425 S. Palos Verdes Street

Post Office Box 151

San Pedro, CA 90733-0151

Tel/TDD 310 SEA-PORT

www.portoflosangeles.org

August 19, 2005

Mr. Michael N. Jones
U.S. EPA (D243-02)
4930 Page Road
Durham, NC 27703

SUBJECT: LOCAL SCALE AIR TOXICS AMBIENT MONITORING APPLICATION

Dear Mr. Jones:

Please find enclosed an application for the US EPA's Local-Scale Air Toxics Ambient Monitoring Grant (OAR-EMAD-05-16), submitted by the City of Los Angeles, Harbor Department, Environmental Management Division. The Harbor Department would use this grant to expand the air toxics monitoring capability of our existing community based ambient air quality monitoring network. The existing network collects representative ambient particulate matter (PM) and meteorological data at four stations located within the port's region of influence. The grant would allow us to enhance our current program to include the capability of monitoring air toxics, particularly polycyclic aromatic hydrocarbons (PAHs).

Additional details are found within the enclosed application. Should you have any questions or require additional information, please do not hesitate to contact me at 310-732-3675 or at pjohansen@portla.org.

Sincerely,

PAUL JOHANSEN
Assistant Director of
Environmental Management

Enclosure
PJ:jm
ADP No. 031106-534
File: Y:_General Clerical\Letters\031106-534 Portwide Air Qual Mon Network\USEPA Grant Submittal 08-19-05.doc

THE PORT OF LOS ANGELES

Port of Los Angeles Community-Based Air Toxics Exposure Study

Application to the U.S. Environmental Protection Agency's Solicitation: "Local-Scale Air Toxics Ambient Monitoring"

RFA No: OAR-EMAD-05-16
CFDA NO: 66.034

Applicant: City of Los Angeles
Harbor Department
Environmental Management Division

Contact: Paul Johansen
Assistant Director of Environmental Management
The Port of Los Angeles
Phone No. (310) 732-3675
Fax No. (310) 547-4643
E-mail: pjohansen@portla.org

Requested Funding: $250,000

UNIVERSITY OF CALIFORNIA, RIVERSIDE

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO SANTA BARBARA • SANTA CRUZ

COLLEGE OF ENGINEERING - CE-CERT
CENTER FOR ENVIRONMENTAL RESEARCH & TECHNOLOGY
(909) 781-5791 FAX (909) 781-5790

RIVERSIDE, CALIFORNIA 92521-0434

August 4, 2005

Mr. Paul S. Johansen
Assistant Director of Environmental Management
The Port of Los Angeles
425 S. Palos Verdes Street
San Pedro, CA 90731

RE: EPA Local-Scale Air Toxics Ambient Monitoring Grant Opportunity

Dear Mr. Johansen:

The Bourns College of Engineering-Center for Environmental Research and Technology (CE-CERT) at the University of California, Riverside (UCR) would be very interested in working with the Port of Los Angeles on the proposed project of "Community Scale Air Toxic Monitoring Network." CE-CERT has the capability of providing the Port with expertise in technical services, as well as QA/QC.

I personally have 25 years of experience in managing air quality measurement studies, and would play the role of Scientific Advisor, overseeing all technical issues with the upgrades of monitoring stations. Mr. David Gemmill, with over 20 years experience in field and laboratory emissions measurements, would be responsible for the development of Quality Assurance Program Plans and auditing, serving as the QA/QC officer and ensuring the quality of the work. If the project were funded, a formal contracting process would need to be negotiated between the involved parties.

I know that CE-CERT's renowned expertise and our excellent facilities and personnel will be a great asset to this project. I look forward to this collaboration.

Sincerely.

Dennis Fitz
Manager, Atmospheric Processes

Version 7/03

APPLICATION FOR FEDERAL ASSISTANCE

		2. DATE SUBMITTED August 19, 2005	Applicant Identifier
1. TYPE OF SUBMISSION: Application ☐ Construction ☒ Non-Construction	Pre-application ☐ Construction ☐ Non-Construction	3. DATE RECEIVED BY STATE	State Application Identifier
		4. DATE RECEIVED BY FEDERAL AGENCY	Federal Identifier

5. APPLICANT INFORMATION

Legal Name: City of Los Angeles	Organizational Unit: Department: Harbor Department
Organizational DUNS: 01 867 92 46	Division: Environmental Division
Address: P.O. Box 151	Name and telephone number of person to be contacted on matters involving this application (give area code)
Street: 425 South Palos Verdes St.	Prefix: Mr. / First Name: Paul
City: San Pedro	Middle Name:
County: Los Angeles	Last Name: Johansen
State: CA / Zip Code: 90733-0151	Suffix: n/a
Country: United States of America	Email: pjohansen@portla.org
6. EMPLOYER IDENTIFICATION NUMBER (EIN): 95-6000735W	Phone Number (give area code): (310) 732-3675 / Fax Number (give area code): (310) 547-4643
8. TYPE OF APPLICATION: ☒ New ☐ Continuation ☐ Revision If Revision, enter appropriate letter(s) in box(es) (See back of form for description of letters.) ☐ ☐ Other (specify)	7. TYPE OF APPLICANT: (See back of form for Application Types) Municipal Other (specify)
	9. NAME OF FEDERAL AGENCY: Environmental Protection Agency
10 CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: 66-034 TITLE (Name of Program): Local Scale Air Toxics Ambient Monitoring	11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT: Port of Los Angeles Community Based Air Toxics Exposure Study
12. AREAS AFFECTED BY PROJECT (Cities, Counties, States, etc): City of Los Angeles (San Pedro)	
13. PROPOSED PROJECT Start Date: October, 2005 / Ending Date: March, 2007	14. CONGRESSIONAL DISTRICTS OF: a. Applicant 36 – Jane Harman / b. Project 36 – Jane Harman

