A1. QUALITY ASSURANCE PROJECT PLAN
FOR
HURRICANE KATRINA AIR RESPONSE
IN LOUISIANA

U.S. EPA Work Assignment No.: 21-001
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Prepared For:
United States Environmental Protection Agency/Environmental Response Team
Edison, NJ

September 9, 2005

Approved By:

_____	_____
REAC Task Leader	Date
_____	_____
REAC Section Leader	Date
_____	_____
REAC Quality Assurance Officer	Date
_____	_____
REAC Program Manager	Date
_____	_____
U.S. EPA Work Assignment Manager	Date

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A. PROJECT MANAGEMENT

This Quality Assurance Project Plan (QAPP) was prepared in accordance with the *EPA Requirements for Quality Assurance Projects Plans*, EPA QA/R-5, *U.S. EPA Quality Assurance Guidance Document; Quality Assurance Project Plan for the Air Toxics Monitoring Program* and the *Response Engineering and Analytical Contract (REAC) Program QAPP*.

A3. DISTRIBUTION LIST

The following personnel will receive copies of the approved QAPP for the Hurricane Katrina Response in Louisiana (LA), Work Assignment (WA) No. 0-001.

1. David B. Mickunas, Environmental Protection Agency/Environmental Response Team (EPA/ERT) Work Assignment Manager (WAM)
2. Kyndall Barry, EPA Region VI Enforcement
3. Debbie Killeen, REAC Quality Assurance Officer (QAO)
4. Stephen Blaze, REAC Advanced Analytical Group Leader
5. Jeffrey Bradstreet, REAC Air Section Leader
6. Dennis Miller, REAC Program Manager

A4. PROJECT ORGANIZATION

The following individuals will participate in the project:

EPA/ERT
David B. Mickunas - WAM
William A. Smith - WAM
William Coakley - Quality Assurance (QA) Manager
David W. Charters

EPA/R6
Gary Moore - IMT Operations Section Chief

Office of Solid Waste and Emergency Response
Debbie Dietrich OEM Director
Dana Tulis OEM Deputy Director

REAC
Edward McGovern - TL/QC Coordinator/Trace Atmospheric Gas Analyzer (TAGA) Operator
Danielle McCall - Field Chemist
Charles Sheild - Field Chemist
William Weeks - TAGA Driver
Tim Macaluso - TAGA Driver
Rich Magan - TAGA Driver
Dave Adams - TAGA Driver/Environmental Scientist
Gmae Loy - TAGA Data Validator/Information Specialist
Deborah Killeen - QA

The REAC TL/QC Coordinator for the project is the primary point of contact with the EPA/ERT WAM. The TL is responsible for the completion of the Work Plan (WP) and QAPP, project team organization, and supervision of all project tasks, including reporting and deliverables. EPA Region VI will provide oversight and guidance in the field through the WAM.

A5. PROBLEM DEFINITION

Background.
Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, and tasking by FEMA under ESF #10 of the National Response Plan, EPA Region 6 has prepared this Quality Assurance Sampling Plan for EPA Region 6 Response and Prevention Branch to conduct initial mobile air monitoring surveys of impacted areas in and around New Orleans, LA.

The EPA/ERT has a variety of state-of-technology instrumentation to monitor for air toxics. This instrumentation includes two ECA TAGA IIe Mobile Laboratories. The TAGA Mobile Laboratories are capable of monitoring, in real-time, trace levels of many organic compounds in ambient air. The EPA Region VI has thereby requested that the ERT assist in the Urban Air Toxics Monitoring program by using the TAGA Mobile Laboratory to monitor for selected HAPs in the assessment area. The TAGA IIe, (tandem quadrapole spectrometer) mounted in the TAGA Mobile Laboratory, is a rugged, reliable, and yet sensitive real-time monitoring instrument capable of detecting low concentrations (parts per billion by volume [ppbv]) in various locations including urban areas.

A6. PROJECT DESCRIPTION AND SCHEDULE

Project Description. Due to the environmental impact from Hurricane Katrina the Region 6 Incident Management Team (IMT) is deploying the US EPA Environmental Response Team's Trace Atmospheric Gas Analyzer (TAGA) to the staging area in Lafayette, LA. Mobile air surveys of impacted areas in and around New Orleans will be performed using the ECA TAGA IIe to assist EPA Region VI personnel in establishing a baseline of data that identifies and quantifies toxic air pollutants. Real-time ambient air monitoring will be performed using a selected positive ion technique for the pollutants of concern.

