mary monitoring site would be a more appropriate location for an RA-40 monitor, or, at least, an additional NO_x monitor. **Figure 24**, below, shows the locations of the Beaumont Mary, Beaumont Downtown, Nederland High School Monitor, and SETRPC 43 Jefferson County Airport monitor overlaid on a map of the area's NO_x emitters according to the EPA's National Emissions Inventory (NEI). The Beaumont Mary monitor is marked in blue while the other three monitors are marked in green. The Beaumont Mary monitor is located next to the highest concentration of NO_x emitters in central and northern Jefferson County.

Figure 24. Location of NOx Emitters and Regulatory NOx Air Monitors in Northern Jefferson County[57]



According to the NEI, the Beaumont Mary monitor is located near some of Jefferson County's (and the whole region's) highest emitters of NO_x. Two of Jefferson County's four largest emitters are located within 1 to 1.5 miles of the Beaumont Mary monitoring site. These are the Exxon Mobil Beaumont refinery and the Exxon Mobil chemical plant. The location of the sprawling integrated ExxonMobil plant can be seen on the above map—they are located just east of the Beaumont Mary monitor. Together, in 2017, those two facilities emitted over 2,474 tons of NO_x. (The refinery emitted 1,783 tons and the chemical plant emitted 691 tons.) These facilities alone make up nearly 25% of the approximately 10,300 tons of NO_x emitted in all of Jefferson County. In addition, the neighborhoods around the Beaumont Mary monitoring site

[57] EPA, Environmental 2017 National Emissions Inventory, available at https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data.

are crossed by railways coming to and from the Port of Beaumont and the area's industrial plants (such as ExxonMobil) and busy highways—most notably, Interstate 10 cuts north and then due east through Beaumont's east side. While the Beaumont Downtown monitor is located a few miles from the Beaumont Mary monitor, it is not really in downtown Beaumont. It is located on the edge of urban Beaumont. It is not located a particularly close to point sources of NO_x. Rather, it is upwind of most of Beaumont's sources of NO_x.

Every other facility in Jefferson County emitted 600 or more tons of NO_x is located in or around West Port Arthur. The highest emitting point source outside of Beaumont's east side and West Port Arthur is the TPC plant in Port Neches, which emitted 526 tons in 2017. This facility is located more than 4 miles from the Nederland 17th Street site.

In sum, the Beaumont Mary monitoring site would be a more appropriate location of an RA-40 NO_x monitor—or an appropriate and necessary site of an additional NO_x in general—in order to ensure the health of the area's air shed and in order to properly protect the area's vulnerable and susceptible populations.

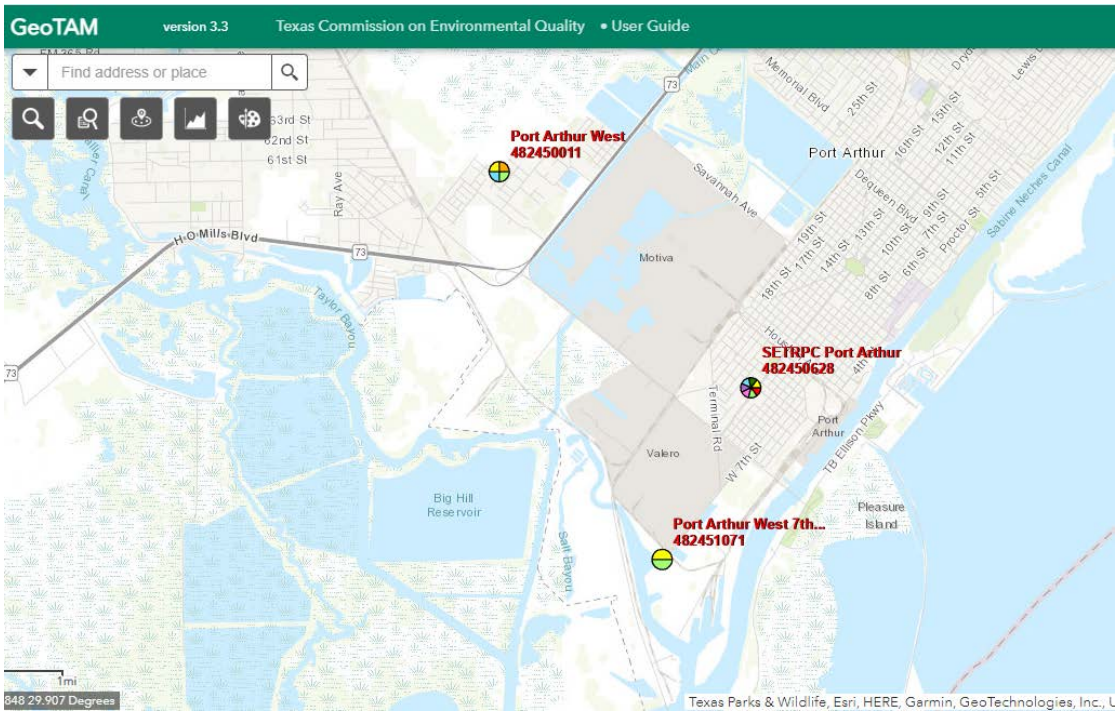
As noted, West Port Arthur is surrounded by most of Jefferson County's largest NO_x emitters. Jefferson County's largest and third largest NO_x emitters are the Motiva Port Arthur refinery (1827 tons in 2017) and the Valero Port Arthur refinery (756 tons in 2017). Three other major emitters located in West Port Arthur include:

- Motiva Chemical Plant (669 tons)
- Chevron Phillips Chemicals (619 tons)
- Oxbow Calcining (608 tons)

Together, these five facilities alone emitted 4,478 tons of NO_x in 2017, accounting for approximately 43% of the entire county's NO_x emissions. Several other smaller sources dot the landscape around West Port Arthur, such as the Air Products & Chemicals Inc. facility located within the footprint of the Valero refinery, which emitted 152 tons in 2017.

Figure 25, below, is a screenshot from TCEQ's GeoTAM website showing the location of the three existing air monitors in West Port Arthur. The location of the Motiva facilities and the Valero refinery are identified by the map—both are among the largest such facilities in the world.

Figure 25. Location of Regulatory Monitors in West Port Arthur[58]



The SETRPC Port Arthur air monitor is well-located to allow nearby residents to understand NO_x emissions in their air. However, the Port Arthur West monitor should also be given NO_x capabilities. The Port Arthur West monitor is better located to help capture NO_x emissions from Motiva, Valero, and other nearby facilities which are south and southwest of the facility. North-northwest is the predominate wind director in the area. When those winds are blowing, emissions would be blown directly towards the Port Arthur West monitor.

Adding NO_x capabilities at the Port Arthur West monitoring site would help ensure the highest levels of NO_2 are captured in the area. In addition, it would help better inform residents of the El Vista, El Vista Village, Montrose, and Port Acres neighborhoods—important areas of West Port Arthur, but neighborhoods which are often overlooked because they are cut off and isolated from the center of West Port Arthur by the sprawling Motiva refinery and other industry.

B. Sulfur Dioxide (SO_2)

SO_2 is an air toxic associated with a variety of negative health effects. Short term exposures to SO_2 can harm the respiratory system and cause a variety of symptoms making breathing difficult.[59] Children and people with existing pulmonary issues such as asthma are

[58] https://www.tceq.texas.gov/airquality/monops.

[59] EPA, Sulfur Dioxide Basics, What are the harmful effects of SO_2, available at https://www.epa.gov/so2-pollution/sulfur-dioxide-basics#effects.

especially vulnerable to the negative effects of SO_2.[60] Additionally, SO_2 can react with other compounds in the air to form particulate matter, another criteria pollutant and potent respiratory irritant discussed below.[61]

According to the EPA, the largest source of SO_2 in the atmosphere is the burning of fossil fuels by power plants and other industrial facilities.[62] Other lesser sources of SO_2 emissions include: industrial processes such as extracting metal from ore; natural sources such as volcanoes; and locomotives, ships and other vehicles and heavy equipment that burn fuel with a high sulfur content.

1. Jefferson County Concerns

One of the largest SO_2 emitters in all of Texas is located in West Port Arthur. The Oxbow Calcining facility (Oxbow) is located due south of residential Port Arthur. PACAN has and continues to advocate for increased and better SO_2 monitoring near Oxbow. While Oxbow is a relatively small facility, it has for decades refused to install modern pollution controls. Because of this, it is by far the largest emitter of SO_2 in Jefferson County. According to the EPA's 2017 NEI, Oxbow emitted 11,495.4977 tons of SO_2. These emissions made up over 85% of all SO_2 releases in Jefferson County. Oxbow was the 11th largest emitter in all of Texas. Every other facility among the top 14 SO_2 emitters in Texas and all other emitters of at least 6950 tons of SO_2 were electricity generation facilities.

Oxbow is also unique in that it is located in an urban setting—the City of Port Arthur is directly adjacent and downwind from Oxbow. While the City of Port Arthur itself has a population of 54,280, the facilities emitting more SO_2 than Oxbow are mostly located in counties with fewer people than Port Arthur. (Jefferson County has a population of over 250,000). **Table 7** shows these facilities and their respective county's population.

Table 7. Texas' Largest SO_2 Emitters in 2017 and Their County's Population[63]

SO_2 Emissions (Tons)	Facility Name	County Name	County Population
47,632.468	Big Brown Steam	Freestone	19,717
37650.621	Wa Parish Electric Generating Station	Fort Bend	811,688
36441.458	Martin Lake Electrical Station	Rusk	54,606
29412.161	Monticello Steam Electric Station	Titus	32,750
17447.481	Sandow Steam Electric Station	Milam	24,823
14074.801	Welsh Power Plant	Titus	32,750
13625.198	Tolk Station	Lamb	12,893

[60] *Id.*
[61] *Id.*
[62] *Id.*
[63] EPA, Environmental 2017 National Emissions Inventory, available at https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data.

SO_2 Emissions (Tons)	Facility Name	County Name	County Population
12880.344	Harrington Station Power Plant	Potter	117,415
12201.5	Coleto Creek Power Station	Goliad	7,658
12097.5529	Calaveras Plant	Bexar	2,003,554
11495.498	**Oxbow Calcining**	**City of Port Arthur**	**54,280 in City of Port Arthur**
10240.356	Limestone Electric Generation	Limestone	23,437
8775.872	Oak Grove Steam Electric	Robertson	17,047
8584	San Miguel Electric Plant	Atascosa	51,553
6949.595	Borger Black Carbon Plant	Hutchinson	20,938

While emissions from all of these facilities are high and serious, Oxbow is unique in its location directly upwind from a major urban area. Further, Oxbow is upwind from a West Port Arthur neighborhood which is poor and suffering from the many documented health challenges outlined above. WA Parish Electric Generation Station is located in a rural portion of south-central Fort Bend County, some 6 or more miles from the county's population centers. The Calaveras Plant is 5.5 miles outside of San Antonio's I-410 loop and in a largely rural area of southeast Bexar County. **Figure 26** shows the location of Oxbow in relation to central West Port Arthur, marked by a triangle.

