155503

■ ■ ■ ■ ■ ■

LABORATORY AUDIT REPORT
QUANTERRA ENVIRONMENTAL SERVICES
4101 SHUFFEL DRIVE, NW
NORTH CANTON, OHIO 44720

September 8, 1994

For:

U.S. Environmental Protection Agency
Region 3
841 Chestnut Street
Philadelphia, Pennsylvania 19107

Prepared for:

Beazer East, Inc.
436 Seventh Avenue
Pittsburgh, Pennsylvania 15219

and

Du Pont Chemicals
Room 12228
1007 Market Street
Wilmington, Delaware 19898

Prepared by:

Woodward-Clyde Consultants
201 Willowbrook Boulevard
Wayne, NJ 07470

4E02153F-002

AR304093

Woodward-Clyde Consultants

Engineering & sciences applied to the earth & its environment

September 8, 1994
4E02153F

Ms Lisa Marino, RPM
U.S. Environmental Protection Agency
Region III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

Re: Laboratory Audit Report
Quanterra Environmental Services
450 William Pitt Way
Pittsburgh, Pennsylvania

Dear Ms. Marino:

On behalf of Beazer East, Inc. (Beazer) and E.I. du Pont de Nemours and Company, Inc. (DuPont), and in accordance with Section XII (C, 6) of the Administrative Consent Order (dated September 30, 1991) for the Former Koppers Company, Inc. Newport Site (Site), Woodward-Clyde Consultants (WCC) performed an analytical laboratory audit at the facility referenced above on August 24 and 25, 1994. This laboratory is the primary facility approved by EPA for the analysis of TCL volatile organics, TCL semi-volatile organics, and TAL metals samples collected from the Site. WCC is pleased to present the results of this audit in the enclosed report referenced above. The findings of this audit are that the overall analytical capability of the Quanterra Pittsburgh facility is acceptable for this project.

Three copies of this report are included in this submittal to facilitate your review. If you have any questions, please do not hesitate to call the undersigned.

Very truly yours,

William Lyon
Project Engineer

H. Scott Laird, P.G.
Project Manager

cc: Peter Ludzia, EPA
Margie Zhang, DNREC
Jane Patarcity, BEI
T. Faye, Esq., BEI
Brandt Butler, DuPont
Joel Karmazyn, DuPont
Norm Griffiths, Esq., DuPont
Susan Colman, Geomatrix

5120 Butler Pike • Plymouth Meeting, Pennsylvania 19462
215-825-3000 • Fax 215-834-0234

TABLE OF CONTENTS

LIST OF APPENDICES

1.0 SCOPE OF AUDIT

An analytical laboratory audit of Quanterra Environmental Services (Quanterra) was conducted by Woodward-Clyde Consultants (WCC) on August 24 and 25, 1994 at Quanterra's Pittsburgh, PA facility. The purpose of the audit was to verify the laboratory's analytical capability for volatile organics (VO), semi-volatile organics (SVO) and wet chemistry analyses of samples to be collected from the Former Koppers Company Site located in Newport, Delaware.

The audit was conducted using the U.S. Environmental Protection Agency (USEPA) Region III Organics checklist that was furnished to the WCC Quality Assurance (QA) officer for this project, Ms. Linda Laughlin, by Stevie Wilding of USEPA. The Quality Assurance Project Plan (QAPjP) for the Koppers Company Site dated January 31, 1994 specified additional requirements that were used for this audit. The Pittsburgh lab currently holds a USEPA Contract Lab Program (CLP) Contract for inorganics, but not organics.

Samples collected for chemical analyses from the Site will be analyzed at the Pittsburgh lab with the exception of Pesticide/PCB analyses which will be sent to Quanterra's North Canton, Ohio (Canton) laboratory.

In preparation for the audit, Quanterra completed a WCC Pre-Audit Questionnaire (with attachments) that is included in Appendix A of this report. Appendix B includes the USEPA Region III checklist used during the audit.

