# Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project
# Case Number: 2:11-MC-00044

## Quarterly Report for the Period

## July 1, 2012 through September 30, 2012

**Submitted to**

**The Honorable Janis Graham Jack**
**US District Court for the Southern District of Texas**
**Corpus Christi, Texas**

**Ms. Kathleen Aisling**
**US 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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**November 29, 2012**

## I. Introduction

On October 1, 2003, the US 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). This quarterly report has been prepared pursuant to the requirements of the project and is being submitted to the US District Court, the US Environmental Protection Agency (EPA), and the Texas Commission on Environmental Quality (TCEQ).

## II. Project Progress Report

The focus of work during the quarter ending September 30, 2012 has been directed to the following activities.

A. Operations and Maintenance Phase of the Project

A detailed description of the data analyses for this quarter appears in Appendix A, pages 10 through 27, and a summary of these analyses appears in this section.

The Project consists of a network of six (6) active air monitoring stations with air monitoring instruments and surveillance camera equipment, and one inactive monitoring station awaiting redeployment. A map showing locations of the COCP Project monitoring sites, along with TCEQ sites in the Corpus Christi area, appears in Figure 1, on page 3. Table 1, on page 3, identifies the location and instrumentation found at each of the COCP Project sites. TCEQ sites and some sites farther from the COCP area than the TCEQ sites that are operated by Texas A&M at Kingsville (TAMUK) provide additional data used in these analyses.

**Figure 1. Corpus Christi Monitoring Sites, "X" marks recently terminated/to-be-relocated site**

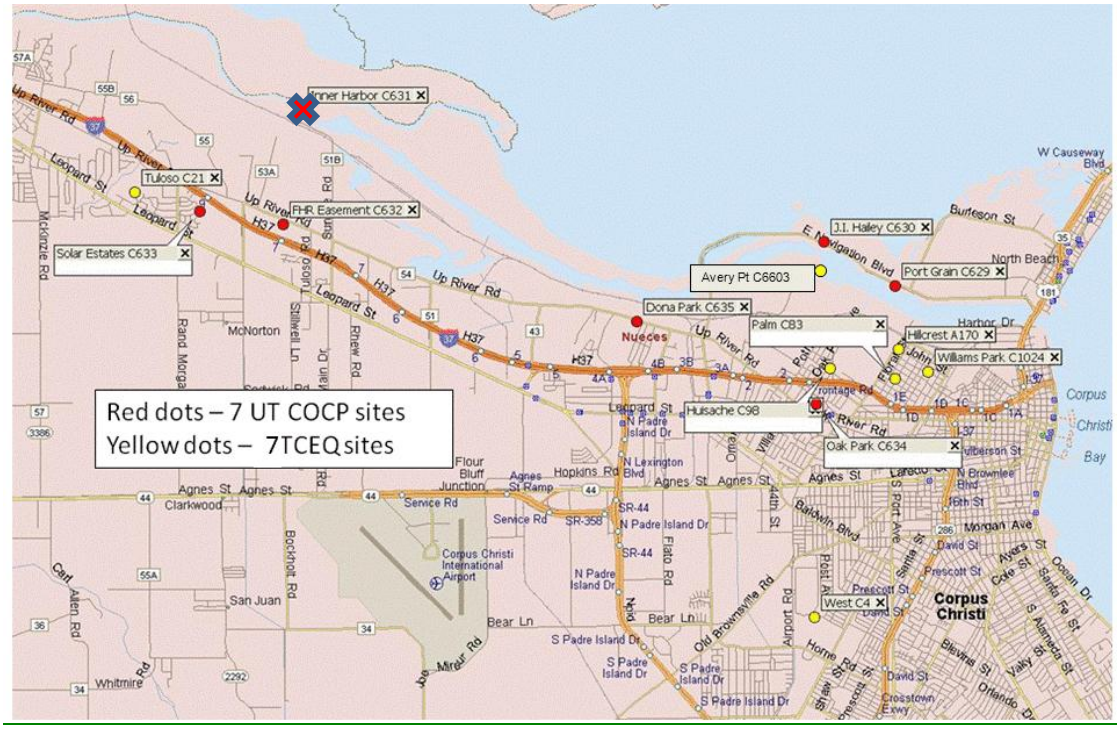



**Table 1. Schedule of Air Monitoring Sites, Locations and Major Instrumentation**

| TCEQ CAMS# | Description of Site Location | Monitoring Equipment | | | | |
|---|---|---|---|---|---|---|
| | | Auto GC | TNMHC (T) / Canister (C) | $H_2S$ & $SO_2$ | Met Station | Camera |
| 634 | Oak Park Recreation Center (**OAK**) | Mar 2005 to date | C: Dec 2004 to Feb 2009<br>T: Dec 2004 to Apr 2012 | | Dec 2004 to date | |
| 629 | Grain Elevator @ Port of Corpus Christi (**CCG**) | | T&C: Dec 2004 to date | Dec 2004 to date | Dec 2004 to date | |
| 630 | J. I. Hailey Site @ Port of Corpus Christi (**JIH**) | | T&C: Dec 2004 to date | Dec 2004 to date | Dec 2004 to date | |
| 635 | TCEQ Monitoring Site C199 @ Dona Park (**DPK**) | | T&C: Dec 2004 to date | Dec 2004 to date | Dec 2004 to date | Jan 2005 to date |
| 632 | Off Up River Road on Flint Hills Resources Easement (**FHR**) | | T&C: Dec 2004 to date | Dec 2004 to date | Dec 2004 to date | |
| 633 | Solar Estates Park at end of Sunshine Road (**SOE**) | Mar 2005 to date | C: Dec 2004 to Feb 2009<br>T: Dec 2004 to Apr 2012 | Dec 2004 to date | Dec 2004 to date | Jan 2005 to date |
| *631* | *Port of Corpus Christi on West End of CC Inner Harbor (**WEH**) (to be relocated)* | | T&C: Dec 2004 to May 2012 | Dec 2004 to May 2012 | Dec 2004 to May 2012 | |

***Legend***

| | |
|---|---|
| CAMS | continuous ambient monitoring station |
| Auto GC | automated gas chromatograph |
| TNMHC | total non-methane hydrocarbon analyzer (all except CAMS 634 & 633 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 |

A discussion of data findings for the quarter appears in Appendix A, pages 10 through 27. Specifically, the appendix contains the following elements:

- **Auto-GC Data Summary –** In examining the validated second quarter of 2012 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 second quarter average concentrations were below each compound's long-term AMCVs. For third quarter 2012 data, the preliminary values were also below respective AMCVs. A summary of data appears in Appendix A, pages 15 through 19.

- **Benzene Summary** – A review of the seven years of data is presented, with focus on the quarterly means from 2005 through 2012. Details appear in Appendix A, pages 20 through 22.

- **Analysis of Sulfur Dioxide at Several Sites** – The JIH CAMS 630 site measured concentrations high enough and often enough to violate the $SO_2$ annual National Ambient Air Quality Standards (NAAQS), but concentrations have recently declined. Trends from various CAMS site are examined. These issues are expanded upon in Appendix A, pages 22 through 27.

B. 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 seven 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/).

**Relocation of West End of Corpus Christi Inner Harbor Air Monitoring Site Due to Termination of Lease on June 30, 2012**

On March 27, 2012, UT Austin received notice from the Port of Corpus Christi Authority (POCCA) that it was terminating the lease for the use of the land at the project's West End of Corpus Christi Inner Harbor (IH) air monitoring site, CAMS 631. The notice required that all site improvements be removed by June 30, 2012. Site air monitoring operations were terminated on May 15, 2012. All site improvements were removed by June 30, 2012 and acknowledgement that the condition of the vacated site was acceptable to POCCA (per Mr. Dave Michelson, PE, POCCA Chief Engineer) was received July 3, 2012. Equipment from this site is being stored in Corpus Christi at the remaining sites in the network.

In this quarter, UT Austin continued its efforts to assess options for relocation of this site. At the June 12, 2012 meeting of the project's Advisory Board, the Board confirmed the order of priority for the options being considered. In order of priority these sites are: 1) the fishing bank site approved by the POCCA, 2) a site on the Driscoll property, 3) a site on City of Corpus Christi property near the old land fill and shooting range northwest of the current IH CAMS 631 site, and 4) a site on Flint Hills property, similar to the current sites on Flint Hills property, but nearer to the area of the other alternate site locations being pursued. A summary of the information obtained to date for each of these sites follows.

