

MEMORANDUM

DATE: August 20, 2009

TO: Placer County Air Pollution Control District Board of Directors

FROM: Yushuo Chang, Manager, Planning and Monitoring

SUBJECT: Technical Service Contract with Sierra Research Inc. for UPRR Roseville Railyard Modeling Evaluation Project (Consent)

Action Requested:

Approve Resolution # 09-08 (Attachment #1), thereby authorizing the Air Pollution Control Officer to negotiate, sign, and amend, as needed, a technical service contract with Sierra Research Inc. to conduct a project to evaluate computer modeled diesel particulate matter (DPM) levels around the Union Pacific Railroad Company (UPRR) Roseville Railyard compared to monitored DPM levels. The total proposed contract amount is \$50,000.

Background:

The proposed project is a follow-up research study for the Roseville Railyard Air Monitoring Project (RRAMP). The RRAMP was a four year (2005-2008) air monitoring study of the air pollutant impacts emanating from the UPRR Roseville Railyard facility. The major goals of the RRAMP were to use the field monitoring equipment and the latest monitoring technologies to 1) determine whether air pollutant impacts from the emissions at the UPRR facility can be identified and 2) observe changes in ambient concentrations that may be indicative of the effectiveness of mitigation measures (over time) proposed by UPRR. In addition, the RRAMP provided a unique opportunity to evaluate the performance of the air dispersion model by comparing the actual ambient monitoring data with the forecasted exposure concentration from the computer modeling analysis. The proposed project is designed to conduct this evaluation and the results will help to quantify the level of potential bias in the air dispersion model for future modeling analysis and provide useful information regarding the interpretation of data collected in the RRAMP. Furthermore, the final modeled concentration profiles will be transferred to California Air Resources Board (CARB) to update the risk analysis for the Roseville Railyard.

Discussion:

On December 9, 2004, your Board approved Resolution #04-21 authorizing the Chairperson and the APCO to sign an Agreement with Union Pacific Rail Road (UPRR) pertaining to mitigation measures to decrease DPM and monitoring of emissions at the Roseville Railyard. The RRAMP was originally designed as a three-year (2005-07) air monitoring study associated with the mitigation plan. Later, the District accepted recommendations from the RRAMP Technical Advisory Committee (TAC) to continue another summer study in 2008. Currently, District Staff is working with the data analysis contractor, Desert Research Institute, to review all four years (2005-08) of monitoring data. District staff is planning to submit the final RRAMP report, including the multi-year trend analysis and DPM estimates, to the Board in October 2009.

According to the Agreement in 2004, UPRR also committed to the goal of reducing DPM emissions from its Roseville operations by at least 25% from the baseline period when data for the CARB Health Risk Assessment (HRA) was collected (1999-2000). An Emissions Trend Report (Report) from UPRR was submitted to your Board in October 2008 to demonstrate that the goal of reducing DPM emissions from its Roseville operations was achieved. The Report contains the railyard activity data and emissions estimates for the years of 2005, 2006, and 2007 in a similar manner to the original 1999-2000 estimate for the CARB HRA. In 2009, the District received an updated Report including the railyard activity data and emission estimates for the year of 2008. District Staff are currently reviewing all four years of Railyard emission data (2005-2008) from the updated Report, as well as the details emerging from the RRAMP final report and will provide a report back to your Board with the RRAMP final report in October 2009.

While reviewing all available data and information, a new project has been initiated by UPRR and PCAPCD to answer the question: Is there any correlation between the four-year railyard activity data and resulting calculated emissions with the ambient monitoring data using the on-site weather data? The proposed project will develop concentration isopleths for each year based on computer models and calculated emissions with related railyard activities. The modeling results include the forecasted concentration at the locations of each of the RRAMP monitoring stations. Therefore, the correlation and the level of bias could be identified based on this rare opportunity by comparing the forecasted concentrations from the railyard emissions with the actual ambient monitoring measurements. Furthermore, the value in the effort will be to update the risk analysis from the 2000 year activity to 2008 activity in order to present whether the presumed reduction in health risk is due to the mitigation efforts made by UPRR.

The proposed contract with Sierra Research, Inc. will be to conduct the computer model analysis and quantify the level of bias between the modeled concentrations and actual ambient measurements (Attachment #2). Sierra Research has worked with UPRR and CARB to prepare the facility-wide emission inventory and air dispersion modeling analysis for the UPRR Railyards identified in the Statewide Agreement, which was signed by CARB, UPRR and BNSF to reduce emissions from their railyard operations. Nine (9) emission inventory and air dispersion modeling analysis reports have been conducted by Sierra Research. Those reports have been submitted to CARB to conduct the follow-up railyard health risk assessments. Because of their unique expertise and knowledge in emission calculation and air dispersion model analysis for the railyard activity, Sierra Research was selected as the primary contractor for the proposed project. Their project proposal has been reviewed by the District and UPRR (Attachment #3). The cost proposal from Sierra Research for this project is \$50,000. The District agrees to contribute \$35,000 and the UPRR agrees to contribute \$15,000.