At the time of the audit, the Pittsburgh lab had completed the analyses of several VO samples, but had only extracted several samples for SVO analyses. Therefore, another sample group (from another site) was used for spot checking analytical results to determine the lab's analytical capabilities for SVO samples.

All information presented in this report are based on observations made by WCC personnel and information obtained from laboratory personnel during the audit.

2.0
AUDIT PERSONNEL

2.1 WOODWARD-CLYDE CONSULTANTS (WCC)

The WCC analytical lab audit was conducted by Mr. William Lyon of WCC's Wayne, NJ office. Mr. Lyon is a WCC Project Manager and has a total of nine years of experience in auditing analytical laboratories, including three years as the Laboratory Manager for Havens & Emerson, Inc. located in Saddle Brook, NJ.

2.2 QUANTERRA

WCC's initial contact was Mr. Thomas Tomayko, the Quanterra Project Manager, who furnished the information in Appendix A.

Mr. John Flaherty, the Laboratory Director, and Ms. Connie Schussler, the Quality Assurance Officer, conducted the on-site audit with Mr. Lyon. Other persons interviewed during the audit include Ms. Chris Kovitch, Sample Custodian; Mr. David Brennan, Waste Disposal Supervisor; Ms. Chris McCain, Supervisor of CLP Volatile Organics Analyses; Mr. Kevin Geehring, Organics Sample Preparation Supervisor; and Mr. Donald Ferguson, Semi-Volatile Organics Analyses Supervisor.

An exit interview was conducted with Mr. Flaherty, Ms. Schussler and Mr. Tomayko regarding minor deficiencies that would not impact the lab's analytical capabilities, but required corrective actions.

2.3 LABORATORY ORGANIZATION

Mr. Tom Tomayko, as Quanterra's Project Manager, is responsible for coordinating the lab analyses with WCC's sampling activities. If necessary, he will interact with Mr. Flaherty to mobilize internal resources to ensure that analytical protocols are in compliance with the Site QAPjP. The other personnel listed in Section 2.2 of this report

are indicated in the Organization Chart in Appendix C. The resumes of the persons interviewed during the WCC audit are included as Appendix D to this report.

3.0
SUMMARY OF ANALYTICAL CAPABILITIES

3.1 SAMPLE RECEIPT, STORAGE AND TRACKING

Samples are received at the ground floor of this four story facility that is located in the University of Pittsburgh's Applied Research Center (UPARC). The entire UPARC facility is secured by fencing and patrolled by security guards. Entry is controlled through gates that are staffed around the clock by the security personnel. According to Laboratory Director John Flaherty, visitors are signed in and escorted by Quanterra personnel to and from the laboratory. Each section of the laboratory is locked after normal working hours and the building is patrolled by security personnel.

Coolers are received in the sample receipt area where sample preservation and temperature are checked. This area consists of a single room where coolers are unpacked. Coolers are usually opened on the counter top unless there is suspected breakage, odors, or other signs that the cooler should be opened in a fume hood. There is only a single fume hood for that purpose but it is not used for routine sample receipt and log-in.

Each sample is assigned a computer generated lot number for tracking the sample through the various lab sections. Sample Control Summary log sheets are maintained in the sample receipt area and in the other sections of the lab for custody of sample analyses in progress. Sample tracking information is also entered into the Laboratory Information Management System (LIMS) that is an AS-400 mainframe computer. (The Pittsburgh and Canton facilities are both networked to this computer system.)

Samples are stored in either a walk-in refrigerator or a second small refrigerator for VO samples only. Temperatures of cold storage areas are recorded daily in a logbook. The refrigerators are not locked but the sample receipt area is always staffed during working hours. After hours, the area is locked and patrolled by security guards.