*Fishing Bank Site Approved by POCCA (Alternate Location A(2) in Figure 2, on page 6)*

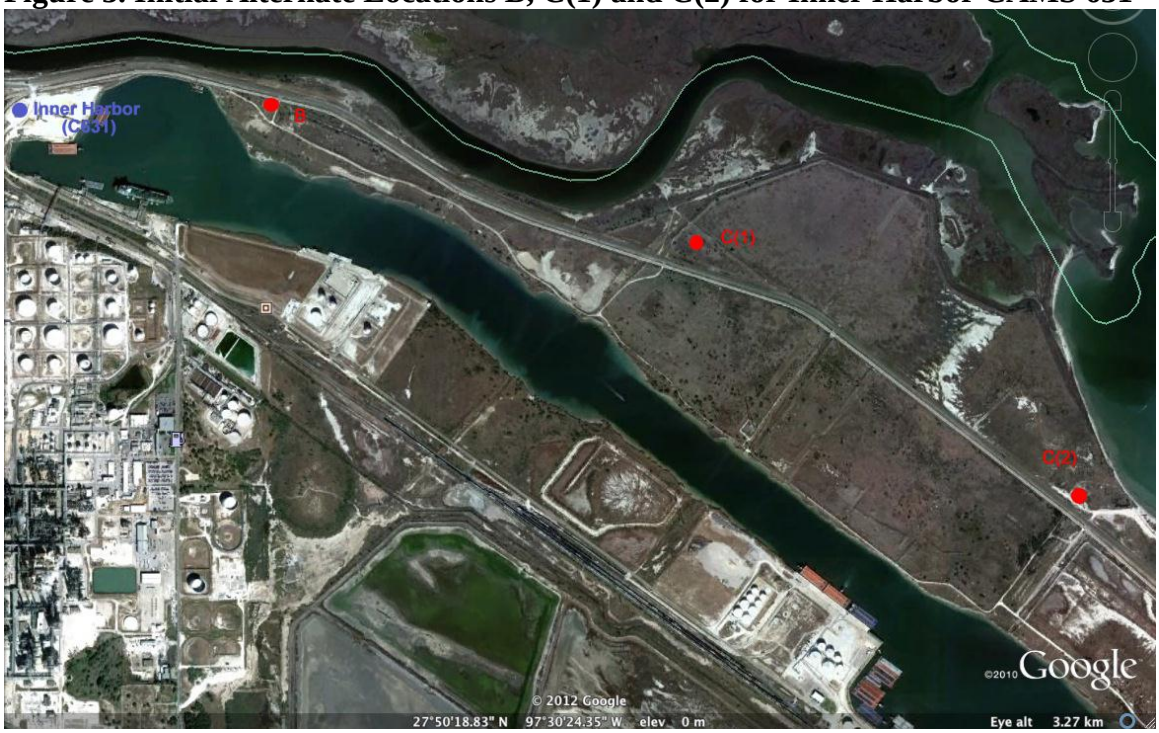
On June 18, 2012, proposed changes to the current lease to include language consistent with the direction of the court, i.e., 1) end of new lease to extend as long as the current funding is projected to last; 2) one optional renewal period to allow for the possibility of obtaining additional funding to extend the life of the project; and 3) a no termination clause in the lease, were submitted to Mr. Darrin Aldrich, POCCA lease representative. In July, Mr. Aldrich reported that the proposed changes were being reviewed and a new lease would be prepared for negotiation. In August, UT staff were informed that the proposed changes would require review by the Port Commissioners and more time was needed. On September 20, Mr. Aldrich confirmed that the changes requested will require Port Commissioners review and approval. No guarantee of their approval was provided or a time frame within which the review would be conducted. Mr. Aldrich suggested that in the interest of time, UT use the current original lease currently in place for the remaining sites on POCCA property, amend the lease to add only the new site location and then renegotiate the lease for all three sites when the current lease ends August 8, 2012. This suggestion effectively makes no changes to the terms of the current lease. It would also place UT in a very vulnerable position when renegotiating the current lease.

*Location on Driscoll Property (Alternate location C(2) in Figure 3, on page 6)*

A proposal exploring the possibility of establishing an air monitoring site on Driscoll property was submitted to their Board August 8, 2012. On September 20, 2012, UT learned from the Driscoll property representative, Mr. Craig Shook, that the property had been sold to M&G Polymers, Milan, Italy, and any further interest in the property would have to be conducted with the new property owners.

**Figure 2. Initial Alternate Locations A(1) and A(2) for Inner Harbor CAMS 631**


**Figure 3. Initial Alternate Locations B, C(1) and C(2) for Inner Harbor CAMS 631**



*Location on City of Corpus Christi Property (near the old land fill and shooting range northwest of the current IH CAMS 631 site)*
On July 24, UT staff met with City of Corpus Christi personnel and discussed placing an air monitoring station on or near this location. They also toured the area and identified leading candidate locations on the landfill that would be ideal sites. However, there are numerous engineering and site development questions that must be investigated and answered before a recommendation to use this location as an air monitoring site can be made. UT staff waited for a resolution on the fishing bank site before pursuing additional information on the landfill site. Therefore in late September, UT proceeded with obtaining the information needed to pursue use of this site as an air monitoring site for this project.

**Figure 4. Alternate Location at City of Corpus Christi Closed Landfill**


*Additional Location on Flint Hills Property*
Upon review of the terms and conditions for the existing two air monitoring sites on Flint Hills property, it was determined that these terms would not satisfy the requirements requested by the court (see above). Further, unlike the Flint Hills properties where the current sites are located, the new property location being considered would be inside a plant fence line, which would present access, safety and security issues that would have

to be addressed. Given these disadvantages, no further work will be done on this location until other more promising sites are eliminated.

The Advisory Board will be provided a detailed update on all of these sites at its next meeting November 13, 2012.

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.

3. **Budget Monitoring**
   Budget monitoring during the period has focused on projects costs for Phase II – Sites Operation and Maintenance costs. Financial reports for the quarter are included in Appendix B, pages 28 and 29.

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 B, pages 28 and 29.

A. Total Amount of COCP Funds and Other Funds Received Under the Project

The COCP funds received through September 30, 2012 totals $7,576,980.17. This total includes interest earned through September 30, 2012.

B. Detailed List of the Actual Expenditures Paid from COCP Funds

Expenditures of COCP funds during this quarter totaled $150,814.72. The detailed breakdown of the actual expenditures is included in Appendix B, page 29. The activities for which these expenditures were used are detailed in Section II, on page 2 of this report.

C. Total Interest Earned on COCP Funds during the Quarter

The interest earned during this quarter totaled $45.67. A report providing detailed calculations of the interest earned on the COCP funds during each month of the quarter is included in Appendix B, pages 28 and 29.

D. Balance as of September 30, 2012, in the COCP Account

The balance in the COCP account, including interest earned totals $39,110.06.

E. Expected Expenditures for the Funds Remaining in the COCP Account

The projected expenditures for the funds remaining totals $39,110.06.

**Quarterly Report Distribution List**:

U.S. District Court

- Mr. Joseph Jasek, Assistant Deputy Chief USPO
- Mr. James Martinez, Supervising USPO

Texas Commission on Environmental Quality

- Ms. Sharon Blue, Litigation Division – Headquarters
- Mr. Chris Owen, Air Quality Division – Headquarters
- Ms. Susan Clewis, Director – Region 14
- Ms. Rosario Torres, Field Operations – Region 14

Environmental Protection Agency

- Ms. Kathleen Aisling, Environmental Engineer, Air Enforcement Section, Dallas Regional Office

Members of the Advisory Board

# APPENDIX A

**Data Analysis for Corpus Christi Quarterly Report**

***July 1, 2012 through September 30, 2012***

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# Data Analysis for Corpus Christi Quarterly Report

This technical report describes results of monitoring and analysis of data under the Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project, with primary focus on the period July 1 through September 30, 2012. The monitoring network is shown earlier in this report in Figure 1, on page 3, 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 second and third quarters of 2012;
- Information on the trends for benzene concentrations at the two project auto-GCs and the TCEQ's auto-GC in residential areas, now for a full seven years of data, with eight instances of third quarters;
- A discussion of the sulfur dioxide ($SO_2$) data from several sites;

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

| TCEQ CAMS# | Description of Site Location | Monitoring Equipment | | | | |
|---|---|---|---|---|---|---|
| | | Auto GC | TNMHC (T) / Canister (C) | $H_2S$ & $SO_2$ | Met Station | Camera |
| 634 | Oak Park Recreation Center (**OAK**) | Mar 2005 to date | C: Dec 2004 to Feb 2009<br>T: Dec 2004 to Apr 2012 | | Dec 2004 to date | |
| 629 | Grain Elevator @ Port of Corpus Christi (**CCG**) | | T&C: Dec 2004 to date | Dec 2004 to date | Dec 2004 to date | |
| 630 | J. I. Hailey Site @ Port of Corpus Christi (**JIH**) | | T&C: Dec 2004 to date | Dec 2004 to date | Dec 2004 to date | |
| 635 | TCEQ Monitoring Site C199 @ Dona Park (**DPK**) | | T&C: Dec 2004 to date | Dec 2004 to date | Dec 2004 to date | Jan 2005 to date |
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| *631* | *Port of Corpus Christi on West End of CC Inner Harbor (**WEH**) (to be relocated)* | | T&C: Dec 2004 to May 2012 | Dec 2004 to May 2012 | Dec 2004 to May 2012 | |

***Legend***

| | |
|---|---|
| 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 "AMCV document") that explain AMCVs are at http://www.tceq.texas.gov/toxicology/regmemo/AirMain.html#compare (accessed October 2012). The following text is an excerpt from the TCEQ "fact sheet":

  > 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[1]. 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 15 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

[1] See http://epa.gov/air/criteria.html accessed October 2012

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 TCEQ's Website at http://www.tceq.texas.gov/airquality/monops/naaqs.html (accessed October 2012).