15. ESTIMATED FUNDING:	
a. Federal	$ 250,000
b. Applicant	$ 1,000,000
c. State	$
d. Local	$
e. Other	$
f. Program Income	$
g. TOTAL	$ 1,250,000

16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?

a. Yes ☐ THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON
DATE:

b. No ☒ PROGRAM IS NOT COVERED BY E. O. 12372
☐ OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW

17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT?
☐ Yes If "Yes" attach an explanation. ☒ No

18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT. THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.

a. Authorized Representative

Prefix	First Name	Middle Name
Mr.	Paul	
Last Name Johansen		Suffix
b. Title Assistant Director of Environmental Management		c. Telephone Number (give area code) (310) 732-3675
d. Signature of Authorized Representative		e. Date Signed 8/18/05

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Standard Form 424 (Rev. 9-2003)
Prescribed by OMB Circular A-102

Section 2.0 Narrative Work Plan

A. Title: Port of Los Angeles Community-Based Air Toxics Exposure Study

B. Category: Community-Scale Monitoring

C. Applicant Information:

Submitted by:	Paul Johansen
Organization:	City of Los Angeles
	Harbor Department
	Environmental Management Division
Address:	425 S. Palos Verdes Street
	San Pedro, CA 90733-0151
Phone:	(310) 732-3675
Fax:	(310) 547-4643
Email:	pjohansen@portla.org

D. Funding Requested

The total funding requested is **$ 250,000.00** for a period of 18 months.

E. Total Project Cost

It is estimated the entire project cost is approximately **$1,250,000. $250,000** will be provided by the requested EPA Grant, and the remaining cost will be absorbed by the existing Port of Los Angeles Port-wide air quality monitoring network budget. This is considered as a very cost-effective program to enhance monitoring capability of the existing network and upgrade the network to a community-based air toxics monitoring network. The additional monitoring data collected is critical for community-scale air toxics exposure assessment.

F. Project Period

The project is expected to start in October 2005 and will last for 18 months.

G. Summary Description of Qualifications to Meet the Category-Specific Criteria

2.1 Project Summary

The proposed project meets the requirements of the National Ambient Air Monitoring Strategy to measure air toxics in local communities adjacent to the Port of Los Angeles (Port). Specifically polycyclic aromatic hydrocarbons (PAHs), and the collected PAH data along with the data collected at the existing Port-wide ambient air quality monitoring network stations can be integrated and to supplement measurements at the National Air Toxics Trend Stations.

Furthermore, the proposed project supports the U.S. Environmental Protection Agency's (U.S. EPA) Strategic Plan Goal 1 - Clean Air and Global Climate Changes, Objective 1.1 - Healthier Outdoor Air, and Sub-Objective 1.1.2 - Reduced Risk from Toxic Air Pollutants, to reduce public exposure to hazardous air pollutants by collecting and analyzing data from a local-scale air toxics monitoring network, and to better understand the potential health impacts of local communities from Port's operations. This project will also assist state and local communities in characterizing the degree and extent of local air toxics problems and assist with the tracking progress of adopted reduction measures.

The Port of Los Angeles is leading the industry in identifying and implementing control strategies for air emissions in the port sector. A task force appointed by the Mayor of the City of Los Angeles was set in place to build consensus on an innovative and realistic strategy to achieve 'No Net Increase' in air emissions at the Port of Los Angeles. The NNI Task Force has recently completed its deliberations and has detailed 68 potential control measures for port-related sources. Many of these measures are non-regulatory due to the nature of the source (i.e. international sources). While not a regulatory agency, the Port, as a landlord may exercise proprietary power to impose and enforce air emission reduction requirements in Port leases, permits and other Port project approvals; to charge differential fees to encourage emission reductions; or, to adopt new resolutions to reduce emissions when leases are approved or renewed or to adopt mandatory air emission requirements of general application through amendment of the Port's tariff.

Project Objective

The main objective of the proposed project is to enhance the Port-wide ambient air quality monitoring program currently in progress in the Port to include the capability of monitoring air toxics, especially PAHs. The proposed study will utilize real-time PAH analyzers (EcoChem Analytics PAS 2000) to measure particle-bound PAHs in the ambient air on a quasi-real time basis to provide better temporal resolution. This enhancement expands the capability of the existing ambient air quality monitoring network to include ambient PAH measurements, and upgrade to become a community-scale air toxics exposure monitoring program. Results from real-time PAH measurements coupled with meteorological data, and particulate mass and chemical measurements obtained from the existing Port-wide air monitoring network will be used to characterize emission sources and potential ambient air quality impacts by air emission from the Port's operations, particularly, diesel exhaust particulates. Furthermore, the direct measurement of particle-bound PAH will provide better insight into potential health effects; PAH measurements are considered a better indicator than elemental carbon as a surrogate for diesel particulate matter in estimating diesel particulate matter concentration for health risk assessment purposes.

