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June 30, 2010

Via U.S. Mail and Electronic Service
California Energy Commission
Attn: Docket No. 07-AFC-03
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

Re: *CPV Sentinel Energy Project; Docket No. 07-AFC-03*

Dear Sir or Madam:

Enclosed is the original Rebuttal Expert Declaration of Mohsen Nazemi Regarding Emission ~~Reduction~~ Offset Credits.

This document is being filed today via electronic mail and the original was deposited into the U.S. Mail for delivery to the Dockets Unit. All parties on the service list (last revised on 5/21/10) have also been served electronically and by U.S. Mail.

Very truly yours,

Barbara Baird
District Counsel

BB:pm
Encl.
e/share/bb/energy/sentinel63010.doc

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STATE OF CALIFORNIA
ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION

Application for Certification for the **CPV SENTINEL ENERGY PROJECT**	**Docket No. 07-AFC-03** REBUTTAL EXPERT DECLARATION OF MOHSEN NAZEMI REGARDING EMISSION OFFSET CREDITS

I, Mohsen Nazemi, hereby declare as follows:

I. Background and Qualifications Of Witness

Q1: Mr. Nazemi, would you please state your full name, name of your employer and your position title?

A1: My name is Mohsen Nazemi and I am employed by the South Coast Air Quality Management District ("District") as the Deputy Executive Officer of Engineering and Compliance. My resume is attached as Attachment A.

Q2: Would you please describe your experience and current employment background?

A2: I have over 34 years of experience in the field of air pollution control and air quality research, development and regulatory framework related to permitting, compliance, rulemaking and policy development. I have been employed by the District since April 24, 1978 and have worked progressively in more responsible positions since then. Most recently, since April 1, 2008, I have held the position of Deputy Executive Officer of Engineering and Compliance. I am responsible for the oversight of 325 professional and technical staff involved in permitting and compliance for over 28,000 stationary sources and several thousand portable sources. Since March 22, 1999, I have been responsible for overseeing the District's permitting programs for more than 28,000 stationary sources. I am also responsible for implementing the District's New Source Review ("NSR") permitting, credit-tracking, and federal and state compliance programs. I am also a member of National Association of Clean Air Agencies' (NACAA) Permitting,

NSR and Enforcement and other NACAA Committees, as well as California Air Pollution Control Officers Association's (CAPCOA) Engineering and Enforcement Managers and other CAPCOA Committees.

Q3: What is your prior professional experience?

A3: I have taught environmental classes in air pollution and toxics risks at the University of California at Irvine (UCI) and have experience working in the private sector, at Filtrol Corporation, in the development of catalytic processes, including Hydrodesulfurization (HDS) and Fluidized Catalytice Cracking (FCC) processes. I have also conducted my graduate research work and completed my Thesis in control of air pollution using catalytic processes (Control of Nitrogen Oxides using Selective Catalytic Reduction (SCR) systems).

Q4: What is your educational background?

A4: I have a Master of Science (M.S.) degree in Chemical Engineering from University of California at Los Angeles (UCLA) and a Bachelor of Science (B.S.) degree in Chemical Engineering from California State University at Long Beach. I have a Professional Engineering (P.E.) license in Chemical Engineering from the State of California and I am a Certified Hazardous Materials Manager (CHMM) from University of California at Irvine (UCI) and Institute of Hazardous Materials Management at Rockville, Maryland. I have authored several papers in the field of air pollution and I have made over one hundred presentations on air quality and NSR related issues at local, regional, state, national and international conferences, symposiums and association and other meetings.

Q5: Have you ever testified before?

A5: I have provided numerous declarations in state and federal court cases, provided expert witness testimony in court and Hearing Board cases, provided testimony in front of legislative committees and have been deposed in litigation matters.

II. Purpose Of Testimony

Q6: Mr. Nazemi, would you please summarize the purpose of your testimony before the California Energy Commission in this proceeding?

A6: The purpose of this testimony is to respond to the Expert Declaration of Julia May Regarding Emission Reduction Credits Documentation Offered by South Coast Air Quality Management District ("Julia May's Declaration") as well as certain statements raised by the Expert Testimony of Michael Harris ("Michael Harris' Declaration). My testimony is limited to those issues raised by Julia May's Declaration and Michael Harris' Declarations regarding the identification, calculation and transfer of the emission offsets for Particulate Matter <10 micron ("PM10") and Oxides of Sulfur ("SOx") for the CPV Sentinel project as required and authorized by the California State Legislation (AB 1318) and codified in Health and Safety Code Section 40440.14. The responses

contained in this testimony are based on review and evaluation of the issues raised by Julia May and Michael Harris in their Declarations regarding the District's offset calculations that were performed by my staff at my direction and under my supervision.

Communities for a Better Environment ("CBE"), an intervenor in the California Energy Commission's ("CEC") CPV Sentinel Project certification proceedings, has provided Julia May's Declaration and California Communities Against Toxics ("CCAT"), also an intervenor, has provided Michael Harris' Declaration in advance of the July 19, 2010 Evidentiary Hearing before the CEC. The July 19, 2010 Evidentiary Hearing will be limited to air quality issues. The applicant, CPV Sentinel, has requested active participation from the District as the permitting agency. I have been designated as the District's witness in this proceeding and my testimony is being sponsored by CEC staff. Pursuant to the schedule set forth by Hearing Officer Celli at the June 1, 2010 Prehearing Conference, the rebuttal testimony that I am filing today, June 30, 2010, is timely.

At issue here are the emission offsets that were identified in Tables A and B attached to my May 12, 2010 letter to Mr. John Kessler regarding the District's Revision to the Addendum to the Determination of Compliance ("DCO") for CPV Sentinel. This letter included revisions to those offsets previously identified in the District's March 2, 2010 Addendum to the DOC. The offsets contained in Tables A and B of my May 12, 2010 letter have been incorporated into the District's AB 1318 Tracking System. The District is submitting a State Implementation Plan ("SIP") revision to the Environmental Protection Agency ("EPA") for approval of the AB 1318 Tracking System and offset transfer to CPV Sentinel.

As the Deputy Executive Officer of Engineering and Compliance, I have worked closely with the engineering staff in my office to ensure that the calculations and assumptions included in each Offset Source Calculation / Verification Form are accurate, creditable and reliable. The work done by the engineering staff was performed at my direction and under my supervision. The Offset Source Calculation / Verification Forms were prepared by the District's engineering staff who are Registered Professional Engineers. The preparation of these forms was done within the scope of District engineering staff's duties to identify and credit offsets pursuant to AB 1318. The forms were prepared at or near the time that the calculations were performed, and the sources of information used to perform the calculations were the most accurate and trustworthy information available (such as Annual Emissions Reporting ("AER") forms). Inaccurate reporting on the AER forms is subject to substantial penalties and the forms are relied on by the District for purposes such as emissions inventory development. In some cases, the forms also restated work that had been done for the March 2, 2010 Addendum to the DOC. I am prepared to testify as to the applicant's compliance with the offset requirements, as well as all other applicable air quality rules and regulations.

III. Summary Of Proceedings And Actions Taken By The South Coast Air Quality Management District

Q7: Would you please explain the timeline of events that have led up to the Evidentiary Hearing scheduled for July 19, 2010, including actions taken by the District?

A7: CPV Sentinel, LLC has filed a proposed Power Plant Project Application for Certification ("AFC") and a Title V Application for a Permit to Construct with the CEC and the District, respectively. The applicant proposes to construct an 850 megawatt power plant, to be located at 62575 Power Line Road, Desert Hot Springs, CA 92440. The District prepared and issued a Preliminary Determination of Compliance ("PDOC") on May 7, 2008 and a Final Determination of Compliance ("FDOC") on August 29, 2009. In the FDOC, the District indicated that the applicant complied with all applicable air quality rules and regulations except that it had not yet established how it would meet the emissions offset requirements.

On March 2, 2010, the District prepared and issued an Addendum to the Determination of Compliance ("DOC"). In my March 2, 2010 letter to Mr. John Kessler of the CEC regarding the Addendum to the DOC, I explained that, following the District's issuance of the FDOC, the applicant provided additional information regarding the project operations and emissions offsets. The applicant will offset Oxides of Nitrogen ("NOx") and Volatile Organic Compound ("VOC") emissions by acquiring RECLAIM trading credits ("RTCs") and emissions reduction credits ("ERCs"), respectively, in the open market. Emission increases of PM10 and SOx will be offset from the District's internal offset accounts as authorized by the California State Legislature in AB 1318, codified in California Health & Safety Code § 40440.14.

The Addendum to the DOC included an "Emissions Offset Evaluation" specifying the CPV Sentinel emissions and the corresponding offset sources. With regard to PM10 and SOx offsets, the District provided an AB 1318 Tracking System explaining the statute's eligibility provisions and detailing the identification of emission offsets from the District's internal bank (see Tables A and B of Attachment I to Appendix N of the March 2, 2010 Addendum to the DOC listing each offset source and the emission credits generated by that source).

On May 12, 2010, the District prepared and issued a Revision to the Addendum to the DOC. The Revision consisted only of changes to Tables A and B of Attachment I to Appendix N of the March 2, 2010 Addendum to the DOC. The amounts of PM10 and SOx offsets in Tables A and B of the Revised Addendum replaced the previous amounts of offsets detailed in the AB 1318 Tracking System. The primary difference between Tables A and B in the March 2, 2010 Addendum and the May 12, 2010 Revised Addendum is that the May 12th Revised Addendum uses more conservative assumptions to calculate offset credits associated emission reductions from equipment which has ceased operation. In particular, in the May 12th Revised Addendum the District used the average of the emissions from the last two years of operation of equipment, rather than the highest two out of the last five years of operation of equipment used in the March 2nd

Addendum, to calculate the offsets. Because this more conservative assumption used in the May 12th Revised Addendum resulted in a smaller amount of emission credits from the offset sources compared to the amount of emission credits provided in the March 2nd Addendum, it was necessary to include additional offsets in the AB 1318 Tracking System to ensure there would be adequate offsets available to meet CPV Sentinel's offset needs.

