Neighborhood Air Toxics Modeling Project
For
Houston and Corpus Christi
Case # 2:11-MC-00044

Phase 1B
Monitoring Network Extension

Quarterly Report for the Period

October 1, 2014 through December 31, 2014

Submitted to

The Honorable Janis Graham Jack
United States District Court for the Southern District of Texas
Corpus Christi, Texas

Mr. John L. Jones
United States Environmental Protection Agency, Region 6
Dallas, Texas

Ms. Susan Clewis
Texas Commission on Environmental Quality, Region 14
Corpus Christi, Texas

Submitted by

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I. Introduction

On February 1, 2008, the United States District Court entered an Order (D.E. 981, Order (pp.1, 7-11)) regarding unclaimed settlement funds in Lease Oil Antitrust Litigation (No.11) Docket No. MDL No.1206. The Court requested a detailed project proposal from Dr. David Allen, the Gertz Regents Professor in Chemical Engineering and the Director of the Center for Energy and Environmental Resources at The University of Texas at Austin (UT Austin), regarding the use of $9,643,134.80 in the Settlement Fund. The proposal was for a project titled "Neighborhood Air Toxics Modeling Project for Houston and Corpus Christi" (hereinafter "Air Toxics Project"). The Air Toxics Project was proposed in two stages. In Stage 1, UT Austin was to develop, apply, demonstrate and make publicly available, neighborhood-scale air quality modeling tools for toxic air pollutants in Corpus Christi, Texas (Phase 1A) and extend the operation of the air quality monitoring network in Corpus Christi, Texas (Phase 1B). The ambient monitoring results from Stage 1 Phase 1A were to be used in synergy with the neighborhood-scale models to improve the understanding of emissions and the spatial distribution of air toxics in the region.

On February 21, 2008, the United States District Court for the Southern District of Texas issued an order to the Clerk of the Court to distribute funds in the amount of $4,586,014.92, plus accrued interest, to UT Austin for the purposes of implementing Stage 1 of the Air Toxics Project as described in the detailed proposal submitted to the Court by UT Austin on February 15, 2008 (D.E. 998).

Under the Order to Distribute Funds in MDL No. 1206, on March 3, 2008, at the direction of the Settlement Administrator, $4,602,598.66 was disbursed to UT Austin for Stage 1 of the Project. This amount includes the interest accrued prior to distribution from the MDL No. 1206 Settlement Fund.

In Stage 2, subject to the availability of funds, it was planned that UT Austin would extend the modeling to the Houston, Texas ship channel region, develop a mobile monitoring station that could be deployed in Corpus Christi and in other regions of Texas and/or further extend the operating life of the existing stationary network in the same or a modified spatial configuration. Based on the decision of the U.S. Court of Appeals for the 5th Circuit on June 27, 2011, UT Austin will not be receiving the Stage 2 funding at any point in the future. Further, work on the modeling portion of Stage 1 (Phase 1A) was completed June 30, 2011. Hence, all future progress reports will describe only work on Stage 1 Phase 1B (extending the operation of the air quality monitoring network).

The air quality monitoring network was originally authorized on October 1, 2003, when the United States District Court for the Southern District of Texas issued an order to the Clerk of the Court to distribute funds in the amount of $6,700,000, plus interest accrued, to The University of Texas at Austin (UT Austin) to implement the court ordered condition of probation (COCP) project *Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation* (Project). Those funds have been expended. Funding for the air quality monitoring network originally created for the COCP Project is now provided through Stage 1 Phase 1B of the Air Toxics Project.

This Stage 1 Phase 1B quarterly report has been prepared pursuant to the requirements of the Air Toxics project and is being submitted to the United States District Court, the United States Environmental Protection Agency (EPA), and the Texas Commission on Environmental Quality (TCEQ).

II. Air Toxics Project – Stage 1 - Phase 1B Overview

Phase 1B of the project reserved approximately 65% of the initial Stage 1 project funds, or approximately $3 million, to extend the operation of the Corpus Christi ambient air monitoring network. Under Phase 1B, the project team will use these funds to continue the operation and maintenance of the monitoring network initiated under the Corpus Christi Air Monitoring and Surveillance Camera Project.

III. Air Toxics Project – Stage 1 – Phase 1B Progress Report

The focus of work during the quarter ending December 31, 2014, has been directed to the following activities funded by the Stage 1 Phase 1B extension of the Corpus Christi Air Monitoring network.

A. Operations and Maintenance Phase of the Project

The Project currently consists of a network of six (6) air monitoring stations with air monitoring instruments and surveillance camera equipment. A map showing locations of the COCP Project monitoring sites along with TCEQ sites appears in Figure 1, on page 4. Table 1, on pages 4 and 5, identifies the location and instrumentation found at each of the COCP Project sites. TCEQ sites and some of the sites farther from the COCP area than the TCEQ sites, operated by Texas A&M at Kingsville (TAMUK), provide additional data used in these analyses.

Figure 1. Corpus Christi Monitoring Sites, "X" marks site terminated in 2012

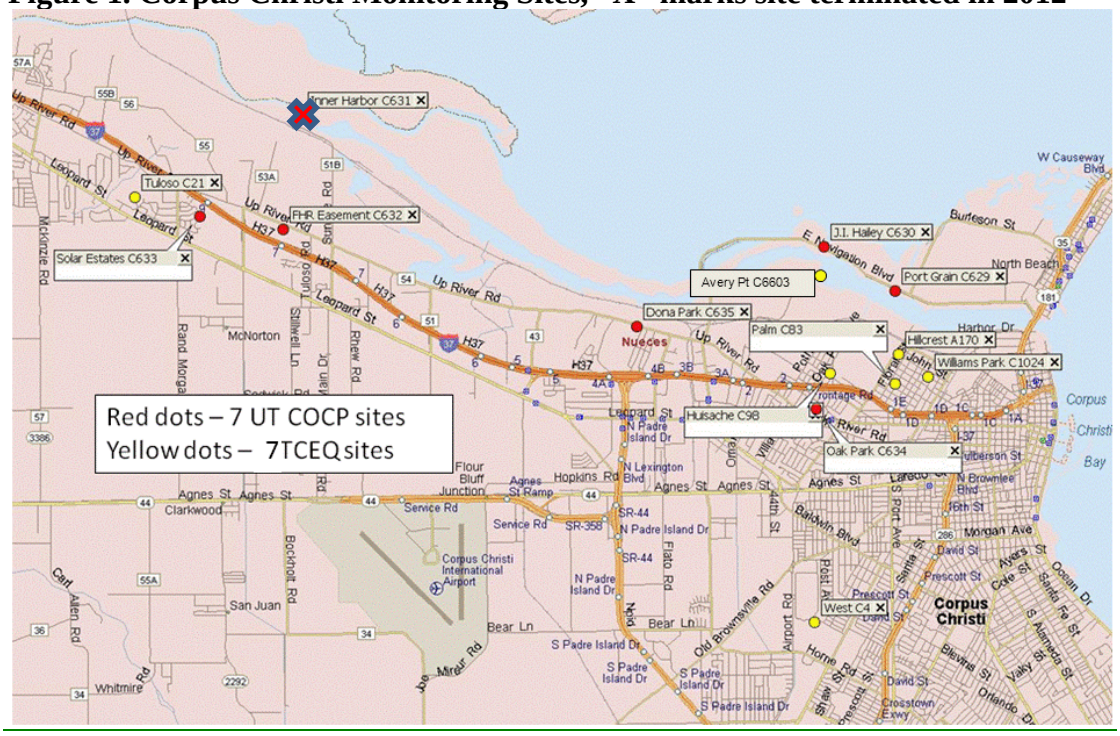

Table 1. Schedule of Air Monitoring Sites, Locations and Major Instrumentation

TCEQ CAMS#	Description of Site Location	Monitoring Equipment showing month/year of operations				
		Auto-GC	TNMHC (T) / Canister (C)	H_2S & SO_2	Met Station	Camera
634	Oak Park Recreation Center (**OAK**)	3/05 to date	C: 12/04 to 2/09 T: 12/04 to 4/12		12/04 to date	
629	Grain Elevator @ Port of Corpus Christi (**CCG**)		T&C: 12/04 to date	12/04 to date	12/04 to date	
630	J. I. Hailey Site @ Port of Corpus Christi (**JIH**)		T&C: 12/04 to date	12/04 to date	12/04 to date	
635	TCEQ Monitoring Site C199 @ Dona Park (**DPK**)		T&C: 12/04 to date	12/04 to date	12/04 to date	1/05 to date
632	Off Up River Road on Flint Hills Resources Easement (**FHR**)		T&C: 12/04 to date	12/04 to date	12/04 to date	
633	Solar Estates Park at end of Sunshine Road (**SOE**)	3/05 to date	C: 12/04 to 2/09 T: 12/04 to 4/12	12/04 to date	12/04 to date	1/05 to date
631	*Port of Corpus Christi on West End of CC Inner Harbor (**WEH**) (terminated)*		T&C: 12/04 to 5/12	12/04 to 5/12	12/04 to 5/12	

Legend

CAMS	continuous ambient monitoring station
Auto-GC	automated gas chromatograph
TNMHC	total non-methane hydrocarbon analyzer (all except CAMS 633 & 634 also have canister hydrocarbon samplers)

Table 1 (Continued)
Legend

H_2S	hydrogen sulfide analyzer
SO_2	sulfur dioxide analyzer
Met Station	meteorology station consisting of measurement instruments for wind speed, wind direction, ambient air temperature and relative humidity
Camera	surveillance camera

A detailed description of the data analyses and findings for this quarter appears in Appendix A, pages 8 through 27. Specifically, the appendix contains the following elements:

- **Auto-GC Data Summary –** In examining the validated third quarter of 2014 hourly auto-GC data from Oak Park, Solar Estates, and TCEQ's Palm sites, no individual measurements were found to have exceeded a short-term air monitoring comparison value (AMCV). The validated third and fourth quarter average concentrations were below each compound's long-term AMCVs. A summary of data appears on pages 13 through 19. In examining all the data over the course of the project, it does appear that for some hydrocarbon species mean concentrations there is a general increase in recent years.

- **Benzene Summary** – A review of ten years of data is presented, with a focus on overall trends and the fourth quarter average concentrations from 2005 through 2014, which appears on pages 19 through 23.

- **Analysis of Sulfur Dioxide at Several Sites** – In past years the JIH CAMS 630 site had measured concentrations high enough and often enough to violate the current SO_2 annual National Ambient Air Quality Standards (NAAQS), but concentrations have declined over time and all Corpus Christi sites are now in compliance with standards. Long term trends for all Corpus Christi sites are discussed on pages 23 through 26.

B. Scheduled Meetings of the Volunteer Advisory Board

The Corpus Christi Project Advisory Board met on December 4, 2014. The meeting notes from that Advisory Board Meeting are found in Appendix B, pages 28 through 31.

C. Project Management and Planning

Project Management and Planning during this period has focused on the following four (4) major activities.

1. **Air Monitoring Operations**
   Operations and maintenance of the six monitoring sites reporting data via the TCEQ LEADS is on-going. The data can be accessed and reviewed at the project website (http://www.utexas.edu/research/ceer/ccaqp/).

2. **Communication and Reporting**
   The status of the Project has been communicated through the website, which is operational with portions under continual updating, quarterly and annual reports, and meetings of the project's Community Advisory Board.

3. **Budget Monitoring**
   Budget monitoring during the period has focused on projects costs for Stage 1 Phase IB – Sites Operation and Maintenance costs. Financial reports for the quarter are included in Appendix C, pages 32 through 34.

4. **Other Contributions**
   There were no other contributions made to the project during this quarter.

III. Financial Report

As required, the following financial summary information is provided. Details supporting this financial summary are included in Appendix C, pages 32 through 34.