One species measured by this project and regulated by a NAAQS is sulfur dioxide ($SO_2$). Effective June 2, 2010, EPA modified the $SO_2$ NAAQS to include a level of 0.075 ppm, or 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. There is also a secondary $SO_2$ standard of 0.500 ppm (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 the 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 hydrocarbons 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 3, is generally downwind under northerly and westerly winds. In examining aggregated data one observes similar patterns of hydrocarbons at all three sites.

Table 3, on page 16, lists the data completeness from the project auto-GCs during 2011 and 2012 for which data have been validated. June of 2012 was the lowest data return (65%) to date at Oak Park. Three system failures occurred during the month.

- June 1 – 5, system was down due to a bad heated transfer line.
- June 16 – 17, June 27 – 29, system was down with a trap failure.

Although not yet validated, the Oak Park data for July 2012 appear nearly complete, and validated August data have 99 percent data recovery.

**Table 3. Percent data recovery by month, 2011-2012, validated data only**

| Date | Oak Park | Solar Estates | Date | Oak Park | Solar Estates |
|---|---|---|---|---|---|
| Jan 2011 | 100 | 96 | Jan 2012 | 94 | 99 |
| Feb 2011 | 84 | 77 | Feb 2012 | 97 | 100 |
| Mar 2011 | 100 | 95 | Mar 2012 | 97 | 100 |
| Apr 2011 | 100 | 80* | Apr 2012 | 94 | 100 |
| May 2011 | 78 | 100 | May 2012 | 77* | 96 |
| Jun 2011 | 69* | 93 | Jun 2012 | 65 | 97 |
| Jul 2011 | 95 | 96 | Jul 2012 | | 93* |
| Aug 2011 | 56 | 95 | Aug 2012 | 99 | 93* |
| Sep 2011 | 92 | 78 | **Average** | **89** | **93** |
| Oct 2011 | 99 | 83 | | | |
| Nov 2011 | 97 | 94 | | | |
| Dec 2011 | 100 | 100 | | | |

* Months with planned preventive maintenance

Table 4, on page 17, summarizes the validated average data values from the second quarter of 2012. Data in this table are available to TCEQ staff at http://rhone3.tceq.texas.gov/cgi-bin/agc_summary.pl (accessed October 2012). Table 5, page 18, summarizes the as-yet-unvalidated average data values from the third quarter of 2012.

As noted in the preceding paragraph, Tables 4 and 5 show the averages (arithmetic mean of measured values) for 27 hydrocarbon species for the periods of interest, and Table 4 also shows the maximum one-hour values and the maximum 24-hour average concentrations for the quarter's validated data. 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 Table 4 for the validated second quarter data and Table 5 for the as-yet-unvalidated third quarter data are shown graphically in Figures 4 and 5, respectively, on page 19. Figures 4 and 5 are plotted on the same y-axis scale, so they can be compared directly. Mean concentrations for all 27 species measured consistently above their respective method detection limits are generally comparable for the fourth and first quarters each year (late autumn, winter, early spring), and are generally higher than the second and third quarters (late spring, summer, early autumn). Increased maritime southerly flow in the spring and summer is a contributor to lower concentrations in the second and third quarters. As can be observed by comparing Figures 4 and 5, average concentrations for many species were very close from one quarter to the next.

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 2nd quarter 2012**

| Units ppbV | Oak 2Q12 | | | Solar 2Q12 | | | Palm 2Q12 | | |
|---|---|---|---|---|---|---|---|---|---|
| Species | Peak 1hr | Peak 24hr | Mean | Peak 1hr | Peak 24hr | Mean | Peak 1hr | Peak 24hr | Mean |
| Ethane | 52.369 | 14.199 | 4.761 | 40.934 | 12.038 | 5.189 | 70.799 | 22.411 | 4.017 |
| Ethylene | 15.451 | 1.082 | 0.350 | 4.061 | 0.639 | 0.176 | 9.362 | 1.168 | 0.294 |
| Propane | 107.436 | 8.734 | 2.575 | 50.559 | 8.439 | 2.892 | 106.483 | 17.543 | 2.282 |
| Propylene | 11.342 | 0.930 | 0.317 | 1.171 | 0.277 | 0.102 | 5.416 | 0.548 | 0.220 |
| Isobutane | 29.878 | 3.647 | 0.926 | 19.172 | 2.699 | 0.948 | 26.218 | 7.801 | 0.809 |
| n-Butane | 36.130 | 5.534 | 1.326 | 25.592 | 3.876 | 1.254 | 56.009 | 13.871 | 1.293 |
| t-2-Butene | 1.515 | 0.368 | 0.214 | 0.167 | 0.031 | 0.009 | 0.812 | 0.312 | 0.030 |
| 1-Butene | 0.468 | 0.110 | 0.036 | 0.500 | 0.048 | 0.011 | 0.651 | 0.211 | 0.049 |
| c-2-Butene | 1.290 | 0.214 | 0.073 | 0.142 | 0.025 | 0.007 | 0.807 | 0.290 | 0.024 |
| Isopentane | 21.939 | 3.509 | 0.966 | 8.643 | 1.710 | 0.699 | 23.532 | 8.814 | 0.92 |
| n-Pentane | 18.026 | 2.638 | 0.538 | 6.293 | 1.234 | 0.464 | 23.683 | 4.438 | 0.515 |
| 1,3-Butadiene | 0.274 | 0.082 | 0.026 | 0.156 | 0.031 | 0.014 | 0.229 | 0.052 | 0.025 |
| t-2-Pentene | 0.917 | 0.168 | 0.045 | 0.176 | 0.018 | 0.004 | 1.53 | 0.498 | 0.052 |
| 1-Pentene | 0.473 | 0.092 | 0.028 | 0.089 | 0.013 | 0.003 | 0.918 | 0.283 | 0.032 |
| c-2-Pentene | 0.457 | 0.086 | 0.022 | 0.085 | 0.008 | 0.001 | 0.788 | 0.258 | 0.025 |
| n-Hexane | 10.261 | 1.303 | 0.285 | 2.859 | 0.583 | 0.196 | 20.713 | 2.27 | 0.249 |
| **Benzene** | **5.273** | **1.338** | **0.208** | **1.832** | **0.293** | **0.098** | **5.186** | **1.268** | **0.157** |
| Cyclohexane | 3.016 | 0.687 | 0.112 | 1.704 | 0.396 | 0.106 | 42.973 | 3.202 | 0.116 |
| Toluene | 7.172 | 1.722 | 0.262 | 1.500 | 0.52 | 0.142 | 6.285 | 1.428 | 0.236 |
| Ethyl Benzene | 0.426 | 0.089 | 0.029 | 0.211 | 0.069 | 0.015 | 0.749 | 0.122 | 0.02 |
| m&p -Xylene | 2.006 | 0.371 | 0.097 | 3.752 | 0.472 | 0.082 | 2.344 | 0.524 | 0.094 |
| o-Xylene | 0.681 | 0.113 | 0.031 | 0.360 | 0.084 | 0.015 | 0.675 | 0.172 | 0.032 |
| Isopropyl Benzene | 16.669 | 4.458 | 0.133 | 0.534 | 0.062 | 0.005 | 1.706 | 0.080 | 0.005 |
| 1,3,5-Trimethylbenz | 1.204 | 0.188 | 0.013 | 0.394 | 0.086 | 0.008 | 0.26 | 0.056 | 0.01 |
| 1,2,4-Trimethylbenz | 1.362 | 0.224 | 0.052 | 0.363 | 0.094 | 0.014 | 0.404 | 0.128 | 0.032 |
| n-Decane | 1.006 | 0.156 | 0.027 | 0.756 | 0.167 | 0.020 | 0.528 | 0.061 | 0.017 |
| 1,2,3-Trimethylbenz | 0.208 | 0.112 | 0.012 | 0.206 | 0.047 | 0.010 | 0.131 | 0.040 | 0.022 |