Figure 26. Location of Oxbow Calcining Relative to the Residential Core of West Port Arthur

Oxbow is subject to the EPA's 2015 Data Requirements Rule (DRR) for the 1-Hour Sulfur Dioxide Primary NAAQS because Oxbow emits over 2,000 tons of SO_2.[64] To satisfy the rule and monitor SO_2 from Oxbow, the Port Arthur 7th Street monitor is located near Oxbow. As outlined

[64] Draft TCEQ 2022 Annual Air Monitoring Network Plan, at 14.

in a Civil Rights Complaint filed with the EPA by PACAN in 2021[65], Oxbow has long refused to update its pollution control technology and repeatedly and substantially altered its operating procedures to specifically avoid allowing the Port Arthur 7th Street monitor to pick up peak SO_2 concentrations. Oxbow's actions do not lower emissions or the risk that Port Arthur's air shed will suffer from SO_2 NAAQS violations. Rather, it only prevents detection.

In order to better understand the SO_2 challenges in the Port Arthur area and support the public education of environmental hazards, PACAN retained an expert, I2M Associations, LLC, to conduct an SO_2 air quality analysis for Port Arthur. The results of modeling included, among others, the following finding:

- Oxbow's SO_2 emissions at their permitted rates are predicted, based on AERMOD modeling of Oxbow hot stacks using Oxbow's emission point input parameter values, to result in significant numbers of exceedances of the SO_2 NAAQS one-hour standard in Port Arthur, Texas and Jefferson County. The modeling results are consistent with the ambient monitoring data for local monitors, substantiating the exceedances of the SO_2 NAAQS one-hour standard in Jefferson County.

Results of the modeling are included below in **Figure 27** and **Figure 28**. **Figure 27** shows concentrations up to 10 km from Oxbow. **Figure 28** shows areas where modeling receptors were predicted to exceed the SO_2 NAAQS one-hour standard of 196 ug/m3 (75 ppb) based on 2017 information from the EPA's NEI.

[65] The Complaint filed by PACAN is available at https://environmentalintegrity.org/wp-content/uploads/2021/08/2021.08.18_Oxbow-Title-VI-Complaint-Final.pdf.

Figure 27. Modeled Concentrations of SO_2 Near the Oxbow Calcining Facility in West Port Arthur

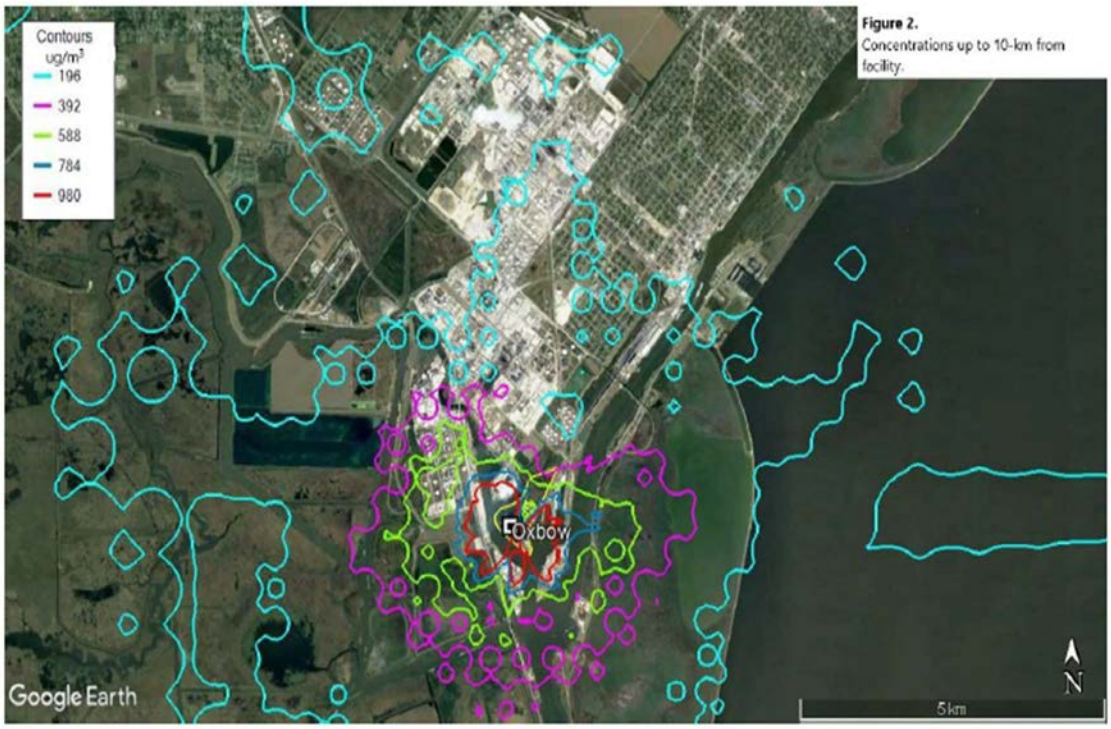


Figure 28. Modeled Locations of One-Hour NAAQS Exceedances for SO_2 Near the Oxbow Calcining Facility in West Port Arthur

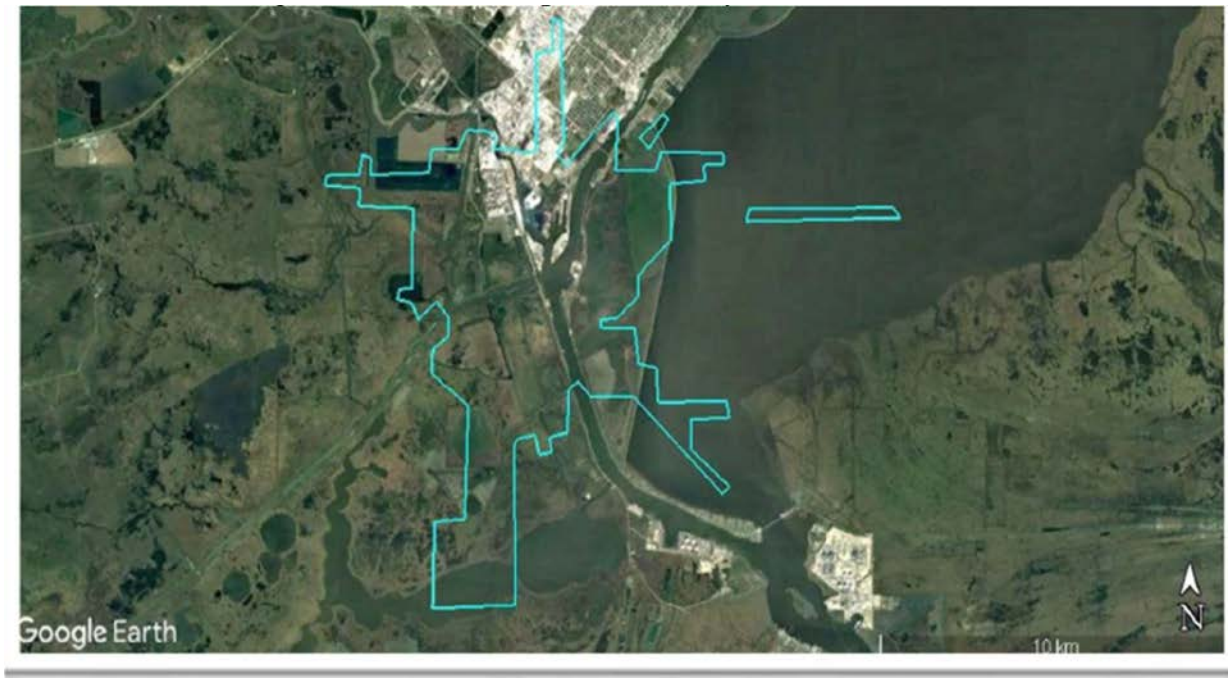
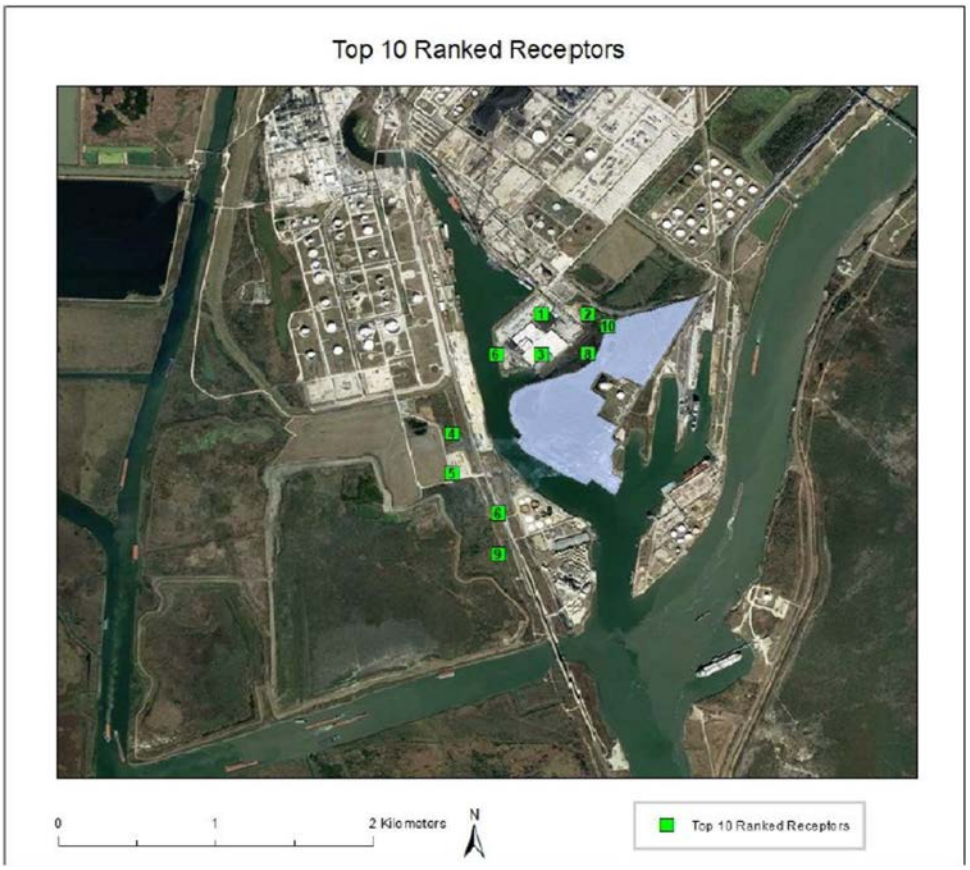


Figure 29 shows the 10 top receptor locations based on the frequency of 1-hour exceedances and high normalized design values. In order to comply with the DRR and ensure SO_2 levels in Port Arthur are not exceeding the NAAQS, TCEQ must include better placed monitors near Oxbow to fully reflect the reality of emissions in the area. The locations modeled and shown below are ideal candidates for additional SO_2 monitoring near the Oxbow facility. PACAN urges TCEQ to place additional SO_2 monitors in locations near Oxbow in accordance with this modeling.

