

**Neighborhood Air Toxics Modeling Project
For
Houston and Corpus Christi – Stage 1**

**Quarterly Report for the Period
April 1, 2008 through June 30, 2008**

Submitted to

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

Submitted by

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I. Introduction

On February 1, 2008, the 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 will develop, apply, demonstrate and make publicly available, neighborhood-scale air quality modeling tools for toxic air pollutants in the Corpus Christi, Texas and Houston, Texas ship channel regions. In Stage 2, subject to the availability of funds, UT Austin will develop a mobile monitoring station that can be deployed in Corpus Christi and in other regions of Texas. The mobile monitoring station will be used to map the spatial distributions of air pollutant concentrations; these maps of air pollutant concentrations will be used to inform the public about the spatial distributions of air pollutants and to evaluate and improve the performance of the neighborhood-scale models developed in Stage 1.

On February 21, 2008, 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 \$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. Stage 2 funding has not been awarded by the US District Court.

This Stage 1 quarterly report has been prepared pursuant to the requirements of the Air Toxics Project and is being submitted to the US District Court.

II. Air Toxics Project – Stage 1 Overview

A. Scope and Objectives

The objective of Stage I of The Air Toxics Project for UT Austin and its subcontractors is to develop, apply, and make publicly available, neighborhood-scale air quality modeling tools for toxic air pollutants in the Corpus Christi area. After demonstration of the modeling tools in Corpus Christi, the modeling tools will be applied in the Houston Ship Channel region. Stage 1 of the Air Toxics Project should provide significant and discernible environmental benefits to the Corpus Christi and Houston areas by providing analyses of air pollutant concentrations experienced by the community, and providing post-event evaluation of pollutants emitted during a release.

B. Major Tasks

The major tasks for Stage I include:

1. *Development of a conceptual model of meteorological conditions likely to lead to high concentrations of air toxics in the Corpus Christi area.*
This task will identify meteorological conditions (seasons, temperatures, wind speeds, wind directions, frontal passages and other parameters) and air quality conditions that are most likely to lead to high concentrations of air toxics in populated regions of Corpus Christi. The conceptual model will be used to identify historical periods that can be used to develop and test air toxics modeling systems for Corpus Christi.
2. *Development of emissions inventory and land cover input information.*
These data will be developed at a spatial resolution that will allow the neighborhood scale air quality models to operate with a resolution of a few hundred meters.
3. *Application of dispersion models to estimate the neighborhood-scale concentrations of air toxics in Corpus Christi.*
Dispersion models represent the current best practice for estimating air toxics concentrations in urban areas. Using emissions, land cover, and meteorological data, a dispersion model will be used to estimate concentrations of air toxics in plumes from sources identified in the emissions inventory and during historical meteorological conditions identified during the conceptual model development.
4. *Development of improved meteorological models of air pollutant dispersion in the Corpus Christi area.*
A more rigorous combined plume and gridded model able to characterize the complex coastal meteorology in the region will also be developed and applied in order to address uncertainties in predicted concentrations obtained from the dispersion model. A state-of-the-science meteorological model will be used to simulate the three-dimensional weather conditions in the Corpus Christi area, with a focus on the replication of historical weather patterns identified in the conceptual model. Simulation of local circulation features will be carefully assessed, and additional analyses will customize the model for best performance in the Corpus Christi area.
5. *Development of combined gridded and plume models to estimate neighborhood-scale concentrations of air toxics in Corpus Christi:*
The combined gridded and plume model will predict three-dimensional concentrations of selected air toxic pollutants throughout the Corpus Christi area using the meteorological modeling, emission inventory and land cover data described above. An evaluation framework will be developed to compare predicted and observed concentrations during specific historical episodes and to refine the modeling approach and performance.
6. *Application of the combined dispersion and gridded modeling tools to estimate concentrations of air toxics in Corpus Christi.*
The combined dispersion and gridded modeling tools will be applied to estimate concentrations of air toxics in Corpus Christi under a variety of meteorological conditions for routine emissions and when monitoring data has indicated higher concentrations of air toxics than would be expected under routine emission conditions; make spatial mappings of the estimated air toxics concentrations available on a Project website.
7. *Application of the model framework developed in Corpus Christi to the Houston Ship Channel region in east Harris County, Texas:*