All identified offsets for PM10 and SOx in the May 12th Revised Addendum were created as a result of reductions from permitted equipment that permanently ceased operation in the District. The District has not issued any ERCs for the emission reductions shown in Tables A and B to the companies who operated the equipment, the identified offsets have been removed from the District's internal offset accounts, and these offsets have not been used by any other source permitted by the District. In short, all of the offsets in the AB 1318 Tracking System conform to the EPA's integrity criteria that offsets be "surplus, permanent, quantifiable, and federally enforceable." *See* 40 C.F.R. § 51.165(a)(3)(ii)(C)(1)(ii).

Q8: Would you please provide an overview of the methodology used by the District when identifying the source of emission reductions and when calculating the offsets proposed for the CPV Sentinel project?

A8: The emission offsets used in the AB 1318 Tracking System are from actual emission reductions of PM10 and SOx which resulted from site specific permitted equipment permanently ceasing operation in the District. The amount of offset credits are calculated based on emissions information from the District's AER forms and other appropriate and relevant data and information. All of the emission reductions for both PM10 and SOx occurred between 1999 and 2008.

To ensure that the emission reductions are creditable for use in the AB 1318 Tracking System, the District performed several verifications and, in addition, used a number of very conservative assumptions which resulted in an underestimation of the actual amount of emission reductions identified. The verification steps and conservative assumptions used by the District are as follows:

Verification Steps:

- The District only identified emission reductions from permitted equipment and verified that each source of offset had obtained and operated under a valid permit issued by the District.

- The District verified that the permit for the offset source has been inactivated and the equipment is no longer in operation.

- The District verified that it had not issued any ERCs for the emission reductions shown in Tables A and B of the May 12, 2010 Revised Addendum.

- The District verified that the identified offsets had been removed from the District's internal offset accounts and had not been used for permitting of any other source in the District.

Conservative Assumptions:

- The District did not use permitted or allowed emission levels to calculate the offsets, but rather used the actual emissions as reported to the District.

- Significantly, since companies pay emission fees based on their reported emissions, there is an incentive to underreport rather than overreport emissions to the District. In cases where companies used an emission factor that was lower than the standard emission factor to report their emissions, although the actual emissions should have been higher, the District only claimed emission credits based on the use of lower emission factors and did not attempt to adjust the reported emissions to a higher value.

- To the contrary, in cases where companies used an emission factor that was higher than the standard emission factor to report their emissions, the District adjusted the reported emissions to a lower level using the standard emission factor and only assigned the lower adjusted emissions as offset credits for that source.

- The District used emissions reported within the last two years of operation of equipment prior to shutdown. The use of the last two years of operation generally tends to reflect reduced emissions due to lower activity or phase out in preparation for shutdown, instead of more representative higher emissions due to normal operation.

- Although in many cases companies do not request inactivation of their permits immediately after shutdown and in some cases permits could stay active for a period of more than one year subsequent to shutdown, the District in general used the permit inactivation date to determine the last two years of operation.

- This also results in a conservative calculation because during the periods where equipment or facility has been shutdown but the permits are still active, or if the facility is phasing out its operation and their emissions are dropping below the levels that the companies are required to report their emissions to the District, the companies would not be submitting any AER forms for the equipment or facility. In such cases the District used "zero" for each year that an AER form was not submitted or equipment emissions were not reported to average the last two years of emissions, although the facility or equipment may have still had emissions or the shutdown date may have been earlier (in which case the prior years' reported emissions should have been used instead of "zeros").

- Although the ratio of PM10 to Total Solid Particulate (TSP) for many non-combustion industrial operations is greater than 50%, the District used a conservative assumption of 50% for PM10 to TSP to calculate the PM10 emissions from TSP emissions which tended to underestimate the amount of PM10 reductions from non-combustion sources of offsets.

Under my direction and supervision, the District's Registered Professional Engineering staff, then utilized the above verifications and conservative assumptions, as well as other relevant data and information to complete an "Offset Source Calculation / Verification Form" for each piece of equipment used as an offset source and calculated the amount of PM10 and SOx credits from each source that was included in Tables A and B of the May 12, 2010 Revised Addendum. Moreover, it is important to note that despite the use of the above-described conservative assumptions, which have resulted in significantly lower amounts of calculated emission credits, the AB 1318 Tracking System includes more offsets than are needed to offset the PM10 and SOx emissions for the CPV Sentinel project.

Q9: Throughout her Declaration, Julia May praises both the diligence of the District engineers who filled out the Offset Verification forms and the conservative estimations evidenced by the District's records. Nevertheless, Julia May makes the legal assertion that conservative estimations are not sufficient and that the offsets should be discarded anytime a data gap or discrepancy exists. From an engineering standpoint, please explain the District's position on this issue.

A9: As explained in detail in my above answer to Question 8, the District has utilized several verification steps and conservative assumptions which have likely resulted in a significant underestimation of the amount of emission offsets identified from each offset source. The purpose of using these conservative assumptions is to ensure that the District has used sound engineering principles and practices to validate the offset sources and to ensure that the amount of emission offsets are not overestimated. In fact, this practice has been recognized and praised by Ms. May. I am not aware of any engineering reasons, nor has Ms. May identified any such reasons, to discard offsets which, as clearly demonstrated in the documents prepared by the District, have been generated from creditable and real emission reductions.

Q10: What are the next steps that the District will be taking with respect to the identified offsets?

A10: The District's next step is to "surplus adjust" the offsets in the AB 1318 Tracking System at time of use by CPV Sentinel in accordance with federal requirements. As explained in the District's Legal Argument, these offsets are already federally enforceable. However, the District had already planned to take action to address the issue which has now been raised by Michael Harris' Declaration, namely that the SIP does not contain a provision authorizing the transfer of these offsets to CPV Sentinel. On July 9, 2010, the District's Governing Board will consider the proposed SIP revision that incorporates the AB 1318 Tracking System and authorizes the transfer of the surplus adjusted offsets to CPV

Sentinel. Upon approval by the District's Governing Board, the District will then submit the SIP revision to the EPA through the California Air Resources Board ("CARB"). According to the EPA, a construction permit could be issued to CPV Sentinel even before the transfer of the offsets are approved into the SIP (if they are not already federally enforceable) as long as the permit contains a "federally-enforceable condition that expressly prohibits the commencement of any actual operations pending EPA approval of the SIP measure." *See* Memorandum from John S. Seitz, Director, EPA Office of Air Quality Planning and Standards (June 14, 1994), pg 6.

IV. Discussion Of Issues Raised By Michael Harris' Expert Declaration

Q11: While Michael Harris' Declaration is legal in nature, and more appropriately addressed in the District's Legal Argument, could you please respond to the misstatements you have identified in Mr. Harris' testimony regarding the PM10 and SOx offsets that the District has included in the AB 1318 Tracking System?

A11: On pages 3 and 9 of his declaration, Michael Harris implies that CPV Sentinel needs all of the offsets that have been deposited into the AB 1318 Tracking System. This is incorrect. As set forth in the Addendum to the DOC filed on March 2, 2010, the maximum worst case scenario amounts of offsets needed for this project are 118,120 lbs/year of PM10 and 13,928 lbs/year of SOx (based upon the initial commissioning year).

Michael Harris further states on page 3 of his Declaration that the District's FDOC is "invalid." However, it should be noted that the FDOC addresses a wide variety of air quality issues that are not challenged in the testimony filed. Only the offsets for PM10 and SOx are at issue here.

On pages 8-9 of his Declaration, Michael Harris states that the CPV Sentinel project exceeds the District's major source thresholds. However, this is only true for VOC and NOx which again are not the pollutants or offsets at issue here. For PM10 and SOx, the facility will not exceed major source thresholds of 70 tons per year for PM10 and 100 tons per year as a precursor to PM10 for SOx. Accordingly, federal law does not require offsets for PM10 or its precursors, as explained in the Addendum to the DOC.

On page 11 of his Declaration, Michael Harris discusses the baseline for offset generation. However, the SIP revision that he refers to, which provides for the transfer of offsets to CPV Sentinel, has nothing to do with the baseline for offset generation. The baseline for offset generation is the actual emissions of the shutdown source, not to exceed lawfully permitted emissions.

V. Discussion Of Threshold Issues Raised By Julia May's Expert Declaration Regarding The District's Calculation Of Offsets

(1) Adjusting Offsets To BACT Emission Levels

Q12: Much of Julia May's testimony focuses on the proposition that the District should have discounted the offsets to current best available control technology ("BACT") standards. While a discussion of the appropriate discounting standard is a legal issue that is appropriately addressed in the Legal Argument of South Coast Air Quality Management District In Response To Intervenors' Testimony ("Legal Argument"), could you please briefly describe the appropriate standard for adjusting offsets to be provided to CPV Sentinel?

A12: Julia May's testimony erroneously relies on the argument that the offsets to be provided to CPV Sentinel must be reduced to current BACT. As explained in the District's Legal Argument, there is no requirement for such a BACT discount in the context of the provision of offsets being transferred into the AB 1318 Tracking System and being provided to CPV Sentinel. The offsets at issue here are being provided to CPV Sentinel in accordance with federal requirements, which contain no requirements for discounting to BACT levels. The relevant applicable federal requirement is that offsets must be "surplus," meaning that the offsets must be surplus at time of use. 40 C.F.R. § 51.165(a)(3)(ii)(C)(1)(i). Prior to the date of the District Governing Board's adoption of the SIP Revision for CPV Sentinel, the District will "surplus adjust" the offsets.