A. Total Amount of Air Toxics Project Funds and Other Funds Received Under the Project
   The Air Toxics Project funds received through December 31, 2014 totals $3,137,177.22. This total includes total interest earned through December 31, 2014.

B. Detailed List of the Actual Expenditures Paid from Air Toxics Project Funds Stage 1 Phase 1B through December 31, 2014
   Expenditures of Air Toxics Project funds during this quarter totaled $228,453.15. The funds remaining in the Air Toxics account (not spent for Stage 1 Phase 1A) are in a separate account so that separate financial reports can be generated.

C. Total Interest Earned on Air Toxics Project Funds through December 31, 2014
   The interest earned during this quarter totaled $254.25. The Air Toxics Project total interest earned through December 31, 2014 totals $391,805.54. A report providing detailed calculations of the interest earned on the Air Toxics Project funds is included in Appendix C, pages 32 through 34.

D. Balance as of December 31, 2014, in the Air Toxics Project Account
   The balance in the Air Toxics Project account, including interest earned totals $1,421,067.03.

E. Anticipated Expenditures for the Funds Remaining in the Air Toxics Project Account – Stage 1 Phase 1A
   There are no additional expenditures anticipated for Stage 1 Phase 1A.

F. Anticipated Expenditures for the Funds Remaining in the Air Toxics Project Account – Stage 1 Phase 1B
   All funds remaining after the close of Stage 1, Phase 1A have been allocated to Stage 1, Phase 1B, and the extension of the operation of the Corpus Christi ambient monitoring network.

The Stage 1 Phase 1A Neighborhood Air Toxics Modeling Project was originally allocated a budget of $2,277,564. As of June 30, 2011, final expenditures on Phase 1A totaled $1,863,081.22. The remaining funds totaling $414,482.78, have been transferred, with the Court's permission, to a new account to allow for easier tracking of the expenses as they are utilized for Stage 1 Phase 1B, the extension of the Corpus Christi Air Monitoring Project.

Quarterly Report Distribution List:

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Members of the Community Advisory Board of the *Corpus Christi Air Monitoring and Surveillance Camera Project*

APPENDIX A

Data Analysis for Corpus Christi Quarterly Report

October 1, 2014 through December 31, 2014

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Data Analysis for Corpus Christi Quarterly Report

This technical report describes results of the monitoring and analysis of data under the Air Toxics Project Stage 1 Phase 1B. The primary focus is on the period October 1 through December 31, 2014. The monitoring network is shown earlier in this report in Figure 1, on page 4, and is described in Table 2, below. This report contains the following elements:

- A summary of Oak Park, Solar Estates, and Palm (TCEQ) auto-GC data for the third and fourth quarters of 2014;
- Information on the trends for benzene concentrations at the two project auto-GCs in residential areas, now with ten years of fourth quarter data, and at the TCEQ's Palm auto-GC, with five years of fourth quarter data (since 2010); and
- A discussion of sulfur dioxide (SO_2) measured at Corpus Christi sites.

Table 2. Schedule of air monitoring sites, locations and major instrumentation

TCEQ CAMS#	Description of Site Location	Monitoring Equipment showing month/year of operations				
		Auto-GC	TNMHC (T) / Canister (C)	H_2S & SO_2	Met Station	Camera
634	Oak Park Recreation Center (**OAK**)	3/05 to date	C: 12/04 to 2/09 T: 12/04 to 4/12		12/04 to date	
629	Grain Elevator @ Port of Corpus Christi (**CCG**)		T&C: 12/04 to date	12/04 to date	12/04 to date	
630	J. I. Hailey Site @ Port of Corpus Christi (**JIH**)		T&C: 12/04 to date	12/04 to date	12/04 to date	
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632	Off Up River Road on Flint Hills Resources Easement (**FHR**)		T&C: 12/04 to date	12/04 to date	12/04 to date	
633	Solar Estates Park at end of Sunshine Road (**SOE**)	3/05 to date	C: 12/04 to 2/09 T: 12/04 to 4/12	12/04 to date	12/04 to date	1/05 to date
631	*Port of Corpus Christi on West End of CC Inner Harbor (**WEH**) (terminated)*		T&C: 12/04 to 5/12	12/04 to 5/12	12/04 to 5/12	

Legend

CAMS	continuous ambient monitoring station
Auto-GC	automated gas chromatograph
TNMHC	total non-methane hydrocarbon analyzer (all except CAMS 633 & 634 also have canister hydrocarbon samplers)
H_2S	hydrogen sulfide analyzer
SO_2	sulfur dioxide analyzer
Met Station	meteorology station consisting of measurement instruments for wind speed, wind direction, ambient air temperature and relative humidity
Camera	surveillance camera

Glossary of terms

- **Pollutant concentrations** – Concentrations of most gaseous pollutants are expressed in units denoting their "mixing ratio" in air; i.e., the ratio of the number molecules of the pollutant to the total number of molecules per unit volume of air. Because concentrations for all gases other than molecular oxygen, nitrogen, and argon are very low, the mixing ratios are usually scaled to express a concentration in terms of "parts per million" (ppm) or "parts per billion" (ppb). Sometimes the units are explicitly expressed as ppm-volume (ppmV) or ppb-volume (ppbV) where 1 ppmV indicates that one molecule in one million molecules of ambient air is the compound of interest and 1 ppbV indicates that one molecule in one billion molecules of ambient air is the compound of interest. In general, air pollution standards and health effects screening levels are expressed in ppmV or ppbV units. Because hydrocarbon species may have a chemical reactivity related to the number of carbon atoms in the molecule, mixing ratios for these species are often expressed in ppb-carbon (ppbV times the number of carbon atoms in the molecule), to reflect the ratio of carbon atoms in that species to the total number of molecules in the volume. This is relevant to our measurement of auto-GC species and TNMHC, which are reported in ppbC units. For the purpose of relating hydrocarbons to health effects, this report notes hydrocarbon concentrations in converted ppbV units. However, because TNMHC is a composite of all species with different numbers of carbons, it cannot be converted to ppbV. Pollutant concentration measurements are time-stamped based on the start time of the sample, in Central Standard Time (CST), with sample duration noted.

- **Auto-GC** – The automated gas chromatograph collects a sample for 40 minutes, and then automatically analyzes the sample for a target list of 46 hydrocarbon species. These include benzene and 1,3-butadiene, which are air toxics, various species that have relatively low odor thresholds, and a range of gasoline and vehicle exhaust components. Auto-GCs operate at Solar Estates CAMS 633 and Oak Park CAMS 634. In June 2010 TCEQ began operating an auto-GC at Palm CAMS 83 at 1511 Palm Drive in the Hillcrest neighborhood.

- **Total non-methane hydrocarbons (TNMHC)** – TNMHC represent a large fraction of the total volatile organic compounds released into the air by human and natural processes. TNMHC is an unspeciated total of all hydrocarbons, and individual species must be resolved by other means, such as with canisters or auto-GCs. However, the time resolution of the TNMHC instrument is much shorter than the auto-GC, and results are available much faster than with canisters. TNMHC analyzers operate at the sites that do not take continuous hydrocarbon measurements with auto-GCs (CAMS 629, 630, 632, and 635).

- **Canister** – Electro-polished stainless steel canisters are filled with air samples when an independent sensor detects that *elevated* (see below) levels of hydrocarbons (TNMHC) are present. Samples are taken for 20 minutes to try to capture the chemical make-up of the air. In most cases, the first time on any day that the monitored TNMHC concentration exceeds 2000 ppbC at a site for a continuous period of 15 minutes or more, the system will trigger and a sample will be collected. Samples are sent to UT Austin and are

analyzed in a lab to resolve some 60 hydrocarbon and 12 chlorinated species. Canister samplers operate at the four active sites that do not take continuous hydrocarbon measurements with auto-GCs (CAMS 629, 630, 632, and 635).

- **Air Monitoring Comparison Values (AMCV) –** The TCEQ uses AMCVs in assessing ambient data. Two valuable online documents ("Fact Sheet" and "Uses of ESLs and AMCVs Document") that explain AMCVs are at http://www.tceq.texas.gov/toxicology/AirToxics.html (accessed January 2015). The following text is an excerpt from the TCEQ "Fact Sheet" document:

  > Effects Screening Levels are chemical-specific air concentrations set to protect human health and welfare. Short-term ESLs are based on data concerning acute health effects, the potential for odors to be a nuisance, and effects on vegetation, while long-term ESLs are based on data concerning chronic health and vegetation effects. Health-based ESLs are set below levels where health effects would occur whereas welfare-based ESLs (odor and vegetation) are set based on effect threshold concentrations. The ESLs are screening levels, **not ambient air standards.** Originally, the same long- and short-term ESLs were used for both air permitting and air monitoring.
  >
  > There are significant differences between performing health effect reviews of air permits using ESLs, and the various forms of ambient air monitoring data. The Toxicology Division is using the term "air monitoring comparison values" (AMCVs) in evaluations of air monitoring data in order to make more meaningful comparisons. "AMCVs" is a collective term and refers to all odor-, vegetative-, and health-based values used in reviewing air monitoring data. Similar to ESLs, AMCVs are chemical-specific air concentrations set to protect human health and welfare. Different terminology is appropriate because air *permitting* and air *monitoring* programs are different.

- **Rationale for Differences between ESLs and AMCVs** – A very specific difference between the permitting program and monitoring program is that permits are applied to one company or facility at a time, whereas monitors may collect data on emissions from several companies or facilities or other source types (e.g., motor vehicles). Thus, the protective ESL for permitting is set lower than the AMCV in anticipation that more than one permitted emission source may contribute to monitored concentrations.

- **National Ambient Air Quality Standards (NAAQS) –** U.S. Environmental Protection Agency (EPA) has established a set of standards for several air pollutions described in the Federal Clean Air Act. NAAQS are defined in terms of *levels* of concentrations and particular *forms*. For example, the NAAQS for particulate matter with size at or less than 2.5 microns ($PM_{2.5}$) has a *level* of 12 micrograms per cubic meter averaged over 24-hours, and a *form* of the annual average based on four quarterly averages, averaged over three years. Individual concentrations measured above the level of the NAAQS are called *exceedances*. The number calculated from a monitoring site's data to compare to the level of the standard is called the site's *design value*, and the highest design value in the area for a year is the regional design value used to assess overall NAAQS compliance. A monitor or a region that does not comply with a NAAQS is said to be *noncompliant*. At some point after a monitor or region has been in noncompliance, the U.S. EPA may choose to label the region as *nonattainment*. A nonattainment designation triggers

requirements under the Federal Clean Air Act for the development of a plan to bring the region back into compliance.

A more detailed description of NAAQS can be found on the EPA's Website at http://www.epa.gov/air/criteria.html (accessed January 2015).

One species measured by this project and regulated by a NAAQS is sulfur dioxide (SO_2). EPA set the SO_2 NAAQS to include a level of 75 ppb averaged over one hour, with a form of the three-year average of the annual 99^{th} percentiles of the daily maximum one-hour averages. If measurements are taken for a full year at a monitor, then the 99^{th} percentile would be the fourth highest daily one hour maximum. There is also a secondary SO_2 standard of 500 ppb over three hours, not to be exceeded more than once in any one year.