Documentation and Standard Operating Procedures (SOP's) are acceptable for sample receipt and storage with one minor deficiency noted: the Sample Custodian did not sign-off each Sample Control Log Sheet. However, the technicians working in that area and personnel from other areas of the lab did sign and date each log sheet entry.

Sample holding times are tracked via the LIMS status reports that are generated on a daily basis and distributed to each manager and supervisor. Sample preservations are checked and any instructions with Chain-of-Custody forms are also entered into the project file upon receipt of samples.

3.2 SAMPLE CONTAINERS AND SAMPLE PREPARATION

The laboratory provides certified pre-cleaned sampling containers and preservatives to clients. VOA vials for aqueous samples are the only bottles which are preserved prior to release to clients. Other sample containers are properly labelled with which preservative to add after collection of the sample in the field. The samples are checked for proper preservative and temperature when received at the lab.

Samples requiring extractions for SVO analyses are relinquished from the sample receipt area to the organics preparation lab, located on the third floor (along with all other individual labs). The sample prep lab is an isolated room with good exhaust ventilation and fume hoods to prevent solvent contamination of other samples (e.g., VO samples).

SOP's are available to sample prep lab personnel for CLP protocol. If any errors are made during the extraction process, the error(s) will be noted in the case narrative and the appropriate corrective action taken. For example, lab case #170023-007 had 1.0 ml of the surrogate compound mixture added to the sample, whereas the CLP protocol required 0.5 ml. This error will be noted in the case narrative and corrective actions have already been taken by the Sample Prep Supervisor.

Extracts are transferred from the sample prep lab to the base neutral/acid extractable (BNA) lab across the hall. Extracts are logged in and stored in a refrigerator until analysis.

3.3 FACILITIES AND MAJOR INSTRUMENTATION

The Quanterra Pittsburgh facility has a separate lab for VO, SVO (BNA), metals, extractions, digestions, wet chemistry and metals analyses. The lab has approximately 13,000 square feet (total) floor space.

Each lab is clean, well-organized, and has full documentation of activities. The facility has an extensive, well-written set of SOP's for everything from glassware cleaning to methodology specific SOP's for each analysis conducted. Table 9-1 of Appendix A includes a complete listing of all major instrumentation including two complete Gas Chromatograph/Mass Spectrometer (GC/MS) systems for VO's (equipped with heated purge and trap systems) and an additional two GC/MS's for BNA's. There is also an additional GC for VO screening.

Instruments are equipped with autosamplers to maximize efficiency and meet holding times. The organics sample prep lab also has one Gel Permeation Cleanup (GPC) unit for CLP work.

Balances are properly located and routinely checked with class "S" weights prior to use. Logbooks cross reference samples, instruments, dates and time, calibration standards, surrogate mixtures, spiking solution, etc.

3.4 REAGENTS AND STANDARDS PREPARATION

Standards are prepared in each lab (except the organics preparation area) from reagent grade materials such as Sulpelco or Ultra. Each standard or calibration mix is logged according to the SOP requirements in each lab. Each standard is dated, traceable to a specific source, and stored in refrigerators. Standards are also evaluated prior to use with samples being analyzed in each lab.

Each lab also maintains a complete file of certificates of analysis for reagents, calibration mixtures, or any other materials used in analytical procedures.

3.5 INSTRUMENT CALIBRATION AND MAINTENANCE

Instrument calibrations are performed in accordance with the analytical protocol specified in the individual methods. Calibration criteria are reviewed by either a senior chemist or supervisor before samples are analyzed.

The laboratory personnel are responsible for their own instrument maintenance and replacement parts are available. If a problem cannot be solved in the laboratory, the manufacturer is then contacted to solve the problem. Maintenance logs are maintained by each department listing the corrective actions. There are no outside service contracts available on the Extrel MS instrumentation.

3.6 STANDARD OPERATING PROCEDURES

SOP's for the analytical methods and procedures are kept in each department. The SOP's are revised by the QA department as procedures or methods change, or as the need arises. Updates are dated and inserted into each manual. The SOP's are clearly assembled and labelled. Old copies of SOP's are maintained in the QA department. A complete listing of SOP's is included in Appendix A.