**Table 5. Unvalidated auto-GC mean statistics 3rd quarter 2012**

| Units ppbV | Oak 2Q12 | Solar 2Q12 | Palm 2Q12 |
|---|---|---|---|
| **Species** | **Mean** | **Mean** | **Mean** |
| **Ethane** | 3.930 | 5.281 | 3.801 |
| **Ethylene** | 0.399 | 0.276 | 0.281 |
| **Propane** | 2.578 | 3.445 | 2.208 |
| **Propylene** | 0.176 | 0.095 | 0.141 |
| **Isobutane** | 0.893 | 1.184 | 0.865 |
| **n-Butane** | 1.234 | 1.398 | 1.383 |
| **t-2-Butene** | 0.041 | 0.010 | 0.031 |
| **1-Butene** | 0.028 | 0.011 | 0.041 |
| **c-2-Butene** | 0.080 | 0.004 | 0.026 |
| **Isopentane** | 1.026 | 0.809 | 1.080 |
| **n-Pentane** | 0.628 | 0.545 | 0.539 |
| **1,3-Butadiene** | 0.036 | 0.011 | 0.022 |
| **t-2-Pentene** | 0.043 | 0.007 | 0.074 |
| **1-Pentene** | 0.024 | 0.006 | 0.037 |
| **c-2-Pentene** | 0.021 | 0.003 | 0.033 |
| **n-Hexane** | 0.309 | 0.224 | 0.307 |
| **Benzene** | **0.275** | **0.103** | **0.147** |
| **Cyclohexane** | 0.092 | 0.120 | 0.091 |
| **Toluene** | 0.250 | 0.162 | 0.285 |
| **Ethyl Benzene** | 0.034 | 0.020 | 0.025 |
| **mp -Xylene** | 0.106 | 0.090 | 0.118 |
| **o-Xylene** | 0.033 | 0.023 | 0.039 |
| **Isopropyl Benzene** | 0.008 | 0.003 | 0.004 |
| **1,3,5-Trimethylbenzene** | 0.013 | 0.009 | 0.017 |
| **1,2,4-Trimethylbenzene** | 0.054 | 0.018 | 0.047 |
| **n-Decane** | 0.044 | 0.023 | 0.026 |
| **1,2,3-Trimethylbenzene** | 0.013 | 0.011 | 0.030 |

**Figure 4. Mean ppbV for 27 species at three auto-GCs, 2nd quarter 2012 (validated data)**

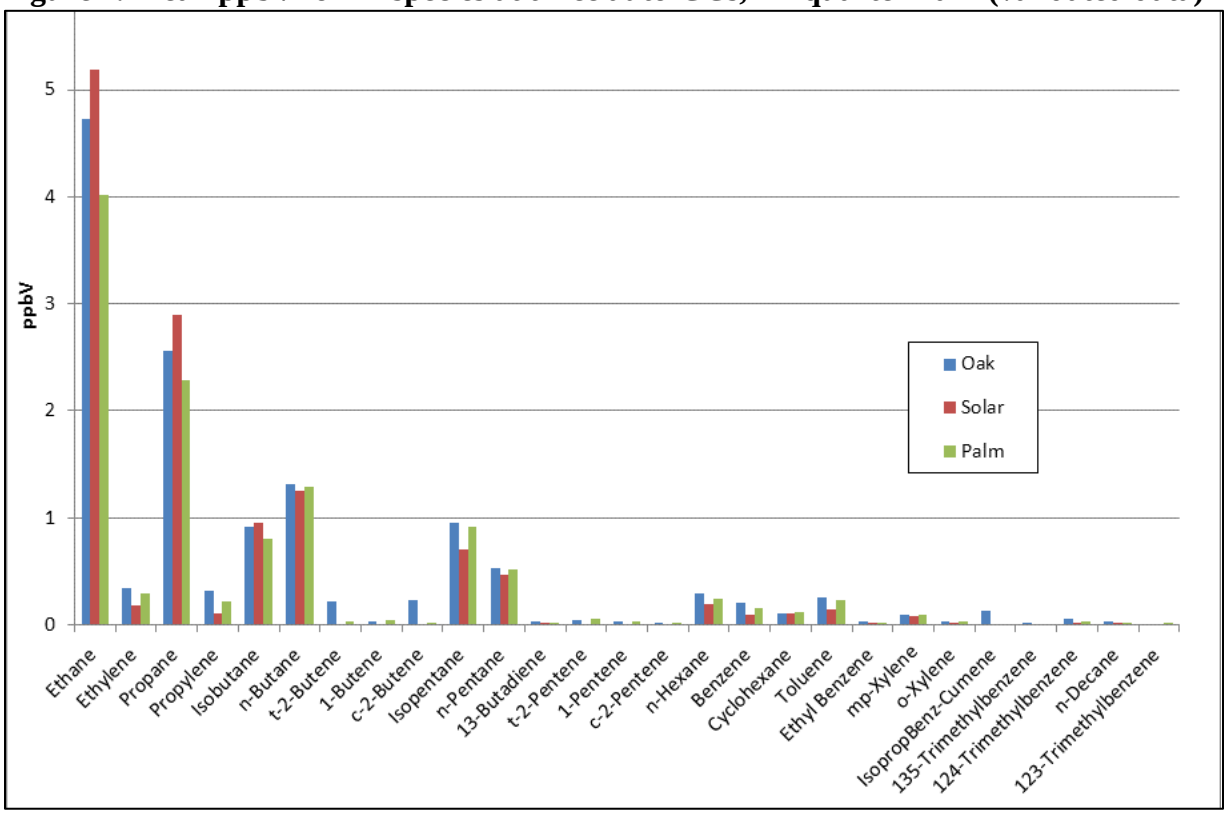
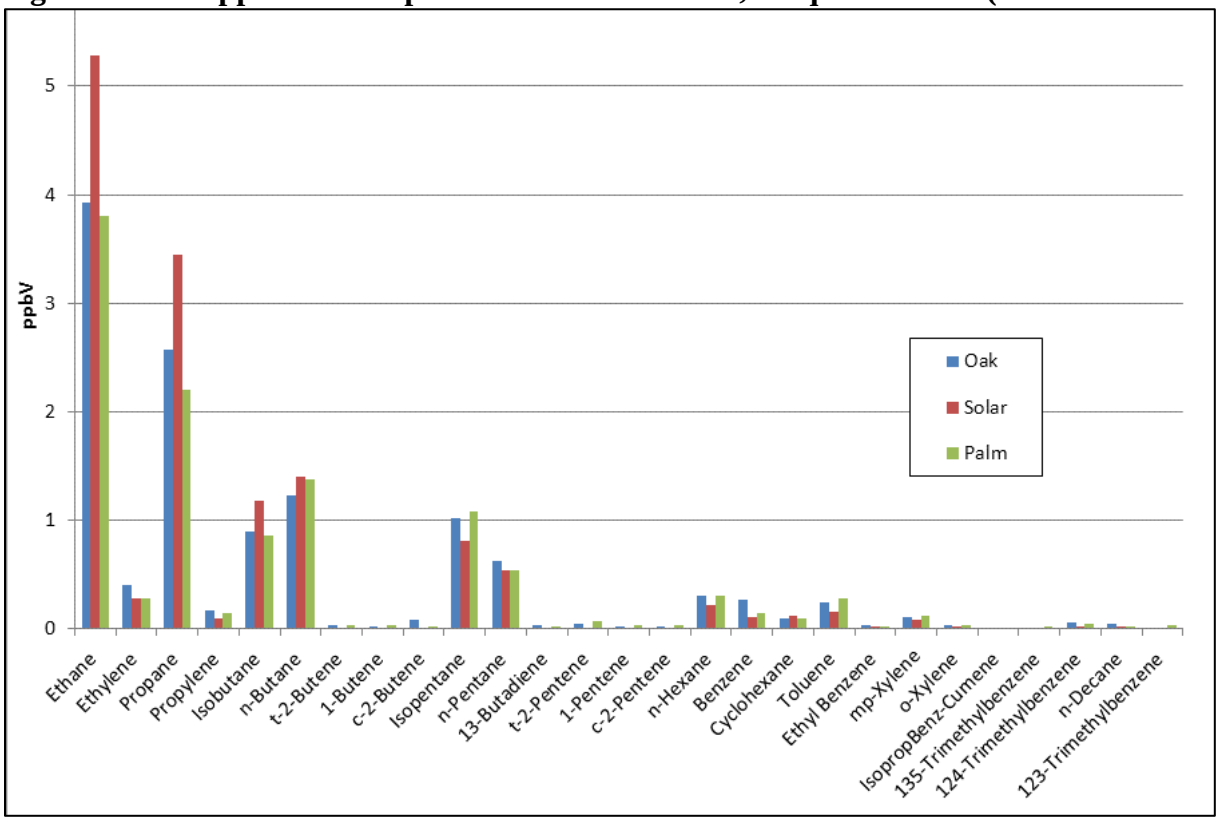