(2) Explanation Of Assumptions Relied Upon By The District In Calculating Offsets

Q13: In paragraph 11 on page 4 of her Declaration, Julia May alleges that generalizations used for most facilities can introduce overestimations such as the assumption that PM10 equals 50% of total PM, and alleges that for many industries the fraction of PM10 is much less than 50%. Could you please explain why the 50% PM10 to PM ratio was used by the District when calculating offsets?

A13: The assumption that PM10 equals 50% of TSP for non-combustion sources is actually conservative and, therefore, appropriate for determining shutdown credits for reasons discussed below.

To determine the PM10 to TSP ratio for non-combustion sources, the District used the information provided in the 2007 Air Quality Management Plan ("AQMP"). Based on 2007 AQMP, Appendix III, Table A-1, for 2002 Annual Average Emissions Inventory by Source Category, the total TSP inventory for non-combustion industrial processes is 21.51 tons per day ("tpd") and the PM10 fraction of the TSP inventory is 12.53 tpd (see Attachment B). This results in a an overall ratio of PM10 to TSP for non-combustion industrial processes of over 58%. This ratio for various non-combustion industrial processes, as shown in Table A-1, ranges from about 33% to 100%, with all industrial processes other than "Food and Agriculture" having a PM10 to TSP ratio of greater than 50%. This overall ratio of PM10 to TSP for non-combustion industrial processes for

2005 Annual Average Emissions Inventory is also over 58% and for 2008 is over 63% as shown in 2007 AQMP, Appendix III, Tables A-2 and A-3 of Attachment B.. These PM10 to TSP fraction factors are from CARB's profiles assigned to each source category.

In addition, when a PM emission source is controlled by an air pollution control device such as a baghouse filter or an electrostatic precipitator, the particle size distribution profile of the exhaust gas changes. Since larger particles are generally more easily removed by these particulate removal devices, the filtered or controlled exhaust gas is predominately comprised of particles that are smaller than 10 microns in size (i.e., PM10). This phenomenon is further illustrated in Figure 5.3-2, Fractional Efficiency of Fabric Filters vs. Particle Size on page 5.3-5 of a document named "Stationary Source Control Techniques Document for Fine Particulate Matter" prepared by EC/R Incorporated for the U.S. EPA in October 1998, available at http://epa.gov/ttn/catc/dir1/finepmtech.pdf. According to this diagram, the control efficiency for particles larger than 10 microns approaches 100% while the efficiency for smaller particles is mostly between 99% - 99.9%. As a result, one can expect that the PM emissions from the exhaust of the baghouse filter will be nearly 100% PM10.

Therefore, based on the above information, the assumed overall ratio of 50% PM10 to TSP for the purpose of determining reduction credits is both conservatively appropriate and health-protective.

Q14: In paragraph 12 on page 4 of her Declaration, Julia May alleges that the use of Heat Input data from the EPA's Acid Rain Program can create discrepancies based on statements in an April 19, 2004 memo provided by an EPA webpage. How did the District utilize Heat Input data when calculating offsets and do the discrepancies alleged by Julia May apply to the District's calculation of offsets?

A14: In calculating the amount of emission reductions resulting from shutdown of utility boilers at power plants like the Mountainview Generation Station and Reliant RRI Energy Etiwanda, the District used heat input information data obtained from the EPA's Acid Rain data base. This was done in order to utilize more accurate fuel use and heat input information for each unit, since the companies had reported their emissions in the AER forms to the District by combining fuel usages for all utility boilers and reporting them together.

Ms. May's declaration describes an April 19, 2004 memo regarding U.S. Energy Information Administration ("EIA") annual heat input data. The memo describes fuel heat input data discrepancies due to database considerations for facilities which have non-acid rain generation units and all combustion turbines. Acid rain reporting requirements are required for generation units with a nameplate capacity of greater than 25 MW. The memo explains that for facilities with a mix of acid rain and non-acid rain units, the fuel use inventories could not be differentiated for individual boilers and for all combustion turbines (CTs). This issue is irrelevant to the offsets calculated by District staff. For the facilities in question, Mountainview Generation Station and Reliant RRI Energy

Etiwanda, all boiler generation units at the facilities are identified as subject to Acid Rain reporting requirements since they are all greater than 25 MW capacity. Mountainview Boilers 1 and 2 are each 63 MW and Reliant RRI Energy Etiwanda Boilers 1 and 2 are 132 MW each. As such, no fuel input data discrepancies are expected based upon the memo, nor were any noted. In addition, all of the combustion turbines at Reliant RRI Energy Etiwanda were shutdown. Therefore, the proportioning of fuel input data would only be distributed to the shutdown turbines, thus no fuel input data discrepancies are incurred. As noted earlier, the use of EPA's Acid Rain data was intended and resulted in a more accurate calculation of emission reductions from these units. Further, as stated above, there are no discrepancies associated with the data used by the District based on the information on EPA web-site referenced by Ms. May.

VI. Responses To Julia May's Comments Regarding Specific Offset Calculations

(1) Seagull Sanitation

Q15: In her Declaration, Ms. May alleges that the assumptions used relative to the inventory years for the credits for this offset source vary significantly from the District's overall statement in its March 2, 2010 Addendum to DOC. What were the assumptions for inventory years used for the calculation of offsets from this facility and were those assumptions stated on the Offset Verification form?

A15: The facility's annual emissions inventory reports for fiscal years 1999-2000 and 2000-2001 are provided in the offset verification file for this facility for reference only. The statement in the Offset Source Calculation/Verification Form clearly indicates that the credits are not calculated based on these inventory reports because the facility had applied for and was issued ERCs for some of its emission reductions. Therefore, the credits provided from Seagull Sanitation use the same inventory time frame that was used in the ERC application. Note that this is the only facility for which a detailed emission reduction calculation has been done because the facility requested ERCs and, subsequently, ERCs were issued for a portion of the emission reductions. However, the inventory years used to calculate the ERCs do not "vary significantly" from the general approach used for inventory years for other offset sources. Since the District rules for granting ERCs (Rule 1309) require staff to use a period of the past two years prior to the date of filing of ERC application, the two-year average emissions from 5/1/99 to 4/30/01 was used to determine the eligible amounts of ERCs. The operating and emission records for this period have been fully evaluated and validated by the District engineers as documented in the engineering evaluation report for the ERC application (Application Number 387479, dated 5/29/02) Therefore, in order to be able to use only the portion of the emission reductions which the District did not issue any ERCs for to the company, it is appropriate to use the same two-year period (in this case 5/1/99 to 4/30/01), rather than the regular annual emission reporting two-year period (in this case 7/1/99 to 6/31/01) used in other cases. Notably, there is only a two month difference in the inventory periods used; this does not vary significantly from the District's general approach used to calculate offsets from other sources. The engineering evaluation report

along with the entire ERC application file is included in the offset verification file for Seagull Sanitation.

Q16: What is a positive NSR balance, and is Seagull Sanitation an appropriate source of offsets for CPV Sentinel?

A16: Prior to 1990 the District's New Source Review ("NSR") rules required that if a facility installed new equipment or modified existing equipment which resulted in an emission increase, it had to offset not only the emission increases associated with the new or modified equipment, but also all previous emission increases, if the cumulative emission increases from the new project and all other previous projects since 1976 exceeded a certain threshold. In 1990, the District amended its NSR rule to zero out all accumulated NSR balances for each facility and required that unless exempt, all emission increases for each new project have to be offset. However, in the same amendment, the District's NSR rules required that if a facility had a positive NSR balance which was forgiven in 1990, that when and if the facility applies for ERCs, the District is required to reduce the amount of ERCs by the facility's positive NSR balance prior to issuance of any ERCs.

In the case of Seagull Sanitation, the facility had a positive NSR balance meaning they had to "pay back" to the District the amount of offsets corresponding to the positive balance before they could receive any ERCs for their shutdown. Therefore, the total amount of calculated ERCs were reduced by the amount of this facility's positive NSR balance prior issuing ERCs. District rules require that the amount of emission credits reduction credits returned to the District due to positive NSR balances must then be deposited in the District's internal offset account. In this case, the credits from this source that qualified for transfer into the AB 1318 Tracking System and for use by CPV Sentinel Project were determined based on amounts of the facility's positive NSR balance that was returned back to the District's federal offset account. As discussed in District's February 2, 2007 "Status Report on Regulation XIII – New Source Review" to its Governing Board (a copy of the report is included in the file set), these returned credits have been recognized and eligible for use by other qualified projects. Upon transfer of these credits to the AB 1318 Tracking System, these credits have been removed from the District's internal offset accounts.

Q17: Do the alleged "substandard operations" referenced in paragraph 22 on page 7 of Julia May's Declaration affect the District's ability to provide offsets from this source?

A17: The excerpt cited by Julia May is part of the process description in the engineering evaluation report for Seagull Sanitation's ERC application (A/N 387479). The purpose of the detailed description of the equipment was to demonstrate that the subject equipment was not in the same equipment category as a mass-burn municipal waste combustor. It should be noted that the subject refuse pit burner might be "substandard" when compared to the state-of-the-art municipal mass-burn waste combustors, but this equipment is in a different category. Additionally, due to the fact that the equipment was located on Catalina Island, the open burning of solid wastes was, and still is, allowed under California Health and Safety Code § 41810. In addition, the federal New Source

Performance Standard for municipal waste combustors (40 C.F.R. 60 Subparts Ea, Eb, and BBBB, etc.) were not applicable to this equipment as the capacity of this unit was well below the lowest applicability threshold of 35 tons per day. Furthermore, there have not been any District rules adopted that establish additional requirements for this equipment type since the shutdown of this facility. Indeed, Health & Safety Code § 41810 specifically precludes the District from adopting any more stringent rules.