Analysts have access to these SOP's and are required to sign off on the correct procedures during their training. This assures that the SOP's are read and understood by each analyst before analyzing samples.

3.7 DATA REDUCTION

During the initial meeting of the on-site audit, Connie Schussler reviewed the data reduction process with Mr. Bill Lyon. The following is a review of the data reduction procedures conducted by Quanterra.

The first level of review is conducted by the analyst. The analyst checks the Quality Assurance/Quality Control (QA/QC) data for compliance and determines if any corrective action is necessary at this time. The analyst also checks that concentrations

and compounds were quantitated and identified properly. The analyst also ensures that the required forms are present and assembled.

The second level of review is conducted by either a senior chemist or supervisor. This review consists of an overall check of QA/QC data and calculations checks. The second level of review also reviews the data package for completeness before the data package is released from the department to the Project Manager.

The third level of review is conducted by the Project Manager. The Project Manager makes sure that results were provided by each lab section performing the work and that appropriate QA/QC data is available. He also assembles the data package into one final report for submission to the client. A typical Data Review Checklist is included in Appendix E for the GC/MS labs. Also included in Appendix E are forms for Holding Time Violations and Corrective Actions.

A fourth level of data review is conducted by the QA officer on 10 percent of the data packages. This level of review is similar to the Lab Project Manager's review for completeness of deliverables and compliance with QAPjP requirements.

3.8 QC CHECKS

The laboratory performs the proper quality control (QC) checks required by each method (for example: method blanks, surrogates, matrix spike/matrix spike duplicates, etc.). Any corrective actions that are necessary are specified in the individual methods and the lab's SOP's.

The Project Manager is contacted if any problems occurred during the analytical process. The Project Manager then contacts the client for further guidance and action, if required, or to alert the client of potential problems.

Laboratory Control Samples (LCS) are not required by CLP protocol except for low level VO analyses.

Unacceptable QC sample results require (1) re-calculation of results; (2) re-analysis; or (3) re-extraction and analysis of the entire lab batch of samples.

3.9 INTERNAL QUALITY ASSURANCE

The laboratory has an extensive internal QA program. Internal audits are conducted annually. The findings of these audits are issued to each Section Supervisor and the Laboratory Manager and Regional QA Manager. The QA department tracks any corrective actions which were required as part of this audit. The corporate QA department also conducts an independent audit of the laboratories once a year to assure that the correct QA protocols and methodologies are being followed.

The QA Manager also issues a report on a monthly basis to the Laboratory Manager and Regional QA Manager addressing any problems that occurred with analytical procedures during that month (for example: holding time violations, surrogate problems, etc.). Any corrective actions taken are also addressed in this report. When control charts are updated they are also included in this report. Control charts are used by the laboratory to track any trends in the analytical process so that appropriate corrective action can be taken.

The QA department is also responsible for updating each department as to analytical method changes or new method updates that are approved by the EPA. If necessary, SOP's are updated accordingly to account for these changes.

At a frequency of 10 percent, the QA department also performs an audit of a data package which has been sent to a client. This review is conducted to ensure proper compliance and completeness of the data packages.

The corporate QA program also includes annual testing of "blind" Proficiency Evaluation (PE) samples. These blind PE's are sent to the lab via a current client and are a true test of the overall facility's capability.

The LIMS for sample tracking and data handling was designed by Quanterra. Laboratory personnel are trained prior to accessing the system. Access is password

controlled for users. Although the Pittsburgh lab does not have user manuals, intensive training and evaluation by laboratory management ensures proper use of the system.

4.0
CERTIFICATIONS AND PROFICIENCY EVALUATIONS

The Quanterra Pittsburgh facility currently holds a USEPA/CLP contract for inorganics only. The lab is currently seeking an organics contract. Quanterra has merged with IT Analytical Services (ITAS) and will relocate to a larger facility at the UPARC later this year.