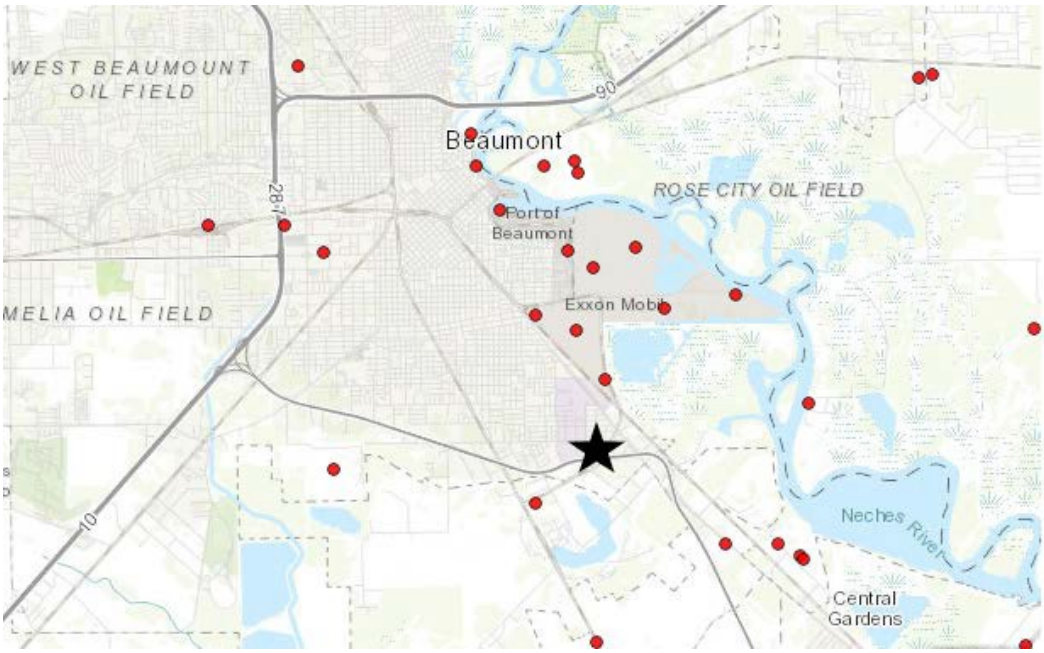
Figure 29. Top Modeling Receptors Near the Oxbow Calcining Facility in West Port Arthur



The Beaumont Mary monitor should be equipped with SO_2 capabilities. **Figure 30**, below, shows the location of the area's many SO_2 emitters according to the EPA's NEI. The only SO_2 monitor in the area—the Beaumont Downtown monitor—is marked with a star. No less than 18 emitters are located north of the Beaumont Downtown site, despite prevailing winds. Two of the largest emitters in the area include the ExxonMobil refinery (675 tons) and the Arkema Beaumont Plant (268 tons).[66] Monitoring at the Beaumont Mary site would better protect the people of Beaumont from SO_2 emissions.

[66] EPA, Environmental 2017 National Emissions Inventory, available at https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data.

Figure 30. Location of SO_2 Emitters and the Single Regulatory Downtown Beaumont SO_2 Air Monitoring the Beaumont Area[67]



2. Brazoria County Concerns

Because of the industrial operations detailed in Section II-F, CCACW supports the TCEQ's recommendation to change the Freeport South Avenue I SO_2 monitor network designation from state-initiative to federal SPM, effective December 31, 2022.

C. Lead (Pb)

Lead exposure can severely harm much of the human body. Exposure can harm the nervous system, kidney function, immune system, reproductive and development systems, and the cardiovascular system.[68] It can also harm the capacity of blood to carry oxygen throughout the body. Infants and children are especially at risk to lead related harms.[69] Those exposed to lead at a young age may develop behavioral problems and learning deficits.[70] Sources of lead include metals processing, waste incinerators, and utilities.[71] It can also be found in water pipes, as well as homes built before 1978, when lead-based paint was used in construction.[72]

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[67] EPA, Environmental 2017 National Emissions Inventory, available at https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data.

[68] EPA, Basic Information about Lead Air Pollution, available at https://www.epa.gov/lead-air-pollution/basic-information-about-lead-air-pollution#health.

[69] *Id.*

[70] *Id.*

[71] *Id.*

[72] Centers for Disease Control and Prevention, Sources of Lead Exposure, available at https://www.cdc.gov/nceh/lead/prevention/sources.htm.

When lead-based paint peels and cracks, it makes lead dust, which can be harmful when inhaled, especially by children.[73]

1. Harris County Concerns

Progressive Fifth Ward is particularly concerned about lead exposure in its community from home demolition, drinking water, metal recycling facilities, and soil. Experts state that lead is a major issue in older, lower-income neighborhoods such as Fifth Ward, where infrastructure and homes are outdated and in need of renovation.[74] Many of the homes were built in the 1950's, long before lead-based paint was banned.[75] Now, as residents attempt to renovate and reconstruct their homes after decades, the release of lead dust into the air from demolition and exposure to it remains unmonitored, and in turn, concerning to the entire community.

Furthermore, per the EPA, sources of lead include metals processing. As demonstrated above, Fifth Ward is surrounded by metal recycling facilities which process metal, such as CMC Recycling and Sims Metal. As there are far too many potential sources of ambient lead exposure affecting the less than 5 square mile community, TCEQ should consider evaluating lead monitoring needs for the community in its AMNP.

If ambient lead exposure is not addressed in Fifth Ward, the community will continue to face a lead crisis. Fifth Ward already experiences major concerns with respect to lead levels in its drinking water caused by local water pipes. Experts say that up until 1986, when the practice was stopped and banned federally, many Houston based builders continued to install lead pipes leading into homes.[76] In 2021, Texas A&M University researchers testing water samples from Fifth Ward found lead in drinking water in about 30% of approximately 200 homes tested in the community.[77] From January to July 2019, HHD worked to combat issues of lead poisoning in the Fifth Ward area after studies demonstrated that as many as 51% of screened children have tested positive for elevated blood lead.[78] Given these statistics, lead is a major concern for Fifth Ward. Accordingly, Progressive Fifth Ward advocates for lead monitoring in its community.

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[73] *Id.*

[74] Benjamin Wermund, 'They are being exposed': Experts fear lead poisoning makes Fifth Ward one of 'hundreds of Flints.' Houston Chronicle (October 15, 2021), available at https://www.houstonchronicle.com/politics/texas/article/They-are-being-exposed-Experts-fear-lead-16519913.php.

[75] The Editorial Board, "Just how bad is the lead problem in Houston's water?" Houston Chronicle (October 21, 2021), available at https://www.houstonchronicle.com/opinion/editorials/article/Editorial-Just-how-bad-is-the-lead-problem-in-16549849.php.

[76] Houston Water Solutions, Latest Updates on Lead in the Houston Water Supply, available at https://www.houstonwatersolutions.net/latest-updates-on-lead-in-the-houston-water-supply/.

[77] "Just how bad is the lead problem in Houston's water?" Houston Chronicle (October 21, 2021).

[78] Case study by National Center for Healthy Housing available at https://nchh.org/resource-library/case-studies_stories-from-the-field_2019-health-in-all-policies-mini-grantee_houston.pdf.

2. Jefferson County Concerns

WMP is also particularly concerned about the effect of lead on the area's children. Beaumont already suffers from educational challenges, as evidenced in **Figure 31**, which shows WMP is also particularly concerned about the effect of lead on the area's children. Beaumont already suffers from educational challenges, as evidenced in **Figure 32**, which shows much of Beaumont's east side has struggled to graduate high school. For good reason, WMP hopes to ensure risks to development are minimized in Beaumont. As explained above for the Fifth Ward, areas with aging infrastructure are at particular risk for lead-related challenges. Beaumont's east side has long been neglected and currently suffers from an increasing level of urban decay, especially in southeast quarter of Beaumont near the Port of Beaumont, the ExxonMobil complex, and much of the rest of the area's industry. Beaumont's east side is also vulnerable to lead exposure via exceptionally high rates of lead paint in the area, as shown in Figure 30. While WMP acknowledges TCEQ's Air Monitoring Network Plan is not necessarily responsible for monitoring indoor air quality in Beaumont, the combination of lead exposures from various sources raises significant health concerns.

WMP is particularly concerned about lead monitoring at the Beaumont Mary location due to the location of the Charlton Pollard neighborhood and Charlton Pollard Elementary School. Many of the children served by WMP attend school there. The school is located no more than 6 blocks from the Exxon Mobil refinery and just a block from the Port of Beaumont.