All of these instruments will be equipped with data logging capabilities. Ambient air will be drawn from the same sampling train used for the TAGA IIe. When any of the TAGA target compounds exceed reporting levels, a grab sample of ambient air will be collected into a SUMMA® canister at the discretion of the field personnel. The canisters will be provided and analyzed by the EPA Houston Regional Laboratory for VOCs using EPA Method TO-15.

During monitoring events, the position of the ECA TAGA IIe unit will be determined by visual observations logged in the operator's notes and in data files collected by a GPS. The TAGA Mobile Laboratory is equipped with a GPS Pathfinder Pro XR receiver. The antenna for each respective receiver is mounted on the roof of the TAGA Mobile Laboratory, which is attached to the receiver inside the Laboratory. The receiver will be operated using an on-board personal computer (PC) and data collected directly in the Trimble TCS datalogger/control device for subsequent downloading. Based on results from the monitoring events field personnel may decide to collect grab samples using

Meteorological data will be collected throughout the monitoring event. Data will be collected from meteorological stations adjacent to the monitoring area.

Schedule. The schedule of activities and reports is as follows:

It should be noted that decisions on real time results will be made based on direct readings of the TAGA tandum quadrapole spectometer for areas of potential concern. While the data will be verified, data for the baseline risk assessment will be obtained by additional air samples utilizing additional methods. The preliminary TAGA data is not anticipated to be used in the screening level risk assessment.

- WP

• QAPP	September 9th, 2005
• Mobilize TAGA Mobile Laboratory to the study area in Louisiana	September 10th, 2005
• Mobilize staff to study area in Louisiana	September 8th, 2005
• TAGA Monitoring/Met Monitoring	September 10th, 2005
• Preliminary Analytical Reports	2 weeks after receipt of data.
• Final Analytical Reports	1 week after WAM reviews preliminary.

A7. DATA QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT OF DATA

The objective of the sampling plan is to assess air surrounding New Orleans Louisiana to make an assessment of potential contamination from uncontrolled releases due to Hurricane Katrina and the aftermath of the flooding caused by the Hurricane. The results of tandum quardrapole spectrometer will be used to locate sampling locations where air sampling will be conducted to identify and quantify contaminants in the air and potentially identify sources of plumes of contamination that are detrimental to human health and the environment. The verified results of additional air sampling will be compared to appropriate human health benchmarks (attached) and a screening level risk assessment will be conducted. The initial comparison will be to benchmarks are a cancer risk level of 10-6 and a hazard quotient of one. The results of the risk assessment will be used to determine appropriate areas for additional air sampling which will be incorporated in a baseline risk assessment. Study areas will be determined by Region VI personnel.

A review of the HAP emissions inventory for the study area in Louisiana and the 33 Urban Hazardous Air Pollutants, revealed the following pollutants to be of concern:

Benzene (BEN)	Toluene (TOL)	Xylenes (XYL)
Vinyl chloride (VCl)	Tetrachloroethene (PCE)	Trichloroethene (TCE)
1,2-Dichloroethane (1,2-DCA)	1,3-Butadiene (1,3-BDE)	

Two of the three data categories (DC) based on the two Superfund data categories outlined in the 1993 Office of Solid Waste and Emergency Response (OSWER) Office of Emergency and Remedial Response (OERR) Directive "Screening Data (SD)" and "Definitive Data (DD)" will be used for this WA.

The following requirements for "Screening Data (SD)" are applicable to all monitoring data:

1. Sample documentation in the form of field logbooks and appropriate field data sheets. Chain of custody records are optional for field screening locations.
2. All instrument calibration and/or performance check procedures/methods will be summarized and documented in the field/personal or instrument log notebook. The manufacturer's instructions or standard operating procedures (SOPs) should specify the procedure and frequency for calibration during use.
3. Detection limit(s) will be determined and documented, along with the data, where appropriate.

The following requirements for "Definitive Data (DD)" are assumed to be applicable for the analysis of the ambient air samples by gas chromatography/ mass spectrometry (GC/MS) at the EPA Houston Regional Laboratory:

1. Sample documentation in the form of field logbooks, the appropriate field data sheets, and chain of custody forms will be provided.
2. All instrument calibration and/or performance check procedures/methods will be summarized and documented in the field/personal or instrument log notebook.
3. Detection limit(s) will be determined and documented, along with the data, where appropriate.
4. Sample holding times will be documented; this includes documentation of sample collection and analysis dates.
5. Initial and continuing instrument calibration data will be provided.