- **Elevated Concentrations** – In the event that measured pollutant concentrations are above a set threshold they are referred to as "elevated concentrations." The values for these thresholds are summarized by pollutant below. As a precursor to reviewing the data, the reader should understand the term "*statistical significance*." In the event that a concentration is higher than one would typically measure over, say, the course of a week, then one might conclude that a specific transient assignable cause may have been a single upwind pollution source, because experience shows the probability of such a measurement occurring under normal operating conditions is small. Such an event may be labeled "statistically significant" at level 0.01, meaning the observed event is rare enough that it is not expected to happen more often than once in 100 trials. This does not necessarily imply the occurrence of a violation of a health-based standard. A discussion of "elevated concentrations" and "statistical significance" by pollutant type follows:

    - For H_2S, any measured concentration greater than the level of the state residential standards, which is 80 ppb over 30 minutes, is considered "elevated." For SO_2, any measured concentration greater than the level of the NAAQS, which is 75 ppb over one hour, is considered "elevated." Note that the concentrations of SO_2 and H_2S need not persist long enough to constitute an exceedance of the standard to be regarded as elevated. In addition, any closely spaced values that are statistically significantly (at 0.01 level) greater than the long-run average concentration for a period of one hour or more will be considered "elevated" because of their unusual appearance, as opposed to possible health consequence. The rationale for doing so is that unusually high concentrations at a monitor may suggest the existence of unmonitored concentrations closer to the source area that are potentially above the state's standards.
    - For TNMHC, any measured concentration greater than the canister triggering threshold of 2000 ppbC is considered "elevated." Note that the concentrations need not persist long enough to trigger a canister (900 seconds) to be considered elevated.
    - For benzene and other air toxics in canister samples or auto-GC measurements, any concentration above the AMCV is considered "elevated." Note that 20-

minute canister samples and 40-minute auto-GC measurements are both compared with the short-term AMCV.

- Some hydrocarbon species measured in canister samples or by the auto-GC generally appear in the air in very low concentrations close to the method detection level. Similar to the case above with H_2S and SO_2, any values that are statistically significantly (at 0.01 level) greater than the long-run average concentration at a given time or annual quarter will be considered "elevated" because of their unusual appearance, as opposed to possible health consequence. The rationale for doing so is that unusually high concentrations at a monitor may suggest an unusual emission event in the area upwind of the monitoring site.

1. Auto-GC Data Summaries in Residential Areas

In this section the results of semi-continuous sampling for 27 hydrocarbon species at the three Corpus Christi auto-GC sites – UT's Solar Estates CAMS 633, UT's Oak Park CAMS 634, and TCEQ's Palm CAMS 83 – are presented. These three sites are located in residential areas. Solar Estates and Oak Park are generally downwind of industrial emissions under northerly winds. Palm, located near the TCEQ's Hillcrest and Williams Park sites in Figure 1, on page 4, is generally downwind of industries under northerly and westerly winds. In examining the aggregated data, one observes similar patterns of hydrocarbon species at all three sites.

Table 3, below, lists the data completeness from the two project auto-GCs from January 2012 through December 2014. Data validation has been completed for all months for 2014. When data are missing, the reason is generally owing to quality assurance steps or maintenance procedures. The project regularly exceeds the minimum 75 percent data recovery goal.

Table 3. Percent data recovery by month, 2012-2014, validated data only

Month	Oak Park	Solar Est.	Month	Oak Park	Solar Est.	Month	Oak Park	Solar Est.
Jan-12	94	99	Jan-13	100	100	Jan-14	97	96
Feb-12	90	98	Feb-13	94	99	Feb-14	99	100
Mar-12	97	100	Mar-13	97	100	Mar-14	93	97
Apr-12	94	100	Apr-13	100	100	Apr-14	98	100
May-12	77*	96	May-13	99	99	May-14	95	98
Jun-12	65	97	Jun-13	75*	91*	Jun-14	100	84*
Jul-12	98	93*	Jul-13	98	99	Jul-14	80*	100
Aug-12	99	93*	Aug-13	87	98	Aug-14	96	99
Sep-12	99	100	Sep-13	82	99	Sep-14	99	100
Oct-12	98	93	Oct-13	99	99	Oct-14	98	98
Nov-12	99	88	Nov-13	91	100	Nov-14	99	99
Dec-12	97	99	Dec-13	99	99	Dec-14	98	100
Average 2012	**92**	**96**	**Average 2013**	**93**	**99**	**Average 2014**	**96**	**98**

* Months with planned preventive maintenance

Table 4, on page 15, summarizes the statistics (maximum and average values) on validated data from the third quarter of 2014. Data in this table are available to TCEQ staff at http://rhone3.tceq.texas.gov/cgi-bin/agc_summary.pl (accessed January 2015). Table 5, on page 16, summarizes the statistics (maximum and average values) on validated data from the fourth quarter of 2014.

As noted in the preceding paragraph, Tables 4 and 5 show the averages (arithmetic mean of measured values), and the maximum one-hour values and the maximum 24-hour average concentrations for the third and fourth quarters' validated data for 27 hydrocarbon species for the periods of interest. All concentration values in the tables are in ppbV units. No concentrations or averages of concentrations from the 27 species were greater than TCEQ's air monitoring comparison values (AMCV). The average data columns in Tables 4 and 5 are shown graphically in Figures 2 and 3, respectively, on page 17. Figures 2 and 3 are plotted on the same y-axis scale, so they can be compared directly. For species measured consistently above their respective method detection limits at the Corpus Christi auto-GCs, mean concentrations are generally lower in the second and third quarters of the year, and higher in the first and fourth quarters of the year. More frequent maritime southerly flow in the spring and summer is a contributor to lower concentrations in the spring-summer second and third quarters, while lower wind speeds and more northerly wind directions contribute to higher concentrations in the fall-winter fourth and first quarters. As can be observed by comparing Figures 2 and 3, average concentrations were higher in the fourth quarter compared with the third quarter at all three Corpus Christi sites.

The rows for ***benzene*** are bold-faced in Tables 4 and 5 owing to the concern that the concentrations for this species tend to be closer to the AMCV than are concentrations of other species. The benzene short-term AMCV is 180 ppbV and the benzene long-term AMCV is 1.4 ppbV.

Table 4. Validated auto-GC statistics, 3rd quarter 2014

Units ppbV	Oak 3Q14			Solar 3Q14			Palm 3Q14		
Species	**Peak 1hr**	**Peak 24hr**	**Mean**	**Peak 1hr**	**Peak 24hr**	**Mean**	**Peak 1hr**	**Peak 24hr**	**Mean**
Ethane	47.636	12.239	3.765	146.762	16.022	5.808	68.677	15.481	5.548
Ethylene	12.714	2.068	0.320	4.072	1.067	0.326	6.902	0.724	0.240
Propane	427.124	27.592	2.501	138.246	12.523	3.069	452.525	42.206	2.778
Propylene	6.815	0.639	0.206	5.090	0.562	0.154	6.141	0.701	0.097
Isobutane	25.695	4.948	0.820	31.095	3.658	1.096	24.194	4.027	0.789
n-Butane	40.198	7.219	1.078	50.516	6.773	1.492	62.410	6.520	1.133
t-2-Butene	0.693	0.234	0.046	4.091	0.232	0.035	0.842	0.093	0.025
1-Butene	0.324	0.100	0.029	1.790	0.105	0.014	1.505	0.117	0.055
c-2-Butene	0.757	0.255	0.036	4.399	0.227	0.014	0.803	0.073	0.015
Isopentane	28.936	5.368	0.849	78.582	4.780	0.933	38.239	3.417	0.686
n-Pentane	20.887	3.795	0.484	15.986	2.102	0.576	30.981	2.637	0.411
1,3-Butadiene	0.246	0.049	0.023	0.239	0.033	0.005	0.123	0.030	0.020
t-2-Pentene	1.303	0.436	0.048	5.539	0.261	0.010	0.991	0.107	0.027
1-Pentene	0.755	0.222	0.027	2.501	0.122	0.006	1.104	0.079	0.016
c-2-Pentene	0.660	0.209	0.022	2.694	0.126	0.004	0.840	0.055	0.012
n-Hexane	7.531	1.504	0.234	10.369	1.009	0.295	13.865	1.134	0.228
Benzene	**5.271**	**0.885**	**0.170**	**2.582**	**0.636**	**0.113**	**6.992**	**0.815**	**0.099**
Cyclohexane	3.434	0.460	0.088	2.932	0.398	0.123	4.486	0.368	0.059
Toluene	3.042	0.712	0.191	2.150	0.533	0.155	3.687	0.522	0.154
Ethyl Benzene	1.028	0.088	0.023	5.947	0.312	0.020	0.446	0.036	0.009
m&p -Xylene	4.300	0.308	0.080	25.184	1.331	0.116	1.491	0.193	0.060
o-Xylene	1.466	0.116	0.028	8.001	0.415	0.024	0.459	0.057	0.018
Isopropyl Benzene	1.372	0.276	0.020	1.315	0.108	0.007	0.704	0.063	0.001
1,3,5-Tri-methylbenzene	0.206	0.047	0.011	0.268	0.058	0.007	0.172	0.027	0.006
1,2,4-Tri-methylbenzene	0.545	0.105	0.030	0.329	0.088	0.019	0.377	0.053	0.020
n-Decane	0.395	0.125	0.019	0.405	0.148	0.024	0.328	0.047	0.014
1,2,3-Tri-methylbenzene	0.235	0.054	0.016	0.173	0.039	0.008	0.318	0.060	0.027

Table 5. Validated auto-GC mean statistics, 4th quarter 2014

Units ppbV	Oak 4Q14			Solar 4Q14			Palm 4Q14		
Species	**Peak 1hr**	**Peak 24hr**	**Mean**	**Peak 1hr**	**Peak 24hr**	**Mean**	**Peak 1hr**	**Peak 24hr**	**Mean**
Ethane	225.531	56.294	11.538	240.098	52.130	13.407	301.813	55.329	11.740
Ethylene	35.130	4.613	0.710	8.398	1.642	0.622	30.689	3.465	0.611
Propane	178.266	38.882	7.023	119.918	36.021	7.664	80.844	40.173	7.439
Propylene	4.376	1.210	0.323	9.270	0.931	0.267	5.461	1.008	0.280
Isobutane	81.195	10.081	2.552	45.745	8.277	2.215	46.963	11.330	2.530
n-Butane	158.574	19.693	4.166	43.355	16.360	3.646	73.459	20.858	4.100
t-2-Butene	3.652	0.384	0.091	0.732	0.120	0.047	2.626	0.274	0.057
1-Butene	1.073	0.335	0.065	0.826	0.139	0.028	1.415	0.224	0.074
c-2-Butene	2.474	0.386	0.095	0.734	0.142	0.046	2.315	0.238	0.043
Isopentane	61.776	8.068	2.021	18.634	5.256	1.427	37.963	7.350	1.774
n-Pentane	50.986	6.565	1.384	13.879	4.432	1.013	15.980	5.789	1.191
1,3-Butadiene	4.889	0.272	0.038	0.149	0.025	0.008	8.316	0.456	0.030
t-2-Pentene	1.327	0.295	0.074	0.560	0.059	0.005	3.107	0.265	0.043
1-Pentene	0.798	0.155	0.039	0.357	0.035	0.006	3.777	0.257	0.031
c-2-Pentene	0.630	0.124	0.028	0.282	0.027	0.002	4.971	0.340	0.025
n-Hexane	15.079	2.386	0.579	5.147	1.399	0.452	23.715	2.224	0.525
Benzene	**5.829**	**1.335**	**0.374**	**13.866**	**1.991**	**0.229**	**10.471**	**1.347**	**0.274**
Cyclohexane	8.529	0.923	0.224	2.740	0.499	0.182	19.552	1.531	0.176
Toluene	5.106	1.604	0.454	1.987	0.578	0.241	42.683	6.777	0.386
Ethyl Benzene	0.777	0.145	0.047	0.458	0.077	0.022	2.038	0.362	0.029
m&p -Xylene	4.546	0.461	0.162	8.165	0.958	0.184	7.178	1.246	0.144
o-Xylene	0.776	0.151	0.055	0.585	0.100	0.028	2.234	0.415	0.044
Isopropyl Benzene	2.077	0.328	0.043	1.622	0.143	0.014	2.720	0.137	0.006
1,3,5-Tri-methylbenzene	0.361	0.072	0.019	0.434	0.071	0.011	1.924	0.102	0.016
1,2,4-Tri-methylbenzene	4.119	0.245	0.052	0.449	0.096	0.026	6.226	0.341	0.043
n-Decane	0.614	0.112	0.036	1.144	0.197	0.037	2.199	0.123	0.024
1,2,3-Tri-methylbenzene	0.260	0.062	0.023	0.181	0.031	0.005	1.919	0.103	0.020