Appendix F of this report includes a copy of the lab's most recent inorganic PE results for the quarterly CLP testing (received on June 27, 1994). The overall score of 98.2% is acceptable and no response to USEPA is necessary.

Because the lab does not hold an organics CLP contract, WCC requested a copy of the two most recent Water Pollution (WP) Study results that are conducted by USEPA. Those results are generally used by most states to evaluate a laboratory's proficiency and analytical capability for non-CLP methods. Among the WP parameters tested was alkalinity and non-filterable residue (TSS) both of which were acceptable for this lab.

5.0
FINDINGS AND PROGRAM DEFICIENCIES

The overall analytical capability of the Quanterra Pittsburgh facility is acceptable for this project. The critical observations on capacity, responsiveness and the effectiveness of their internal QA program indicate a positive emphasis on good laboratory practices and documentation of laboratory activities.

There were only a few minor deficiencies that are discussed below.

1. **Supervisor Sign-Off:** Although each Section Supervisor closely monitors the daily activities of each lab and reports to management, some bench logs were not always signed and dated by the appropriate section supervisor.

2. **Fume Hood - Sample Receiving:** Because the fume hood is not used on a routine basis for opening and unpacking coolers in the Sample Receipt Area, there exists a potential for cross-contamination of samples or injury to lab personnel.

3. **Service Contracts on GC/MS Instruments:** The lab does not have any service contracts for the Extrel mass spectrometers. Although the lab personnel are knowledgeable and have documentation of preventative maintenance and minor repairs, the instruments do not receive any periodic inspection by the manufacturer.

6.0
RECOMMENDATIONS FOR CORRECTIVE ACTIONS

An exit interview was conducted by WCC at the close of the audit to discuss the above deficiencies. The following recommendations were made to the Laboratory Director as corrective actions to these deficiencies.

1. **Supervisor Sign-Off:** The various Section Supervisors should simply sign and date bench logbooks or worksheets on a daily basis. This was recommended with the understanding that should there be any errors or discrepancies with the entries, such exceptions would be handled by the supervisor for additional corrective action on a timely basis.

2. **Fume Hood -Sample Receiving:** Although this is not a large fume hood, WCC recommended that the sample receipt personnel open each cooler inside the hood and not on the lab countertop or tables.

3. **Service Contracts on GC/MS Instruments:** WCC recommended that Quanterra consider obtaining service contracts. Lab personnel are limited in their abilities to recognize or prevent problems that could result in down time that would jeopardize sample holding times.

The corrective actions requested of the laboratory by WCC were not of a nature that will affect the results and quality of the analytical data. It is anticipated that the laboratory will issue a formal response to WCC addressing these corrective actions.

1.0 ORGANIZATION AND PERSONNEL
Record years of experience

Item
Laboratory or Project Manager (individual responsible for overall technical effort: Name: John M. Flaherty Degree(s) - Year(s): BS in Chemistry, 14 yrs Major(s): Chemistry
GC/MS Laboratory Supervisor Name: Don Ferguson Experience: 3 years minimum requirement Degree(s) - Year(s): BS, 13 yrs (5 yrs GC/MS) Major(s): Environmental Biology
Organic Sample Preparation Supervisor Name: Kevin Gechring Experience: 3 years minimum requirement Degree(s) - Year(s): —, 16 yrs Major(s): —
GC/MS Operator Name: _____ Experience: 1 year minimum requirement (3 years if no degree in physical science) Degree(s) - Year(s): _____ Major(s): _____ Valerie Tomayko, B.A., Crim. E. Tech } 17 yrs B.S. Human Resource Mgmt Bob Williams, B.S Chemistry / Communications } (4 yrs GC M.S. Chemistry } 16 yrs John Smith, B.S Chemistry - 8 yrs (5 yrs GC/MS) Chris McCain AS Med. Lab Tech - 12 yrs (3½ GC/MS) Maria Nolan BA Liberal Arts - 4 yrs (2 yrs GC/MS)
GC/MS Spectral Interpretation Expert — See above. All operators capable of interpretation. Name: _____ Experience: 2 years minimum experience Degree(s) - Year(s): _____ Major(s): _____