The model framework developed for Corpus Christi will be applied to the Houston Ship Channel with the goal of demonstrating that the neighborhood-scale air toxics modeling framework is applicable in other urban areas. The area surrounding the Ship Channel in east Harris County, Texas will be used for this demonstration, and the period to be modeled will be August 15-September 15, 2006, which corresponds to the period of the Second Texas Air Quality Study (TexAQS II).

C. Project Milestone Schedule

The development of a project milestone schedule has been under development during this quarter. The project milestone schedule will be completed by UT Austin and the Project subcontractors.

III. Project Progress Report

A. Meteorological Team

Develop a conceptual model of meteorological conditions likely to lead to high concentrations of air toxics in the Corpus Christi area.

During this quarter negotiations between The University of Texas at Austin (UT Austin) and Texas A&M University (TAMU) to finalize the terms of a subcontract were on-going. The subcontract is expected to be finalized during the next quarter. Upon completion of this subcontract, the UT Austin team and the TAMU team will begin the development of the meteorological models set forth in the Project's Major Tasks.

UT Austin researchers have obtained the data collected on air toxics concentrations and meteorology by the *Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project*. The data have been processed and reformatted for analysis using the SAS statistical program and Microsoft Access database. Using the hourly observations of hydrocarbon concentrations (TNMHC), analyses to describe the temporal (seasonality, time-of-day, and day-of-week) variability and spatial scale of air toxic pollutant events have been initiated. The site-specific analyses have included an investigation of the relationship between high pollutant concentrations and winds as measured at each monitoring station. Additional VOC monitoring data (i.e., auto-GC observations from the Solar Estates and Oak Park monitoring stations and pollutant event canister samples from the seven Corpus Christi Air Quality Project monitoring stations), are being organized for supporting analyses

B. Modeling Team

During this quarter, UT Austin completed the subcontract with ENVIRON International Corporation (ENVIRON). The teams initiated development of a unified list of air toxics (including gas-phase pollutants and particulate matter) that will be the focus of the analysis and establishment of the geographic area for data collection and analysis.

The current best practice for air quality modeling of neighborhood-scale air toxics concentrations is based on the use of Gaussian dispersion models. Dr. Elena McDonald-Buller and Dr. Yosuke Kimura from the UT Austin team with Dr. Yarwood's team from ENVIRON will evaluate existing Gaussian plume models.

UT Austin and ENVIRON anticipate that they will then use emissions and surface wind data for the Corpus Christi area with two common dispersion models to estimate concentrations of air toxics in plumes from point sources in the region. During this quarter, UT Austin obtained the AERMOD and CALPUFF supporting documentation from the U.S. Environmental Protection Agency (U.S. EPA) and is in the process of reviewing both modeling configurations. UT Austin is also evaluating applications of these models for air toxics modeling in the United States. It is anticipated that ENVIRON will install these two modeling systems at UT Austin and will train UT Austin research staff in their use during the early Fall of 2008.

IV. Financial Summary

A. Budget for Year One

The budget for year one of the Air Toxics Project can be found on the financial report of expenditures found in Appendix A, page 6.

B. Financial Report

Details of the following financial summary information are included in Appendix A.

1. Detailed List of the Actual Expenditures Paid from Air Toxics Project Funds through June 30, 2008

Expenditures of Air Toxics Project funds during this quarter totaled \$100,817.98. The breakdown of expenditures is included in Appendix A.. The activities for which these expenditures were used are detailed in Section II and Section III, beginning on page 3 of this report.

2. Total Interest Earned on Air Toxics Project Funds During the Quarter

The interest earned during this quarter totaled \$34,455.87. A report providing detailed calculations of the interest earned on the Air Toxics Project funds is included in Appendix A.