Figure 2. Mean ppbV for 27 species at three auto-GCs, 3rd quarter 2014 (validated data)

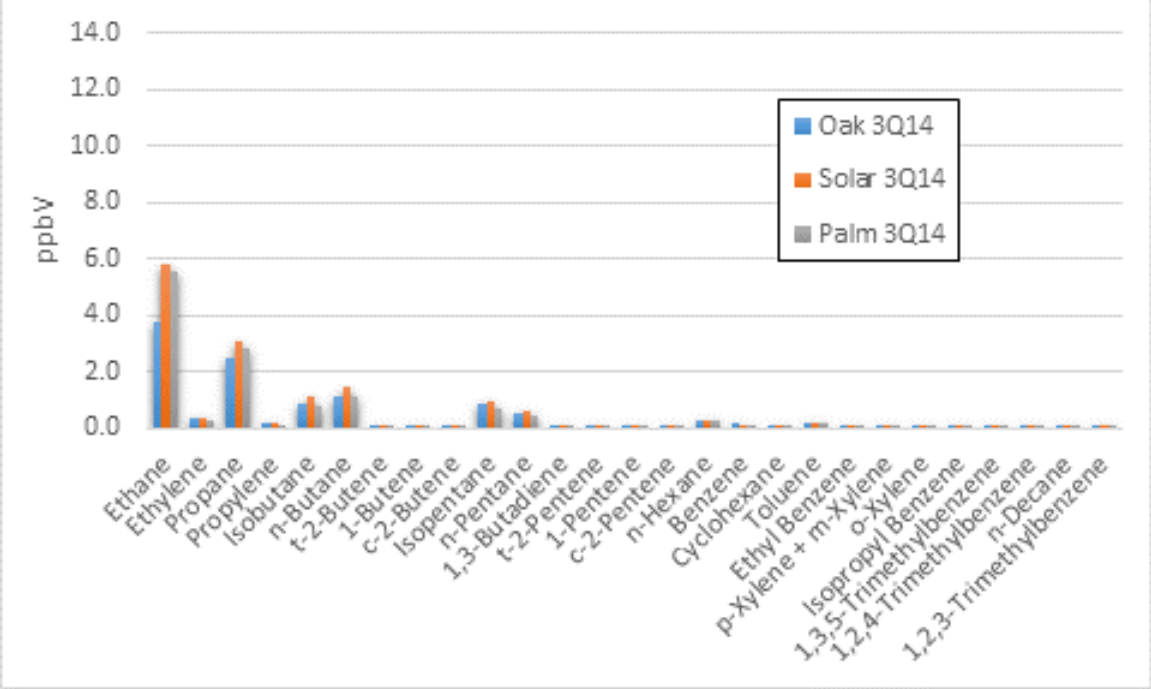
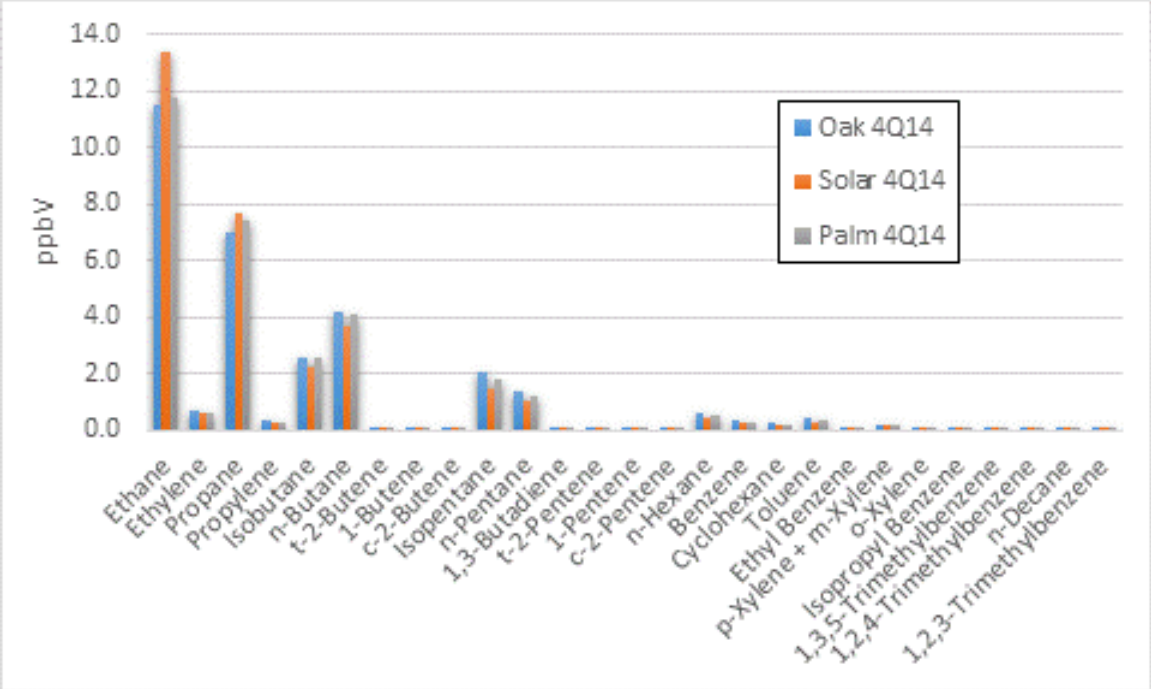


Figure 3. Mean ppbV for 27 species at three auto-GCs, 4th quarter 2014 (validated data)



As was reported in the recent quarterly reports and in the 2013 annual report, the annual and quarterly mean concentrations from Solar Estates and Oak Park are higher over the last three years under northerly winds for ethane and propane and some other light alkane species than in the preceding three years. A preliminary hypothesis is that increased natural gas emissions is a

possible assignable cause for the higher mean concentrations. Figure 4, below, shows graphical summaries of the mean concentrations for the fourth quarters of the years 2005 through 2014 for Solar Estates for ethane and propane, two species found in natural gas, and two butane isomers and two pentane isomers, which may be in natural gas and in other fuel products. Figure 5, below, shows only the butane and pentane isomers to better show the change in these lower-concentration species over time. The upward trend for ethane, propane, and n-butane appears to be steeper than for the other three species. Figures 6 and 7, on page 19, are similar graphs for the Oak Park site, for which the upward trend is most significant for ethane and n-butane.

Figure 4. Mean concentrations of ethane, propane, butane isomers, and pentane isomers during fourth quarters of each year at Solar Estates

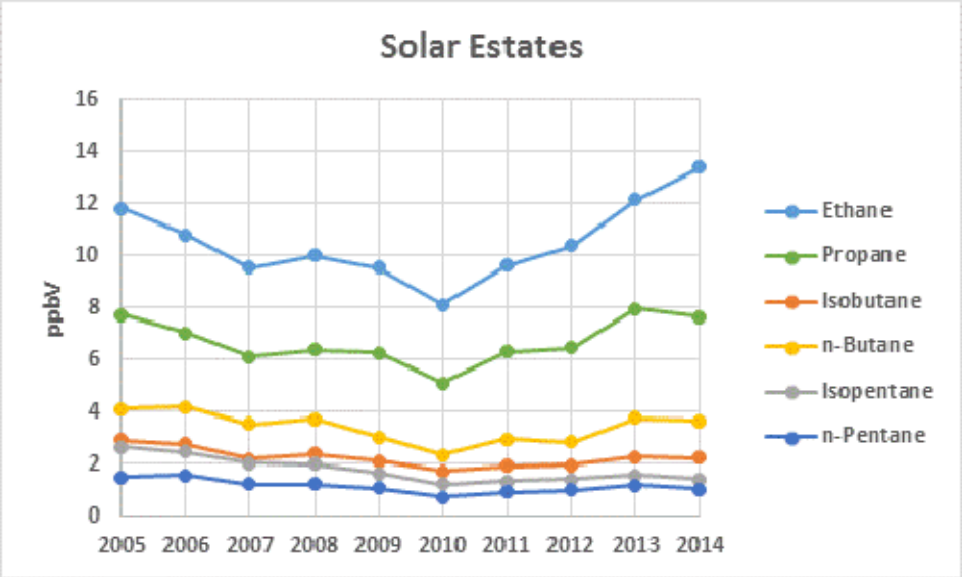


Figure 5. Mean concentrations of butane and pentane isomers during fourth quarters of each year at Solar Estates

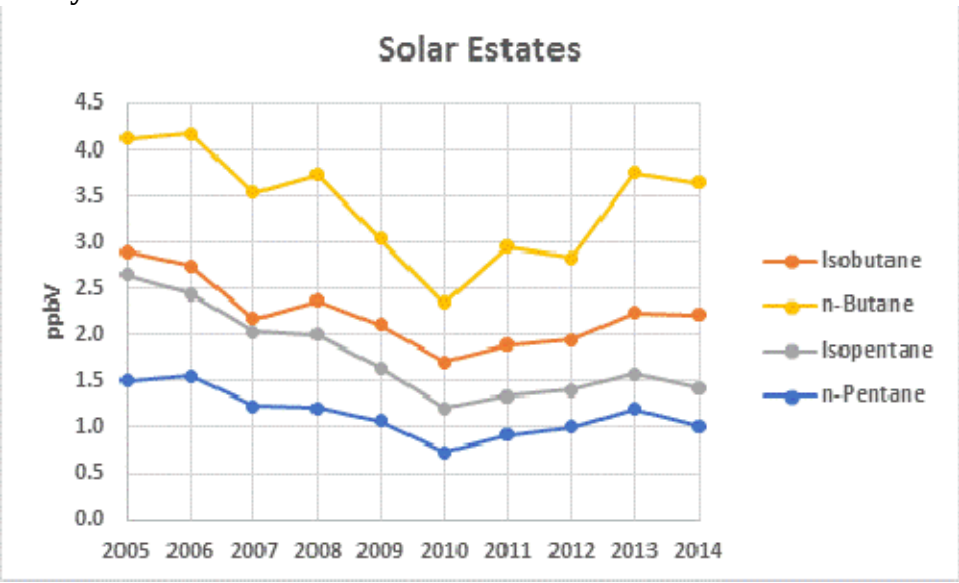


Figure 6. Mean concentrations of ethane, propane, butane isomers, and pentane isomers during fourth quarters of each year at Oak Park