6. For air samples, one trip blank will be included with each shipment of samples.
7. Performance Evaluation (PE) samples are optional.
8. Analyte identification will be confirmed on 100 percent (%) of the samples by analytical methods associated with definitive data.
9. Quantitation results for all samples will be provided.
10. Analytical or total measurement error must be determined on 100% of the samples.
    a. Analytical error determination measures the precision of the analytical method. At a minimum, two replicate aliquots are taken from a thoroughly homogenized sample or two media blanks, prepared and analyzed in accordance with the method, calculated and compared to method-specific performance criteria.
    b. Total measurement error is determined from independently collected samples from the same location and analyzed by analytical methods associated with definitive data. Quality control parameters such as the mean, variance, and coefficient of variation is calculated and compared to established measurement criteria.

The number of samples to be collected is up to the discretion field personnel for confirmation purposes, and Table 2, *QA/QC Analysis and Data Categories Summary*. These tables identify analytical parameters desired; estimated limits of detection, volume and sampling media; flow rates; suggested holding times; number of samples to be collected; and associated number and type of QC samples based on the data category.

A8. TRAINING AND CERTIFICATION

All field personnel involved with sampling activities will have the following documented training:

- Occupational Safety and Health Administration (OSHA) 40-hour and/or 8-hour refresher in Hazardous Waste Operations (20 CFR1910.120)
- Department of Transportation (DOT) hazardous materials shipping
- First Aid and Cardiopulmonary Resuscitation (CPR) Training (at least one team member)

A9. DOCUMENTS AND RECORDS

The REAC Program QAPP serves as the basis for the site-specific QAPP. The most current approved version is available to all REAC technical personnel as an uncontrolled copy of the REAC Local Area Network (LAN).

Documents and records that will be generated during this project include:

- WP
- QAPP
- Laboratory, Site Log Books
- Site Map
- Sample Labels
- Chain of Custody (COC) Records
- Custody Seals
- Air Sampling Work Sheets
- Instrument Printouts
- Field Change Form (if required)
- Data Reduction Records
- Data Assessment Forms
- Laboratory Analytical Reports
- Final Analytical Report

The Final Analytical Report will provide a description of the project, field procedures, laboratory procedures, difficulties encountered and will include validated final laboratory reports (with copies of chain of custody records) as appendices. All written reports will be available in both hard copy and electronic format immediately after completion and delivery to the WAM. Copies of both formats will remain permanently in REAC archives. Site logbooks will also be archived once the project is completed and the WA 0-121 is closed.

All documentation will be recorded in accordance with REAC SOPs #2002, *Sample Documentation* and #4001, *Logbook Documentation* and reviewed in accordance with REAC Administrative Procedure (AP) #22, *Peer Review*

of REAC Deliverables.

B. DATA GENERATION AND ACQUISITION

B1. MONITORING/SAMPLING PLAN DESIGN

Mobile and stationary real-time target compound monitoring will be performed in the residential and industrial areas near and in New Orleans using the TAGA Mobile Laboratory to provide data needed to identify potential sources of airborne contaminants. Ambient air sampling may be performed, if requested by the WAM, using SUMMA® canisters to verify real-time monitoring information. The sampling design will focus on determining off-site exposure and potential for environmental impact.

Set-up and instrument checkout will be conducted on September 10th, 2005. Beginning on January September 10th, 2005, the TAGA Mobile Laboratory will navigate accessible roads in the selected urban/industrial areas in the New Orleans Assessment Area and monitor for the pollutants of concern. One eight-hour day of monitoring runs will be performed for each of the selected areas and each monitoring run is expected to last approximately 30 to 45 minutes. Additional monitoring may be performed at the request of the WAM.

B2. SAMPLING/ MONITORING METHODS

TAGA Air Monitoring. The TAGA will perform ambient air monitoring at a flow-rate of approximately 1,500 milliliters per second (mL/sec). The air will then pass through a glass splitter where the pressure gradient between the mass spectrometer core and the atmosphere will cause a sample flow of approximately 10 milliliters per minute (mL/min) into the ionization source through a heated transfer line. The flow into the TAGA source will be controlled so that the ionization source pressure will be maintained at an optimum value of approximately 2.8 torr. The remaining air flow will be drawn through the air pump and vented from the TAGA.

The TAGA will perform ambient air monitoring in the parent/daughter ion monitoring mode. As the air monitoring proceeds, the operator will press the letter keys (flags) sequentially to denote events or locations during the monitoring. This information will also be recorded on the operator's log sheet. The intensity of each parent ion/daughter ion monitored by the TAGA, in turn, will be recorded by the computer in a file on the hard disk. One set of measurements of all of the ions is called a sequence.