Figure 31. Charlton Pollard Neighborhood and Charlton Pollard Elementary School's Location Near the ExxonMobil Refinery and Port of Beaumont

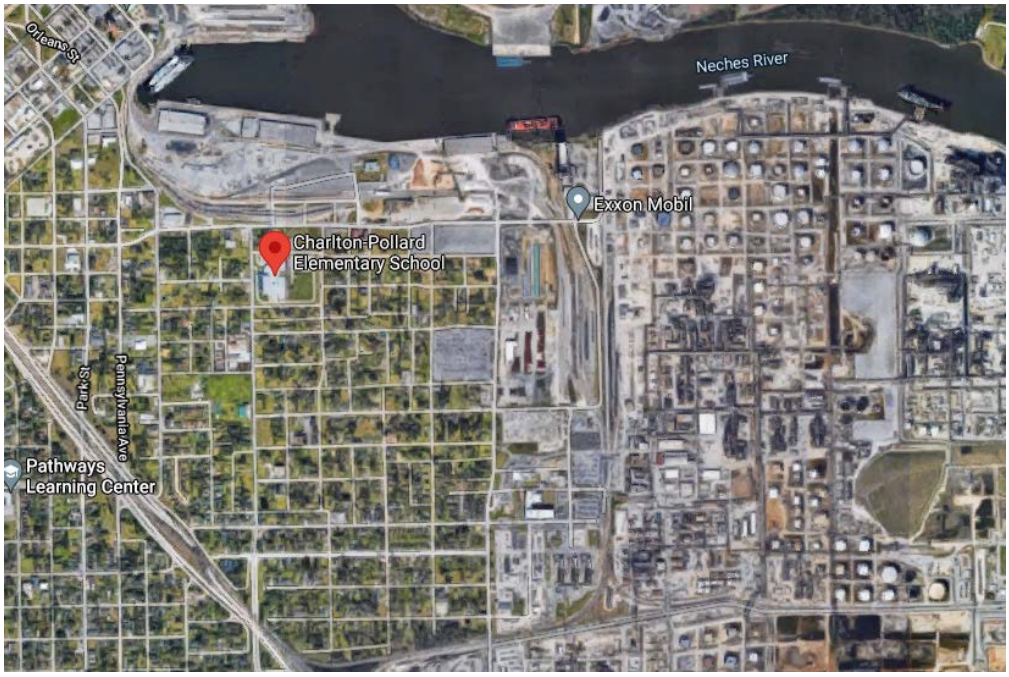


Figure 32. Prevalence of Less Than a High School Education in Beaumont[79]

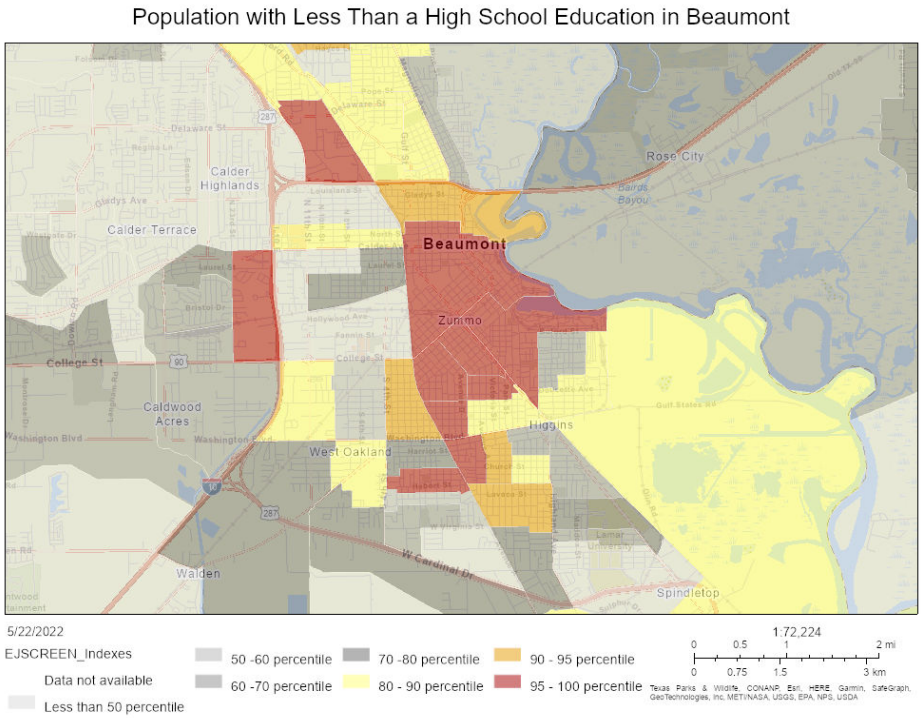
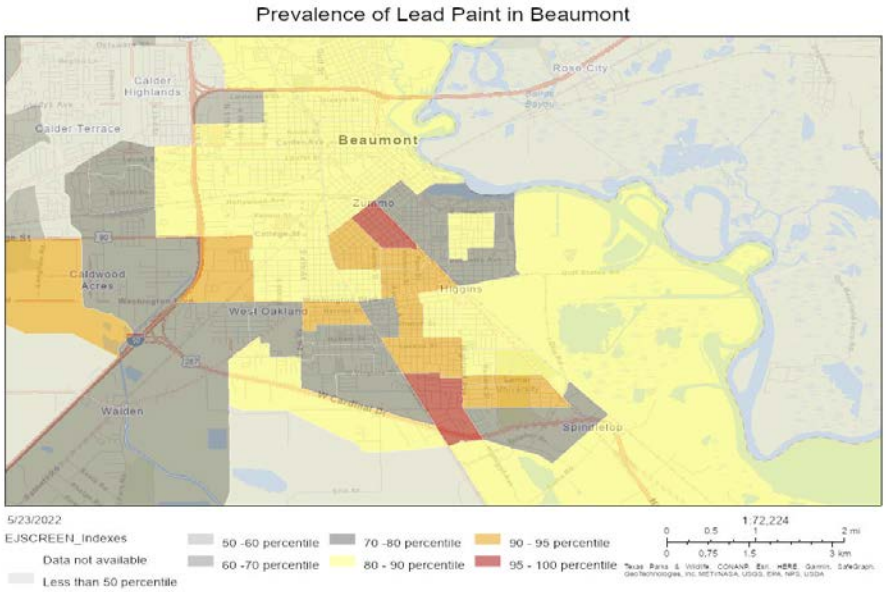


Figure 33. Prevalence of Lead Paint in Beaumont[80]



[79] EPA, Environmental EJ Mapping Tool, available at https://ejscreen.epa.gov/mapper/.
[80] *Id.*

TCEQ can help alleviate concerns by monitoring lead concentrations outside the home by providing lead monitoring capabilities to the Beaumont Mary monitor.

D. Ozone

As the main ingredient of "smog", ground level ozone is a harmful air pollutant which negatively effects human health and the environment. Breathing O_3 can trigger a variety of health problems including chest pain, coughing, throat irritation, and airway inflammation.[81] It can also reduce lung function and harm lung tissue.[82] O_3 exposure can worsen bronchitis, emphysema, and asthma, leading to increased medical care needs and expenses.[83] People most at risk of harm from breathing O_3 include those with asthma, children, older adults, and people who are active outdoors, including outdoor workers.[84] In addition, people with certain genetic characteristics and people with reduced intake of certain nutrients, such as vitamins C and E, are at greater risk of harm from O_3 exposure.[85]

Due to the serious consequences of ground level ozone, it is critically important that levels of O_3 be sufficiently monitored in environmental justice communities such as Northeast Houston, the Pleasantville Area, Port Arthur, the east side of Beaumont, and Brazoria County. All these communities already are vulnerable and have compromised health and limited access to health care due to other social and economic factors.

1. Harris County Concerns

Located along the Houston Ship Channel, a 52-mile-long corridor along Buffalo Bayou containing a high concentration of industrial facilities and activities, are communities where 41.08% of the population are people living in poverty, 69.03% are people of color, and 41.91% are limited English speaking households, all of which shoulder a disproportionate burden of environmental degradation. These individuals live, work, and recreate in these neighborhoods that exceed the ozone NAAQS of 0.070 ppm that EPA in 2015 found requisite to protect human health and welfare. Specifically, ozone pollution in the Houston area is 0.79 ppm, and EPA designates the HGB Area as marginal nonattainment under the 8-Hour Ozone NAAQS (2015).

The EPA is seeking to add Houston to the list of "severe" violators of 2008 federal ozone pollutions standards. EPA additionally proposed to deny TCEQ's request for a 1-year extension on its attainment date after taking "into account applicable statutory and regulatory criteria, current air quality trends, and potential environmental justice concerns within the area."[86] The

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[81] EPA, Health Effects of Ozone Pollution, available at https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution.
[82] *Id.*
[83] *Id.*
[84] *Id.*
[85] *Id.*
[86] EPA Docket No. EPA-HQ-OAR-2021-0741 Determinations of Attainment by the Attainment Date, Extensions of the Attainment Date, and Reclassification of Areas Classified as Serious for the 2008 Ozone National Ambient Air Quality Standards (May 19, 2022) at 21828.

2008 rule requires urban regions to stay below 75 parts per billion of ozone in the air—and the 8-county Houston region regularly exceeds 79 parts per billion.[87] Changing this designation will require the state to do more to reduce this pollution with more aggressive pollution control requirements. High levels of pollution can disproportionately harm Black and Latino children, researchers have found. A study by the Kinder Urban Institute at Rice found that 13% of Black children in Houston have an asthma diagnosis compared with 7% of Hispanic children and 4% of white children and Asian children.[88,89] Until regulatory modifications are made at the state level to address the reciprocal federal changes, it is paramount that overburdened communities like the Pleasantville Area, East Houston and other Ship Channel Communities have access to real time data and adequate monitoring for VOCs.

2. Jefferson County Concerns

The Beaumont-Port Arthur area has long struggled with maintaining ozone attainment. Ozone continues to be a major concern for the area. WMP believes the Beaumont Mary monitor should monitor for ozone. While TCEQ's plan does include a number of ozone monitors in Jefferson County, the Beaumont Mary monitor does not measure for ozone. Several large emitters of ozone precursors are located near the monitor, as outlined in **Table 8**:

Table 8. Major NOx, and VOC Emitters in the East Beaumont Area[90]

Facility	CO Emissions (tons)	NOx Emissions (tons)	VOC Emissions (tons)
ExxonMobil Beaumont Refinery	2,038.024	1,783.248	1,265.697
ExxonMobil Beaumont Chemical Plant	328.890	272.56	691.417
Optimus Steel	935.392	257.771	13.842

In fact, the Exxon Mobil Beaumont Refinery is Jefferson County's largest emitter of CO and VOC's, and Jefferson County's second largest emitter of NO_x. According to the EPA's 2017 National Emissions Inventory (NEI) data release, this location is upwind of no less than 27 CO, NOx, and/or VOC emitting facilities in Jefferson County located east of the Neches River, north of US-96, and west of the town of Bevil Oaks in north-central Jefferson County or those located

[87] EPA Docket No. EPA-HQ-OAR-2021-0741 Determinations of Attainment by the Attainment Date, Extensions of the Attainment Date, and Reclassification of Areas Classified as Serious for the 2008 Ozone National Ambient Air Quality Standards (May 19, 2022) at 21827.