AR304111

1.0 ORGANIZATION AND PERSONNEL (continued)

Item	
Extraction/Concentration Expert Name: _____ Experience: 1 year minimum requirement	Keith Anderson - 2 yrs Charles Laber - 1 yr. Anthony Errico - 4 yrs. James Miller - 10 yrs.
Degree(s) - Year(s): _____	Major(s): _____
Pesticide Residue Analysis Expert Name: _____ Experience: 2 years minimum requirement	Jill Colussy - B.S, Biology, 5 yrs. Dean Rudibaugh - B.S, Entomology - 6 yrs Erick Greenleaf - B.S, Biochemistry - 13 yrs (4 on GC)
Degree(s) - Year(s): _____	Major(s): _____
Inductively Coupled Plasma Emission Spectroscopist Name: Dave Eppinger Experience: 1 year minimum requirement	Jake DeWalt, B.S. Biology, 12 yrs (4 on ICP)
Degree(s) - Year(s): —, 6 yrs	Major(s): —
Flameless Atomic Absorption Spectroscopist Name: _____ Experience: 1 year minimum requirement	Dave Eppinger - see above Jake DeWalt - see above Cindy Yost - BS-Chemistry, 3 yrs (1½ on GFAA) Charles Harp - B.S Psychology, M.Ed. Counseling } 2 yrs, 7 yrs on GFAA + CVAA
Degree(s) - Year(s): _____	Major(s): _____
Inorganic Sample Preparation Expert Name: Melanie Crouse Experience: 3 months minimum requirement	(ICP + GFAA analysts are all cross-trained for this position)
Degree(s) - Year(s): —, 1 year	Major(s): Chemical Science Technology

AR304112

1.0 ORGANIZATION AND PERSONNEL (continued)

Item		
Flame and Cold Vapor AA Spectroscopist Name: Charles Hearp Experience: 9 months minimum experience Degree(s) - Year(s): B.S, M.Ed, 27 yrs (7 yrs CVAA) Major(s): Psychology, Counseling		
Classical Inorganic Techniques Analyst Name: _____ Experience: 6 months minimum requirement Degree(s) - Year(s): _____ Major(s): _____ G. Ronald Ripper - B.S., Natural Sciences, 7 yrs. Cheryl Loheyde - —, 4 yrs. Tim Gilchrist —, 4 yrs. Fred Bergman —, 6 yrs Trish Jacques BA Biology, 4 yrs. Randy Miller —, 2 yrs.		
	Yes	No
Do personnel assigned to this project have the appropriate educational background to successfully accomplish the objectives of the program?	✓	
Does the staff have a copy of the facility's Quality Assurance Plan (QAP)?		✓
Do the analytical supervisors have their groups follow the QAP?	✓	
Is the organization adequately staffed to meet project commitments in a timely manner?	✓	
Will the Quality Assurance officer be available during the onsite audit? ✓ Name: Connie Schussler Degree(s) - Year(s): B.S. 13 yrs Major(s): Chemistry + Zoology		
Will the person responsible for disposal of hazardous waste be available during the onsite audit? ✓ Name: David Brennan		
Does the Laboratory Quality Assurance Officer report to senior management levels? ✓ Who? Chris Heltzel, Regional QA Director Peggy Skeen, Corporate QA Director		

They have all SI QA Training, + access to QAP.