**Figure 5. Mean ppbV for 27 species at three auto-GCs, 3rd quarter 2012 (unvalidated data)**



## 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 – 2012), concentration means have generally been relatively constant. No individual one-hour benzene values have been measured above the AMCV since the beginning of monitoring. A time series for hourly benzene in ppbV units with two points annotated by date appears in Figure 6, below, for Oak Park. The two points from 6:00 CST Saturday January 27, 2007 and 4:00 CST Friday November 6, 2009 are identified as statistical outliers in that they are unusually high given the balance of the data. The same graph is reproduced without these two points in Figure 7, below. The time series for Solar Estates appears in Figure 8, on page 21. Note the different y-axis scales for the two sites, as Oak Park does tend to measure higher concentrations than Solar Estates. Figure 9, on page 21, shows the time series for the two-year old TCEQ Palm auto-GC, with two apparent outliers on January 30, 2012 indicated. Note that for all three sites, the data from the third quarter 2012 have not been validated yet.

**Figure 6. Oak Park hourly benzene March 2005 – Sept. 30, 2012, ppbV units, individual elevated values noted, no observations greater than the TCEQ's AMCV**

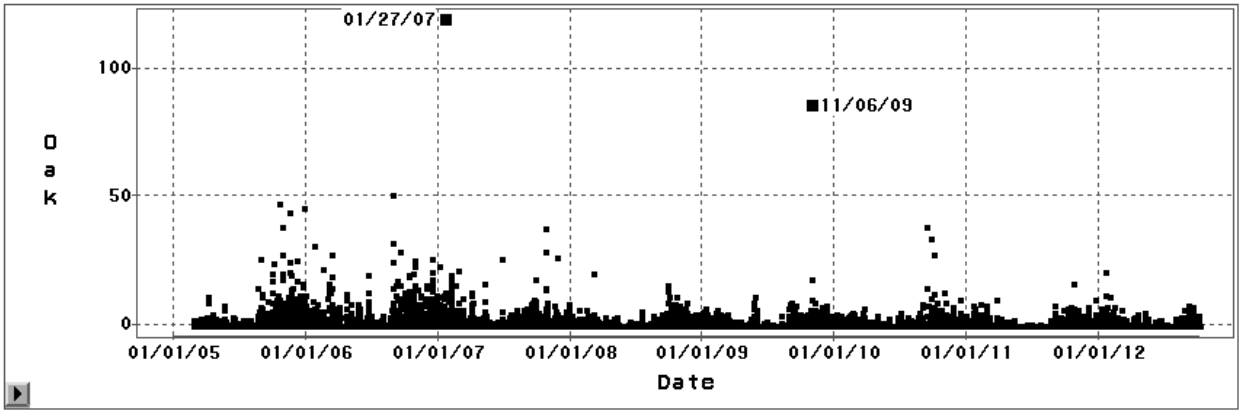



**Figure 7. Oak Park hourly benzene Mar. 2005 – Sept. 30, 2012, ppbV units, two outliers from January 27, 2007 and November 6, 2009 removed**

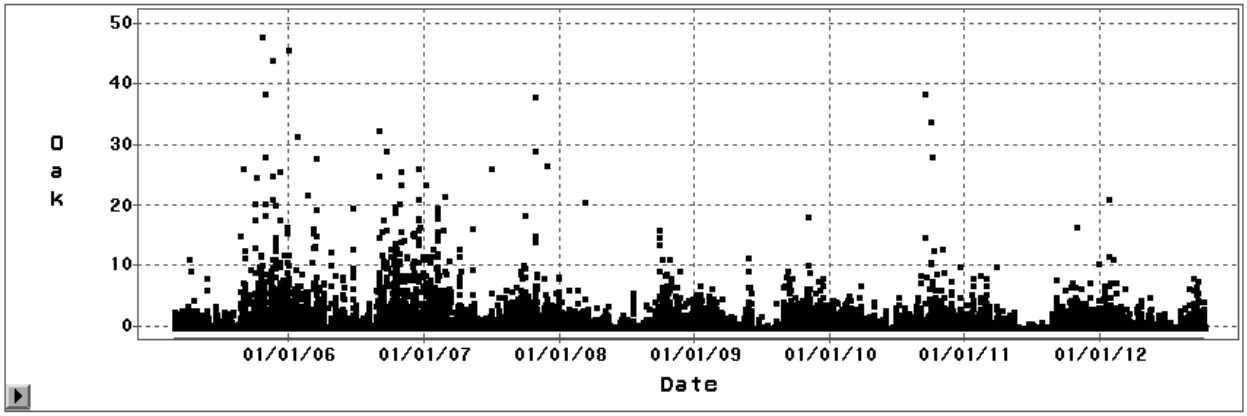


**Figure 8. Solar Estates hourly benzene Mar. 2005 – Sept. 30, 2012, ppbV units, no observations greater than the TCEQ's AMCV**

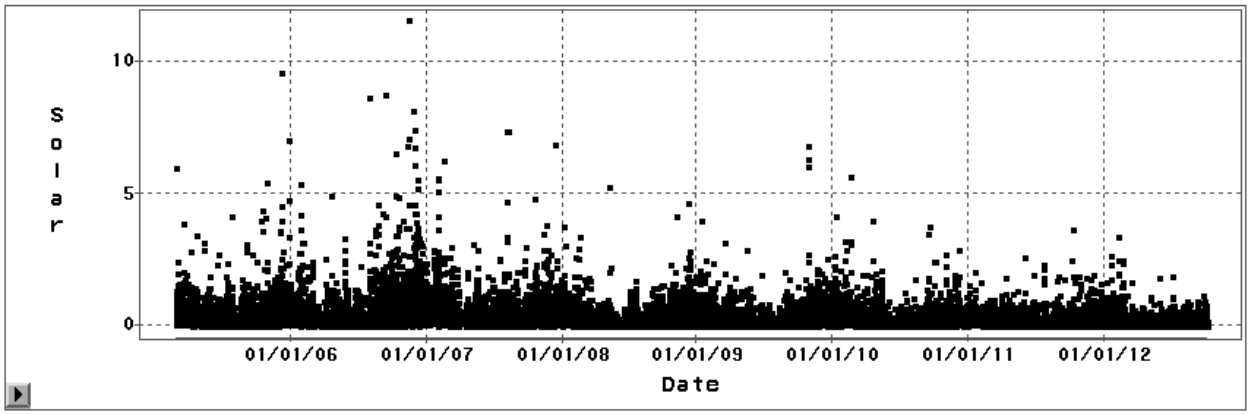



**Figure 9. TCEQ Palm hourly benzene June 1, 2010 – Sept. 30, 2012, ppbV units, individual elevated values noted, no observations greater than the TCEQ's AMCV**