Background

The Port is one of the busiest seaports on the west coast of the United States. The Port has more than 3,000 vessel calls and moves more than $100 billion dollars worth of goods annually. The infrastructure that requires moving goods throughout the region and to other areas in the nation includes many diesel-powered mobile sources. The Port's activity has increased significantly in recent years due to the tremendous economic growth and trade in the Pacific Rim areas. As a result, air emissions from Port's predominately diesel-powered equipment are also increased.

California Air Resources Board (ARB) has identified diesel particulate matter (DPM) as a toxic air contaminant because of its known carcinogenic properties. U.S. Environmental Protection Agency (EPA) also lists diesel exhaust as a mobile source air toxic among 33 air pollutants in the National-Scale Air Toxics Assessment. South Coast Air Quality Management District (SCAQMD) conducted three urban air toxics monitoring programs in the South Coast Air Basin in the last two decades, the Multiple Air Toxics Exposure Study-I (or MATES-I) in 1986, MATES-II in 1998 and MATES-III in 2004 (still on going) to assess potential adverse health effects by exposure to air toxics (including DPM). DPM health risks were estimated using California EPA risk factors for DPM and elemental carbon (EC) as a surrogate for estimating DPM concentrations.

DPM is a parameter commonly used by regulatory and scientific communities, the general public and various industries to represent particulate emissions from diesel engines. However, EC may be a good surrogate for estimating DPM concentrations, but other sources in addition to diesel exhausts can also contribute to EC concentrations in ambient samples. As a result, the DPM estimation could be biased. Furthermore, from a chemistry standpoint, DPM contains numerous individual chemical species, both organic and inorganic, on the surface of the particle. One group of chemical species in DPM that has

significant health implication is PAH. PAHs are byproducts of the combustion of organic matters. Many of them are potent carcinogens or mutagens that can be metabolized and become bioactive to attack cell DNA. Many PAHs, such as benz[a]anthrcene, benzo[b]fluoranthene, benzo[k]fluoranthene and chrysene are considered as hazardous air pollutants (HAPs). Table 1 provides a list of selected PAHs and DPM, and their unit risk factors.

Table 1. Selected PAH Pollutants, DPM and Unit Risk Factors

Selected PAH Pollutants and DPM	Unit Risk Factor
Benzo[a]anthracene	1.10E-04
Benzo[b]fluoranthene	1.10E-04
Benzo[k]flouranthene	1.10E-04
Benzo[a]pyrene	1.10E-03
Chryscene	1.10E-05
Dibenz[a,h]anthracene	1.20E-03
Indeno[1,2,3-cd]pyrene	1.10E-04
Diesel particulate matter (CARB)	3.00E-04

The Port has taken initiatives to investigate and mitigate air emissions from Port's activities. One of the benchmark studies was the 2001 Port-wide Baseline Air Emission Inventory, in which five major emission categories were identified: - ocean going vessels, harbor craft, cargo handling equipment, heavy duty trucks and locomotives. Control measures were proposed for each category to reduce air emissions.

In a continuing effort, the Port implemented the Port-wide Air Quality Monitoring Program to: (1) measure ambient DPM levels in the Port vicinity and adjacent communities; (2) measure the effect of mitigation activities; and (3) validate health risk assessments.

The existing Air Quality Monitoring Program has five stations, one primary station and four satellite stations, located within the Port's operational region of influence (ROI). The first two satellite stations are located in the two adjacent communities, one in Wilmington to the north (at the Saints Peter and Paul Elementary School, or SPPS) and the second one in San Pedro (on the Liberty Hill Plaza building or LHO). The third satellite station, a "coastal boundary" station is located at Berth 47 of the Port and the last satellite station, a "source-dominated" station is located on Terminal Island, near the center of Port operations during onshore wind flows. The Wilmington station also serves as a primary station, because (1) it is located just north of the Port, (2) the wind flow patterns, and (3) due to its proximity to this community from the Port operations, this area may experience elevated pollutant concentrations from Port emissions.

Air monitoring site selection and development of the air monitoring protocol were developed by the Port staff and their consultants. In consideration of public and regulatory interest in the air quality issues in the Port, concurrence was obtained from SCAQMD and ARB on the protocols and parameters to be measured. In addition, the Port staff also worked with the air quality subcommittee of the Port Community Advisory Committee (PCAC), in the protocol development process to address local community concerns. This unique approach provides an opportunity to address concerns and incorporate input from regulatory agencies and local communities during the development process, and to validate the creditability of the monitoring program. The Port conducted surveys, evaluations and pilot studies prior to initiating the actual monitoring study.

The existing program collects representative ambient particulate matter (PM) and meteorological data within the Port ROI for an initial period of one year (starting February 2005). This special study program collects PM less than 10 microns in diameter (PM_{10}) and PM less than 2.5 microns in diameter ($PM_{2.5}$) to determine ambient levels and chemical composition of these pollutants within the Port ROI. Chemical

analysis includes elemental analysis by X-ray diffraction, ionic species by water extraction and ion chromatography, elemental carbon (EC) and organic carbon (OC) by thermal/optical reflectance method. Table 2 lists the parameters measured and sampling frequency at each station.