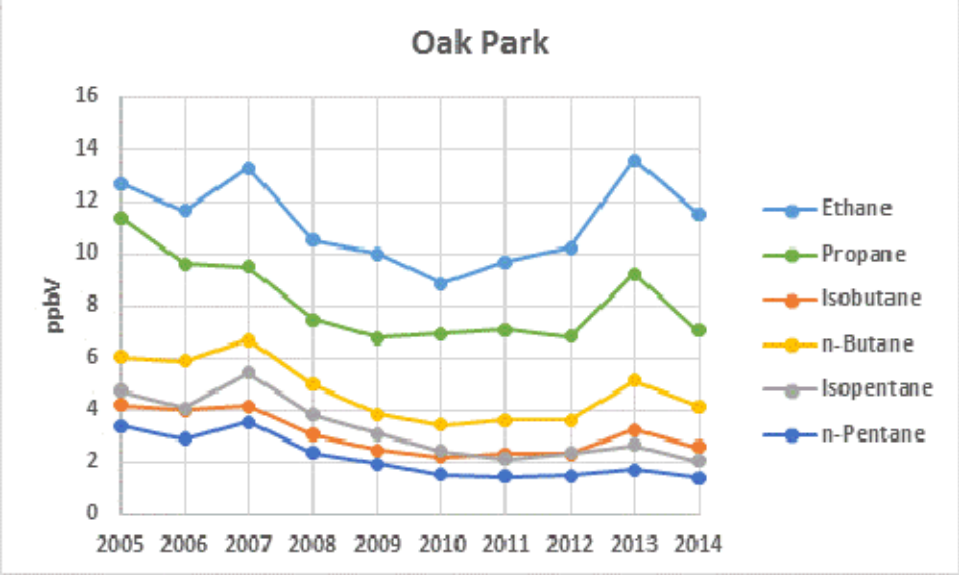
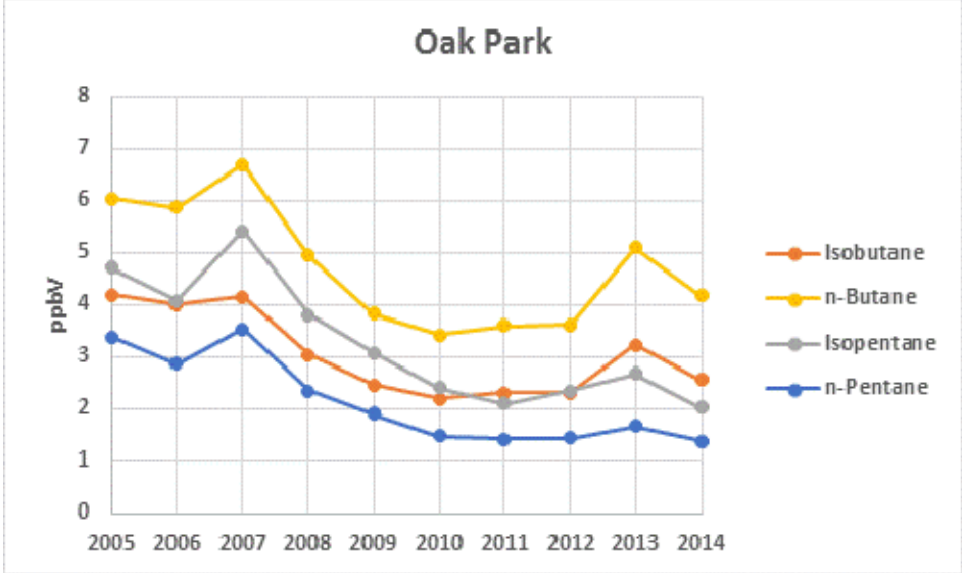


Figure 7. Mean concentrations of butane and pentane isomers during fourth quarters of each year at Oak Park



2. Benzene Concentrations in Residential Areas

As has been discussed in past reports, benzene concentrations in recent years are lower than in the first three years of operation at the two auto-GCs operated at Oak Park CAMS 634 and Solar Estates CAMS 633. Also, in recent years (2008 through 2014), concentration averages have generally shown relatively little variation compared to earlier years. No individual one-hour benzene values have been measured above the AMCV since the beginning of monitoring. A time series for Oak Park hourly benzene in ppbV units from March 1, 2005 through December 31, 2014, with two points annotated by date, appears in Figure 8, on page 20. The two points from

6:00 CST Saturday, January 27, 2007, and 4:00 CST Friday, November 6, 2009, measured under northerly winds, are identified as statistical outliers in that they are unusually high given the balance of the data. The same graph is reproduced without the two outlier points in Figure 9, below. The time series for Solar Estates appears in Figure 10, on page 21. Note the different y-axis scales for the two sites, as Oak Park does tend to measure higher benzene concentrations than Solar Estates. Figure 11, on page 21, shows the time series for the TCEQ Palm auto-GC, with apparent outliers on January 30, 2012 and May 13, 2014 indicated, both measured under northerly winds.

Figure 8. Oak Park hourly benzene March 1, 2005 – December 31, 2014, ppbV units, individual elevated values noted, no observations greater than the TCEQ's AMCV

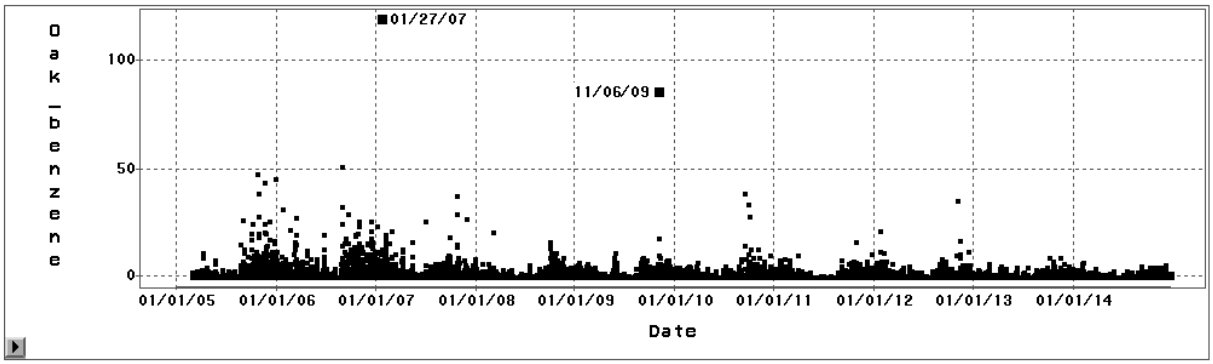


Figure 9. Oak Park hourly benzene March 1, 2005 – December 31, 2014, ppbV units, two outliers from January 27, 2007 and November 6, 2009 removed

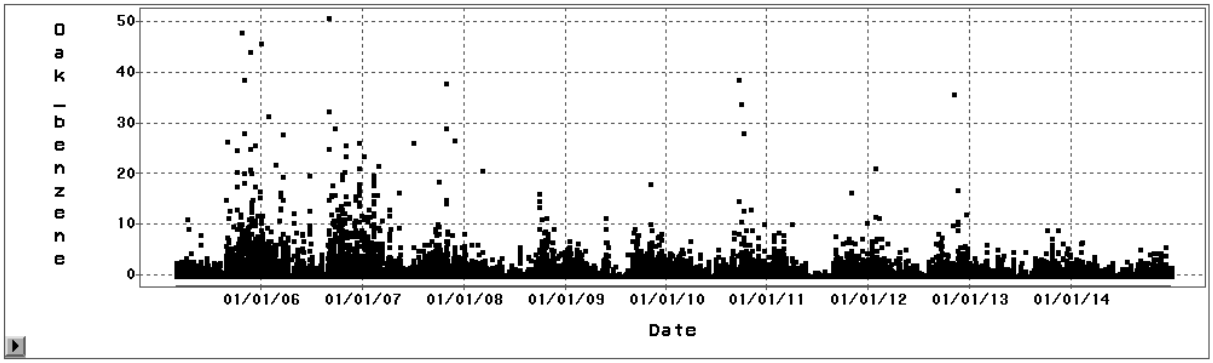


Figure 10. Solar Estates hourly benzene Mar. 2005 – December 31, 2014, ppbV units, no observations greater than the TCEQ's AMCV

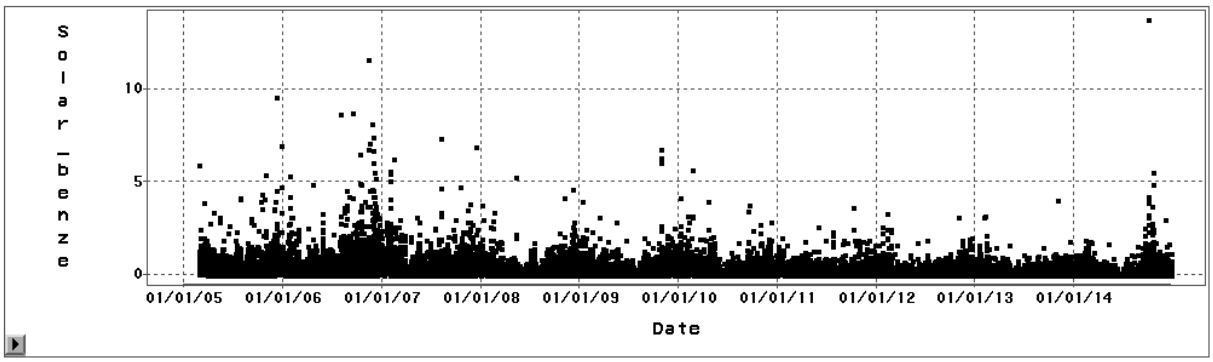


Figure 11. TCEQ Palm hourly benzene June 1, 2010 – December 31, 2014, ppbV units, individual elevated value noted, no observations greater than the TCEQ's AMCV

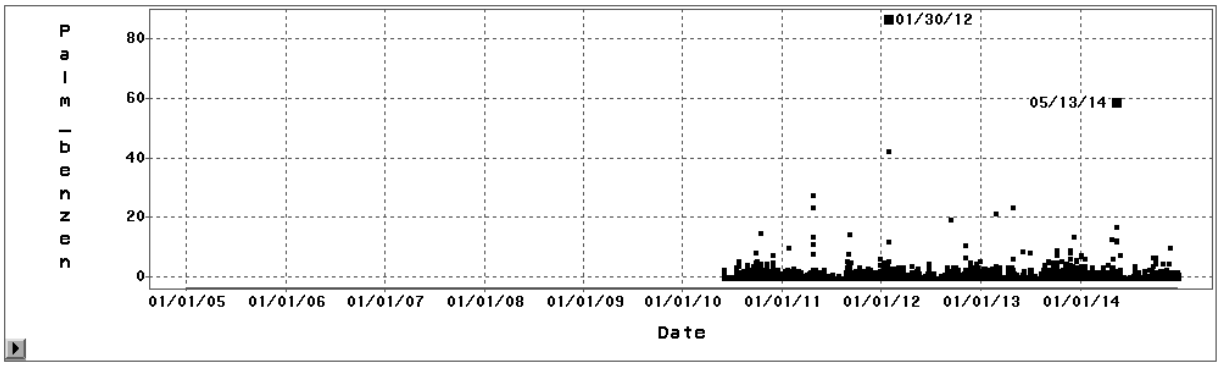


Table 6, on page 22, shows the fourth quarter average concentrations from the three auto-GCs for benzene from 2005 through 2014. The project now has ten years of complete fourth quarter data. The fourth quarter means are graphed in Figure 12, on page 22. The means for TCEQ's Palm site are shown for 2010 through 2014 only. The fourth quarter averages at UT sites from 2008 through 2014 are statistically significantly lower than in the fourth quarters of the project's first three years, and this finding is similar to findings for other quarters in recent reports on this project. Figure 13, on page 23, shows the quarterly means for the three sites since each started operation. This figure shows the strong seasonal effects, the early downward trend and subsequent flattening out in the trends at Oak Park and Solar Estates, and similarity between the Oak Park and TCEQ Palm benzene concentration means.