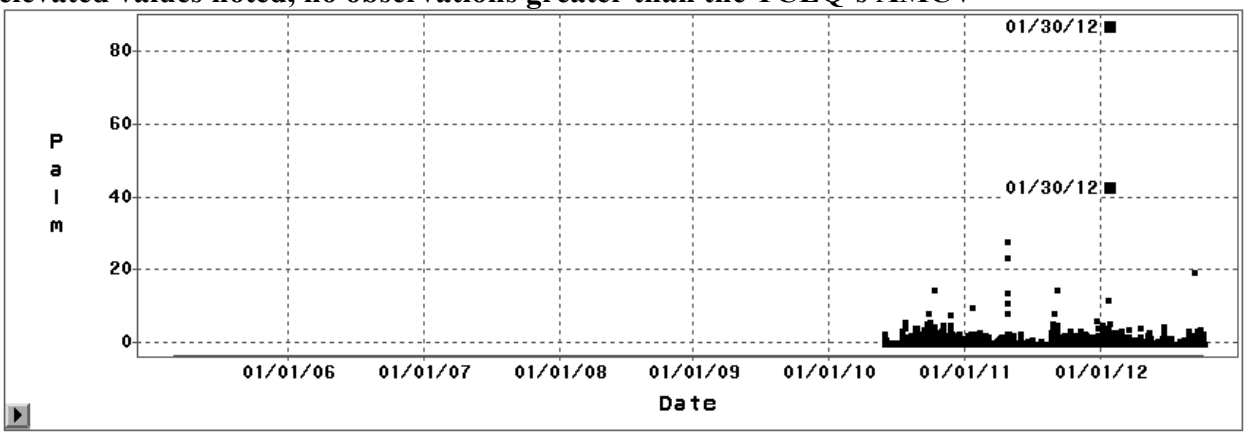
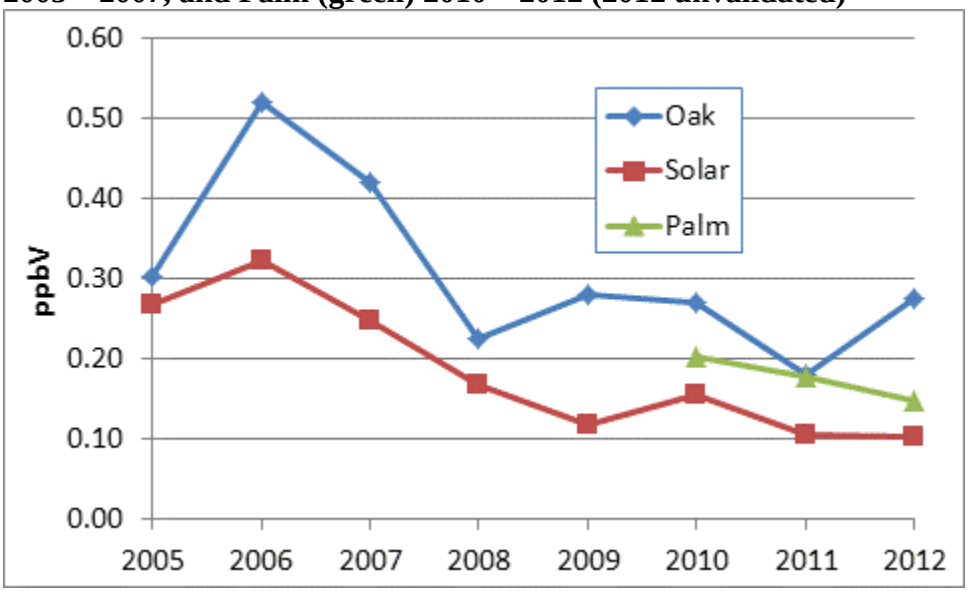



Table 6, on page 22, shows the third quarter average concentrations from the auto-GCs for benzene from 2005 – 2012 (2012 unvalidated). The third quarter means are graphed in Figure 10, on page 22. The means for TCEQ's Palm site are shown for 2010 through 2012 only. The third quarter means at UT sites from 2008 through 2012 are statistically significantly lower than in the third quarters of the project's first three years, and this finding is similar to findings for other quarters in recent reports on this project.

**Table 6. Mean statistics for Benzene at Oak Park and Solar Estates, 3rd quarter 2005 – 2012 Palm 2010 – 2012, ppbV units (2012 unvalidated)**

| 3rd qtr/year | Oak | Solar | Palm |
|---|---|---|---|
| 2005 | 0.302 | 0.268 | |
| 2006 | 0.520 | 0.322 | |
| 2007 | 0.421 | 0.248 | |
| 2008 | 0.226 | 0.169 | |
| 2009 | 0.281 | 0.119 | |
| 2010 | 0.271 | 0.155 | 0.203 |
| 2011 | 0.180 | 0.106 | 0.179 |
| 2012 | 0.275 | 0.103 | 0.147 |

**Figure 10. Mean concentrations of benzene during third quarters of each year at Oak Park (blue) and Solar Estates (red), 2005 – 2012, with lower values in 2008 – 2012 compared with 2005 – 2007, and Palm (green) 2010 – 2012 (2012 unvalidated)**




### 3. Sulfur Dioxide Measurements at Corpus Christi Monitors

As has been discussed in recent reports, the JIH CAMS 630 site measures $SO_2$ concentrations that do not comply with the EPA's $SO_2$ NAAQS. Research to date has concluded that emissions from ships operating in the Corpus Christi ship channel and docked along the shores are major contributors to elevated $SO_2$ concentrations at JIH. The main source of $SO_2$ is believed to be the result of emissions from diesel engines used in dockside ships' auxiliary engines running on high-sulfur diesel fuel. However, over the course of 2012, $SO_2$ concentrations at JIH have been steadily declining. A likely explanation is as follows.

Title 40 of the Code of Federal Regulations (40CFR) is the codification of federal law related to protection of the natural environment, and Part 80 of 40CFR deals with the regulation of fuels and fuel additives. Part 80, Subpart I is titled Motor Vehicle Diesel Fuel; Nonroad, Locomotive,

and Marine Diesel Fuel; and ECA Marine Fuel, and specifies a schedule for reducing sulfur content in diesel fuel used by smaller boats and ships and for reducing sulfur content in fuel used by larger "Emission Control Area" ships, those large vessels operating within 200 nautical miles (230 miles) of the coast. The requirements in 40CFR Part 80.510 specify that by June 1, 2012, sulfur content in marine diesel fuel must drop from the 500 ppm limit set in 2007 to a new 15 ppm limit. A provision in an international treaty to which the U.S. is party will require additional reduction in sulfur content in the larger ocean going vessel (OGV) fuel in 2015. However, the OGVs generally operate smaller diesel motors while at dock, and it is very likely that the fuel employed for these smaller motors now has lower sulfur content. Thus, both small ships motoring in the ship channel and large ships docked in the ship channel may now be producing lower emissions of $SO_2$.

One hour concentrations above 75 ppb are considered to be individual exceedances of the level of the NAAQS. The maximum one hour value for each day at a site is logged, and at the end of the year the 99$^{th}$ percentile daily maximum is selected. This value is averaged with the same statistic from the previous two years, and the resulting three-year average is compared with 75 ppb to determine compliance. If a site collects a full year of data, then the 99$^{th}$ percentile value would be the 4$^{th}$ highest daily maximum for the year. The resulting statistic is called the *design value* for a monitoring site. Table 7, below, contains the design values for Corpus Christi monitors (TCEQ and UT) for recent three-year periods. The JIH CAMS 630 site shows noncompliance in each three-year period to date. A row has been entered in Table 7 for the incomplete 2010 – 2012 period, because the fourth highest daily maximum at JIH for 2012 through three quarters (61.4 ppb on January 6), which would be the 99$^{th}$ percentile value in a full year, was already high enough to create a rolling three year average over 75 ppb. As was noted above, concentrations appear to have declined over the course of 2012 at JIH CAMS 630 and the same is true for TCEQ Avery Point CAMS 6603. If the lower concentrations continue through 2013, then the JIH site would come into compliance with the current $SO_2$ NAAQS.

**Table 7. $SO_2$ NAAQS design values for Corpus Christi area sites, ppb units, values greater than 75 ppb represent noncompliance**

| Years | C21 | C4 | C629 | C630 | C631 | C632 | C633 | C635 | C98 |
|---|---|---|---|---|---|---|---|---|---|
| 2005-2007 | 8 | 24 | 34 | **119** | 38 | 21 | 51 | 34 | 36 |
| 2006-2008 | 8 | 21 | 31 | **131** | 33 | 19 | 31 | 31 | 32 |
| 2007-2009 | 9 | 18 | 30 | **89** | 32 | 17 | 21 | 23 | 28 |
| 2008-2010 | 9 | 17 | 26 | **103** | 21 | 13 | 11 | 22 | 33 |
| 2009-2011 | 9 | 12 | 19 | **80** | 15 | 13 | 30 | 20 | 27 |
| 2010-2012* | | | | **76** | | | | | |

* 2012 incomplete

Figures 11 – 14, on page 24, show the time series of five-minute time scale $SO_2$ measurements at JIH in the third quarter for each of the past four years. Figures 11 – 13 show the episodic nature of transient high $SO_2$ events, which appear to be absent in Figure 14 for 2012.