[88] Erin Douglas, "EPA seeks more smog controls in Houston, Dallas after they fail to meet standards." Houston Chronicle (Apr. 14, 2022), available at: https://www.chron.com/news/houston-texas/article/texas-epa-pollution-smog-dallas-houston-17080469.php

[89] Leah Binkovitz, "Research Shines Light on Asthma Rate Disparities in Houston." Rice | Kinder Institute for Urban Research. (Mar. 21, 2017), available at: https://kinder.rice.edu/2017/03/21/research-shines-light-on-asthma-rate-disparities-in-houston

[90] EPA, Environmental 2017 National Emissions Inventory, available at https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data.

just across the Neches River from central Beaumont. Further, the busy I-10 corridor cuts north and then east directly through Beaumont's east side. Ships, rail, and truck traffic move to and from the busy Port of Beaumont and other industrial facilities located on Beaumont's east side. WMP urge TCEQ to add an ozone monitor to the Beaumont Mary location. Further, WMP urges TCEQ to conduct air monitoring to ensure the highest predicted levels of ozone are well monitored in the Beaumont area.

3. Brazoria County Concerns

As was explained above, the EPA's redesignation of the Houston Galveston Brazoria County area from "serious" to "severe" is cause for concern in the Freeport community. This concern about ozone pollution and air quality justifies adequate monitoring in the region to apprise the local community of their air quality. According to CCACW's members, the Clute monitor was originally thoughtfully placed and brought online in 1974 to address regional concerns. Because a monitor was already carefully placed in Clute and previously measured ozone pollution, it would make sense for the TCEQ to add this constituent of concern, back to the Clute monitor to capture the region's ozone emissions more wholistically. CCACW requests that ozone monitoring be reinstated at this monitor, given the EPA's recent significant concerns about NAAQS compliance for ozone in the region.

E. Carbon Monoxide

Exposure to CO "reduces the amount of oxygen that can be transported in a person's blood stream to the body's organs."[91] When the brain, heart, and other critical organs do not receive enough blood, "dizziness, confusion, unconsciousness, and death" can happen.[92] While these severe effects are most usually tied to indoor exposures, outdoor exposure is of "particular concern for people with some types of heart disease."[93] When exercising, working outside, or under increased stressed, "short-term exposure to elevated CO may result in reduced oxygen to the heart accompanied by chest pain."[94]

WMP reiterates that the Beaumont Mary monitor is the best positioned to capture major pollution in Beaumont, but the monitor is not well equipped. WMP believes this applies to CO, as well, and advocates for the Beaumont Mary monitor to be equipped with CO capabilities. The largest CO emitter in Jefferson County or adjacent Orange County or any adjacent county for that matter is the ExxonMobil Beaumont Refinery, having emitted 2,038 tons in 2017.[95] The ExxonMobil Chemical plant, at the same site, emitted 328 tons; across the Neches River in Orange County, the Optimus Steel facility emitted 935 tons.[96]

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[91] EPA, Basic Information about Carbon Monoxide (CO) Outdoor Air Pollution, available at https://www.epa.gov/co-pollution/basic-information-about-carbon-monoxide-co-outdoor-air-pollution.
[92] *Id.*
[93] *Id.*
[94] *Id.*
[95] EPA, Environmental 2017 National Emissions Inventory, available at https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data.
[96] *Id.*

As noted previously, the Charlton Pollard neighborhood is surrounded on three sides by the refinery and the Port of Beaumont. Many of the children served by WMP attend Charlton Pollard Elementary. In addition to the many other pollutants emitted by the refinery and other industry nearby and south/southeast of the school, WMP is particularly concerned for the health of children at the school. CO also likely reaches much of the rest of the east side of Beaumont. WMP urges TCEQ to model CO in and around the Charlton-Pollard neighborhood and to place a CO monitor in the area.

F. Particulate Matter of 10 Micrometers or Less

Particulate matter (PM) refers to microscopic particles in the atmosphere that are hazardous to human health. PM, sometimes referred to in everyday language as soot, dust, or smoke, consists of very small solid particles or liquid droplets suspended in the air.[97] While some PM can be seen with the naked eye, some are so small that they can only be seen by an electron microscope.[98] The smaller the particles, typically the more threatening they are to human health—smaller particles are more capable and likely to penetrate deep into the respiratory system and lodge themselves into a person's lungs.[99] Recent studies indicate PM can have many effects on the human body, including:

- Cause lung irritation, leading to increased permeability in lung tissue;
- Aggravate the severity of lung disease, causing rapid loss of airway function;
- Cause inflammation of lung tissue, resulting in the released of chemical which can negatively impact heart function;
- Cause changes in blood chemistry that can result in clots which may lead to heart attacks; and
- Increase susceptibility to viral and bacterial pathogens leading to pneumonia in vulnerable persons unable to clear those pathogens and infections.

The NAAQS regulate both $PM_{2.5}$ and PM_{10}. $PM_{2.5}$—those with a diameter of 2.5 micrometers or less—are considered of greatest health concern. Still, PM_{10}—those with a diameter of 10 micrometers or less—are considered inhalable and can negatively impact human health. PM can also get into a person's bloodstream. TCEQ must ensure its monitoring plan adequately monitors both $PM_{2.5}$ and PM_{10}.

PM is also the main cause of reduced visibility in the United States. Just as other criteria pollutants are precursors of O_3, including SOx, NOx, VOCs, these criteria pollutants are precursors of PM. Other chemicals such as ammonia are also considered precursors to PM. Thus, while facilities may directly emit PM, PM may be formed by other emissions and TCEQ must be mindful of this when it anticipates or models future PM concentrations.

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[97] https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#effects.
[98] *Id.*
[99] *Id.*

There are no monitors in the Beaumont-Port Arthur area which measure PM_{10} concentrations. While $PM_{2.5}$ is considered generally more dangerous than PM_{10}, PM_{10} is not by any means harmless. WMP and PACAN reiterate the previous section in regard to PM_{10}. There is a high concentration of PM precursor emitting facilities in and near their two communities on Beaumont's east side and Port Arthur's west side, yet no PM_{10} monitors. There are multiple busy highways and two bustling seaports. Many railroads cross the area, taking materials, oil, gas, and chemicals to and from the area's many industrial facilities. And, similarly to $PM_{2.5}$, some of the state's largest direct emitters of PM10 are located near West Port Arthur and Beaumont's east side. **Table 9** shows these emitters.

Table 9. Highest PM10 Emitters in 2017 in Jefferson County and Their Statewide Ranking[100]

Facility Name	PM10 Emissions (tons)	Statewide Rank
ExxonMobil Beaumont Refinery	532.765	16th highest
Motiva Port Arthur Refinery	503.238	19th highest
Valero Port Arthur Refinery	251.160	34th highest
Oxbow Calcining, Port Arthur	190.924	49th highest
Total Port Arthur Refinery	147.239	61st highest
ExxonMobil Beaumont Chemical Plant	145.234	63rd highest
TPC Port Neches Plant	126.339	73rd highest

G. Particulate Matter of 2.5 Micrometers or Less

$PM_{2.5}$ are fine inhalable particles, with diameters that are generally 2.5 micrometers and small. These airborne particles are small enough to travel deeply into the respiratory tract reaching the lungs.[101] $PM_{2.5}$ generally consists of soot, which is generally made up of elemental organic carbon from sources including soil and sources of sulfates, nitrates as well as other ionic species formed in the atmosphere.[102] Exposure to $PM_{2.5}$ can have adverse health impacts, including: premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and/or increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing.[103] Sources of $PM_{2.5}$ include: unpaved roads, construction sites, smokestacks, fires, concrete batch plants.[104]

[100] EPA, Environmental 2017 National Emissions Inventory, available at https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data.
[101] EPA, Health and Environmental Effects of Particulate Matter (PM), available at: https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm
[102] EPA, $PM_{2.5}$ Advance Path Forward 2018 Update Final at 9 (2018) available at: https://www.epa.gov/sites/default/files/2018-10/documents/update_2018.plan_.pdf
[103] EPA, Health and Environmental Effects of Particulate Matter (PM), available at: https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm
[104] *Id.*

1. Harris County Concerns

Higher concentrations of $PM_{2.5}$ are having major health and economic consequences for residents of Houston. The Harvard School of Public Health and Environmental Defense Fund published a new study which found that the 2015 elevated levels of $PM_{2.5}$ in Houston were responsible for over 5,200 premature deaths, and more than $49 billion in economic damages.[105]

As stated above, Super Neighborhood 57 is glad the TCEQ has recognized the need for more air monitoring in the Pleasantville Area in the 2022 AMNP. Although the monitor location has not been disclosed as part of the plan, the group is excited about the agency's stated commitment to install a continuous monitor for $PM_{2.5}$ in the Pleasantville Area by December 31, 2022. This type of monitor for the area will help the community assess its exposure to particulate matter from the industrial build out in the area, particularly truck traffic related to port operations nearby.

The location of the proposed Pleasantville Area monitor is also important-given the port-related operations in the area described above. Depending on the time of year, prevailing winds in the Houston area typically range from the South, SE, East, NE and North, but are predominate from the SE direction. It would be important to position the monitor to ensure that the ship channel and port operations that are South of the neighborhood are captured by this new monitor. However, there is also significant port-related industry that is to the immediate North of the neighborhood at the intersection of I-10 and the Loop 610.

Similarly, Progressive Fifth Ward and Prince Square are both appreciative of TCEQ's recognition of the need for air monitoring in their Fifth Ward community. However, the civic associations want to ensure the air monitors accurately reflect the level of air pollution in the area emitted by industrial actors nearby, namely concrete batch plants and metal recycling facilities, particularly with respect to $PM_{2.5}$. They want to ensure their most vulnerable populations, such as children, seniors, and those with health issues, are adequately protected from the dangers of particulate matter. Therefore, the placement of the new air monitors, as well as TCEQ's process in determining said placement, are crucial factors the community would like addressed by TCEQ in the 2022 AMNP.

Finally, as explained above, the Northeast Neighborhoods are extremely encouraged that TCEQ deployed a monitor on North Wayside. However, the monitor only confirms their long-standing fears about the poor air quality in their neighborhood. The uptick in $PM_{2.5}$ values, the current North Wayside Monitor readings that exceed NAAQs, and the 25+-square mile area this monitor serves are three valid reasons why the TCEQ needs to install additional monitors in Northeast Houston. More monitors within the Northeast Neighborhoods will ensure that

[105] Ananya Roy, Amid COVID-19, the Trump Administration sets dangerous air pollution standards. What is at stake for Houstonians? Environmental Defense Fund Blog (Mar. 11, 2020) available at: https://blogs.edf.org/health/2020/05/11/pm-standards-houston-analysis/

Northeast Houston's air quality remains within the federal standards; and, if not, that TCEQ will know it needs to take action to curb excess emissions.