Q18: Are the emission factors for municipal incinerators described in the AP42 chart (see paragraph 24, page 7-8 of Julia May's Declaration) relevant to the District's offset calculations?

A18: AP42 is an EPA-published compilation of emission factors for various source categories derived from source tests. AP42 emission factors for refuse combustion are provided under Chapter 2.1 – Refuse Combustion. Most of the emission factors provided and/or discussed in this chapter are for mass burn combustors, refuse-derived fuels and modular combustors. As indicated above, the subject refuse pit burner is not in the same equipment category as any of these. The equipment is most similar to an air-curtain trench combustor, but the District used the emission factor for multiple chamber incinerators Chapter 2.1 of AP42 does provide emission factors on Table 2.1-12 (page 2.1-33) for trench combustors (or air curtain trench incinerators), which is basically the same as the subject equipment. The AP42 emission factors for this equipment category are 37 lbs/ton for PM and 2.5 lbs/ton for SO2, respectively. The factors used by the District to determine the Seagull Sanitation credits were 3.5 lbs/ton for PM (or 1.05 lbs/ton for PM10) and 2.5 lbs/ton for SO2, respectively. Thus, the emission factors for multiple chamber incinerators, instead of the trench combustors, were used to determine its BACT-adjusted emissions. In this unique case, emissions were BACT-adjusted because ERCs were issued for the remainder of the reductions not claimed by the District. In comparison, the AQMD factor for SOx is the same as that in AP42 and for PM (or PM10) the AQMD factor is far more conservative (i.e. more health protective). Thus, the use of AP42 emission factors for municipal mass burn combustors are inappropriate, as Seagull Sanitation's refuse pit burner was a different equipment category. The emission factors used by the District for determining Seagull Sanitation's ERCs were actually the same as that in AP42 for SOx and much more conservative for PM10.

(2) RRI Energy Etiwanda

Q19: How did the District utilize the EPA's Acid Rain Heat Input data when calculating offsets?

A19: Ms. May's declaration describes the process by which AQMD engineers used refined data to calculate a more accurate shutdown emissions total for RRI Energy Etiwanda's ("Etiwanda") Boilers 1 and 2 than would be provided by the AER data. The fuel heat input data imported from EPA's Acid Rain inventory provided further unit specific heat input for each of the boilers at the facility. The Acid Rain data was also found to be consistent with AQMD's Annual Emission Reports ("AERs") filed for Etiwanda's

boilers. The Acid Rain data for Etiwanda showed greater than 99% consistency with the AQMD AER data assuming standard heating value for Natural gas (1050btu/scf). Since the AERs and Acid Rain inventory do not differentiate for each combustion turbine ("CT") and because all of the CTs were shutdown, it was appropriate to evenly distribute the fuel use data amongst the eight CTs. It does not matter how the emissions were apportioned because all of the CTs were shut down and all had the same emission factor. Regardless of whether they were all assigned to one or to multiple turbines, the total amount of emission credits would not have changed and. Therefore, all of the emission reductions were creditable.

Q20: What EF did the District use in the Offset Verification Form for PM10 and how does it relate to the EF used in the AER data sheet?

A20: Ms. May questions the different emission factors of 6.93 lbs/mmcf vs. the default emission factor of 7.6 lbs/mmcf, but later on indicates that, "[t]he District properly used the lower instead of the higher number." As indicated previously, the District has exercised a significant amount of conservatism in calculating these offsets. Accordingly, the offsets identified by the District likely represent underestimations.

In addition, Ms. May inquires about some other emission factors, namely 1.43 lbs/mmcf and some very high factors listed in the AER forms. First, it should be noted that all these very low and very high emission factors are used for calculating emissions in reporting year 2002-03, whereas the emission offset calculations for this facility were done using reporting years 2000-01 and 2001-02, for which the standard factor was used for reporting the emissions in the AER forms. Therefore, they are irrelevant to the offsets being provided.

Second, the offsets were based on the shutdown of utility boilers No. 1 and 2, whereas the very low and very high emission factors were reported for utility boilers No. 3 and 4. Based on the information in our AER records, Etiwanda was conducting a series of experimental tests with and without the air pollution control system in operation. In this case, the air pollution control system used was ammonia injection and selective catalytic reduction ("SCR") systems. The data reported by Etiwanda for the reporting period 2002-03 was an average emission factor of 1.43 lbs/mmcf for utility boiler No. 3 based on two separate source tests and an average emission factor of 13.27 lbs/mmcf for utility boiler No. 4 based on five separate source tests with results ranging from 2.05 lbs/mmcf up to 29.63 lbs/mmcf. Therefore, as noted above the data resulting from experimental tests for utility boilers No. 3 and 4 during reporting period 2002-03 are inapplicable to the offset calculations conducted the District for shutdown of utility boilers No. 1 and 2 using reporting periods of 2000-01 and 2001-02.

(3) Mountainview Power

Q21: What is the relevance of the facility's re-rating of Boilers 1 and 2 in 2000 and how did this re-rating affect the District's calculation of offsets?

A21: Ms. May's declaration asserts that, although the District issued permits and approved re-rating change to MountainView's boilers No. 1 and 2, it is more conservative to use the original maximum rating which she purports would result in the reduction of PM10 emissions by 20%. Notably, the calculation procedure for determining the emission reductions due to the shutdown does not involve the maximum heat rating of the boilers in question. Rather, the historic fuel usage as shown by reported data via AER or EPA Acid Rain fuel heat input usage in coordination with an appropriate emission factor will determine the PM10 emissions during the period of operation evaluated. That is exactly how the District calculated the offsets for boilers No. 1 and 2, and not the maximum rating of these units. Therefore, Ms. May's assertion of a 20% reduction is incorrect.

(4) Matthews International Corporation

Q22: In her Declaration Ms. May states a number of dates relevant to permit issuance and inspections of the facility and refers to a potential typo in the inspection date ("12/31/9999"). What are the relevant dates for inactivation and shutdown of this facility for the purposes of calculating offsets?

A22: In the case of Mathews International the permits were inactivated in 2006 and the offset calculations were based on AER reports for periods 2004-05 and 2005-06. All the other discussions of dates for permit issuance and inspection dates are irrelevant to the offset calculations. However, similar to her other allegations, Ms. May also argues that since the permits were issued in early 1990s, the facility does not meet current BACT standards. As noted previously this matter is addressed in my earlier answers and in detail in the Legal Arguments filed by the District. Therefore, all emission calculations for this source are appropriate.

(5) KMC Wheel Company Incorporated

Q23: Julia May asserts that KMC Wheel Company, Inc. operated at above its permitted levels for 2001-2002 and, therefore, no offsets should be allowed from this source. While this is a legal issue that is appropriately addressed in the District's Legal Argument, can you explain how the offsets from this source were generated?

A23: As noted in the District's Legal Argument, there is no legal provision that would prohibit the use of KMC's lawful emissions to generate offsets. Any reductions that exceeded those authorized in the permit would fail the federal "surplus" requirement. However, the District is only issuing offsets for the amount of reductions that were lawful and were authorized by KMC Wheel's permit. This means that the District calculated offsets only for the portion of the operation in 2001-2002 that complied with the throughput limits on their permits and reduced the total emissions by the amount of emissions associated with KMC Wheel's alleged operation above its permit throughput limits. Therefore, the emission reductions from this source meets all of the federal offset integrity criterion and the amount of emission reductions calculated for this source are considered qualified offsets.

Q24: Are there any data gaps in the offset verification file that would affect the District's ability to effectively calculate offsets for this facility?

A24: Not at all. KMC Wheel previously operated two aluminum melting furnaces, two aluminum heat treating furnaces, and one baking oven. Each of the two aluminum melting furnaces was limited to a monthly throughput (310,500 lbs/month and 520,000 lbs/month, respectively). Based on these monthly throughput limits, the total maximum allowable throughput for these two melting furnaces was calculated to be 4,983 tons/year. Based on a letter dated 10/24/03 from the facility, one melting furnace and one heat treating furnace were determined to be shut down in late 2003 (AERs 2001-2002 & 2002-2003 were used for credit calculations). Based on the District's finance records, the remaining equipment was shutdown in late 2004 (AERs 2002-2003 & 2003-2004 were used for credit calculations).

The PM10 credit calculations for AER 2001-2002 were adjusted to reflect the allowed and correct annual throughput for the two melting furnaces. Even though the emission factor of 1.9 lbs/ton used in AER 2001-2002 was apparently incorrect (4.3 lbs/ton is the correct emission factor for reverberatory-type furnace based on AP-42, Table 12.8-2) and resulted in under reporting of PM10 emissions, in order to take the most conservative approach, the District did not recalculate the reported emissions for AER 2001-2002 to the AP42 factor.

In paragraph 41 Ms. May acknowledged that the District made appropriate adjustments in credit calculations by not taking the credit for the throughput level above the permit conditions and used the lower emission factor for credit calculations. However, Ms. May still raised the concerns that significant credits were generated for this facility even with the appropriate adjustments.

In paragraph 43, Ms. May calculated the amount of PM10 emissions in excess of the permitted throughput level of 4,983 tons/year in years 2001-2002 using an emission factor of 4.3 lbs/ton. She further suggested that the District should retire the PM10 emission credits resulting from the facility shutdown, which were calculated using a lower emission factor of 1.9 lbs/ton and adjusted to the permitted throughput limit of 4,983 tons/year, to compensate the PM10 emissions in excess of the permitted throughput level. No basis for her approach was included in this paragraph. Even though AER 2001-2002 suggested that this facility operated their melting furnaces above the permitted throughput level, the District made the appropriate adjustments to the credit calculations. To be conservative, the District also used the lower emission factor of 1.9 lbs/ton for credit calculations. As a result, the PM10 emission credits resulting from the facility shutdown are representative and available for use.