The Port proposes to enhance the existing Port-wide air quality monitoring study by deploying real-time PAH analyzers to measure particle-bound PAHs on a quasi-real time basis. This enhancement will provide chemical specificity in the collected sample as well as better temporal resolution. The measurement results will be used to characterize emission source and potential ambient air quality impacts by diesel particulate emissions from the Port's operations. From a health risk assessment perspective, direct measurement of particle-bound PAH will provide a better understanding of potential health effects from diesel exhaust than using elemental carbon as a surrogate for estimating DPM concentration in health risk assessment. If needed, selective filter samples will be analyzed for individual PAHs and the data will be used to investigate the potential correlation with real-time PAH data for the same monitoring time period. The Port also proposes to deploy Aethelometers at two selected stations to provide correlation study of results from PAH analyzer measurements.

A good example of the application of a PAH analyzer occurred in a study of Children's Pollutant Exposure During School Bus Commutes, where the researchers measured concentrations of diesel vehicle-related pollutants, such as black carbon and particulate bound PAHs using an EcoChem Analytics PAS 2000 analyzer to measure real-time PAHs. The real-time PAH analyzer uses an ultra violet (UV) lamp to ionize PAH-coated aerosols and measures charge change with an electrometer. Furthermore, the result from the recent completed Wilmington Measurement Study showed that the PAH measurement by real-time analyzer correlated well with a real time absorption method that uses the Magee Scientific Aethelometer to measure EC. Table 2 shows the components of the Port-wide Air Monitoring Program and Figure 1 illustrates locations of Port air monitoring stations.

Table 2. Components of the Port-wide Air Monitoring Program

Monitoring Station	Parameter Measured	Monitoring Method	Sampling Frequency	Analysis
Primary Station (Wilmington)	$PM_{2.5}$	Federal reference method (Rupprecht & Patashnick [R&P] Partisol 2000 Sampler)	24-hr average, every 3-days for 90 days of trial period, then once every 6 days	Mass
	PM_{10}	Federal reference method (R&P Partisol 2000 Sampler)	24-hr average, every 3-days for 90 days of trial period, then once every 6 days	Mass
	Meteorological Parameters	Meteorological Stations	Continuous	None
Satellite Stations (Wilmington, San Pedro, Berth 47 and Terminal Island)	$PM_{2.5}$	Desert Research Institute (DRI) Sequential Filter Sampler (SFS)	Onshore and offshore flows	Mass, EC/OC, elemental and ionic species
	$PM_{2.5}$	DRI SFS	24-hr average, every 3-days for 90 days of trial period, then once every 6 days	Mass, EC/OC, elemental and ionic species
	$PM_{2.5}$	TSI 8520 - Dust Trak Monitor	5-min, coincide with SFS 24-hr sampling frequency	Mass
	Meteorological Parameters (Wind speed, wind direction, temperature)	Meteorological Stations	Continuous	None