In addition to the modeling result evaluation, there will be another opportunity to update the health risk assessment based on the computer modeling results from this proposed project. The District has requested that CARB takes the modeled emission concentration profiles from the proposed project and extend the analysis to a health risk assessment (Attachment #4). This effort will provide the opportunity for an update to the risk analysis from the year 2000 activity to the year 2008 activity to show if the associated emission reduction of the mitigation efforts in the Roseville railyard represents a reduction in health risk in the vicinity of the Railyard. CARB has verbally agreed with this request and is working with the District to draft an agreement to join the effort. CARB will provide technical recommendations to assist in guiding the proposed project. The District anticipates that the draft report will be delivered by Sierra Research in early 2010 and that the updated health risk assessment for Roseville railyard will be finished by CARB in late 2010.

Fiscal Impact:

The District has included \$35,000 for the technical services in the proposed FY 2009-10 budget to conduct this modeling evaluation project for the Roseville Railyard. UPRR has agreed to contribute \$15,000 for this technical service contract. The total cost for this project is \$50,000.

Recommendation:

District Staff recommends that the Board approve Resolution # 09-08, thereby authorizing the Air Pollution Control Officer to negotiate, sign, and amend as needed, a contract for professional services with Sierra Research, Inc., for the Roseville Railyard modeling evaluation project.

UPRR Roseville Railyard Modeling Evaluation Project

PCAPCD Board of Directors Meeting

Agenda Date: August 20, 2008

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Attachments #1: Resolution #09-08

#2: Draft Contract with Sierra Research, Inc.

#3: Sierra Research Project Proposal

#4: Letter to CARB for a HRA Update for Roseville Railyard

ATTACHMENT #1

SUBJECT:

Resolution # 09-08

ATTACHMENT #2

SUBJECT:

Draft Contract with Sierra Research Inc.



July 8, 2009

Mr. James Goldstene
Executive Officer
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

Subject: Request for Updated Health Risk Assessment of Roseville Rail Yard

Dear Mr. Goldstene:

In the year 2000, Placer County Air Pollution Control District (PCAPCD) requested help from the ARB in determining the potential public health risks from diesel PM emissions due to locomotive activities at the J. R. Davis Yard in Roseville, California. ARB undertook this project which resulted in the release in October 2004 of ARB's Roseville Rail Yard Study. This study utilized the rail yard activity data for December 1999 through November 2000 and estimated emissions, PM concentrations, and cancer risk to the surrounding population. This study became the prototype for the later rail yard HRAs conducted through the ARB/Railroad Statewide Agreement of 2005.

This Roseville Rail Yard Study was the foundation for a 2004 agreement between Union Pacific Railroad (UPRR) and PCAPCD for mitigation measures and air monitoring at the rail yard. One provision of the agreement was for UPRR to report progress in reducing diesel PM from the yard. In a report to PCAPCD in June 2008, UPRR detailed yard activity and resulting emissions in 2007 and compared this with 2000 activity used in the Roseville Rail Yard Study. The 2007 analysis incorporated the more comprehensive data collection that evolved through later rail yard studies performed under the Statewide Agreement. The 2000 data was also re-analyzed using the later methods. Total emissions of diesel PM in 2007 appear to be 22% lower than those of 2000.

Another provision of the PCAPCD/UPRR agreement was to set up and operate a number of air monitoring stations at the boundaries of the rail yard. These stations were located in two pairs of upwind and downwind positions oriented in line with the predominant summertime wind direction. The purpose of this arrangement was to determine the increase in pollutants as the air moved across the rail yard. Measurements of NO_x, NO, PM_{2.5} and black carbon were recorded during the summer night-time hours (time when the wind direction is aligned with the monitoring station pairs). Data has been recorded for the summers of 2005 through 2008. The stations also recorded weather data at the rail yard.

A new project has been initiated by UPRR, PCAPCD, and Sierra Research to correlate the 2007 rail yard activity and resulting calculated emissions with the monitoring station data using the on-site weather data. The project will develop concentration isopleths for each year of monitoring data using three modeling approaches (ICSCT3-urban, ISCST3-rural, and AERMOD). This correlation effort will be a rare opportunity to compare the rail yard emissions model with actual measured data.

Assuming this project shows reasonable correlation of the modeled emissions with the measured emissions, we would request that ARB take the modeled emission concentration profiles and extend the analysis to a health risk assessment. The value in this effort will be to update the risk analysis from 2000 year activity to 2007 year activity to show the reduction (presumably) in health risk due to the mitigation efforts. The original Roseville Rail Yard Study has been widely disseminated in the Roseville community and this would be an opportunity to demonstrate some positive results from the efforts of UPRR, ARB, and PCAPCD in reducing health risk from this rail yard.

If you, or your staff, have any questions regarding this request, please contact me at (530) 745-2321.

Sincerely,



Thomas J. Christofk
Air Pollution Control Officer

Cc: Michael Scheible
Daniel Donohue
Robert Fletcher
Harold Holmes