W:\PS207\LAB-C-P.—

AR304113

1.0 ORGANIZATION AND PERSONNEL (continued)

Item
Will the Project Manager be available during the evaluation? ✓ Name: Thomas Tomayko If not, will his/her substitute be available during the audit? ___ Name: _____
Please attach the most recent laboratory organization chart. If there have been changes, please mark them on the chart. Additional Comments:

W:\PS207\LAB—C-F.—

AR304114

2.0 ANALYTICAL INSTRUMENTATION*

See attached Table 9-1

2.1 GC/MS/DS Instrumentation

	Manufacturer	Model/ Revision	Installation Date (Updates)	GC Column(s)	Analyses Performed
GC MS ID No.					
GC MS ID No.					
GC MS ID No.					
Data System ID No.					N/A
EPA NIH Mass Spectral Library (No. of compounds)					N/A
Data System ID No.					N/A
EPA NIH Mass Spectral Library (No. of compounds)					N/A
Purge and Trap ID No.					N/A
Purge and Trap ID No.					N/A

*A complete list of all analytical instrumentation can substitute for completion of this section.

2.2 GC Instrumentation

	Manufacturer	Model/ Revision	Installation Date (Updates)	GC Column(s)	Analyses Performed
GC ID No.					
GC ID No.					
GC ID No.					
GC ID No.					
Data System ID No.					N/A
Data System ID No.					N/A
Data System ID No.					N/A
Data System ID No.					N/A

Item
Are manufacturer's operating manuals readily available to the operator? Yes
Is service maintenance by contract? No How often is it performed? Per SOPs on or near instruments

AR304116

2.3 ICP And AA Instrumentation

Instrument	Manufacturer	Model/ Revision	Installation Date (Updates)	Analyses
ICP ID No.				
ICP ID No.				
ICP Data System ID No.				N/A
ICP Data System ID No.				N/A
AA ID No.				
AA ID No.				
AA Data System ID No.				N/A
AA Data System ID No.				N/A

2.4 TOC And TOX Instrumentation

Instrument	Manufacturer	Model/ Revision	Installation Date	Analyses

2.5 HPLC Instrumentation

Instrument	Manufacturer	Model	Installation Date	Analyses

2.6 Inorganic Instrumentation - pH Meters, Auto-analyzers, Flashpoint, etc.

Instrument	Manufacturer	Model	Installation Date	Analyses

3.0 CALIBRATION MATERIALS

Test	Source of Standards(s)*	Source of Reference Samples**
VOA	Supelco, Restek, Ultra Scientific, Accustandard - primary	Supelco, Restek, Ultra Scientific Accustandard - primary
BNA	UltraScientific	Ultra Scientific
Pesticides/PCB's	Restek or Supelco	Restek or Supelco
Metals	PlasmaChem	Plasmachem ERA
Cyanide	Fischer Potassium Cyanide	ERA Potassium Ferricyanide
Others (list):		

*Standard materials used to prepare calibration standards.
**Reference samples supplied to verify external accuracy.

AR304120

4.0 DATA REDUCTION

What software packages are used in data reduction?

Instrument	Analysis	Software	Has the Software Been Verified?
GC-MS	VOAs	Unix Target 2 NASTEC Systems	
GC	VOAs	Amiga-DOS Laboratory Data Systems	
GC-MS	BNAs	NASTEC Systems	
GC:	Pesticides Herbicides PNAs Phenols Other	Amiga-DOS Laboratory Data Systems	
ICP:	Metals	Thermo Jarrell Ash 5.07-Trace Thermo JarrellAsh 5.03-TJA61	
AA:	Metals	Spectra A 300/40 8 5-100901-00 Issue 01 Perkin Elmer-NA (Manual system)	
Misc:	General Chemistry	Softpac Plus Version 1.05 for Alpkem	

Additional Comments on Data Reduction Software:

W:\PS207\LAB-C-P.—

5.0 LABORATORY DOCUMENTATION

5.1 Quality Assurance Manual

Please provide a copy of the laboratory QA manual.