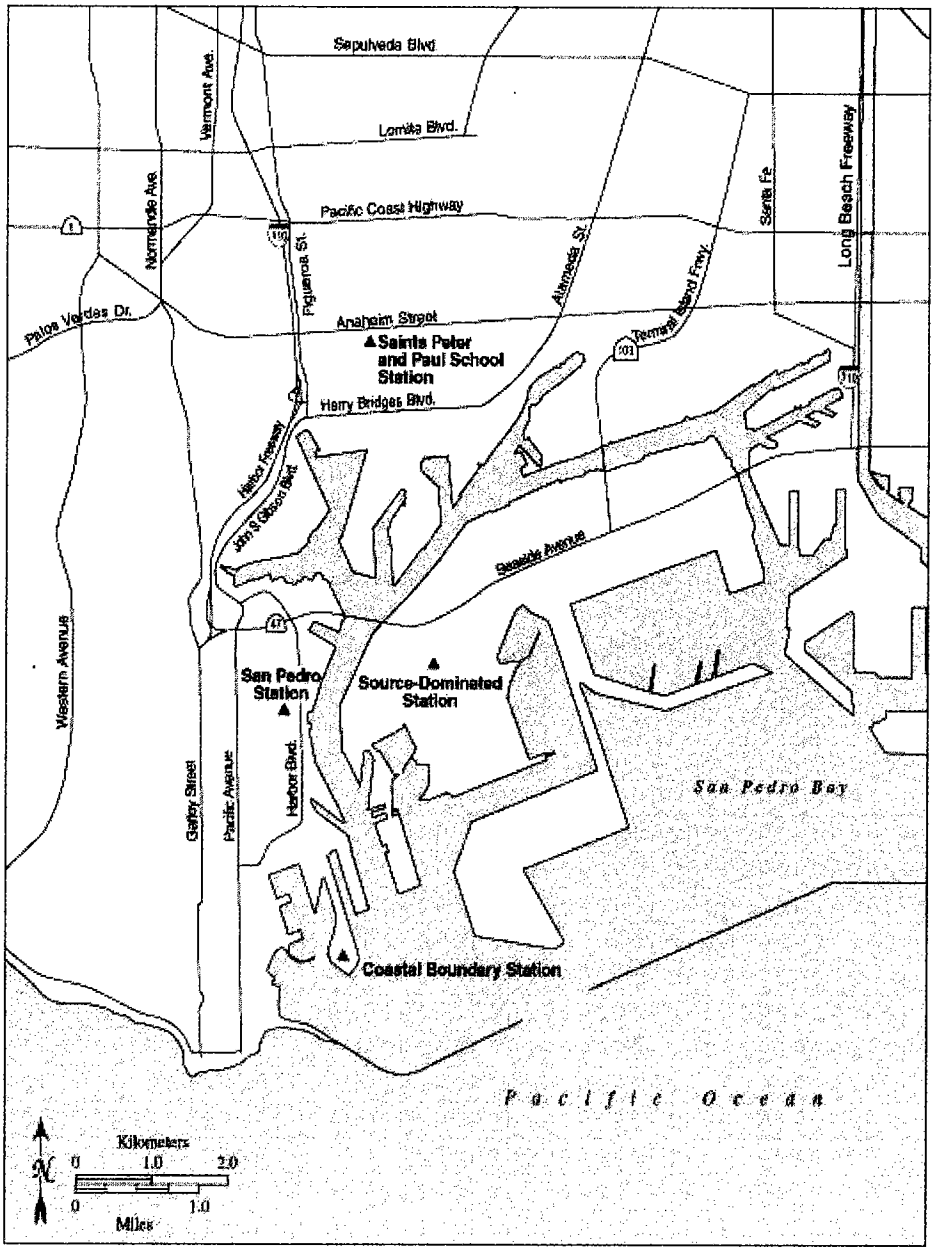


Figure 1. Locations of POLA Air Monitoring Stations

Normally, PAH in an air sample is analyzed by extraction of 24-hour integrated filter sample and identified by liquid or gas chromatography/mass spectrometry analysis. It is a time-consuming, elaborate and expensive process. Therefore, very few PAH samplings and analyses were performed in large-scale air toxics monitoring programs except for special studies. On the other hand, although only gross particle-bound PAH could be measured by the proposed PAH analyzer, the direct PAH and real time measurement does provide unique insights of emission characteristics as compared to traditional analytical scheme. This enhancement also will complement monitoring data collected at MATES-III stations near the Port to validate health risk assessment results.

2.2 Associated Work Products to Be Developed

The addition of EcoChem model 2000 PAS analyzers to the four existing air monitoring stations to measure real-time particle-bound PAHs, this upgrade will elevate the effectiveness of the existing Port-wide Air Quality Monitoring Network Program to a Community-based Air Toxics Exposure Program. Data from real-time PAH measurements along with meteorological data, and particulate mass and chemical measurements obtained from the existing Port-wide air monitoring network will be used to (1) characterize emission sources, (2) to determine potential ambient air quality impacts by air emissions from the Port's operations, and (3) to validate health risk assessments using results from direct ambient PAH measurements. Since the parameter of the monitored area is limited to community scale, results from the program will impose direct benefits to the local communities.

As previously presented, the Port initiated a Port-wide monitoring study and built a network consisting of four ambient air quality monitoring stations in response to regulatory agency and local community concerns about potential adverse environmental and health impacts from air emissions generated from the Port's daily operations, However, the existing stations do not have the capability of directly monitoring PAHs.

The Community-based Air Toxic Exposure Study will enhance the existing network by expanding the measurement capability of its monitoring stations. All four stations will be upgraded with the PAS analyzers. The real time PAH data will be used with meteorological data and measurement data from existing stations to facilitate the assessment of ambient air quality impacts, to characterize and identify emission sources, and to improve and validate results of health risk assessment.

Development of Work Plan

A work plan will be developed immediately after the award to present detailed real-time PAH analyzer initial set-up, calibration and routine monitoring procedures. In the event of budgetary constraints, the Port will reduce the number of required analyzers from four to two. The locations for the two PAH analyzers are tentatively assigned the Wilmington and Terminal Island stations to serve as a receptor and a source station, respectively, in prevailing on-shore wind conditions.

As required by the solicitation, a Quality Assurance Project Plan will be prepared according to requirements as described in the "Quality Assurance Guidance Document - Quality Assurance Project Plan for the Air Toxics Monitoring Program" (EPA-454/R01-007), including the key elements such as project organization, project background and description, tasks and field activities, data quality objectives, sampling methodologies, frequency, analytical methods, quality control requirements, instrument calibration, data management, data review and validation.

Field Monitoring

As discussed earlier, the real-time PAH analyzers will be installed at all four stations in the existing Port-wide air monitoring network. The analyzer operates on the principle of photo-ionizing particle-bound PAHs with UV lamp radiation (or called Excimer) and measuring particle charge changes. The changes of

particle charge can then be converted into particle-bound PAH concentrations. The operation is a real-time measurement depending on cycle time interval selected (i.e., in seconds), then the data is processed internally and can be displayed as minute-average values.

The field operation of PAH analyzer is rather straight-forward and requires minimal supervision and maintenance because the instrument has very few moving parts. However, manual inspection of instrument operation and routine check will still be conducted by the field personnel currently servicing the existing network.

For DPM correlation study, integrated filter samples collected at the existing air quality monitoring stations for the same time period will be retrieved from the storage and analyzed for PAH contents. Analysis of PAH in filter samples will follow traditional sample preparation by solvent extraction and analysis by gas chromatography and mass spectrometry or by high performance liquid chromatography and fluorescence detection (CARB MLD-028).

The field monitoring period will coincide with the existing network for a period of 12 months and can be extended if required.

Data Reduction and Management

Real-time PAH concentration will be collected and processed using PAHDAS software provided by the instrument manufacturer. Post processing for minute, hour and 24-hour average data will be performed using spreadsheet program after downloading from the analyzer's data acquisition system.

Analytical data from PAH analysis of filter samples will be provided by the analytical laboratory following standard sample custody and tracking procedures. Analytical results will be converted to concentration (i.e., milligram per cubic meter or mg/m^3) using data obtained from field samplers and quality assurance/quality control activities.