Table 6. Mean statistics for Benzene at Oak Park and Solar Estates, 4th quarter 2005 – 2014, Palm 2010 – 2014, ppbV units

4th qtr/year	Oak	Solar	Palm
2005	1.30	0.41	
2006	1.14	0.58	
2007	0.68	0.37	
2008	0.63	0.31	
2009	0.81	0.28	
2010	0.50	0.23	0.45
2011	0.52	0.20	0.36
2012	0.55	0.21	0.32
2013	0.46	0.18	0.43
2014	0.37	0.23	0.27

Figure 12. Mean concentrations of benzene, ppbV units, during fourth quarters of each year at Oak Park (blue) and Solar Estates (orange), 2005 – 2014 and Palm (gray) 2010 – 2014

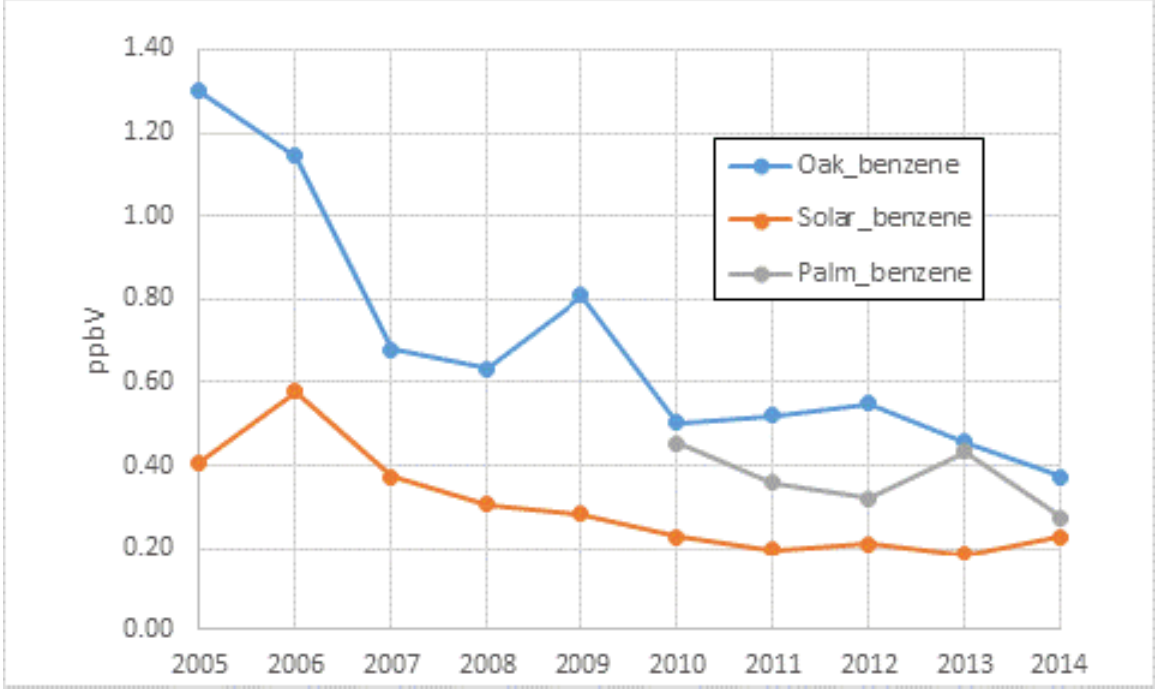
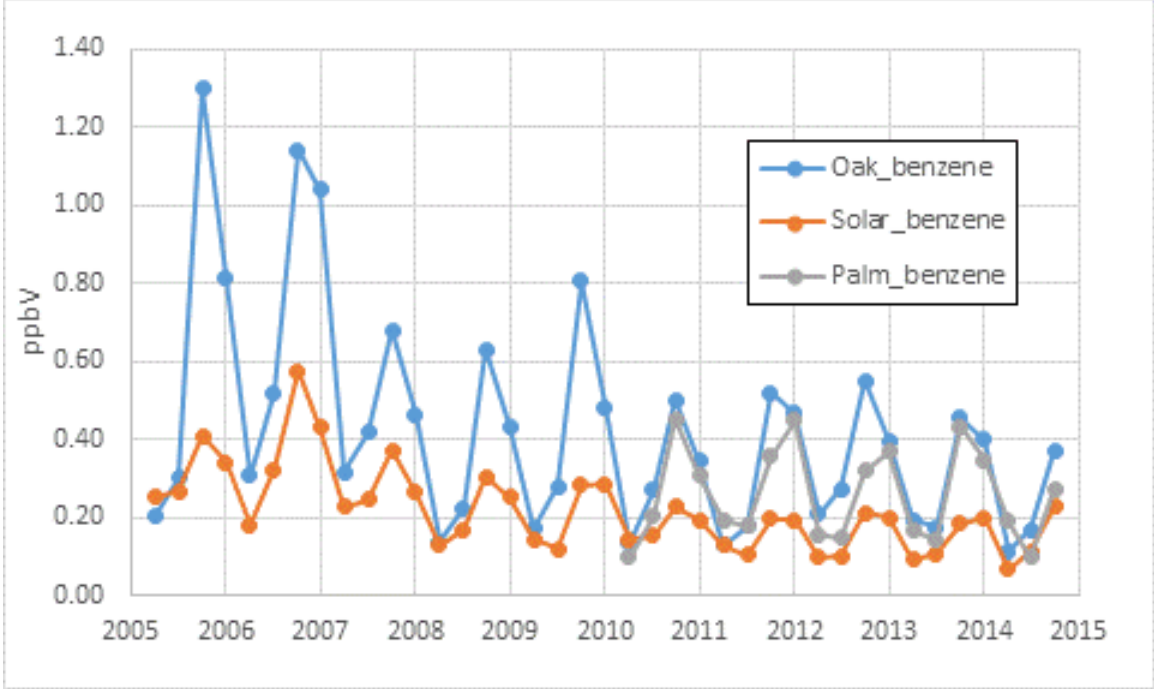


Figure 13. Mean concentrations of benzene by quarter of each year at Oak Park (blue) and Solar Estates (orange), 2005 – 2014 with lower values in 2008 – 2014 compared with 2005 – 2007, and Palm (gray) 2010 – 2014



3. Sulfur Dioxide Measurements at Corpus Christi Monitors

As was mentioned earlier in this report, SO_2 ambient concentrations are regulated by the National Ambient Air Quality Standards (NAAQS) established in 2010. EPA set the SO_2 NAAQS to include a level of 75 ppb averaged over one hour, with a form of the three-year average of the annual 99th percentiles of the daily maximum one-hour averages. If measurements are taken for a full year at a monitor, then the 99th percentile would be the fourth highest daily one hour maximum. Individual hourly concentrations measured above the SO_2 75 ppb level of the NAAQS are called *exceedances*. The average of the three years 99th percentile daily maxima at a monitoring site is that site's *design value*. There is also a secondary SO_2 standard of 500 ppb over three hours, not to be exceeded more than once in any one year; however, concentrations this high have not been measured by TCEQ or UT monitors. The TCEQ also has shorter 30-minute rolling average net ground level standard of 400 ppb that may not be added by an individual emission source on top of a background concentration. Concentrations this high have not been measured by TCEQ or UT monitors in Corpus Christi.

Over time, regulatory efforts have reduced the amount of sulfur in fuels, leading to reduced SO_2 in ambient air. Recent reports on this project have shown that the reductions in sulfur content in fuel used in ships in the Corpus Christi ship channel have led to reduced concentrations measured at specific monitors. Sulfur reductions have also been made in diesel fuel used by some motor vehicles and in the coal used in some power plants.

In this section all monitors are looked at for their long term SO_2 design value trends, with the recent fourth quarter of 2014 added in to complete calendar year 2014 and three year 2012-2014 period. The overall conclusion is that there have been significant declines in the design values at all sites in Nueces County since monitoring for SO_2 began at all sites, with one exception. That one exceptional site, Solar Estates CAMS 633, is hypothesized to have been affected by a chemical interferent. Table 7, below, shows a compilation of monitoring site SO_2 design values going back to 2000 for TCEQ sites, and 2006 for UT sites. The 2006 design value uses only two-years of data. What one observes from Table 7 is that the most recent design values are the lowest measured since each monitor began, the only exception being CAMS 633. Note that in the header row in Table 7, each site is identified with a "C" for CAMS and the site number. The TCEQ's West site is CAMS 4, TCEQ's Tuloso Middle School site is CAMS 21, and TCEQ's Huisache site is CAMS 98.

Table 7. Three-year SO_2 design values for three TCEQ sites and six UT sites

3-yr period	C4	C21	C98	C629	C630	C631	C632	C633	C635
1998-2000	34.5	28.3	66.6						
1999-2001	33.6	26.2	67.0						
2000-2002	29.7	20.4	77.9						
2001-2003	31.7	18.8	81.3						
2002-2004	35.5	14.3	73.4						
2003-2005	37.0	14.0	60.5						
2004-2006*	31.5	10.0	47.6	35.7	145.6	35.3	19.3	56.2	41.6
2005-2007	23.9	8.3	36.1	33.6	118.7	38.0	20.6	50.5	34.4
2006-2008	20.9	8.3	32.5	30.6	131.2	32.8	19.1	31.4	31.0
2007-2009	17.6	8.6	27.7	29.8	88.9	32.4	16.6	20.9	22.7
2008-2010	17.2	9.4	33.1	26.4	102.7	21.2	12.9	10.6	22.3
2009-2011	12.3	9.0	27.0	18.7	79.9	15.2	12.8	29.9	19.9
2010-2012	9.8	7.7	23.3	15.3	76.2	8.4	12.0	39.9	11.7
2011-2013	6.6	6.2	10.2	11.3	47.0		12.1	51.0	7.9
2012-2014	5.0	4.4	5.6	11.3	33.2		12.5	28.4	6.5

*only 2005 & 2006 for 2006 design value for six UT sites

The data in Table 7 are graphed over time in Figures 14 through 17, on pages 25 and 26, using the end year of each 3-year period as the x-axis and design values on the y-axis. A line is provided where appropriate to indicate the level of the NAAQS. Figure 14 shows the trend for all nine sites in Table 7. Figure 15 shows the trend for the three TCEQ sites, which have operated since 1998. Figure 16 shows the trend for four UT sites, which have operated since 2005, with the CAMS 631 site having ended in 2012. The two UT sites not shown in Figure 16 are shown separately in Figure 17. In Figure 17, JIH CAMS 630 is shown with its steep decline in design values as sulfur content in fuels has dropped. Figure 17 also shows the fluctuating trend for Solar Estates CAMS 633, where a chemical interferent has not been detected since 2013, leading to a lower recent design value.