2. Jefferson County Concerns

WMP and PACAN both advocate for increased $PM_{2.5}$ monitoring in the Beaumont-Port Arthur area. There are three monitors in Beaumont-Port Arthur measuring $PM_{2.5}$ but none of them are well positioned to fully monitor particulate matter in the area. Nor are they well positioned to monitor $PM_{2.5}$ in West Port Arthur or Beaumont's east side. Of the three $PM_{2.5}$ air monitors in the area, only the Port Arthur Memorial School monitor is located in Port Arthur. This monitor is not located in West Port Arthur. There is no $PM_{2.5}$ monitor in Beaumont, including the east side of town. The Hamshire and SETRPC 42 Mauriceville monitors are many miles west and east of these facilities, respectively. This monitoring system exists despite the Beaumont's east side and West Port Arthur being home to some Texas' highest $PM_{2.5}$ emitters. **Table 10** shows the EPA's 2017 NEI data for the 9 highest $PM_{2.5}$ emitters in Jefferson County, including the statewide rank for each respective facility. A disproportionate number of emitters are located in Jefferson County. In addition, Optimus Steel, located just the Neches River from Beaumont's east side in Orange County, was the 69th largest emitter.

Table 10. Highest $PM_{2.5}$ Emitters in 2017 in Jefferson County and Their Statewide Ranking[106]

Facility Name	$PM_{2.5}$ Emissions (tons)	Statewide Rank
ExxonMobil Beaumont Refinery	529.433	11th highest
Motiva Port Arthur Refinery	493.278	12th highest
Valero Port Arthur Refinery	155.039	41st highest
Total Port Arthur Refinery	147.239	43rd highest
Oxbow Calcining, Port Arthur	125.463	52nd highest
ExxonMobil Beaumont Chemical Plant	121.692	53rd highest
TPC Port Neches Plant	115.208	55th highest
Air Products Port Arthur Facility	91.540	72nd highest
Chevron Port Arthur Plant	81.065	81st highest

As noted throughout these comments, many precursors to particulate matter exist across Beaumont-Port Arthur. For example, Oxbow Calcining is among the state's largest SO_2 emitters. The Motiva, Valero, and Total refineries in West Port Arthur all emitted over 300 tons of SO_2 in 2017. In Beaumont, ExxonMobil's refinery emitted over 600 pounds. These facilities are all among the state's highest 69 SO_2 emitters. Further, as described above, there are significant NO_x concerns, as well. Beaumont's east side has several very significant NO_x emitters, as does West Port Arthur. TCEQ must include $PM_{2.5}$ monitoring within these communities to ensure compliance with the NAAQS and inform and protect Beaumont-Port Arthur's most vulnerable and susceptible residents.

[106] EPA, Environmental 2017 National Emissions Inventory, available at https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data.

H. Volatile Organic Compounds

VOCs are gases which may adversely affect the health of those exposed to them in the short and long-term. VOCs combine with nitrogen oxides and sunlight to create ground-level ozone and smog; breathing ground-level ozone is harmful for any person, but especially for the elderly, children, and those with health issues like asthma. VOCs also directly cause breathing difficulty and irritation to the respiratory system. Finally, VOCs encompass many harmful toxic or carcinogenic pollutants that are also regulated as HAPs, discussed below.

Hazardous Air Pollutants (HAPs) are known as toxic air pollutants or air toxics which cause or may cause cancer or other serious health effects such as "damage to the immune system, as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory and other health problems." Examples of HAPs include benzene, perchloroethylene, and methylene chloride. These three chemicals are all volatile organic compounds also known as VOCs. HAPs/VOCs are significant challenges across the communities represented in these comments. VOCs react with nitrogen oxide and can form ozone.[107] Sources of VOCs include car exhaust, gasoline powered lawn equipment, gas stations, industrial coating operations, printing shops, paints, chemical manufacturing, refineries, factories, and metal production.[108]

Because of its proximity to the Houston Ship Channel, the Pleasantville Area is also in need of continuous VOC monitoring to capture the impacts of the industrial activity in the area. The Houston Ship Channel, an area that within five miles plays host to roughly 180 facilities that were responsible for 14,884 tons of VOCs and 13,977 tons of NO_x emissions in 2017 alone.[109] In 2019, there were 300 pending NNSR air permit applications with TCEQ.[110] Many of these applications are for facilities that utilize polyethylene, which results in high VOC emissions. "Even through the economic downturn [experienced by the petrochemical industry around 2016], chemical plants [in the Houston Ship Channel] continued to expand," such as "the construction of units at the Chevron Phillips Cedar Bayou Ethylene plant," with a "capacity of 1.5 million metric tons per year, or Ineos's La Porte Gemini Project, which will produce 1 billion pounds of high-density polyethylene [] annually upon completion."[111]

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[107] EPA, Volatile Organic Compound Exemptions, available at: https://www.epa.gov/ground-level-ozone-pollution/volatile-organic-compound-exemptions

[108] EPA, Report on the Environment, Volatile Organic Compounds Emissions at 1, available at: file:///Users/carolinecrow/Downloads/VOC-emissions.pdf

[109] TCEQ, Point Source Emissions Inventory, 2017 Site Level Summary Emissions Data for HGB Area, https://www.tceq.texas.gov/assets/public/implementation/air/ie/pseisums/2013thru2017statesum.xlsx; and TCEQ, Point Source Emissions Inventory, 2017 Site Level Summary Emissions Data for Houston Ship Channel, https://www.tceq.texas.gov/assets/public/implementation/air/ie/pseisums/2013thru2017statesum.xlsx [hereinafter Emissions Inventory]

[110] TCEQ, Pending New Source Review Air Permitting Actions for HGB Area (as of July 26, 2019), https://www2.tceq.texas.gov/airperm/index.cfm?fuseaction=airpermits.start [hereinafter Pending NNSR Air Permits]

[111] Patrick Seeba, Coordinating Chemical Tanker Movements on the Houston Ship Channel, Port Bureau News, 10 (October 2016), http://txgulf.org/wp-content/uploads/2015/12/Oct-2016-Online.pdf

Numerous studies confirm that not only do Houston Ship Channel communities generally already disproportionately shoulder pollution burdens,[112] but they also face a public health crisis because of that pollution. The *Evaluation of Vulnerability and Stationary Source Pollution in Houston* study characterized people of color, people living in poverty and limited English-speaking households within the HGB Area as vulnerable populations while examining pollution as emissions from $PM_{2.5}$, PM_{10}, VOCs and an index of 19 other pollutants of concern.[113] VOCs already place an outsized burden on low-income, minority residents within the HGB Area in alarming ways. For example, for VOCs: the *average emissions burden*[114] experienced by people of color in the HGB Area anywhere from 113% to 122% greater than for non-people of color. For people living in poverty, these same figures were on the magnitude of 46% to 52% greater than for people not living in poverty.[115] When it comes to the *emissions severity,*[116] people of color experience VOC emission densities that are anywhere from 124% to 153% greater than non-people of color; while the disparity for people living in poverty is as much as 50% greater than people not living in poverty; and, the disparity for limited English speaking households is between 100% to 109% greater than non-limited English speaking households.[117] Further underscoring these concerns for Houston Ship Channel communities are the Vulnerability Study's conclusions that *unauthorized* VOC emissions—those that are not permitted in advance, are uncontrolled, and lead to spikes in pollution that contribute to acute and chronic health risks—are largely located in the vicinity of the channel, an area characterized by its high minority and low-income, vulnerable populations.[118]

The Houston Ship Channel is home to a number of environmental justice communities, like those in the boundaries of Pleasantville Area Super Neighborhood 57 and Super Neighborhood 49 East Houston, where long-term exposure to pollution already increases cancer risk by a factor of 1,000.[119] Levels of 1,3-butadiene and benzene, both carcinogenic VOCs and other precursor pollutants associated with formation of ground-level ozone, have been monitored for several years along the Houston Ship Channel.[120] In the case of 1,3-Butadiene, a recent epidemiological investigation confirmed a trend of increased incidence of

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[112] Sustainable Systems Research, LLC, Evaluation of Vulnerability and Stationary Source Pollution in Houston, 32 (Feb. 8, 2019) [hereinafter Vulnerability Study].

[113] *Id.* at 6-10; *see also* Center for Science and Democracy at the Union of Concerned Scientists & Texas Environmental Justice Advocacy Services, Double Jeopardy, Acute and Chronic Chemical Exposure Pose Disproportionate Risks for Marginalized Communities, 3 (Oct. 2016) [hereinafter Double Jeopardy], (finding "Households isolated by language…tend to reside in areas facing significantly greater exposure to high-impact acute events").

[114] *See* Vulnerability Study, *supra* note 112, at 15 (expressing average emissions density in tons per year per sq. mile estimated at the census tract level).

[115] *Id.*

[116] *Id.* at 17 (expressing average emissions density for people living in tracts with emissions as tons per year per square mile estimated at the census tract level).

[117] *Id.*

[118] *Id.* at 32 (emphasis added).

[119] Harris County Health Care Alliance, Houston Texas, The State of Health in Houston/Harris County 2012, 63 (2012) http://www.houstonstateofhealth.com/content/sites/houston/State_of_Health_2012.pdf [hereinafter Houston State of Health 2012].

[120] *Id.* at 62.

any type of leukemia in children living in parts of Harris County with higher average ambient air 1,3-butadiene concentrations compared to children living in areas of Harris County with lower concentrations of the pollutant. For children living near the Houston Ship Channel, there is a noted increase in the incidence rate of acute lymphocytic leukemia.[121]

However, the disparity of pollution burdens within the HGB Area goes beyond VOCs. The Vulnerability Study concluded that the communities surrounding the Houston Ship Channel are at a confluence of vulnerability *and* pollution due to having the highest emissions burdens from a regional perspective, with this being particularly true of the Harrisburg/Manchester neighborhood.[122] This neighborhood's residents are known to have a 24% to 30% higher risk of cancer when compared to more affluent sections of the greater Houston area while in nearby Galena Park, the cancer risk is anywhere from 30% to 35% higher.[123] Vulnerable populations near the Houston Ship Channel living in tracts where emissions occur are in proximity to *greater levels* of pollution when compared to more advantaged populations that also live in tracts where emissions occur. It is a troubling disparity, as these communities are already experiencing greater emissions densities and thus, greater severity of emissions than those more advantaged populations and communities farther away from the Houston Ship Channel.[124]

The Vulnerability Study's conclusions regarding the precarious situation of Houston Ship Channel communities and increasing VOC emissions do not occur in a vacuum because to implement the CAA's objectives, regulatory decisions must directly relate to pollutant emissions density.[125] The TCEQ must also consider these issues within the context of existing health disparities, namely that communities along the Houston Ship Channel—and undoubtedly other environmental justice communities across the nation—are seeing their public health compromised in favor of industrial interests at a rate that outpaces other, more privileged and advantaged neighborhoods. These impacts need to be taken into consideration when TCEQ makes decisions regarding placement of monitors, and more monitors are needed closer to these heavily-health compromised communities like the Pleasantville Area Super Neighborhood 57 and Super Neighborhood 49 East Houston.