All reviewed and validated PAH monitoring data in this enhancement study and also data collected from the Port-wide air quality monitoring network will be submitted to the U.S. EPA, to be incorporated as part of the National Air Toxic Assessment Database.

Data Analysis

Real-time PAH data will be used along with detailed chemical analysis, EC/OC and mass data of filter sample and meteorological data to elucidate the potential sources and their contributions of diesel particulates, especially for the periods that prevailing wind carries air emissions from the Port's operation to the downwind locations.

Validation of Health Risk Assessments

Ambient ground-level concentrations of PAHs at monitoring stations located at the Port and adjacent community area as well as ambient background level will be used to evaluate and validate the results of health risk assessment from regional air toxics study currently underway by the local agency.

2.3 Transferability and Applicability of the Project to Other Like Communities

The proposed community-scale air toxics exposure study has two unique properties that can be easily transferred and applied to not only community-scale exposure assessments at other Ports in the nation, but also to most of the existing air monitoring networks that wish to include air toxics monitoring capabilities. The first is the use of real-time PAH analyzer, which provides ambient particle-bound PAH

concentrations. Although only gross PAH concentrations are measured, the technology does provide a direct measurement of particle-bound PAHs. Furthermore, PAH monitoring data can be analyzed along with meteorological data to identify potential emission sources or residual air pollutants, based on station location and prevailing wind direction. The same measurement technology can be easily applied to other Ports' community exposure studies as well as to air monitoring networks that wish to enhance the capabilities of the monitoring stations.

Secondly, health risk assessments of air toxics are based on the results of air toxics emission inventory and dispersion modeling. Therefore, the measurement of ambient particle-bound PAHs can be used to validate the estimated ambient concentrations of air toxics from emission inventory and dispersion modeling to verify the accuracy of estimated ambient concentration of toxic air contaminants and their potential health impacts. The PAH data can provide a better insight of health risk assessment as compared to conventional estimation of DPM concentration by multiplying EC data of filter samples with a factor (i.e., 1.04). The knowledge learned from this project will benefit future community air toxic studies by categorizing the emissions sources and improving the understandings of the pollution patterns, thereby enhancing the effectiveness of mitigation measures and ultimately improve the air quality in the surrounding communities.

2.4 Tracking and Measuring Progress

To ensure the work is performed at the highest professional level, the work schedules are managed at several levels. The Port Project Manager will communicate regularly with the EPA personnel regarding project status and work progress. On a monthly basis, the Port Project Manager will inform EPA of current progress and submit a monthly update memo. On a quarterly basis, the Port Project Manager will submit a quarterly report to the EPA. In addition, budget control is accomplished by closely monitoring labor and direct expenses for each work assignment. Work reports are completed for each individual, with the Project Manager approving labor hours. Similarly, the Project Manager must approve expense reports and other direct expenses. The Port Project Manager will include budget summaries in quarterly reports to the EPA personnel that detail percentage of the budget used, work anticipated and accomplished.

2.5 Air Quality Program Success Evaluation

The success of the project will be evaluated based on the following three criteria: (1) Data Quality, (2) Project Schedule, and (3) Budget Control. Data obtained from the project will be evaluated against the parameters set by the data quality objectives developed in the aforementioned Quality Assurance Project Plan, namely, the precision, accuracy, representation, completeness and comparability of the data. Secondly, the project will be evaluated based on the timely completion of each task according to the proposed schedule and milestones (Table 3). Finally, the project will be evaluated for its budgetary performance. The cost of the project shall be within the budgeted amount. Proposed work schedule can be found in Table 3. Work Plan Overview.

Table 3. Work Plan Overview

Phase	Milestone Time Period	Activities	Frequency
Phase 1- Planning	2 months after grant is awarded	Team meetings	Weekly
		Detailed work plan development	
		QAPPs development	
		Finalize contracts	
		Purchase instruments from manufacturer	
Phase 2- Installation	1 month after QAPPS submittal	Monitoring sites upgrade with tested, calibrated and operational equipment	
Phase 3- Monitoring	For the following 12 months after monitoring locations are in operation	Prepare and submit quarterly report to EPA	Quarterly
		Data analysis and reporting	
Phase 4- QA/QC & Reporting	Last 3 months of the program	Prepare and submit final report to EPA	
Project Total	18 months		

Figure 2 is a Gantt chart showing individual task duration and start and completion dates, milestones and deliverables in the project.

2.6. Roles and Key Personnel

The proposed POLA team organization is shown in Figure 1, including the specialties for key technical personnel and service areas anticipated from the subcontractors.

Mr. Paul Johansen will be responsible for the successful execution of this contract, both technically and financially. He will represent the Port and provide technical and regulatory liaison. Mr. Johansen will regularly interface with the EPA's Contract Administrator regarding all project-related issues and the Port's team performance to ensure that all work performed adheres to the approved schedule and budget while meeting the EPA's highest expectations.

Project Manager: The Project Manager (PM), Shokoufe Marashi, Ph.D., will be responsible for the day-to-day planning and execution of project activities, performing cost estimates and budget control for assigned tasks, overseeing Task Managers, and ensuring quality and timeliness of all assignments. Dr. Marashi will maintain close communications with the EPA Contract Administrator on all project activities through routine project meetings and monthly progress reports.

Scientific Advisor: The Scientific Advisor, Mr. Dennis Fitz, brings 27 years of experience directing air quality improvement and research programs nationwide. He is presently serving as Manager of the Air Monitoring Group at the University of California, Riverside.