Figure 14. SO_2 design values under current 2010 NAAQS in Nueces County

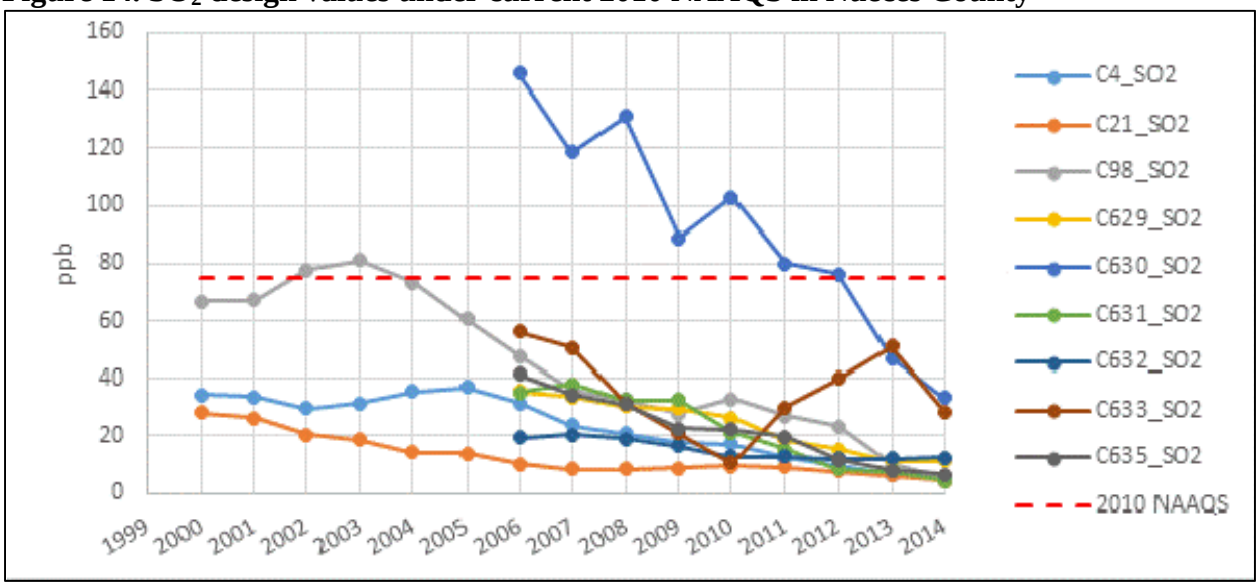


Figure 15. SO_2 design values under current 2010 NAAQS at 3 TCEQ sites in Nueces County

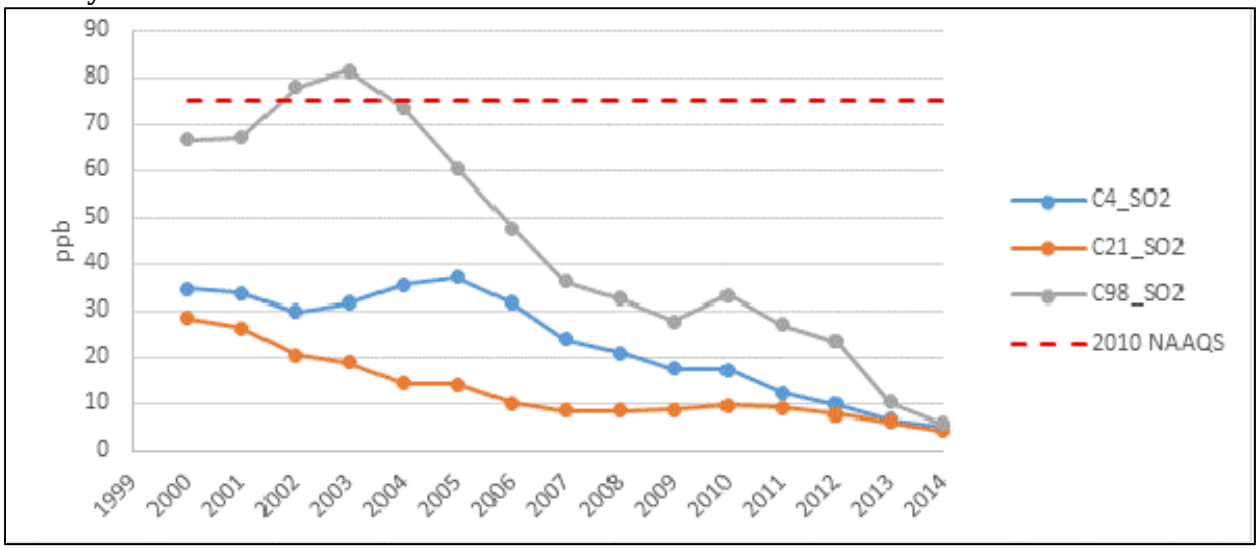


Figure 16. SO_2 design values under current 2010 NAAQS at four UT sites in Nueces County

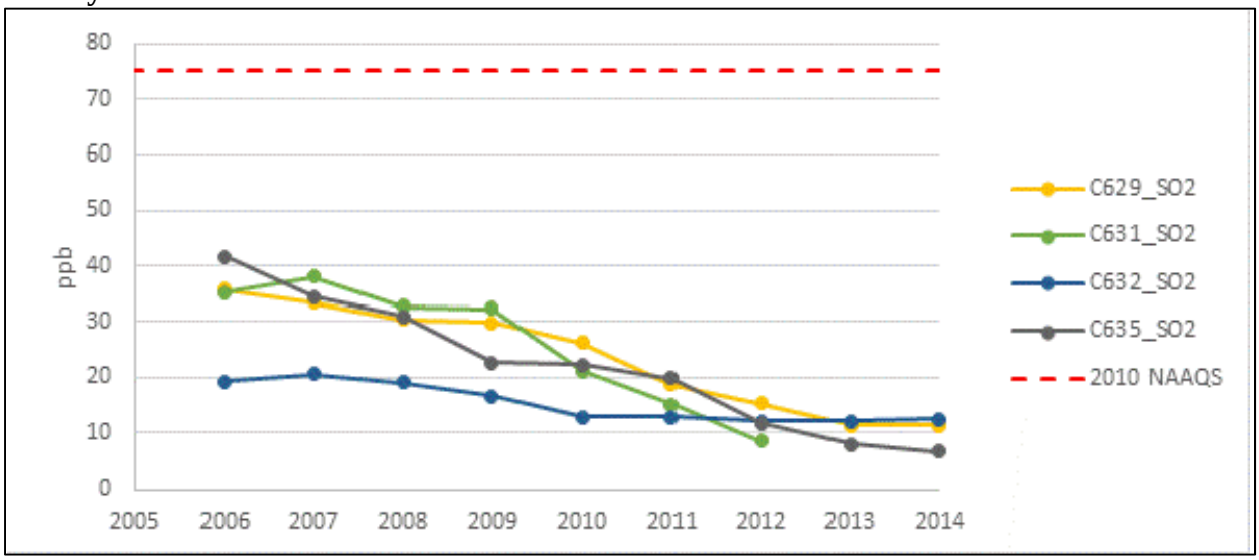
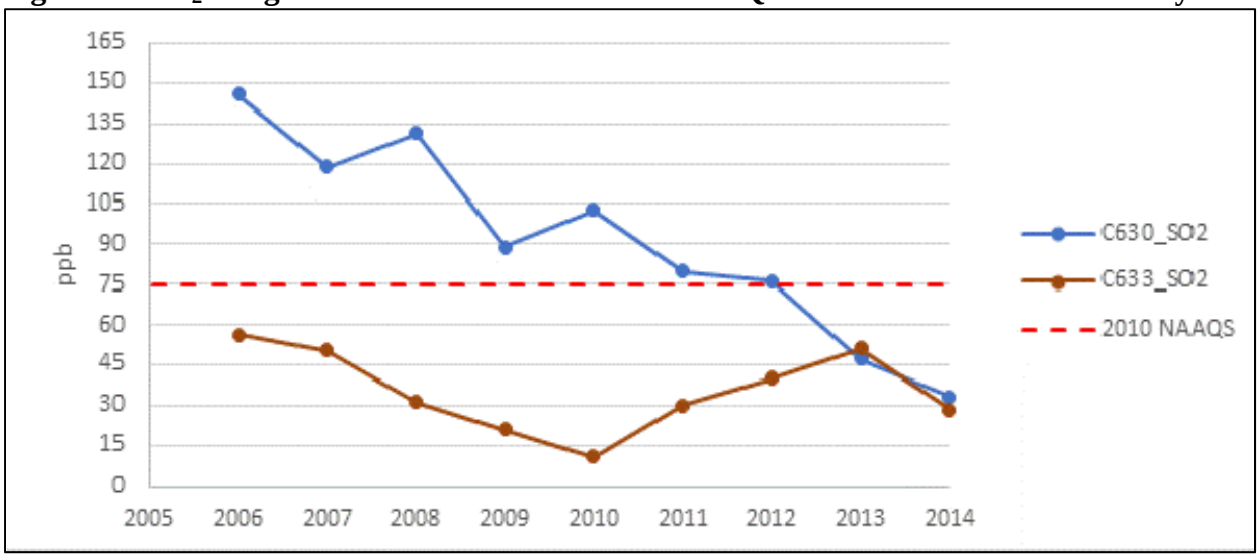


Figure 17. SO_2 design values under current 2010 NAAQS at two sites in Nueces County



Conclusions from the Fourth Quarter 2014 Data

In this quarter's report, several findings have been made:

- No exceedances of the EPA SO_2 NAAQS level were measured this quarter at UT sites or at TCEQ sites. Dockside ship emissions that had affected the UT JIH CAMS 630 site appear to have diminished since June 2012, which is likely relatable to new federal rules on marine fuel. All Corpus Christi sites except one show a long term downward trend in NAAQS design values. However, some SO_2 emissions may still be occurring.
- Third and fourth quarter 2014 concentrations at the auto-GCs remain well below the TCEQ's AMCVs for all species tracked for this project. Trends in quarterly average

benzene concentrations remain relatively flat. Mean concentrations for several hydrocarbon species, possibly associated with natural gas, have increased in the past three years under northerly winds.

- Periodic air pollution events continue to be measured on a routine basis.

Further analyses will be provided upon request.

APPENDIX B

December 4, 2014
Advisory Board Meeting Notes

ADVISORY BOARD MEETING

Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project

Texas A&M University - Corpus Christi

Room 1003, NRC Building

12:00 pm – 2:00 pm

December 4, 2014

Advisory Board Members Present:

Ms. Gretchen Arnold	Corpus Christi Advocate
Dr. Glen Kost	Public Health Awareness
Ms. Joyce Jarmon	Corpus Christi Community Council
Ms. Sharon Lewis	City of Corpus Christi

Ex-Officio Members of the Board Present:

Mr. Chris Owen	TCEQ – Region 14 via teleconference call

Project Personnel Present:

Mr. Vincent Torres	The University of Texas at Austin
Dr. Dave Sullivan	The University of Texas at Austin
Ms. Terri Mulvey	The University of Texas at Austin

I. Call to Order and Welcome

Mr. Vincent Torres called the meeting to order at 12:00 pm.

II. Funding for Operations

A. Financial Status of Project and Decommissioning

Mr. Vincent Torres gave an update on the financial status of the remaining funds. Barring any unforeseen circumstances, as of 9/30/2014, the project had approximately 15 months of funding (exclusive of decommissioning expenses) and could operate the network through December 2015, possibly into January 2016.

Ms. Gretchen Arnold inquired whether UT will own all the property at the end of the project. If so, would there be enough funds to fund a site with sale of the surplus equipment. Mr. Torres responded that UT would own the property at the end of the project. Regarding the value of the equipment, surplusing the equipment for sale would be less cost effective due to the age of the instruments and the costs to surplus the equipment, i.e., shipping of trailers to Austin and other fees/expenses. It would be more cost effective to salvage spare parts from the instruments. Should the proposal prepared by Dr. Sullivan be funded, the best equipment and spare parts would be saved for these sites.

Mr. Torres reported that UT has prepared a proposal to operate one or both of the Auto-GC sites, i.e., Oak Park and Solar Estates (see Item B). UT Austin is also continuing to seek funding to extend the life of the project.

The proposed schedule will follow this timeline: January 2016 – Discontinue operation of all sites and conduct final QA audits; February thru May 2016 – Decommission all sites; prepare final project report; and June 2016 – Submit final project report and close out project account.

B. Proposal for Continued Auto-GC Sites(s) Monitoring

Dr. Dave Sullivan gave a presentation on Proposals for continued Auto-GC Site(s) Monitoring. He reported that UT Austin is proposing continuing one or two Auto-GC sites, and is seeking funding for this purpose. The Auto-GC sites proposal would be to keep the residential area sites: Oak Park, Solar Estates and possibly Dona Park; replace old equipment at continuing sites; add SO_2 and H_2S instruments to the continuing Auto-GC sites; and make software improvements to the Auto-GC sites.

Dr. Sullivan presented the FY 16-17 budget: the two Auto-GC site total amounts would be $745,776 and for one Auto-GC site the total amount would be $389,464. The one and two site FY 17-18 budget: the two sites total amount would be $542,542 and for one site the total amount would be $287,847.