(6) Diamond Pacific Products Company

Q25: Please explain why the Revised Addendum to the Final Determination of Compliance includes additional offset sources from this facility.

A25: As previously indicated in Section III, upon using more conservative assumptions in the May 12th Revised Addendum, the District included additional sources of credits. In the case of Diamond Pacific, the District included additional permitted equipment, which had ceased operation and represented qualified sources of offsets.

Q26: How did the District choose the appropriate years for averaging emissions reductions?

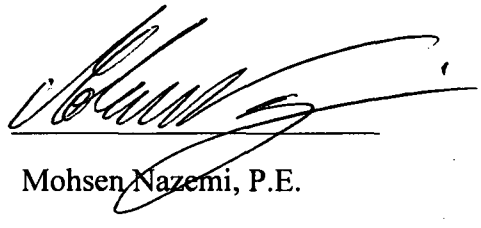
A26: As noted in a series of letters from Diamond Pacific that are included in the offset verification file for this facility, the shutdown of this facility occurred gradually over a period of time. For example, by November 2004, they were no longer operating grain size reduction and cleaning system (i.e., the subject of this comment, A/N 276233). In June 2005, the boiler (A/N 299411) and the livestock feed rolling and steam flaking system (A/N 289835) were removed from service. Eventually, in August 2008, all remaining equipment was shut down. The two-year emissions data for this (grain cleaning) and other equipment were logically selected based on this timeline of facility shutdown. The selection of Inventory Years of 02-03 and 03-04 for grain cleaning was made based on the timeline when equipment at the facility was shutdown.

(7) Gateway Sandblasting

Q27: What is the status of this facility as explained in the inspection report in the Offset Verification file?

A27: The Gateway Sandblasting's permitted equipment was shutdown in 2002 and the permits were inactivated in 2003. The emission reductions were based on reporting periods of 200-01 and 2001-02. The operator had used his home address as both mailing and equipment location address on the application for permit. Upon inactivation and cancellation of the permit, if the equipment were to operate again at any location in the District, a new application would need to be submitted. The emission reductions are based on actual emissions that occurred during the specified time periods prior to shutdown.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge. Executed this 30th day of June, 2010, at Diamond Bar, California.



Mohsen Nazemi, P.E.

Declaration of Service

I, Patricia M. Anderson, declare that on June 30, 2010, I served and filed a copy of the attached ***Rebuttal Expert Declaration of Mohsen Nazemi Regarding Emission Offset Credits***. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: **[http://www.energy.ca.gov/sitingcases/sentinel/documents/index.html].**

The document has been sent to both the other parties in the proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that apply)

For service to all other parties:

___✓___ sent electronically to all email addressed on the Proof of Service list;

_____ by personal delivery;

___✓___ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

For filing with the Energy Commission:

___✓___ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (preferred method);

OR

_____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 07-AFC-03
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Patricia M. Anderson

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE *CPV SENTINEL ENERGY PROJECT* *BY THE CPV SENTINEL, L.L.C*

DOCKET NO. 07-AFC-3

PROOF OF SERVICE
(Revised 5/21/2010)

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Attachment A

Mohsen Nazemi, P.E.

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South Coast Air Quality Management District (AQMD)
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909-396-2662(Tel) ♦ 909-396-3985 (Fax) ♦ mnazemi1@aqmd.gov

Profile

- Deputy Executive Officer for the Office of Engineering and Compliance at the AQMD. In charge of direct oversight and operation of AQMD's Permitting and Enforcement Programs with 32 years of regulatory experience in air quality permitting, enforcement and rule, as well as, policy development.

Qualifications Summary

- **Deputy Executive Officer** and **Senior Engineering Manager** at AQMD:
  - ***Permitting*** – Directly responsible for implementation of New Source Review (NSR) program and air permitting for 28,000 facilities including over 300 RECLAIM and 600 Title V facilities, as well as over 27,000 other stationary sources. Developed NSR implementation guidelines, Title V and RECLAIM permit implementation, permit streamlining measures, improved permitting efficiency & reduced permitting backlog
  - ***Enforcement*** – Directly responsible for compliance & enforcement of air quality requirements for 28,000 facilities including about 300 RECLAIM and 600 Title V facilities, as well as over 27,000 other stationary and several thousands of portable equipment sources. Directly responsible for compliance of largest sources of emissions in AQMD, such as refineries, power plants, solid and liquid waste disposal and treatment facilities, oil & gas production (on-shore & off-shore), cement, glass and other industrial manufacturing plants, bulk and marine terminals, schools, military installations, aerospace and other commercial and industrial operations.
  - ***Rule Development*** – Responsible for development of many criteria pollutant and toxic air quality rules and regulations for AQMD, such as the first toxics rule for existing sources (R-1402), first rule to reduce emissions from lead sources (R-1420), first rule for refinery flares (R-1118) and first Toxics Hot Spots (AB2588) public notification procedures.
  - ***Policy Development*** – Direct liaison with US Environmental Protection Agency (EPA), Air Resources Board (ARB), National Association of Clean Air Agencies (NACAA) and California Air Pollution Control Officers Association (CAPCOA) for implementation of federal and state NSR regulations, Titles I, III & V of the federal Clean Air Act (CAA) and development of Titles III & V of the 1990 CAA Amendments and State Air Toxics Control Measures. Developed guidelines for implementation of the AQMD's NSR program, public notification for permits and Toxics Hot Spots Program (AB 2588) and its associated supplemental Health Risk Assessments, and annual permit renewal & update.

- **Permit Streamlining Ombudsman** & responsible for **Economic Development / Business Retention Program** at AQMD
- Past Chairman and member of CAPCOA Engineering Managers and Toxics and Risk Management Committees and other CAPCOA Committees
- Member of NACAA Permitting, NSR, Enforcement, Criteria Pollutant, Toxics, Greenhouse Gas BACT development and other Committees
- Past Chairman of the Industry Advisory Board for California State University Fullerton's Civil Engineering Department
- Instructor at University of California at Irvine, teaching courses in air pollution and toxics risk in the Department of Social Ecology Extension program
- Member of AQMD's Fee Review Committee and Management Grievance & Labor Contract Negotiations Committees
- Co-Chair of AQMD/Industry/Public Title V Ad Hoc Committee

Education

- Master of Science (M.S.) in Chemical Engineering from University of California at Los Angeles (UCLA)
- Bachelor of Science (B.S.) – (cum laude) – in Chemical Engineering from California State University at Long Beach

Certificates & Awards

- Professional Engineer (P.E.) in Chemical Engineering from State of California
- Certified Hazardous Materials Manager (CHMM) from University of California at Irvine
- Certified Hazardous Materials Manager (CHMM) from Institute of Hazardous Materials Management at Rockville, Maryland
- President's Honor List & Dean's Honor List at California State University at Long Beach
- Outstanding Senior Manager of the Year Award, AQMD

Professional Experience

Deputy Executive Officer, AQMD (2008 to present) –

- Directly responsible for operation of the Engineering & Compliance, with over 325 professional and technical engineering and compliance staff with responsibility for Permitting, Enforcement, Emergency Response Program and regulating of 28,000 stationary sources and several thousands of portable sources.

Assistant Deputy Executive Officer, AQMD (1999 to 2008) –

- Directly responsible for all permitting and assisted in the compliance operations of the Engineering & Compliance Office at AQMD with responsibility for regulating 28,000 stationary sources and several thousands of portable sources.

Permit Streamlining Ombudsman, AQMD (1999 to present) –

- Staff lead and liaison to AQMD Governing Board's Permit Streamlining Task Force and directly responsible for development and implementation of permit streamlining measures
- In charge of AQMD's Economic Development & Business Retention Program.

Senior Engineering Manager, AQMD (1989 to 1999) -

- *Refinery, Energy & OCS* – Responsible for permitting, compliance and rule development for refineries, petroleum terminals (bulk & marine), oil and gas exploration (on-shore & off-shore), public & private power plants.
- *Air Toxics & Global Climate Changes Strategies* – Responsible for permitting, compliance and rule development for toxic sources; in charge of all compliance activities related to Asbestos program and in charge of Stationary Source Compliance Office's Emergency Response Program; and in charge of all aspects of AB2588 program.
- *RECLAIM ROG Protocol & Manufacturers' Bubble* – Responsible for the development of the RECLIAM ROG Enforcement Protocol, as well as responsible for establishing Manufacturers' Bubble program, and worked on development of the first rule which applied the manufacturers' bubble concept to aerosol coatings (R-1129).
- *Policy Development* – Responsible for coordination and development of policies to implement all state and federal regulations, laws and programs for AQMD, also served as staff liaison with EPA in development of regulations for implementation of Titles III & V of the 1990 Clean Air Act Amendments.
- *Resource Recovery & Waste Management* – Responsible for permitting of all landfills, POTWs, Waste-to-Energy, Cogeneration, Resource Recovery other Bio-mass or Bio-energy projects.

Supervising & Senior Air Quality Engineer, AQMD (1982 to 1989) –

- Responsible for permitting of Resource Recovery, waste management, cogeneration, mechanical and other bulk material processes, also responsible for evaluation of the first alternative compliance plan for storage and handling of petroleum coke and coal (R-1158).

Air Quality Engineer, AQMD (1978 to 1982) –

- Responsible for permitting of all types of industrial operations located in Orange County, as well as Resource Recovery, waste management, cogeneration, mechanical and all other types of solids and bulk material handling operations.

Project Engineer, FILTROL Corporation (1977 to 1978) –

- Responsible for research, development and pilot plant operation for various catalytic processes used in petroleum industry for Hydro-desulfurization (HDS) and Fluidized Catalytic Cracking (FCC) processes.