3. Balance as of June 30, 2008, in the Air Toxics Project Account

The balance in the Air Toxics Project account, including interest earned totals \$4,548,371.53.

4. Expected Expenditures for the Funds Remaining in the Air Toxics Project Account

The expected expenditures for the remaining funds totals \$4,548,371.53.

Quarterly Report Distribution List:

U.S. District Court

Ms. Marianne Serpa, Assistant Deputy-In-Charge, District Court Operations
for distribution to The Honorable Janis Graham Jack

cc: Lee Smith, UT Austin

Elena McDonald-Buller, UT Austin

Gary McGaughey, UT Austin

Vincent M. Torres, UT Austin

APPENDIX A
FINANCIAL REPORT
of
Expenditures
and
Interest Earned

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

Accounting Report for the Quarter 04/01/08-06/30/08

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

Total Grant Amount: \$4,602,598.66
Total Interest Earned: \$46,590.85
Total Funds Received: \$4,649,189.51

B. Summary of Expenditures Paid by Air Toxics Funds

| | | First Year Budget Increment | First Year Budget Adjustment | First Year Adjusted Budget | Prior Activity | Current Activity 04/01/08-6/30/08 | Encumbrances | Remaining Balance 6/30/2008 |
|------------------------|-------|--------------------------------|---------------------------------|-------------------------------|----------------|--------------------------------------|----------------------|--------------------------------|
| Salaries-Prof | 12 | \$419,129.00 | 0.00 | \$419,129.00 | \$0.00 | (\$66,716.24) | (\$50,651.78) | \$301,760.98 |
| Salaries-CEER | 15 | \$18,641.00 | 0.00 | \$18,641.00 | \$0.00 | (\$6,218.69) | (\$4,213.59) | \$8,208.72 |
| Fringe | 14 | \$96,309.00 | 0.00 | \$96,309.00 | \$0.00 | (\$14,711.84) | (\$10,289.54) | \$71,307.62 |
| Supplies | 50 | \$61,916.00 | 0.00 | \$61,916.00 | \$0.00 | (\$21.04) | \$0.00 | \$61,894.96 |
| Contingency | 51 | \$1,246.00 | 0.00 | \$1,246.00 | \$0.00 | \$0.00 | \$0.00 | \$1,246.00 |
| Consultants | 60 | \$20,000.00 | 0.00 | \$20,000.00 | \$0.00 | \$0.00 | \$0.00 | \$20,000.00 |
| Subcontracts | 61-62 | \$300,000.00 | 0.00 | \$300,000.00 | \$0.00 | \$0.00 | \$0.00 | \$300,000.00 |
| Modeling/Computer Svcs | 67 | \$34,000.00 | 0.00 | \$34,000.00 | \$0.00 | \$0.00 | \$0.00 | \$34,000.00 |
| Travel | 75 | \$10,000.00 | 0.00 | \$10,000.00 | \$0.00 | \$0.00 | \$0.00 | \$10,000.00 |
| Equipment | 80 | \$0.00 | 0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |
| Indirect Costs | 90 | \$144,186.00 | 0.00 | \$144,186.00 | \$0.00 | (\$13,150.17) | \$0.00 | \$131,035.83 |
| TOTALS | | \$1,105,427.00 | 0.00 | \$1,105,427.00 | \$0.00 | (\$100,817.98) | (\$65,154.91) | \$939,454.11 |

C. Interest Earned by COCP Funds as of 6/30/08

Prior Interest Earned: \$12,134.98
Interest Earned This Quarter: \$34,455.87
Total Interest Earned to Date: \$46,590.85

D. Balance of COCP Funds as of 6/30/08

Total Grant Amount: \$4,602,598.66
Total Interest Earned: \$46,590.85
Total Expenditures: (\$100,817.98)
Remaining Balance: \$4,548,371.53 *includes interest

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



Accounting Certification