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[121] City of Houston Health Department and the University of Texas School of Public Health, Hazardous Air Pollutants Special Report, Epidemiological Investigation, Preliminary epidemiological investigation of the relationship between the presence of ambient hazardous air pollutants and cancer incidence in Harris County, 3 [hereinafter Epidemiological Investigation HAPs] Accessed on July 24, 2019. Available at http://www.houstontx.gov/health/hazardous.pdf.

[122] *See* Vulnerability Study, *supra* note 112, at 31.

[123] *See* Double Jeopardy, *supra* note 113, at 13-14.

[124] *See* Vulnerability Study, *supra* note 112, at 32. (Explaining "Vulnerable populations experience greater emissions densities (on average) than their more advantaged counterparts, although they are also modestly less likely to live in tracts with emissions. These seemingly conflicting accounts of disparity are explained by the greater severity of emissions burdens that vulnerable populations bear when they live in tracts with emissions.").

[125] *Id.* at 31.

V. ADDITIONAL MONITORING CONSIDERATIONS: MONITORING NON-CRITERIA POLLUTANTS

While it is not a criteria pollutant, TCEQ should conduct monitoring for Hydrogen Cyanide (HCN) in Pasadena and along the Houston Ship Channel. HCN is a colorless gas with a faint, bitter, almond-like odor that is emitted from Fluid Catalytic Cracking Units. This well-known poison has been used for executions and in chemical warfare. As a gas it may be inhaled or absorbed through the skin. Chronic and sub-chronic inhalation of HCN can cause a range of effects to the central nervous system, like "headaches, weakness, nausea, and changes in taste and smell." Such exposure can also enlarge the thyroid, affect its uptake of iodine, and alter thyroid hormone levels. Chronic inhalation of HCN may also harm pulmonary function.

Other associated adverse health effects of exposure to HCN include Parkinson-like symptoms; bilateral lesions in basal ganglia (neurodegenerative disorder); memory problems; personality changes; sudden collapse; anxiety; hyperventilation; giddiness; headache; arrhythmias; nausea; vomiting; tachycardia; bradycardia (slower-than-normal heartrate); hypertension; hyperpnoea (increased depth and rate of breathing); seizures; coma; palpitations; apnea; dilated pupils; pulmonary edema (excess fluid in the lungs); syncope (temporary loss of consciousness due to insufficient blood flow to the brain); cardiopulmonary failure (cardiac arrest); acidosis (excess of acid in the blood); encephalopathy (brain disease); diabetes; and skin burns.

In 2002, EPA recognized that industry-reported HCN emissions were much higher than it had previously understood. The EPA estimated HCN emissions from existing fluid catalytic cracking units (FCCUs) had a chronic non-cancer target organ-specific hazard index from inhalation exposure of 1, which EPA recognizes is significant. Unfortunately, while EPA and TCEQ have set health-based effects screening levels for HCN, neither has adopted technology standards to control emissions. HCN emitting facilities have been required to conduct stack testing to determine emissions and to report those emissions to the EPA, but no off-site monitoring has been conducted. According to TRI data, facilities along the Houston Ship Channel released a combined 340,103.40 pounds of HCN in 2017. Large emitters include the ExxonMobil Baytown Refinery, the Shell Deer Park Refinery, the Valero Houston Refinery, and the LyondellBasell Houston Refinery. According to the EPA, out of all Hazardous Air Pollutants, HCN emitted from refineries is the primary driver of non-cancer health risk and the most highly ranked pollutant on the Maximum Neurological Hazard Index.[126] TCEQ must not downplay the risks posed by HCN, and the agency must quantify those risks for the hundreds of thousands of people living near these facilities.

Because no off-site monitoring has been conducted, and because no cumulative modeling has been performed, exposure levels remain a mystery. HCN has a variety of negative health effects, and existing standards leave the public uncertain about their exposure. It is imperative that TCEQ monitor this pollutant. TCEQ must conduct an in-depth review of the

[126] EPA, Final Residual Risk Assessment for the Petroleum Refining Source Sector at 36, 41, 44 (September 2015).

effects of HCN exposure on the surrounding population and effectively convey that information to the public. Satisfaction of this duty must be based on implementation of proper techniques that yield more monitoring data.

VI. REQUESTED RELIEF

To summarize, Commenters Port Arthur Community Action Network, Westry Mouton Project, Super Neighborhood 48, Super Neighborhood 47, Super Neighborhood 49 / 50, Super Neighborhood 57, Progressive Fifth Ward Community Association, Prince Square Civic Association, and Citizens for Clean Air and Clean Water are requesting the following changes to the TCEQ AMNP:

1. **NOx (Nitrogen Dioxide):**
    a. Jefferson County:
        i. Add NOx capabilities at the Port Arthur West monitoring site.
        ii. Add NOx capabilities at the Beaumont Mary monitoring site.
2. **SO_2 (Sulfur Dioxide):**
    a. Jefferson County: Add SO_2 emissions monitoring to the Beaumont Mary monitoring site.
    b. Brazoria County: CCACW supports the TCEQ's recommendation to change the Freeport South Avenue I SO_2 monitor network designation from state-initiative to federal SPM, effective December 31, 2022.
3. **Pb (Lead):**
    a. Harris County: Evaluate lead monitoring needs for Fifth Ward community.
    b. Jefferson County: Evaluate lead monitoring needs in Beaumont.
4. **O_3 (Ozone):**
    a. Harris County: Add more ozone monitors in the Houston Ship Channel and in East Houston to comply with proposed elevation to severe nonattainment concerns.
    b. Jefferson County: Add an ozone monitor to the Beaumont Mary location and conduct air monitoring to ensure the highest predicted levels of ozone are well monitored in the Beaumont area.
    c. Brazoria County: Add ozone capabilities back to the Clute monitoring site.
5. **CO (Carbon Monoxide):**
    a. Jefferson County: Model CO in and around the Charlton-Pollard neighborhood and place a CO monitor in the area.
6. **Particulate Matter:**
    a. Jefferson County: Add PM_{10} and $PM_{2.5}$ monitors in Beaumont and Port Arthur.
    b. Harris County:
        i. The impacted Communities are supportive of new proposed $PM_{2.5}$ monitors in Fifth Ward and Pleasantville Area. The location for these monitors is important to ensure potential impacts on community are

measured. The communities seek more information on the process of how the TCEQ selects the location for the monitor.

ii. Add additional state-run monitors to continue evaluating and real-time monitoring PM levels to ensure they do not exceed NAAQS among Northeast Neighborhoods including SN 47, SN 48, and SN 49/50.

7. **VOCs (Volatile Organic Compounds):**
   a. Harris County:
      i. Add continuous VOC monitors in Houston Ship Channel area to cover impacted areas like Pleasantville Area and East Houston.
      ii. Add continuous VOC monitors tor a VOC cannister to the North Wayside Monitor to evaluate additional need for VOC monitoring among Northeast Neighborhoods including SN 47, SN 48, and SN 49/50.
8. **Non-Criteria Pollutants:**
   a. **HCN (Hydrogen Cyanide).** TCEQ should begin monitoring for HCN in areas where there are facilities generating HCN.

VII. CONCLUSION

For these reasons, LSLA, on behalf of its nine group clients participating in these comments, Port Arthur Community Action Network, Westry Mouton Project, Super Neighborhood 47, Super Neighborhood 48 Trinity / Houston Gardens , Super Neighborhood 49 / 50, Pleasantville Area Super Neighborhood 57, Progressive Fifth Ward Community Association, Prince Square Civic Association, and Citizens for Clean Air and Clean Water, hopes TCEQ will reflect these comments in its final 2022 air monitoring network plan and would appreciate a complete response from TCEQ in response to the comments and concerns raised in this letter. Please contact the undersigned counsel if you have any questions or need clarification regarding the comments contained herein.

Respectfully submitted,

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ATTORNEYS FOR
PORT ARTHUR COMMUNITY ACTION NETWORK,
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SUPER NEIGHBORHOOD 48 TRINITY / HOUSTON GARDENS,
SUPER NEIGHBORHOOD 49 / 50,
PLEASANTVILLE AREA SUPER NEIGHBORHOOD 57,
PROGRESSIVE FIFTH WARD COMMUNITY ASSOCIATION,
PRINCE SQUARE CIVIC ASSOCIATION, AND
CITIZENS FOR CLEAN AIR AND CLEAN WATER

From:	hilliard007@gmail.com
To:	tceqamnp
Cc:	Patrick A. Nye; Kathryn Masten
Subject:	Comments on Annual Monitoring Network Plan
Date:	Tuesday, May 24, 2022 1:37:54 PM
Attachments:	Group Comments 2022 TCEQ Annual Monitoring Network Plan (Final).pdf

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Please see the attached letter and comments regard the TCEQ's Annual Monitoring Network Plan.

Thank you for consideration of our concerns.

Jennifer Hilliard, AIA
Ingleside on the Bay Coastal Watch Association
(361) 249-6260

Comments on the 2022 TCEQ Draft Annual Monitoring Network Plan (AMNP)

Prepared by Allied Organizations of the Coastal Alliance to Protect Our Environment (CAPE)

May 24, 2022

Dear TCEQ,

The Coastal Bend region of South Texas is experiencing rapid petrochemical industrial expansion that threatens both air and water quality in residential areas along Corpus Christi Bay. This expansion is affecting the city of Corpus Christi and several smaller Texas cities and towns whose citizens may not be aware of the impact of these plants on their health and the environment. The newest facilities include some of the largest in North America and, in some cases, the world: the Exxon-SABIC plastics plant, Cheniere's growing LNG facility and the Enbridge Ingleside oil export terminal. The small cities of Taft, Gregory and of Ingleside on the Bay in San Patricio County are neighbors of the afore-mentioned facilities, while older oil refineries line what is known as "Refinery Row" in Corpus Christi (Nueces County).