TAGA monitoring will be conducted using draft REAC SOP #1711, *Trace Atmospheric Gas Analyzer (TAGA) IIe.* Preliminary TAGA monitoring results will be available after the final calibration is performed on a specific monitoring day.

To identify the location of the TAGA Mobile Laboratory as ambient air quality monitoring data are being gathered, an on-board GPS system will be employed. The GPS system will locate the TAGA Mobile Laboratory by means of satellite signals conveyed to the on-board system. Positions conveyed by this system are expected to be accurate to within 10 meters.

Data acquisition will also include an on-board GIS to record the location of the TAGA Mobile Laboratory concurrent with ambient air quality monitoring data acquisition. The on-board GIS involves the software ARC GIS 8.3 and ARC VIEW GIS 3.3 from ESRI™. This GIS affords geographical data query and mapping solutions for use with the TAGA Mobile Laboratory.

The GIS mapping solutions will be provided in digital format as follows:

- Primary base map - Digital orthophoto quarter quads (DOQQs), scale 1:12,000, (United States Geographical Service (USGS) 7.5 minute quadrangles, scale 1:24,000; and Census TIGER files, scale 1:100,000)
- Map accuracy - 1:24,000, 12 meters
- Horizontal datum - NAD 1983

- Mapping projection - UTM, Zone 15

The spatial data quality will include:

- Positional accuracy that is equal to the project map accuracy
- Review of the GIS data for logical consistency
- Description of the data source material

Air Sampling. Air samples may be requested by the field personnel to confirm mobile monitoring results. All SUMMA® air samples will be collected in accordance with REAC SOP #1704, *SUMMA® Canister Sampling*. All sampling efforts will be conducted in accordance with REAC SOP #2008, *General Air Sampling Guidelines.* Appropriate QA/QC samples will be collected using the guidelines in REAC SOP #2005,*Quality Assurance/Quality Control Samples*.

Meteorological data will be collected throughout the on-site monitoring event. The meteorological data will be downloaded from the data collected by the State of Louisiana or local airports.

B3. SAMPLE HANDLING AND CUSTODY

In accordance with REAC SOP #4005, *Chain of Custody Procedures,* chain of custody (COC) records will be used to document all samples collected. All COC records will be peer reviewed in the field prior to release. At least two custody seals will be placed across the canister shipping containers to ensure sample integrity. The samples collected by REAC personnel will be shipped to the EPA Region VI Laboratory for analysis in accordance with REAC SOP #2004, *Sample Packaging and Shipment.*

B4. ANALYTICAL METHODS

The ambient air samples will be analyzed via EPA Method TO-15, *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS).* Preliminary results for all SUMMA® analyses will be available approximately fourteen days after submittal of the final samples.

B5. QUALITY CONTROL

Quality control for the laboratory and field procedures will include the following:

- Trip blanks for VOC definitive analyses,
- System blanks for VOC gas chromatography/mass spectrometry (GC/MS) analyses, and

All appropriate QC samples required by the analytical method will be run. This includes but is not limited to: tunes, initial and continuing calibration standards, internal standards and method detection limit studies.

Clean SUMMA® canisters will be provided by the EPA Region VI laboratory in Houston, TX, certified to 0.5 ppbv.

B6. INSTRUMENT/EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE

Each piece of equipment will be checked operationally prior to deployment. Preventive maintenance will be conducted on the monitoring and analytical instruments on an as needed basis. Because of the short duration of field operations (less than one week), maintenance is not anticipated.

B7. INSTRUMENT/EQUIPMENT CALIBRATION AND FREQUENCY

At the beginning of the sampling day, a gas mixture containing the target analytes of concern will be introduced by a mass flow controller (MFC) into the sample air flow (SAF), and the tuning parameters for the first quadrupole at 30,62,106,130 and 166 amu, and the third quadrupole at 78, 105,131,164 and 166 amu will be optimized for sensitivity and mass assignment. The peak widths will be limited between 0.55 amu and 0.85 amu. The mass assignments will be set to the correct values within 0.15 amu.