Other Relevant Training & Experience

- Graduate Thesis at UCLA on control of air pollution from combustion sources using catalytic reduction processes - NOx Reductions using Selective Catalytic Reduction (SCR) systems
- US EPA – Successfully completed training courses in:
  - New Source Review Program (PSD and Nonattainment NSR)
  - Control of Particulate Emissions
  - Control of Gaseous Emissions
- The George Washington University – Successfully completed training course in Incineration System Design, Thermal Treatment & Disposal of Waste
- US Office of Personnel Management – Successfully completed training in Time Management
- ARB – Successfully completed training and/or certification in:
  - Petroleum Refining
  - Visible Emissions Reading
  - Portable Equipment Registration Program
  - Advanced Air Quality Enforcement
- Authored several technical papers and made over one hundred presentations in local, statewide, national and international conferences and professional associations meetings.
- Represented AQMD in a visit to Chile and worked with and assisted Chile's EPA (CONOMA) on various air pollution regulatory processes.

Professional Affiliations / Membership

- NACAA Permitting, NSR, Enforcement, Criteria Pollutant, Toxics, Greenhouse Gas BACT development Committees
- CAPCOA Engineering Managers Committee, Toxics & Risk Management Committee
- Air & Waste Management Association (AWMA)
- American Institute of Chemical Engineers (AIChE)

Attachment B

TABLE A-1

2002 Annual Average Emissions by Source Category In South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5
Fuel Combustion									
10	Electric Utilities	7.81	1.72	16.13	1.31	0.45	1.40	1.40	1.40
20	Cogeneration	1.03	0.12	0.80	0.06	0.01	0.08	0.07	0.07
30	Oil and Gas Production (combustion)	2.20	0.23	0.66	0.30	0.02	0.16	0.16	0.16
40	Petroleum Refining (Combustion)	3.58	1.31	13.62	0.00	0.00	1.76	1.69	1.66
50	Manufacturing and Industrial	11.96	1.58	8.10	9.33	1.13	1.16	1.14	1.14
52	Food and Agricultural Processing	0.25	0.16	0.97	1.83	0.03	0.18	0.18	0.17
60	Service and Commercial	7.65	1.26	9.76	15.76	0.58	1.43	1.43	1.43
99	Other (Fuel Combustion)	1.03	0.79	2.59	6.15	0.03	0.33	0.33	0.31
Total Fuel Combustion		35.51	7.16	52.64	34.74	2.25	6.51	6.40	6.33
Waste Disposal									
110	Sewage Treatment	0.53	0.30	0.00	0.00	0.00	0.00	0.00	0.00
120	Landfills	4.69	0.09	0.24	0.54	0.33	0.48	0.31	0.30
130	Incineration	0.51	0.08	0.76	1.22	0.08	0.18	0.10	0.09
199	Other (Waste Disposal)	59.52	7.09	0.00	0.00	0.00	0.03	0.02	0.02
Total Waste Disposal		65.25	7.56	1.01	1.77	0.41	0.69	0.44	0.42
Cleaning and Surface Coatings									
210	Laundering	3.14	0.13	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	61.43	18.55	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	25.96	25.01	0.03	0.03	0.00	0.56	0.54	0.52
240	Printing	5.50	5.50	0.00	0.00	0.00	0.00	0.00	0.00
250	Adhesives and Sealants	3.85	3.36	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	1.36	1.36	0.16	0.09	0.02	0.09	0.09	0.09
Total Cleaning and Surface Coatings		101.23	53.91	0.19	0.11	0.02	0.65	0.63	0.60
Petroleum Production and Marketing									
310	Oil and Gas Production	4.46	2.49	0.02	0.04	0.00	0.00	0.00	0.00
320	Petroleum Refining	6.49	4.68	8.27	0.36	6.96	1.64	1.08	0.87
330	Petroleum Marketing	28.72	27.75	0.48	0.02	0.00	0.03	0.03	0.02
399	Other (Petroleum Production and Marketing)	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		39.68	34.93	8.77	0.41	6.96	1.67	1.11	0.90

TABLE A-1
(Continued)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5
Industrial Processes									
410	Chemical	12.30	10.99	0.03	0.00	0.00	0.61	0.51	0.47
420	Food and Agriculture	2.81	2.69	0.00	0.00	0.00	0.54	0.18	0.03
430	Mineral Processes	0.40	0.35	0.24	0.03	0.00	13.76	7.23	1.68
440	Metal Processes	0.05	0.04	1.34	0.01	0.02	0.73	0.48	0.34
450	Wood and Paper	0.10	0.10	0.00	0.00	0.00	5.16	3.58	2.17
460	Glass and Related Products	0.02	0.01	0.02	0.00	0.02	0.28	0.26	0.25
470	Electronics	0.07	0.06	0.00	0.00	0.00	0.01	0.01	0.00
499	Other (Industrial Processes)	6.75	6.43	0.48	0.14	0.00	0.41	0.28	0.22
Total Industrial Processes		22.51	20.68	2.11	0.18	0.04	21.51	12.53	5.17
Solvent Evaporation									
510	Consumer Products	130.40	110.40	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	49.81	48.58	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	2.27	2.26	0.00	0.00	0.00	0.00	0.00	0.00
540	Asphalt Paving/Roofing	0.80	0.73	0.00	0.00	0.00	0.02	0.02	0.02
Total Solvent Evaporation		183.28	161.96	0.00	0.00	0.00	0.02	0.02	0.02
Miscellaneous Processes									
610	Residential Fuel Combustion	8.97	3.89	54.60	26.51	0.39	8.48	8.06	7.84
620	Farming Operations	123.37	9.87	0.00	0.00	0.00	1.71	0.78	0.17
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	81.61	39.91	4.00
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	274.39	125.39	18.93
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	22.99	13.56	1.35
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	5.57	2.80	0.42
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41
670	Waste Burning and Disposal	0.63	0.36	4.20	0.17	0.01	0.56	0.55	0.51
680	Utility Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
690	Cooking	2.57	1.80	0.00	0.00	0.00	15.41	14.22	13.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NOX/SOX RECLAIM				28.62	11.66			
Total Miscellaneous Processes		135.88	16.16	61.82	55.38	12.06	411.17	205.71	46.63

TABLE A-1
(Continued)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5
On-Road Motor Vehicles									
710	Light Duty Passenger Auto (LDA)	193.21	178.47	1631.91	147.56	1.19	7.13	6.99	4.03
722	Light Duty Trucks 1 (T1)	33.02	30.56	333.41	28.92	0.27	1.22	1.20	0.68
723	Light Duty Trucks 2 (T2)	66.90	60.71	730.20	98.28	0.54	3.80	3.71	2.50
724	Medium Duty Trucks (T3)	34.75	31.35	403.58	51.69	0.33	1.58	1.55	1.01
732	Light Heavy Duty Gas Trucks 1 (T4)	20.74	18.83	202.03	26.88	0.07	0.26	0.26	0.14
733	Light Heavy Duty Gas Trucks 2 (T5)	3.28	3.01	30.71	4.01	0.01	0.05	0.05	0.02
734	Medium Heavy Duty Gas Trucks (T6)	8.92	8.26	78.44	7.94	0.01	0.05	0.05	0.03
736	Heavy Heavy Duty Gas Trucks (HHDGT)	5.01	4.46	71.93	9.46	0.01	0.04	0.04	0.02
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.02	0.02	0.08	0.64	0.00	0.01	0.01	0.01
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.22	0.19	0.83	8.37	0.04	0.08	0.08	0.06
744	Medium Heavy Duty Diesel Truck (T6)	1.28	1.07	10.15	71.09	0.57	1.60	1.60	1.41
746	Heavy Heavy Duty Diesel Trucks (HHDDT)	14.38	12.03	49.22	147.84	1.01	8.69	8.69	7.75
750	Motorcycles (MCY)	10.06	9.49	72.94	1.74	0.00	0.09	0.08	0.06
760	Diesel Urban Buses (UB)	0.50	0.42	2.65	12.86	0.13	0.23	0.23	0.21
762	Gas Urban Buses (UB)	0.58	0.48	5.36	0.92	0.00	0.01	0.01	0.00
770	School Buses (SB)	0.38	0.34	4.69	4.23	0.04	0.14	0.14	0.13
776	Other Bus (OB)	0.76	0.70	8.16	3.58	0.02	0.06	0.06	0.05
780	Motor Homes (MH)	1.41	1.23	40.56	3.94	0.02	0.04	0.04	0.02
	On-Road Baseline Adjustment	0.00	0.00	0.00	-1.65	0.00	0.00	0.00	0.00
Total On-Road Motor Vehicles		395.42	361.62	3676.85	628.30	4.26	25.08	24.79	18.13
Other Mobile Sources									
810	Aircraft	7.16	6.39	46.02	13.24	1.30	0.82	0.77	0.75
820	Trains	3.01	2.51	6.31	37.91	1.24	0.93	0.92	0.84
830	Ships and Commercial Boats	4.30	3.60	8.80	64.29	23.45	4.58	4.44	4.28
840	Recreational Boats	47.23	44.15	202.50	7.37	0.02	2.41	2.17	1.64
850	Off-Road Recreational Vehicles	6.56	6.21	22.64	0.20	0.04	0.09	0.08	0.06
860	Off-Road Equipment	113.37	99.23	721.55	241.71	1.23	14.35	14.19	12.82
870	Farm Equipment	2.04	1.76	8.21	8.56	0.06	0.53	0.53	0.48
890	Fuel Storage and Handling	16.30	16.25	0.00	0.00	0.00	0.00	0.00	0.00
895	Truck Stops	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Off-Road Baseline Adjustment	0.00	0.00	0.00	-0.98	0.00	0.00	0.00	0.00
Total Other Mobile Sources		199.97	180.10	1016.03	372.30	27.34	23.71	23.10	20.87
Total Stationary and Area Sources		583.34	302.36	126.54	92.59	21.74	442.22	226.84	60.07
Total On-Road Vehicles		395.42	361.62	3676.85	628.30	4.26	25.08	24.79	18.13
Total Other Mobile		199.97	180.10	1016.03	372.30	27.34	23.71	23.10	20.87
Total Anthropogenic		1178.73	844.08	4819.42	1093.18	53.34	491.01	274.73	99.07