Some of the issues that Dr. Sullivan brought up would be how to alert the community that monitoring is now planned to end next year. Other issues would be how to gauge interest in continuing operations. He listed possible stakeholders as: Federal Court, City of Corpus Christi District 1, Nueces County Precinct 1, Port Industries and others such as possible community groups. Ms. Arnold suggested requesting to send a proposal to the Deep Water Horizon Project. Dr. Sullivan mentioned that he will look further into this. **Action Item**

Ms. Arnold suggested that individuals and/or Advisory Board members could send letters to EPA and TCEQ. Dr. Sullivan mentioned that he has the proposal already written that he would send a copy to the Advisory Board for their use to send to people they think might be interested in funding the project. **Action Item**

III. Project Overview and Status

A. Phase II – Site Operation and Maintenance

Dr. Dave Sullivan gave an update on and analysis of monitoring data collected by the Project for the past 9 years. The Project has now collected 9 years of monitoring data.

Dr. Sullivan mentioned that there was a declining trend in most species at the Auto-GC sites, including Benzene. However, he reported that there was an increasing trend of several alkane species. There was good news about SO_2 in Corpus Christi. New

regulations on emissions from ships took effect June 1, 2012 and appear to have been effective. SO_2 emissions now appear to be in compliance with the latest SO_2 standard of 75 ppb.

There were 4 canisters reported in the 3rd quarter of 2014 that had a sample of predominantly propane. Three canisters were sampled at the Dona Park site from 7/12 – 7/16 and one canister at JI Hailey on 8/26; all during early morning with a south wind.

Dr. Kost inquired to see if there was a possibility that trailers could be using propane for heating and cooking and could that cause the uptick in propane. Dr. Sullivan wasn't sure and said he would look into this. **Action Item**

Dr. Sullivan reported a significant downward trend in benzene at the Oak Park and Solar Estates sites. He noted that there was a strong seasonal pattern which resulted in higher benzene concentrations in winter months. The wind directions associated with peak mean concentrations point back to refineries. Dr. Sullivan reported that he couldn't find an exact diesel signature to compare to motor vehicle or refineries. He will continue to look into finding a diesel signature. **Action Item**

Dr. Sullivan reported sulfur species (SO_2 and H_2S) monitoring is a very important part of the monitoring network. In June 2, 2010 new rules were adopted for stricter EPA standards (NAAQS). The JI Hailey site did not comply with new NAAQS rules in 2012. However, the new stricter emission rules may have had an effect, and the site is now in compliance. There was a decline in SO_2 at JI Hailey and TCEQ's Avery Point monitors that are likely related to new sulfur-content rules for ships.

Dr. Sullivan mentioned that he had submitted a proposal to EPA for low cost portable community based monitors. Dr. Kost asked if drones have been considered for monitoring. Dr. Sullivan didn't think so because they still may be too expensive.

IV. Follow up to Old Business/Action Items

V. Advisory Board

Dr. Sullivan suggested the weeks of April 13 or April 20, 2015 as possible meeting dates for the next Advisory Board meeting.

VI. Other Issues

VII. Adjourn

The meeting adjourned at 1:45pm

APPENDIX C

Financial Report of Expenditures
Financial Report of Interest Earned

Neighborhood Air Toxics Modeling Project for Houston and Corpus Christi - Phase 1B

Accounting Report for the Quarter
10/1/14 - 12/31/143

A. Total Amount of Air Toxics Funds and Other Funds Received Under This Proposal

Total Grant Amount:	$2,745,371.68
Total Interest Earned:	$391,805.54
Total Funds Received:	**$3,137,177.22**

B. Summary of Expenditures Paid by Air Toxics Funds

		Yr 1 Budget	Year 2 Budget	Year 3 Budget	Year 4 Budget	Adjustments Prior Quarter	Adjustments This Quarter	Adjusted Budget	Prior Activity	Current Activity 10/1/14 - 12/31/143	Encumbrances	Remaining Balance 10/1/14 - 12/31/143
Salaries-Prof	12	$111,654.00	$183,063.49	$31,566.18	$31,566.18	($29,495.84)	$127,728.90	$424,516.73	($170,171.49)	($28,389.96)	$0.00	$225,955.28
Fringe	14	$24,563.88	$40,273.97	$11,051.05	$11,051.05	$0.00	$34,155.63	$110,044.53	($48,659.16)	($7,599.06)	$0.00	$53,786.31
Salaries-CEER	15	$0.00	$0.00	$10,536.09	$0.00	$29,495.84	$26,217.47	$66,251.40	($39,373.44)	($5,003.98)	$0.00	$21,873.98
Salary Holding	16	$133,401.93	$0.00	$0.00	$0.00	($133,401.93)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Quality Assurance	41	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Cell Phone Allowance	42	$0.00	$300.00	$360.00	$360.00	$60.00	$435.00	$1,155.00	($720.00)	($90.00)	$0.00	$345.00
SEP Reserve	43	$10,800.00	$0.00	$0.00	$0.00	($10,800.00)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Contingency	47	$0.00	$0.00	$5,000.00	$5,000.00	($5,000.00)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Monthly M&O	50	$0.00	$0.00	$20,908.45	$20,908.45	$26,645.32	$15,827.17	$83,380.94	($42,255.01)	($11,833.16)	($2,722.00)	$6,570.77
Equipment & Spare Parts	51	$0.00	$32,584.00	$17,539.29	$17,539.29	($3,858.00)	$0.00	$46,265.29	($27,532.10)	($4,648.88)	($5,306.80)	$8,577.51
Telephone SWB-DSL/RR	52	$0.00	$8,454.00	$8,707.47	$8,707.47	$1,946.00	$8,445.56	$27,553.03	($17,221.78)	($2,233.22)	$0.00	$8,098.03
Electric	53	$0.00	$22,438.00	$23,086.69	$23,086.69	$4,062.00	$16,195.77	$65,782.46	($44,157.46)	($5,601.95)	$0.00	$16,023.05
Gases	54	$0.00	$10,811.00	$10,676.72	$10,676.72	$5,039.00	$8,418.71	$34,945.43	($23,392.78)	($1,518.25)	($798.65)	$9,235.75
Other Costs	55	$0.00	$0.00	$260,000.00	$260,000.00	$0.00	($260,000.00)	$0.00	$0.00	$0.00	$0.00	$0.00
Consultant Services - Holding	60	$80,000.00	$0.00	$0.00	$0.00	($80,000.00)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Consultant Services - ORSAT/TMSI	61-62	$0.00	$194,750.38	$466,081.72	$466,081.72	$218,430.02	$510,408.80	$1,389,670.92	($772,628.58)	($126,041.55)	$0.00	$491,000.79
Analytical	68	$0.00	$27,839.39	$6,458.00	$6,458.00	$32,530.61	$40,353.00	$107,181.00	($60,970.00)	($5,211.00)	$0.00	$41,000.00
Travel	75	$0.00	$3,000.00	$1,000.62	$1,000.62	$300.00	$2,532.38	$6,833.00	($2,833.00)	($283.99)	($0.01)	$3,716.09
Equipment	80	$0.00	$0.00	$0.00	$0.00	$43,700.00	$0.00	$43,700.00	($43,700.00)	$0.00	$0.00	$0.00
Indirect Costs	90	$54,062.97	$78,527.13	$130,946.14	$130,946.14	$14,947.95	$79,607.76	$358,091.95	($194,042.24)	($29,798.24)	$0.00	$134,251.47
TOTALS		**$414,482.78**	**$602,041.36**	**$1,003,920.42**	**$993,382.33**	**$114,600.97**	**$610,326.15**	**$2,745,371.68**	**($1,487,657.04)**	**($228,453.15)**	**($8,827.46)**	**$1,020,434.03**

C. Interest Earned by Air Toxics Funds as of 10/1/14 - 12/31/143

Prior Interest Earned:	$391,551.29
Interest Earned This Quarter:	$254.25
Total Interest Earned to Date:	$391,805.54

D. Balance of Air Toxics Funds as of 10/1/14 - 12/31/143

Total Grant Amount:	$2,745,371.68
Total Interest Earned:	$391,805.54
Total Expenditures:	($1,716,110.19)
Remaining Balance:	**$1,421,067.03**

I certify that the numbers are accurate and reflect actual expenditures for the quarter

Accounting Certification
26-7700-99

Neighborhood Air Toxics Modeling Project for Houston and Corpus Christi - Stage 1 Phase 1A

Accounting Report for the Quarter
10/01/14 - 12/31/14

A. Total Amount of Air Toxics Funds and Other Funds Received Under This Proposal

Total Grant Amount:	$1,863,081.22
Total Interest Earned:	$344,222.10
Interest Transferred to Phase 1B	($344,222.10)
Total Funds Received:	**$1,863,081.22**

B. Summary of Expenditures Paid by Air Toxics Funds

		Yr 1 and Yr2 Budget	Year 3 Budget	Adjustments Prior Quarter	Adjustments This Quarter	Adjusted Budget	Prior Activity	Current Activity 10/1/14 - 12/31/14	Encumbrances	Remaining Balance 10/1/14 - 12/31/14
Salaries-Prof	**12**	$616,882.00	$228,508.00	($95,903.26)	$0.00	$749,486.74	($749,486.74)	$0.00	$0.00	$0.00
Salaries-CEER	**15**	$66,780.00	$24,045.00	($11,435.81)	$0.00	$79,389.19	($79,389.19)	$0.00	$0.00	$0.00
Fringe	14	$149,185.00	$55,852.00	($22,669.10)	$0.00	$182,367.90	($182,367.90)	$0.00	$0.00	$0.00
Supplies	**50**	$61,991.00	-$5,831.00	($21,633.36)	$0.00	$34,526.64	($34,526.64)	$0.00	$0.00	$0.00
Contingency	**51**	$6,746.00	$27,805.00	($34,551.00)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Consultants	**60**	$22,500.00	$2,500.00	($25,000.00)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Subcontracts	**61-63**	$600,000.00	$0.00	($54,943.78)	$0.00	$545,056.22	($545,056.22)	$0.00	$0.00	$0.00
Modeling/Computer Svs	**67**	$46,500.00	$12,500.00	($59,000.00)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Computation Center	**68**	$0.00	$1,800.00	$0.00	$0.00	$1,800.00	($1,800.00)	$0.00	$0.00	$0.00
Tuition	71	$17,727.00	$0.00	($125.00)	$0.00	$17,602.00	($17,602.00)	$0.00	$0.00	$0.00
Travel	75	$15,000.00	$5,000.00	($17,403.03)	$0.00	$2,596.97	($2,596.97)	$0.00	$0.00	$0.00
Equipment	80	$17,500.00	$7,500.00	($17,755.00)	$0.00	$7,245.00	($7,245.00)	$0.00	$0.00	$0.00
Indirect Costs	90	$243,122.00	$53,952.00	($54,063.44)	$0.00	$243,010.56	($243,010.56)	$0.00	$0.00	$0.00
TOTALS		$1,863,933.00	$413,631.00	($414,482.78)	$0.00	$1,863,081.22	($1,863,081.22)	$0.00	$0.00	$0.00

C. Interest Earned by COCP Funds as of 12/31/14

Prior Interest Earned:	$344,222.10
Interest Earned This Quarter:	$0.00
Interest Transferred to Phase 1B	-$344,222.10
Total Interest Earned to Date:	**$0.00**

D. Balance of COCP Funds as of 12/31/14

Total Grant Amount:	$1,863,081.22
Total Interest Earned:	$0.00
Total Expenditures:	($1,863,081.22)
Remaining Balance:	**$0.00**

I certify that the numbers are accurate and reflect acutal expenditures for the quarter

Accounting Certification
26-7696-41