The calibration system will consist of a regulated gas cylinder with a MFC. The MFC will be checked with a National Institute of Standards and Technology (NIST) traceable flow rate meter. The calibration system will be used to generate the analytes' response factors (RFs), in units of ion counts per second per part per billion by volume (icps/ppbv), which will then used to quantify trace components in ambient air. At the beginning of each monitoring day, the TAGA instrument will be calibrated using certified gas standards. At the end of the monitoring day, the calibration procedure will be repeated and an intermediate response factor applied to all of the data if the end of the day calibration differs from the morning calibration by more than or equal to ($\geq$) 25%.

The gas cylinder standard, which contains a known mixture of target compounds, certified by the supplier, will be regulated at preset flow rates and diluted with ambient air. Dilution of the gas cylinder standard will give known analyte concentrations. The calibrations will consist of a zero point and five known concentrations obtained by setting the MFC to 0, 10, 20, 40, 80, and 90 mL/min with the sample air flow at 1,500 mL/sec. The approximate concentration range of standards introduced into the TAGA will be between 1 ppbv and 25 ppbv. The RFs will then be determined by using a least-square-fit algorithm to calculate the slope of the curves. The coefficient of variation will be checked for each ion pair's RF to ensure that it is greater than 0.90. The software will utilize the analytes' cylinder concentrations, gas flow rates, air sampling flow rates, and atmospheric pressure to calculate the RFs. The RFs will be obtained for the ion pairs of each compound of interest in the cylinder. The cylinder calibration will be used for the target compounds.

All appropriate operational (required by the method) and periodic (e.g., balances, ovens, etc.) calibrations will be performed according to the methods cited. Any calibration conducted by the EPA Regional Laboratory will be done in accordance with the EPA Regional Laboratory's SOPs and their Quality Assurance (QA) Manual.

B8. INSPECTION/ACCEPTANCE OF SUPPLIES AND CONSUMABLES

REAC personnel have the responsibility for the inspection and acceptance of supplies and consumables used in the field. It is the responsibility of the EPA/ERT to provide adequate facilities, equipment and supplies to perform all field related tasks for this WA. The REAC contractor is responsible for the procurement, inspection and acceptance of supplies and consumables for this WA. The EPA Regional Laboratory is responsible for ensuring compliance to the requirements for supplies and consumables outlined in their QA Manual.

B9. NON-DIRECT MEASUREMENTS

This section is not applicable to this QAPP.

B10. DATA MANAGEMENT

Field sampling data will initially be recorded on field data sheets or in field notebooks, and sampling times will be flagged in the TAGA monitoring data files. Ambient monitoring and sampling data will be correlated in time and position with the GPS/GIS data. The VOC samples will be sent under COC to the EPA Region VI Laboratory in Houston, TX.

Any problems identified will be brought to the attention of the TL and the WAM for resolution before release of the final analytical report. A paper version of the Final Analytical Report will be provided to the TL, the WAM and stored in the REAC Central Files. Electronic copies of the Final Analytical Report will be saved on the REAC

archive drive, and archived in accordance with AP #34, *Archiving Electronic Files*. All data deliverables for this WA will be posted to the ERT Information Management System (IMS) web site as a SCRIBE electronic data deliverable (EDD) or in .pdf format.

C. ASSESSMENT/OVERSIGHT

C1. ASSESSMENT AND RESPONSE ACTIONS

The REAC TL/QC Coordinator, Air Response Section Leader, and QAO are responsible for quality control assessments and corrective action for this WA. The tasks associated with this QAPP are assessed through the use of peer reviews and management system reviews. Peer review enables the field chemist to identify and correct reporting errors before reports are submitted. Management system reviews establish compliance with prevailing management structure, policies and procedures, and ensures that the required data are obtained.

The EPA/ERT WAM for this task will be present and will have the responsibility for verifying that the proper SOPs and sampling procedures are followed. If any technical issues or deficiencies are identified, they will be reported to the REAC Task Leader for immediate resolution or corrective action. Any changes in scope of work will be documented on a Field Change Form and approved by the WAM.

C2. REPORTS TO MANAGEMENT

REAC Report	Recipients
Monthly Progress	EPA/ERT Project Officer and WAM
Quarterly QA Reports	EPA/ERT Project Officer and QA Manager

D. DATA VALIDATION AND USABILITY

D1. DATA REVIEW, VERIFICATION AND VALIDATION

All data produced under this QAPP will be evaluated to determine compliance with the stated SOP and correct analytical procedures. Data review will be conducted prior to data release to evaluate the validity of the data. Data verification is the process taken to determine whether the quality requirements specified in the "B" elements of this QAPP have been met. Data verification will be performed by the REAC TL/QC Coordinator. For field activities, it is necessary to determine whether the samples were collected using the sampling design specified in B1, whether the samples were collected according to a specific method or SOP as specified in element B2, whether the collected samples have been recorded and handled properly as in element B3, and whether the proper number of QC samples were taken to satisfy the QC requirement specified in element B5. For analytical activities, each sample should be verified to ensure that the procedures used to generate the data (as specified in element B4) were performed as specified. Instrument calibrations (as specified in element B7) are evaluated to determine whether the correct number of calibration standards were used and the range of the analysis, whether standards were analyzed in an appropriate sequence specific to the methods used, and were performed prior to the analysis of samples and blanks in an appropriate time frame.