TABLE A-2

2005 Annual Average Emissions by Source Category in South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5
Fuel Combustion									
10	Electric Utilities	6.10	1.34	12.57	0.86	0.33	1.08	1.08	1.08
20	Cogeneration	1.05	0.12	0.81	0.06	0.01	0.08	0.07	0.07
30	Oil and Gas Production (combustion)	2.20	0.23	0.66	0.21	0.01	0.15	0.15	0.15
40	Petroleum Refining (Combustion)	3.58	1.31	13.62	0.00	0.00	1.76	1.69	1.66
50	Manufacturing and Industrial	12.21	1.64	8.49	9.12	1.21	1.23	1.21	1.21
52	Food and Agricultural Processing	0.23	0.14	0.91	1.58	0.01	0.15	0.15	0.15
60	Service and Commercial	7.92	1.30	10.02	14.89	0.56	1.44	1.44	1.44
99	Other (Fuel Combustion)	0.96	0.71	2.36	5.65	0.03	0.30	0.30	0.28
Total Fuel Combustion		34.25	6.78	49.45	32.36	2.16	6.20	6.09	6.02
Waste Disposal									
110	Sewage Treatment	0.56	0.32	0.00	0.00	0.00	0.00	0.00	0.00
120	Landfills	4.80	0.09	0.25	0.56	0.33	0.49	0.32	0.31
130	Incineration	0.54	0.09	0.77	1.23	0.08	0.18	0.11	0.10
199	Other (Waste Disposal)	63.73	7.57	0.00	0.00	0.00	0.03	0.02	0.02
Total Waste Disposal		69.63	8.07	1.02	1.79	0.41	0.70	0.46	0.43
Cleaning and Surface Coatings									
210	Laundering	3.26	0.14	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	48.06	8.11	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	24.71	23.79	0.03	0.03	0.00	0.63	0.61	0.59
240	Printing	5.49	5.49	0.00	0.00	0.00	0.00	0.00	0.00
250	Adhesives and Sealants	3.57	3.11	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.59	0.59	0.16	0.10	0.02	0.09	0.09	0.09
Total Cleaning and Surface Coatings		85.67	41.23	0.20	0.13	0.02	0.73	0.70	0.67
Petroleum Production and Marketing									
310	Oil and Gas Production	2.22	1.34	0.02	0.04	0.00	0.00	0.00	0.00
320	Petroleum Refining	5.15	3.80	8.27	0.36	6.96	1.54	1.02	0.81
330	Petroleum Marketing	27.96	27.28	0.49	0.02	0.00	0.03	0.03	0.02
399	Other (Petroleum Production and Marketing)	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		35.34	32.42	8.79	0.41	6.96	1.57	1.05	0.84

TABLE A-2
(Continued)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5
Industrial Processes									
410	Chemical	10.13	9.18	0.04	0.00	0.00	0.66	0.55	0.51
420	Food and Agriculture	2.80	2.68	0.00	0.00	0.00	0.54	0.18	0.03
430	Mineral Processes	0.40	0.35	0.24	0.03	0.00	14.92	7.86	1.82
440	Metal Processes	0.05	0.04	1.53	0.01	0.01	0.79	0.52	0.37
450	Wood and Paper	0.10	0.10	0.00	0.00	0.00	5.19	3.60	2.18
460	Glass and Related Products	0.02	0.01	0.02	0.00	0.02	0.30	0.28	0.26
470	Electronics	0.09	0.07	0.00	0.00	0.00	0.02	0.01	0.00
499	Other (Industrial Processes)	7.08	6.74	0.50	0.14	0.00	0.42	0.28	0.22
Total Industrial Processes		20.67	19.18	2.33	0.19	0.05	22.83	13.27	5.39
Solvent Evaporation									
510	Consumer Products	118.71	100.70	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	39.72	38.79	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	2.02	2.01	0.00	0.00	0.00	0.00	0.00	0.00
540	Asphalt Paving/Roofing	0.89	0.81	0.00	0.00	0.00	0.02	0.02	0.02
Total Solvent Evaporation		161.34	142.31	0.00	0.00	0.00	0.02	0.02	0.02
Miscellaneous Processes									
610	Residential Fuel Combustion	8.97	3.89	55.39	25.14	0.38	8.55	8.13	7.90
620	Farming Operations	94.36	7.55	0.00	0.00	0.00	1.55	0.70	0.16
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	92.76	45.36	4.55
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	271.48	124.06	18.73
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	20.54	12.12	1.20
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	4.88	2.45	0.37
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41
670	Waste Burning and Disposal	5.70	3.25	50.74	1.53	0.46	5.40	5.19	4.64
680	Utility Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
690	Cooking	2.65	1.85	0.00	0.00	0.00	15.89	14.66	13.39
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NOX/SOX RECLAIM				33.46	11.74			
Total Miscellaneous Processes		112.02	16.78	109.15	60.21	12.58	421.50	213.11	51.35

TABLE A-2
(Continued)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5
On-Road Motor Vehicles									
710	Light Duty Passenger Auto (LDA)	140.98	130.67	1205.17	102.06	0.91	7.33	7.18	4.11
722	Light Duty Trucks 1 (T1)	26.52	24.60	256.12	21.36	0.20	1.21	1.18	0.70
723	Light Duty Trucks 2 (T2)	57.25	52.32	611.07	78.03	0.50	4.70	4.59	3.08
724	Medium Duty Trucks (T3)	30.42	27.52	338.10	44.59	0.33	2.12	2.08	1.37
732	Light Heavy Duty Gas Trucks 1 (T4)	18.08	16.47	159.54	23.51	0.06	0.29	0.29	0.15
733	Light Heavy Duty Gas Trucks 2 (T5)	3.21	2.95	27.06	4.04	0.01	0.06	0.06	0.03
734	Medium Heavy Duty Gas Trucks (T6)	7.52	6.95	67.14	7.69	0.01	0.05	0.05	0.03
736	Heavy Heavy Duty Gas Trucks (HHDGT)	4.79	4.22	66.56	9.28	0.01	0.04	0.04	0.02
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.28	0.24	1.45	13.79	0.09	0.13	0.13	0.09
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.30	0.25	1.21	10.89	0.06	0.11	0.11	0.08
744	Medium Heavy Duty Diesel Truck (T6)	1.54	1.29	12.42	77.16	0.74	1.89	1.89	1.65
746	Heavy Heavy Duty Diesel Trucks (HHDDT)	15.82	13.24	52.93	166.15	1.20	9.05	9.04	8.03
750	Motorcycles (MCY)	15.70	14.62	132.16	3.31	0.01	0.16	0.15	0.10
760	Diesel Urban Buses (UB)	0.46	0.39	2.37	11.55	0.12	0.21	0.21	0.19
762	Gas Urban Buses (UB)	0.53	0.44	4.73	0.77	0.00	0.01	0.01	0.00
770	School Buses (SB)	0.34	0.29	3.92	4.09	0.04	0.14	0.14	0.13
776	Other Bus (OB)	0.73	0.67	7.95	3.89	0.03	0.07	0.07	0.06
780	Motor Homes (MH)	1.07	0.94	28.89	3.46	0.02	0.05	0.05	0.03
	On-Road Baseline Adjustment	0.00	0.00	0.00	-9.57	0.00	N/A	N/A	-0.09
Total On-Road Motor Vehicles		325.54	298.07	2978.79	576.05	4.34	27.62	27.27	19.76
Other Mobile Sources									
810	Aircraft	8.14	7.26	52.17	15.36	1.49	0.89	0.83	0.81
820	Trains	3.06	2.55	6.65	32.26	1.33	0.94	0.94	0.86
830	Ships and Commercial Boats	4.37	3.67	9.69	73.33	30.98	5.55	5.37	5.18
840	Recreational Boats	45.59	42.86	208.56	9.58	0.02	2.67	2.40	1.82
850	Off-Road Recreational Vehicles	7.16	6.85	16.42	0.17	0.04	0.06	0.06	0.04
860	Off-Road Equipment	106.99	94.82	685.35	221.03	1.28	13.53	13.36	12.05
870	Farm Equipment	1.85	1.59	7.59	7.68	0.06	0.48	0.47	0.44
890	Fuel Storage and Handling	15.48	15.43	0.00	0.00	0.00	0.00	0.00	0.00
895	Truck Stops	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Off-Road Baseline Adjustment	0.00	0.00	0.00	-1.38	0.00	N/A	N/A	-0.09
Total Other Mobile Sources		192.64	175.03	986.43	358.03	35.20	24.12	23.43	21.11
Total Stationary and Area Sources		518.92	266.77	170.94	95.09	22.18	453.55	234.70	64.72
Total On-Road Vehicles		325.54	298.07	2978.79	576.05	4.34	27.62	27.27	19.76
Total Other Mobile		192.64	175.03	986.43	358.03	35.20	24.12	23.43	21.11
Total Anthropogenic		1037.10	739.87	4136.16	1029.16	61.72	505.29	285.40	105.59