QA/QC Manager: The QA/QC Manager, Mr. David Gemmill, is a Quality Assurance Coordinator with over 20 years experience in field and laboratory emissions measurements, development of Quality Assurance Program Plans, and auditing.

2.7 Biographical Information of Key Personnel

Principal-in-Charge: Paul Johansen: Mr. Johansen is the Assistant Director of the Environmental Management Division. Mr. Johansen is a Marine Biologist with more than 25 years experience working in the environmental field. He has extensive experience in managing multiple projects related to water quality, air quality and environmental impact analyses. Mr. Johansen is responsible for managing an environmental stewardship budget of more than fifty million dollars annually. During his more than 25 years working for the Harbor Department of the City of Los Angeles, Mr. Johansen has had the opportunity to manage multiple grant funded projects.

Project Manager: Shokoufe Marashi, Ph.D.: Dr. Marashi has more than 17 years of experience in water quality monitoring, methodology development, analysis, special studies, modeling, legal reporting, and water quality regulation. She has 2 years of experience in air quality programs and regulations. She is the program manager for the Ambient Air Quality Monitoring at the Port of Los Angeles. Dr. Marashi is also the leader for the emission control technologies and alternate diesel fuel at the Port of Los Angeles. Dr. Marashi has spent 12 years with the City of Los Angeles and 9 years with Bureau of Sanitation in the area of Water Quality monitoring and regulation for the water bodies under City's jurisdiction. She led the La River Nitrogen TMDL as well as the Ballona Creek and LA River Metals TMDL. Dr. Marashi also has more than 10 years of experience in teaching Chemistry in a number of Universities and Colleges including: University of Southern California, University of California, Irvine and Santa Monica College.

Scientific Advisor: Dennis Fitz: Mr. Fitz has more than 25 years of experience in managing air quality measurement studies. He conducts research to determine the fate of air pollutants after they are emitted into the atmosphere using measurements and modeling. Mr. Fitz specializes in the measurement of trace pollutants in ambient air from point, area, and fugitive sources. In addition to having experience with most methods of measuring air pollutants, he has developed several novel measurement methods. Recent experience include projects that measured ambient concentrations of diesel-related pollutants in Wilmington, CA and another project that measured industrial air pollutants in San Diego, CA. A third project evaluated exposure to air pollutants that children receive while riding in buses. He has managed measurement projects for all of the major special air pollution studies conducted in California over the past 20 years. He was also the Principal Investigator for three key projects for the Southern California Oxidant Study (SCOS97-NARSTO), a major research effort to characterize the area's air pollution.

QA/QC Manager: David Gemmill: Mr. Gemmill is a Quality Assurance Coordinator with over 20 years experience in field and laboratory emissions measurements, development of Quality Assurance Program Plans, and auditing. He served as Principal Investigator for the development, testing and documentation of the new EPA coarse particle standard, and for continuous methods for particulates. He is the principal author of Section 2.12 of the EPA QA Handbook for Air Pollution Measurement Systems, and its related systems audit questionnaire, which support the implementation of the PM2.5 regulations. Formulated and initiated quality improvements to measurement and instrument calibration methods, particularly for O3 and particulate matter. Designed, planned and executed field studies nationwide to perform epidemiological research, development and testing of air quality measurement methods, model validation and development of QA methodologies.

2.8 Information Not Covered Above

The Port proposes to team with the Bourns College of Engineering - Center for Environmental Research and Technology (CE-CERT), at the University of California, Riverside to perform project tasks. The selected members of CE-CERT, namely, Mr. Dennis Fitz and Mr. David Gemmill, will bring more 40 years of ambient air toxic monitoring and quality control/quality assurance experience to the project. In addition, this arrangement provides invaluable opportunity for the team to assess vast research resources and technical knowledge, and will benefit the project tremendously. A copy of letter of cooperative agreement from CE-CERT is attached below.

Section 3.0 Detail Itemized Budget

Air Monitoring Program

Agency: Port of Los Angeles

Institution:

Project Period: 1/1/06-6/30/07

				MONTHLY		BENEFIT		
PERSONNEL	**# MO**	**# People**	**% TIME**	**RATE**	**SALARY**	**RATE**	**FRINGE**	**TOTAL**
Port of Los Angeles								
Mr. Paul Johansen	18	1	5.0%	8,418	7,576	50.00%	3,788	$11,364.30
Project Administrator								
1/1/06-6/30/07								
Dr. Shokoufe Marashi	18	1	20%	5,863	21,105	50.00%	10,553	$31,657.50
Project Manager								
1/1/06-6/30/07								
Mr. Kevin Maggay	18	1	10%	4,868	8,762	50.00%	4,381	$13,142.25
Other Staff								
1/1/06-6/30/07								
University of California, Riverside								
Mr. Dennis Fitz								
Principal Investigator								
1/1/06-6/30/07	15	1	5.0%	9,584	7,188	22.00%	1,581	$8,769.36
Mr. David Gemmill								
Development Engineer								
1/1/06-6/30/07	12	1	5.0%	6,088	3,653	22.00%	804	$4,456.42
TOTAL PERSONNEL					48,284		21,106	$69,389.83
CONTRACTUAL COST								
Installation, overview, data collection and maintenance								$36,000.00
EQUIPMENT	**Quantity**	**Description**				**Price**		
	4	PAS 2000 Desktop				15,950		$63,800.00
	4	PAS-2000 Laptop computer remote data acquisition				2,300		$9,200.00
	2	Aethelometer with internal datalogger				18,000		$36,000.00
SUPPLIES		PAS 2000						
	1	Exciment lamp kit for PASS 2000				1,421		$1,421.00
	1	Replacement pump for PASS 2000				740		$740.00
	1	Front Panel display for PAS 2000				360		$360.00
		M-S Aethelometer						
	1	Recording tape				500		$500.00
ANALYSIS								
	72	PAH analysis and filter filters				250		$18,000.00
TRAVEL								
SUBTOTAL								$235,410.83
OTHER Facilities rental								$6,526.19
TOTAL DIRECT COSTS								$241,937.01
INDIRECT COSTS								
26.00% of Modified total direct costs for UCR					31,226			$8,118.70
TOTAL PROJECT COST								$250,055.71