D2. VERIFICATION AND DATA VALIDATION METHODS

Data verification occurs at all levels to ensure that appropriate outputs are being generated routinely. Records produced electronically or maintained as hard copies are subject to data verification. During field activities, records associated with sample collection such as field data sheets, COC record, shipper's air bills, logbook documentation, or electronic devices to log samples or print sample labels are verified against approved SOPs or procedures. Manufacturer's certificates for calibration and/or internal standards, instrument run or injection logs, standard preparation logs, calculation worksheets, and QC sample results are verified during the analysis of the sample set. Review of data package or client deliverables are verified for compliance with peer review procedures.

The TL/QC Coordinator and the analyst will be responsible for reviewing and validating the TAGA data in accordance with REAC SOP #1711, *Trace Atmospheric Gas Analyzer (TAGA) IIe*. Data validation will be conducted to determine how seriously the sample data deviate from acceptance limits and the potential effect on the data. All anomalies will be documented in the final analytical report.

D3. RECONCILIATION WITH USER REQUIREMENTS

Responsibility lies with the EPA; thus, this element is not applicable to this QAPP.

REFERENCES

U.S. Environmental Protection Agency. 2001. EPA Requirements for *Quality Assurance Project Plans* (EPA QA/R-5), EPA/240/B-01/003, Office of Environmental Information.

U.S. Environmental Protection Agency. 1990. *Quality Assurance/Quality Control Guidance for Removal Activities*, EPA/540/G-90/004, Office of Emergency and Remedial Response.

Response Engineering and Analytical Contract. 2003. *Quality Assurance Project Plan for the Response Engineering and Analytical Contract.*

U.S. Environmental Protection Agency. 2001. *Quality Assurance Project Plan for the Air Toxics Monitoring Program*, EPA-454/R-01-007.

TABLE 1. Field Sampling Summary - Air
Urban Air Toxics Monitoring in Louisiana
September 2005

Analytical Parameter	Sampling Media	Suggested Holding Times	Flow Rate	Volume Min - Max	Subtotal Number Samples
VOC	SUMMA Canisters	30 days	Grab	6 Liters	15

TABLE 2. QA/QC Analysis and Data Categories Summary - Air
Urban Air Toxics Monitoring in Louisiana
September 2005

Analytical Parameter	Analytical Method	Estimated Limit of Detection[1]	Lot Blanks[2]	Field Blanks[3]	Collocated Samples[4]	Trip Blanks[5]	Breakthrough[6]	PE Samples[7]	Data Category[8]
Volatile Organic Compounds (VOCs)	EPA TO-15	1 ppbv	NA	NA	NA	5	NA	NA	DD
VOCs (TAGA)	Draft REAC SOP #1711	~0.5 to ~5 ppbv	NA	NA	NA	NA	NA	NA	SD

SD = Screening data SD/DC = Screening Data with Definitive Confirmation DD = Definitive Data ppbv = parts per billion by volume NA = not applicable
ppmv = parts per million by volume PID = photoionization detector ng/m3 = nanograms per cubic meter TAGA = trace atmospheric gas analyzer

1. To be determined by the person arranging the analysis. Should be equal to or less than the action level.
2. Required for all data categories at a minimum rate of 10 percent of the total sample or one pher sampling event per lot.
3. Mandatory for Definitive Data at a minimum rate of 5 percent of the total sample or one per sampling event. Certain methods may require a greater frequency.
4. Required for all data categories at a minimum rate of 5 percent of the total sample or one per sampling event.
5. Optional for SD/DC and mandatory for DD at a minimum rate of 5 percent of the total sample or one per sampling event.
6. Recommended for SD/DC and DD. Rate is method dependent. Requirement for use is based on deviations from accepted protocol and atmospheric conditions.
7. Performance evaluation samples are optional for SD/DC and DD at one per parameter per matrix. For SD, enter "NA."
8. Enter QA objective desired: SD, SD/DC, DD