TABLE A-3

2008 Annual Average Emissions by Source Category In South Coast Air Basin (Tons/Day)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5
Fuel Combustion									
10	Electric Utilities	7.64	1.68	15.76	1.03	0.41	1.36	1.35	1.35
20	Cogeneration	1.06	0.12	0.83	0.06	0.01	0.08	0.07	0.07
30	Oil and Gas Production (combustion)	2.20	0.23	0.66	0.20	0.01	0.15	0.15	0.15
40	Petroleum Refining (Combustion)	3.58	1.31	13.62	0.00	0.00	1.76	1.69	1.66
50	Manufacturing and Industrial	13.07	1.76	9.16	9.04	1.33	1.22	1.20	1.20
52	Food and Agricultural Processing	0.17	0.09	0.77	0.84	0.01	0.11	0.10	0.10
60	Service and Commercial	8.30	1.36	10.52	13.40	0.59	1.49	1.49	1.49
99	Other (Fuel Combustion)	0.86	0.61	2.12	5.00	0.03	0.27	0.26	0.25
Total Fuel Combustion		36.88	7.16	53.44	29.57	2.38	6.42	6.32	6.26
Waste Disposal									
110	Sewage Treatment	0.58	0.33	0.00	0.00	0.00	0.00	0.00	0.00
120	Landfills	4.92	0.09	0.25	0.58	0.34	0.50	0.33	0.31
130	Incineration	0.58	0.10	0.79	1.27	0.08	0.19	0.12	0.11
199	Other (Waste Disposal)	59.14	7.05	0.00	0.00	0.00	0.03	0.03	0.03
Total Waste Disposal		65.23	7.57	1.05	1.85	0.42	0.73	0.47	0.45
Cleaning and Surface Coatings									
210	Laundering	3.41	0.15	0.00	0.00	0.00	0.00	0.00	0.00
220	Degreasing	52.08	8.65	0.00	0.00	0.00	0.00	0.00	0.00
230	Coatings and Related Processes	20.85	20.02	0.04	0.04	0.00	0.72	0.69	0.67
240	Printing	4.10	4.10	0.00	0.00	0.00	0.00	0.00	0.00
250	Adhesives and Sealants	4.05	3.54	0.00	0.00	0.00	0.00	0.00	0.00
299	Other (Cleaning and Surface Coatings)	0.64	0.64	0.17	0.11	0.02	0.05	0.05	0.05
Total Cleaning and Surface Coatings		85.13	37.09	0.21	0.15	0.02	0.77	0.74	0.71
Petroleum Production and Marketing									
310	Oil and Gas Production	1.45	0.85	0.02	0.04	0.00	0.00	0.00	0.00
320	Petroleum Refining	5.09	3.74	8.27	0.36	1.11	1.34	0.90	0.70
330	Petroleum Marketing	27.70	27.01	0.52	0.02	0.00	0.01	0.01	0.01
399	Other (Petroleum Production and Marketing)	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Total Petroleum Production and Marketing		34.26	31.60	8.81	0.41	1.11	1.36	0.91	0.72

TABLE A-3
(Continued)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5
Industrial Processes									
410	Chemical	10.57	9.55	0.04	0.00	0.01	0.72	0.60	0.55
420	Food and Agriculture	2.88	2.74	0.00	0.01	0.00	0.56	0.19	0.03
430	Mineral Processes	0.41	0.36	0.26	0.04	0.00	5.18	2.82	0.97
440	Metal Processes	0.05	0.04	1.80	0.01	0.01	0.88	0.58	0.41
450	Wood and Paper	0.10	0.10	0.00	0.00	0.00	5.63	3.90	2.37
460	Glass and Related Products	0.02	0.01	0.02	0.00	0.02	0.29	0.28	0.27
470	Electronics	0.11	0.08	0.00	0.00	0.00	0.02	0.01	0.00
499	Other (Industrial Processes)	6.85	6.50	0.52	0.15	0.00	0.43	0.29	0.23
Total Industrial Processes		20.99	19.39	2.63	0.21	0.05	13.71	8.66	4.82
Solvent Evaporation									
510	Consumer Products	119.64	101.83	0.00	0.00	0.00	0.00	0.00	0.00
520	Architectural Coatings and Related Solvent	23.21	22.65	0.00	0.00	0.00	0.00	0.00	0.00
530	Pesticides/Fertilizers	1.80	1.78	0.00	0.00	0.00	0.00	0.00	0.00
540	Asphalt Paving/Roofing	0.96	0.88	0.00	0.00	0.00	0.02	0.02	0.02
Total Solvent Evaporation		145.61	127.14	0.00	0.00	0.00	0.02	0.02	0.02
Miscellaneous Processes									
610	Residential Fuel Combustion	9.35	4.05	57.51	24.22	0.40	8.89	8.45	8.21
620	Farming Operations	70.58	5.65	0.00	0.00	0.00	1.41	0.64	0.14
630	Construction and Demolition	0.00	0.00	0.00	0.00	0.00	101.91	49.83	4.99
640	Paved Road Dust	0.00	0.00	0.00	0.00	0.00	267.56	122.28	18.46
645	Unpaved Road Dust	0.00	0.00	0.00	0.00	0.00	17.47	10.31	1.02
650	Fugitive Windblown Dust	0.00	0.00	0.00	0.00	0.00	4.53	2.29	0.34
660	Fires	0.34	0.24	3.02	0.08	0.00	0.45	0.44	0.41
670	Waste Burning and Disposal	5.70	3.25	50.73	1.53	0.46	5.40	5.19	4.64
680	Utility Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
690	Cooking	2.77	1.94	0.00	0.00	0.00	16.61	15.32	14.00
699	Other (Miscellaneous Processes)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NOX/SOX RECLAIM				28.78	11.76			
Total Miscellaneous Processes		88.74	15.13	111.26	54.61	12.62	424.23	214.75	52.21

TABLE A-3
(Continued)

CODE	Source Category	TOG	VOC	CO	NOx	SOx	TSP	PM10	PM2.5
On-Road Motor Vehicles									
710	Light Duty Passenger Auto (LDA)	94.42	86.93	834.01	69.42	0.83	7.05	6.91	3.96
722	Light Duty Trucks 1 (T1)	18.60	17.16	180.73	15.14	0.15	1.14	1.12	0.67
723	Light Duty Trucks 2 (T2)	42.72	38.83	446.29	55.07	0.47	4.60	4.50	3.07
724	Medium Duty Trucks (T3)	23.27	20.88	251.97	32.49	0.30	2.10	2.05	1.38
732	Light Heavy Duty Gas Trucks 1 (T4)	10.98	9.94	89.37	16.03	0.05	0.23	0.23	0.12
733	Light Heavy Duty Gas Trucks 2 (T5)	2.04	1.86	15.53	3.07	0.01	0.05	0.05	0.02
734	Medium Heavy Duty Gas Trucks (T6)	4.34	3.98	40.63	5.27	0.01	0.04	0.04	0.02
736	Heavy Heavy Duty Gas Trucks (HHDGT)	3.12	2.69	42.98	6.35	0.00	0.03	0.03	0.01
742	Light Heavy Duty Diesel Trucks 1 (T4)	0.23	0.19	1.18	9.16	0.01	0.09	0.09	0.06
743	Light Heavy Duty Diesel Trucks 2 (T5)	0.23	0.19	0.97	7.61	0.01	0.08	0.08	0.06
744	Medium Heavy Duty Diesel Truck (T6)	1.16	0.97	9.68	52.46	0.07	1.36	1.36	1.18
746	Heavy Heavy Duty Diesel Trucks (HHDDT)	14.52	12.16	48.33	152.77	0.15	7.82	7.82	6.89
750	Motorcycles (MCY)	13.57	12.47	117.44	3.23	0.01	0.15	0.14	0.09
760	Diesel Urban Buses (UB)	0.45	0.37	2.27	11.03	0.01	0.20	0.20	0.17
762	Gas Urban Buses (UB)	0.53	0.42	4.63	0.80	0.00	0.01	0.01	0.01
770	School Buses (SB)	0.32	0.27	3.49	4.12	0.00	0.15	0.15	0.13
776	Other Bus (OB)	0.56	0.51	6.30	3.35	0.01	0.07	0.07	0.05
780	Motor Homes (MH)	0.76	0.64	19.94	2.96	0.01	0.05	0.05	0.03
	On-Road Baseline Adjustment	N/A	-0.11	0.00	-14.99	0.00	N/A	N/A	-0.17
Total On-Road Motor Vehicles		231.82	210.35	2115.74	435.34	2.10	25.22	24.90	17.75
Other Mobile Sources									
810	Aircraft	9.07	8.10	58.31	17.42	1.68	0.97	0.91	0.89
820	Trains	2.97	2.48	7.06	28.95	0.14	0.86	0.85	0.78
830	Ships and Commercial Boats	4.31	3.61	10.35	76.95	20.10	4.18	4.05	3.90
840	Recreational Boats	42.37	39.93	206.88	10.74	0.02	3.11	2.80	2.12
850	Off-Road Recreational Vehicles	7.16	6.85	15.89	0.16	0.04	0.06	0.05	0.04
860	Off-Road Equipment	89.51	79.91	674.97	190.69	0.18	11.82	11.65	10.47
870	Farm Equipment	1.56	1.35	7.20	6.65	0.01	0.40	0.40	0.36
890	Fuel Storage and Handling	10.37	10.33	0.00	0.00	0.00	0.00	0.00	0.00
895	Truck Stops	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Off-Road Baseline Adjustment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Other Mobile Sources		167.32	152.56	980.66	331.56	22.17	21.40	20.71	18.56
Total Stationary and Area Sources		476.84	245.08	177.40	86.80	16.60	447.24	231.87	65.19
Total On-Road Vehicles		231.82	210.35	2115.74	435.34	2.10	25.22	24.90	17.75
Total Other Mobile		167.32	152.56	980.66	331.56	22.17	21.40	20.71	18.56
Total Anthropogenic		875.98	607.99	3273.80	853.70	40.87	493.86	277.48	101.50