Population-based methods for determining air monitor placement including in the federal regulations and the AMNP do not take into account industrial emissions in lower populated areas like San Patricio and Nueces Counties and their impact on global warming. Citizens of smaller communities have less representation but are as deserving as citizens of large cities to breathe clean air and have the waters around them protected. It is proven that large industrial polluters have long exploited smaller communities to the detriment of public health.

As described in more detail in the table that follows, we are concerned that TCEQ is not taking a holistic and equitable view of the state in the AMNP, leaving many communities who lie in the path of this unprecedented petrochemical expansion unmonitored or under-monitored. Placement of air monitors in the plan, with limited exceptions, represents the bare minimum required under federal rule. Instead, TCEQ needs to take a much more aggressive and inclusive approach, significantly exceeding the minimum federal requirements, to be adequately protective of human health and the environment. We believe that TCEQ can do better!

We are pleased to see that TCEQ plans to implement a new monitoring site in the Gregory-Portland area of San Patricio County. We would ask that this new site be expanded to include additional pollutants beyond PM2.5, at a minimum, add continuous monitoring of NOx and O3. A truly effective air monitoring program would include continuous monitoring of VOCs and methane. We would like to suggest that Dr. Dave Felix of Texas A&M University - Corpus Christi assist with determining the site's location.

<u>Comment #1:</u>
Could you please include the reference and link in the AMNP to the additional state-initiated (and state-funded) monitoring mentioned here?

Reference in AMNP:

The AMNP "does not include a review of state-initiated monitoring conducted in addition to federal requirements" (p. 7) nor is a citation provided in the plan to additional TCEQ monitoring.

Comment #2:

Could you please include the reference and link in the AMNP to information about "state-initiative special studies" under consideration and the process for how can studies be requested outside of the 30-day comment period for the AMNP?

Reference in AMNP:
Implementation of potential monitors "may be included as part of the TCEQ federal ambient air monitoring network or as state-initiative special studies" (p.7)

Comment #3:

We maintain that the number, type, and location of monitors is NOT sufficient to characterize the entire state of Texas. The language of 40 CFR Part 58 represents the bare minimum monitoring required. **What is TCEQ doing to ensure that primary quality assurance organizations (PQAOs) are doing above the bare minimum required monitoring as encouraged in 40 CFR Part 58 "to develop and maintain quality systems more extensive than the required minimums"?**

Reference in AMNP:
"The TCEQ federal monitoring network includes more than double the number of monitors required by federal rule. The number, type, and location of monitors within the network is sufficient to characterize area air quality for all areas required within Texas" (p.7)

Comment #4:

It appears that there is only one PQAO for the entire state of Texas – presumably TCEQ itself. The designation of PQAOs should be made clear in the AMNP. **Who are the PQAOs in Texas?** According to 40 CFR Part 58 "Each PQAO shall be defined such that measurement uncertainty among all stations in the organization can be expected to be reasonably homogeneous as a result of common factors." **Given the state's geographic, climactic, industrial, and other variability, is it inappropriate to assume that Texas is "reasonably homogeneous as a result of common factors" when it comes to measuring differences in air quality? Therefore, should Texas have more than one PQAO?**

Instead of stretching beyond the minimum to create a monitoring network truly designed to protect public health, the AMNP identifies PQAO co-location monitoring requirements incrementally, based on pre-existing insufficient current network size and poor federal requirements for identifying adequate coverage. **What can TCEQ do to protect our public health better?**

Reference in AMNP:
TCEQ does not clearly define or justify what constitutes a primary quality assurance organization (PQAO) in Texas. TCEQ simply invokes the 15% required of PQAOs in 40 CFR Part 58 to determine the minimum number of collocated QC monitors:

- *one Pb monitor (p. 17)*
- *three PM10 monitors (exceeding this requirement with four monitors) (p.19)*
- *one PM2.5 FRM monitor (exceeding this requirement with two monitors) (p.22)*
- *three same-method PM2.5 (FEM/FEM collocation) monitors and three different-method PM2.5 (FEM/FRM collocation) monitors (p. 22-23)*

Comment #5:

Might it be more appropriate to use EPA's intrastate and interstate "Air Quality Control Regions" (AQCRs) for siting and monitoring? See https://www.epa.gov/sips-tx/texas-federal-air-quality-control-regions-aqcrs. **Might this help make sure that susceptible and vulnerable populations within a common airshed have more say, and no communities would be left out?**

Reference in AMNP:
"TCEQ uses statistical-based definitions for core based statistical areas (CBSAs) or metropolitan statistical areas (MSAs), as delineated by the U.S. Office of Management and Budget." (p. 8)

Comment #6:
PM monitoring requires high sensitivity and is of increased concern - especially to residents of the Corpus Christi MSA, because of the massive petrochemical plants that have recently started operating adjacent to cities like Portland, Gregory, and Ingleside on the Bay in San Patricio County. Yet, according to Table 1, NCore instruments are unable to measure trace levels of PM. **Can and will the TCEQ deploy instruments that have high sensitivity capability for PMs in order to be protective of public health?**

Reference in AMNP:
"NCore guidance suggest monitoring instruments capable of trace levels (high sensitivity), where needed" (p. 9)

Comment #7:
PM monitoring requires high sensitivity and is of increased concern - especially to residents of the Corpus Christi MSA, because of the massive petrochemical plants that have recently started operating adjacent to cities like Portland, Gregory, and Ingleside on the Bay in San Patricio County. Yet, according to Table 1, NCore instruments are unable to measure trace levels of PM. **Can and will the TCEQ deploy instruments that have high sensitivity capability for PMs in order to be protective of public health?**

Reference in ANMP:
"Texas is required to operate two to three urban NCore sites, due to multiple air sheds and MSAs, and meets these requirements with three urban NCore sites and associated measurements listed in Table 1." (p. 9)

Comment #8:
By limiting TAMS to Dallas and Houston, TCEQ is again performing at the bare minimum, and appears to be ignoring the spirit of this requirement. **Since San Antonio and Austin both have more than 2,000,000 in population should these cities also have PAMS monitoring?**

Reference in ANMP:
"State monitoring agencies are required to measure and report PAMS measurements at each required NCore site located in CBSAs with populations greater than 1,000,000…" (p. 10).

Comment #9:
Traffic is not the only source of NO2 and SO2 emissions. NO2 and SO2 are present in heavily industrialized areas and shipping ports where such emissions are not minimized by catalytic converters required on automobiles. Population- and traffic-based rules mean that areas like San Patricio County and the Corpus Christi MSA are never identified as air monitoring sites. Many of these areas are home to susceptible and vulnerable populations. To be more protective

and representative of sites most at risk for harmful industrial NO2 and SO2 emissions, ambient air quality monitoring sites could be selected within each of the EPA's 12 Air Quality Control Regions (AQCRs) - in addition to the 4 CBSA sites. **Within AQCRs, when will the most heavily industrialized locations get air monitors for NO2 and SO2?**

Reference in ANMP:
Title 40 CFR Part 58 "requires one area-wide ambient air quality monitoring site [for NO2] in each CBSA with a population of 1,000,000 or more persons" (p.11).
"The TCEQ SO2 network is designed to meet the population weighted emissions index (PWEI) by CBSA" (p.13).

Comment #10:

Relying on 2010 and 2014 data to characterize high SO2 emissions seems dated. **Given that numerous new petrochemical plants, like those in San Patricio County, have been permitted by TCEQ for new emissions, including SO2, since 2017, what assurance is there that Appendix F is complete? Shouldn't the AMNP at least acknowledge that new sources brought online have also been reviewed for SO2 and other emissions during the Annual Plan updates? Could TCEQ create a tool (e.g., interactive map) that shows total permitted emissions (MAERTs) for each industrial plant site (regulated entity)?**
Communities in San Patricio County have had to start their own air monitoring programs to ensure citizen safety and minimize environmental contamination. **What will the TCEQ do to notify communities of violations and enforce penalties relating to the AMNP?**

Reference in ANMP:
"40 CFR Part 51 Subpart BB (the DRR) required air agencies to characterize air quality around specified sources that emitted 2,000 tons per year (tpy) or more of SO2 in the latest emissions inventory year (2014, at that time, for Texas)" (p. 14)
"Details for the TCEQ's DRR SO2 source evaluation, modeling, and monitoring recommendations are in the TCEQ 2017 AMNP" (p. 14)
"Out of all Texas counties (or portions of counties) currently designated attainment/ unclassifiable for the 2010 SO2 NAAQS, only the seven counties shown in Table 1 were designated based on modeled actual SO2 emissions…no additional SO2 air quality modeling is needed to determine compliance with the 2010 SO2 NAAQS for any of the seven Texas counties listed in Table 1." (F-1)

Thank you for your consideration,

Ingleside on the Bay Coastal Watch Association
Patrick Nye, President

Texas Campaign for the Environment
Robin Schneider

Surfrider Foundation, Texas Coastal Bend Chapter
Neil McQueen, Co-Chair

Portland Citizens United
Errol Summerlin, Co-founder

San Antonio Bay Estuarine Waterkeeper
Diane Wilson, Executive Director

Chispa Texas
Elida Castillo, Program Director

Coastal Bend Sierra Club
James Klein, President

From: John W
To: tceqamnp
Subject: Comments for 2022 Draft Annual Monitoring Network Plan
Date: Thursday, April 28, 2022 1:43:18 PM

Dear TCEQ,
On reviewing the 2022 Draft Plan I am still not seeing any monitoring in Corpus Christi in the area where many people live, work and shop. I have commented on this in past draft plans. I propose at least a PM 2.5 monitor be placed within a tenth of a mile from the La Palmera Mall. My reasoning is as follows: it is roughly in the center of the population of the city, many people work next to S.P.I.D., many people shop in this area, all of these people are being exposed to air pollution, during winter events when the wind blows from the northwest pollutants from downwind will be monitored. The current monitors are mostly grouped around the refineries and there is one by the airport and one out of town on the island. None of these current monitors are monitoring where most of the people, live, work, and shop so we don't have any good data regarding the air quality that most people breathe.
The city also likely has a larger than normal percentage of gross polluters. This is caused in part by our aging fleet of vehicles that are in poor repair, lack of charging for zero-emissions vehicles, no vehicle emissions testing, and a lack of public outreach and education regarding air quality in the city.
Thank you for allowing me to comment,
John Weber
361-739-5691