**Figure 11. JIH 5-min $SO_2$ ppb 3rd quarter 2009**

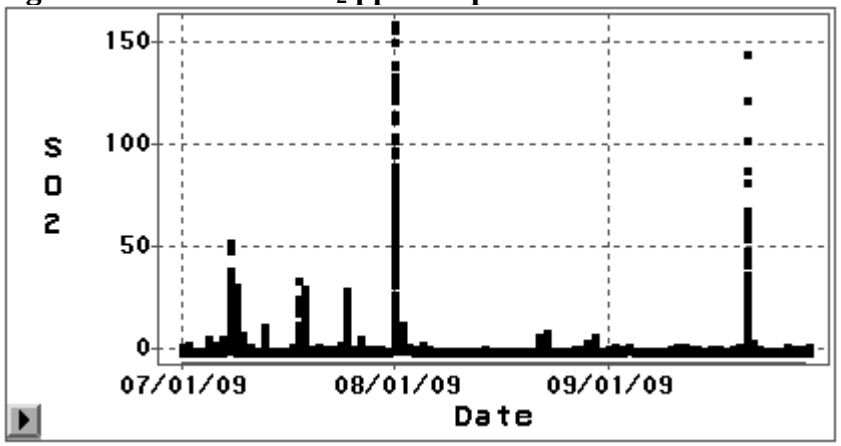



**Figure 12. JIH 5-min $SO_2$ ppb 3rd quarter 2010**

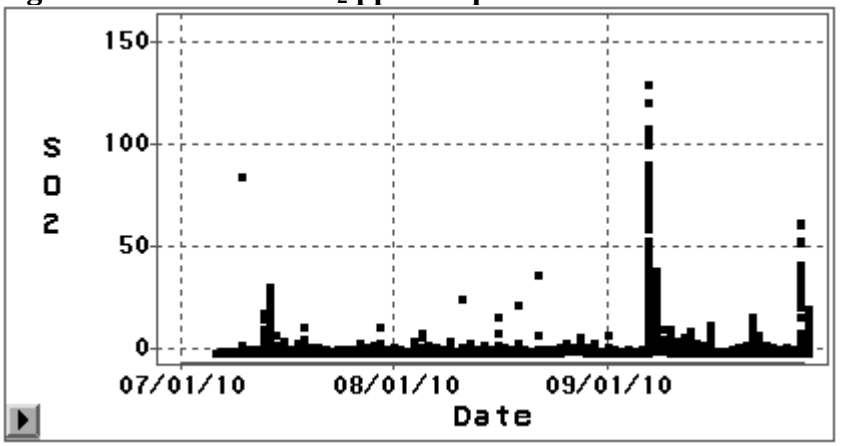



**Figure 13. JIH 5-min $SO_2$ ppb 3rd quarter 2011**

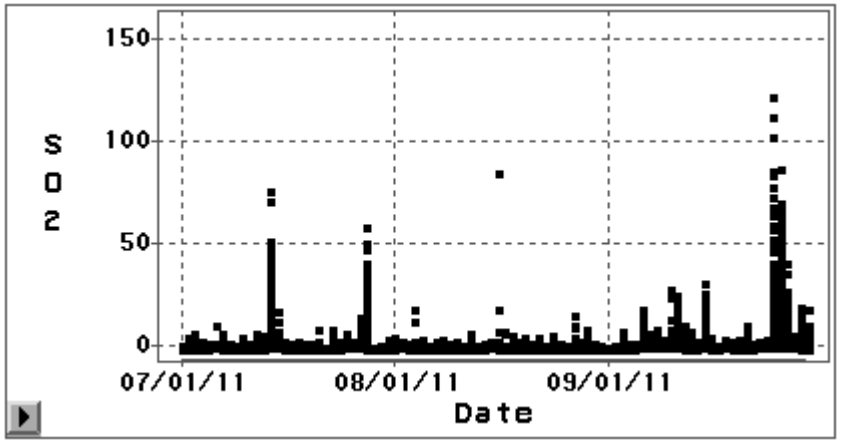



**Figure 14. JIH 5-min $SO_2$ ppb 3rd quarter 2012**

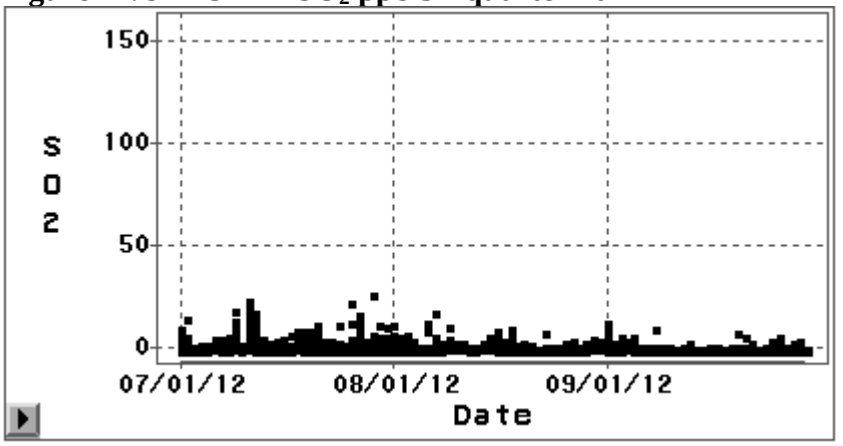


Figure 15, below, plots the five minute values from JIH representing the highest one-percent of observations over 2012 through October 15 against wind direction. Figure 16, below, shows the same for TCEQ's Avery Point site for data from 2012 through September 30. (Because Avery Point is an experimental site, its data must be quality assured before use in data analysis.) These two figures show that the highest concentration observations at each site are associated with specific upwind directions:

- JIH, between 150 and 270 degrees
- Avery Point, between 300 degrees through north to 40 degrees.

In earlier reports it was shown that when $SO_2$ measurements were merged with coincident wind direction measurements for the JIH and Avery Point sites, rays drawn corresponding to the highest average concentrations converged near the docks on the ship channel.

**Figure 15. JIH highest 1-percent of 5-min. $SO_2$ 1/1/2012-10/15/2012 by wind direction**

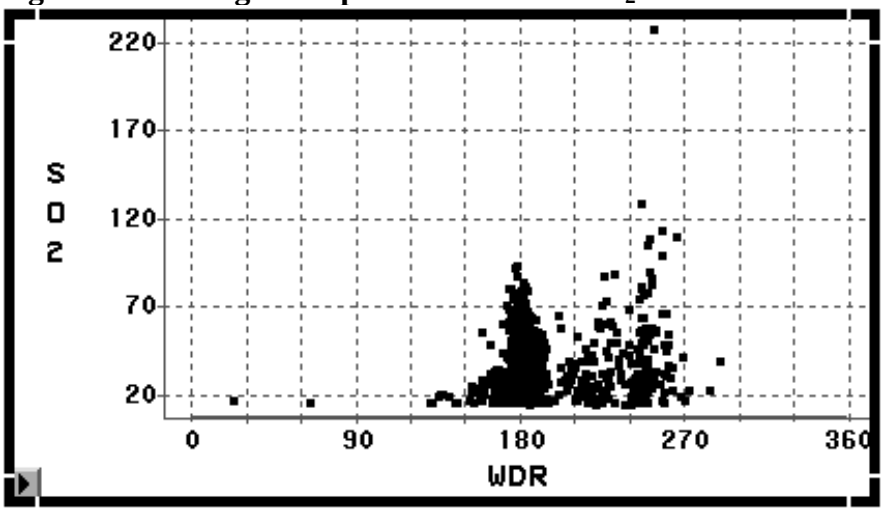
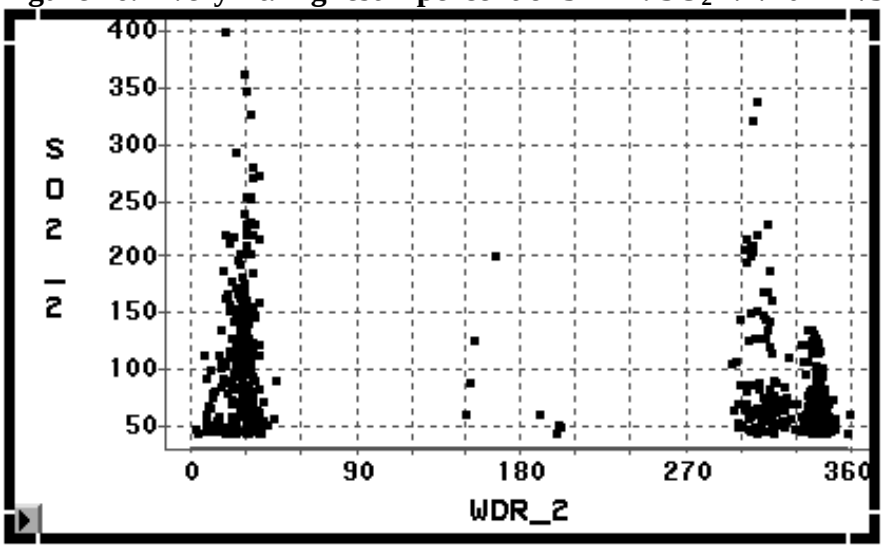



**Figure 16. Avery Pt. highest 1-percent of 5-min. $SO_2$ 1/1/2012-7/31/2012 by wind direction**




In order to examine the changes in concentrations shown in Figures 11 – 14, on page 24, one can examine the behavior over time of the data measured under southerly winds at JIH and under

northerly winds at Avery Point. In Figure 17, below, the average concentration of $SO_2$ by month in 2012 is shown using only JIH data collected under southerly winds. Figure 18, below, shows a similar graph for $SO_2$ at Avery Point under northerly winds. In both graphs, the average concentration by wind direction varies, but at both sites the concentrations from month 6 (June 2012) and later are significantly less than in months 1 – 5 (January – May 2012). In addition to the graphs shown, other statistical measures such as the 95$^{th}$ percentile value by month and the percentage of values that exceed fixed thresholds (e.g., 10 ppb) by month have been studied and they show similar behavior with lower values since June 2012. The conclusion of this analysis is that 40CFR Part 80.510 rules requiring use of low-sulfur marine fuel by June 1, 2012 for ships in the port area appear to have had a significant effect.