Section 4.0 Quality Assurance Narrative

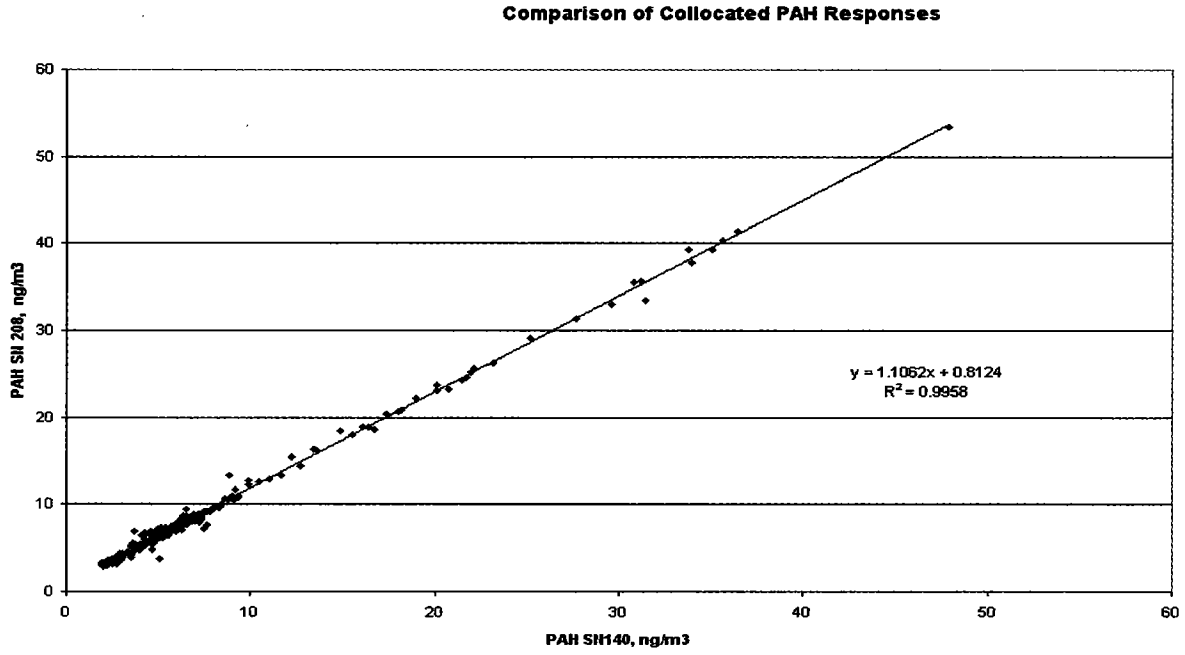
4.1 Quality Control/Quality Assurance

As discussed earlier, prior to initiating the monitoring program, we will submit a Quality Assurance Project Plan (QAPP) in accordance with US EPA Quality Assurance Guidance Document Guidelines (EPA-454/R-01-007). This document will specify the Data Quality Indicators (DQIs) and the quality control steps to be undertaken for both field and laboratory measurements. The primary QC steps proposed include:

- Daily review of real time sensor performance.
- Periodic field maintenance and instrument checkout.
- Collocation of monitors and particulate samplers to determine measurement precision and comparability.
- Collection of dynamic filter blanks and instrument response to particle-free air.
- Replicate analyses to determine analytical precision.
- Quality assurance samples for laboratory analyses.
- Quality assurance audits to determine accuracy using a comparison of two analyzers over a one-day period (the high correlation coefficient is a good indication of useful QA/QC).

To ensure that work is performed at the highest professional level, the Port relies on a proven QA/QC program and technical excellence of its personnel. The Port's QA policies cover all aspects of project performance, technical quality, and peer review and are implemented at each professional and technical level to assure the quality of the work performed. An example of the measurement precision of the proposed PAH analyzers is demonstrated in the Figure 3.

Figure 3. Comparison of Two Collocated PAH analyzers



4.2 Data Validation

Data validation will strictly follow EPA guidelines. Data will not be removed or discarded unless it does not comply with QA/QC requirements. All data will be screened for outliers that are not within the physically reasonable (normal) ranges and handled in the following manner:

- Flagging data when significant deviations from measurement assumptions have occurred,

- Verifying computer file entries,
- Eliminating values for measurements known to be invalid because of instrument malfunctions,
- Adjusting measurement values for quantifiable calibration or interference biases, and
- Reviewing meteorological and PM data as time series plots. Rapidly changing, anomalous or otherwise suspect data will be examined with respect to other data at this and nearby meteorological monitoring stations to determine their validity.