**Figure 17. Average concentration of $SO_2$ at JIH under southerly winds by month (1=January 2012, 2=February 2012, etc.)**

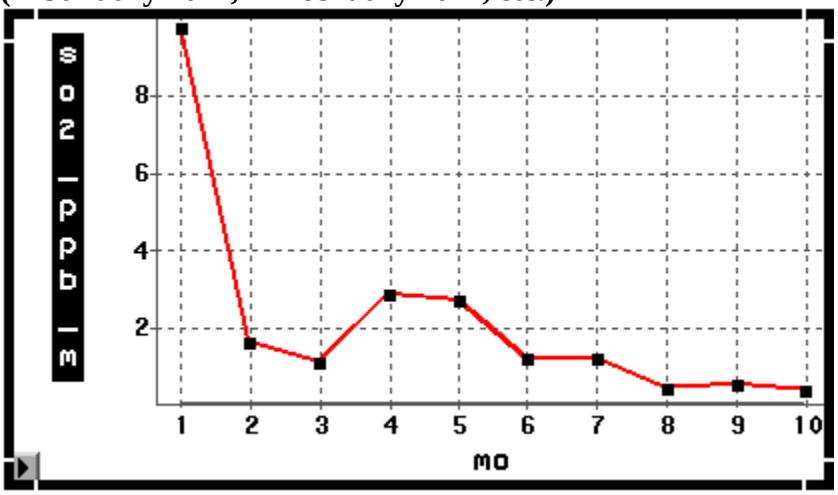
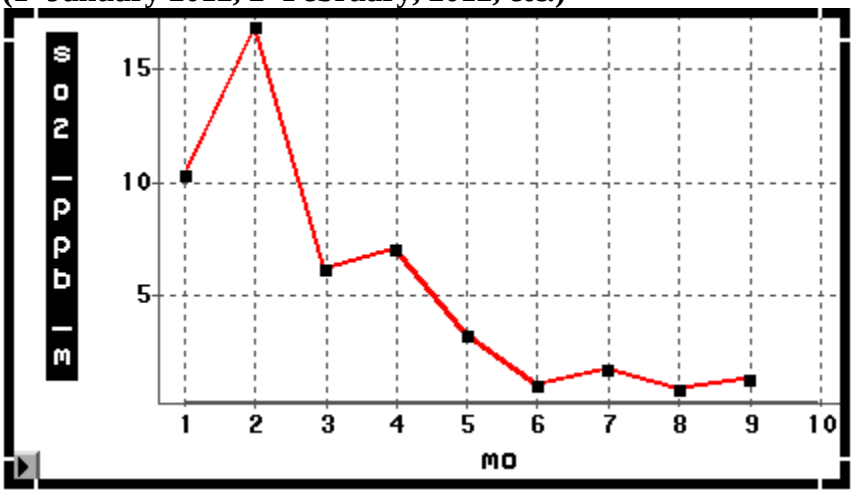



**Figure 18. Average concentration of $SO_2$ at Avery Point under northerly winds by month (1=January 2012, 2=February, 2012, etc.)**



**Conclusions from the Third Quarter 2012 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. The TCEQ's Avery Point site measured one $SO_2$ exceedance but the data have not been quality assured. Dockside ship emissions that had affected the UT JIH CAMS 630 site and the Avery Point appear to have diminished this quarter, which may be relatable to new federal rules on marine fuel. If trends continue, the JIH site would come into compliance with the $SO_2$ NAAQS after 2013.
- Second and third quarter 2012 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.
- Periodic air pollution events continue to be measured on a routine basis.

Further analyses will be provided upon request.

# APPENDIX B

**Financial Report of Expenditures**
**Financial Report of Interest Earned**

Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project

*Accounting Report for the Quarter*
*07/01/2012 - 09/30/2012*

**A. Total Amount of COCP Funds and Other Funds Received Under This Proposal**

| | |
|---|---|
| Total Grant Amount: | $6,761,718.02 |
| Total Interest Earned: | $815,262.15 |
| Total Funds Received: | $7,576,980.17 |

**B. Summary of Expenditures Paid by COCP Funds**

| | | Year 3 Budget | Year 4 Budget | Year 5 Budget | Year 6 Budget | Year 7 Budget | Yrs 1-7 Adjusted Budget | Prior Activity | Current Activity 07/01/12 - 09/30/12 | Encumbrances | Remaining Balance 9/30/2012 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Salaries-Prof | 12 | $216,128.03 | $160,852.00 | $288,279.40 | $299,833.00 | $318,499.00 | $1,205,080.88 | ($1,205,080.88) | $0.00 | | $0.00 |
| Salaries-CEER | 15 | $10,806.37 | $15,638.00 | $33,123.00 | $30,048.00 | $29,880.00 | $102,071.38 | ($102,071.38) | $0.00 | | $0.00 |
| Fringe | 14 | $47,984.00 | $36,783.00 | $58,333.00 | $72,728.00 | $76,043.00 | $300,505.16 | ($322,256.52) | $21,751.34 | | $0.00 |
| Communication | 42 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $1,615.00 | ($1,755.00) | ($75.00) | | -$15.00 |
| Other/C-Analysis | 47/68 | $60,474.00 | $73,500.00 | -$8,656.40 | $73,500.00 | $14,219.00 | $114,455.00 | ($114,455.00) | $0.00 | | $0.00 |
| Supplies | 53 | $30,844.00 | $33,500.00 | $58,678.00 | $122,662.00 | $72,797.32 | $510,502.23 | ($508,014.12) | ($1,573.11) | | $15.00 |
| Quality Assurance | 51 | $0.00 | $20,300.00 | $8,000.00 | $0.00 | $7,070.00 | $16,040.00 | ($16,040.00) | $0.00 | | $0.00 |
| Subcontract | 62-65 | $1,965,693.00 | $314,022.00 | $240,734.00 | $346,289.00 | $591,523.00 | $3,538,580.02 | ($3,538,580.01) | ($0.01) | | $0.00 |
| Program Income | 66* | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | ($839,221.96) | ($173,933.42) | ($975.00) | -$813,130.40 |
| Travel | 75 | $2,300.00 | $2,000.00 | $7,710.00 | $9,000.00 | $6,712.00 | $30,103.73 | ($30,103.73) | $0.00 | | $0.00 |
| Equipment | 80 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | | $0.00 |
| Indirect Costs | 60 | $359,455.00 | $96,759.00 | $112,531.00 | $143,217.00 | $167,001.70 | $881,063.70 | ($846,076.67) | $3,015.48 | | $38,003.31 |
| TOTALS | | $2,758,885.00 | $757,152.00 | $862,730.00 | $1,097,997.00 | $1,284,045.02 | $6,761,718.02 | ($7,387,055.39) | ($150,814.72) | ($975.00) | ($777,127.09) |

**B.1. Summary of Program Income (66) Expenditures**

| | | |
|---|---|---|
| Salaries-Prof | 66 | $20,105.22 |
| Salaries-CEER | 66 | $4,424.06 |
| Fringe | 66 | $26,558.67 |
| Communication | 66 | $0.00 |
| Other/C-Analysis | 66 | $3,505.00 |
| Supplies | 66 | $25,836.50 |
| Quality Assurance | 66 | $0.00 |
| Subcontract | 66 | $93,194.37 |
| Program Income | 66 | $0.00 |
| Travel | 66 | $307.58 |
| Equipment | 66 | $0.00 |
| TOTAL | | $173,933.42 |

**C. Interest Earned by COCP Funds as of 09/30/12**

| | |
|---|---|
| Prior Interest Earned: | $815,216.48 |
| Interest Earned This Quarter: | $45.67 |
| Total Interest Earned to Date: | $815,262.15 |

**D. Balance of COCP Funds as of 09/30/12**

| | |
|---|---|
| Total Grant Amount: | $6,761,718.02 |
| Total Interest Earned: | $815,262.15 |
| Current Q. Expenses | ($150,814.72) |
| Total Expenditures: | ($7,387,055.39) |
| Remaining Balance: | $36,110.86 |

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

Michael Martinez

Accounting Certification