5.2 Standard Operating Procedures

Please provide a copy of the Table of Contents for laboratory standard operating procedures.

5.3 Laboratory Certifications

Please provide copies of original laboratory certifications.

5.4 Performance Evaluation Studies

Please provide copies of results of laboratory's participation in EPA WP and WS Performance Evaluation Studies and any other performance evaluation studies.

9.0 Calibration Procedures and Frequency

9.1 Instrumentation

Enseco-Wadsworth/ALERT Laboratories uses EPA approved instrumentation designed to meet or exceed EPA method performance specifications. A current Inventory of Laboratory Equipment is presented in Table 9-1.

TABLE 9-1

INVENTORY OF LABORATORY EQUIPMENT
ORGANIC EXTRACTIONS

EQUIPMENT DESCRIPTION	SERIAL NO.
Heat Systems-Utrasonics, INC. W-385Utrasonic Processor	G8692
Heat Systems-Utrasonic, INC. XL2020 Utrasonic Processor	G1026
Sartorius Top Loading Balance	49508
Sartorius Analytical Balance	39090059
Organomation Meyer N-Evap Analytical Evaporator Model 112	5376
60 Place Continuous Liquid-Liquid Extraction Rack	
abc GPC Autoprep Model 1002B	707B
~~Perkin-Elmer LC-15 UV Detector~~	~~7706-02-090~~
Spectra-Physics Model SP4290 Integrator	067/6961-010
Nineteen (19) Soxhlet Apparatus, Shamrock Glassware	----

Millipore Waters 440 absorbance detector

TABLE 9-1 (cont.)

INVENTORY OF LABORATORY EQUIPMENT
GC/MS VOLATILE ANALYSIS

EQUIPMENT DESCRIPTION	SERIAL NO.
Varian 3400G Gas Chromatograph	4593
Extrel ELQ400 Mass Spectrometer	---
Tekmar ALS20 16 Autosampler	89332003
Tekmar LSC2000 Purge and Trap Controller	89325008
Tekmar Automatic Sample Heater (low-level only)	89318010
Graphon Model 235 Monitor	036899
Printronix Printer Model P3040	M56980
Varian 3400G Gas Chromatograph	9052
Extrel ELQ400 Mas Spectrometer	---
Tekmar ALS20 16 Autosampler	90038010
Tekmar LSC2000 Purge and Trap Controller	90029008
Tekmar Automatic Sample Heater	90016022
Graphon Model 235 Monitor	030971
Printronix Printer Model P6040	A105483
Fisher Scientific Top Loading Balance Model S-300D	---
Varian 3400G Gas Chromatograph	4643
Tekmar 7050 Equilibrium Headspace (screening) Autosampler	91135006
Spectraphysics SP4290 Integrator	127/8500-010

3 Electron Capture Detectors (for 504, 8080, 8150 use)
3 Dual Hall/PID Detectors (for 8010, 8020, 8121 use)
2 Flame Ionization Detectors (for 8040 use)

TABLE 9-1 (cont.)

INVENTORY OF LABORATORY EQUIPMENT
GC/MS SEMIVOLATILE ANALYSIS

EQUIPMENT DESCRIPTION	SERIAL NO.
Varian 3400G Gas Chromatograph	4594
Varian 8100 Autosampler	0672
Extrel ELQ400 Mass Spectrometer	---
Pericon Monitor	M56008
Printronix Printer Model P6040	A101797
Varian 3400G Gas Chromatograph	3769
Varian 8100 Autosampler	0672
Extrel ELQ400 Mass Spectrometer	---
Graphon Model 235 Monitor	032521
Texas Instruments Omni 800 Printer	0981580037

TABLE 9-1 (cont.)

INVENTORY OF LABORATORY EQUIPMENT
GC/HPLC ANALYSIS

EQUIPMENT DESCRIPTION	SERIAL NO.
Varian 3400G Gas Chromatograph	4645
Varian 8035 Autosampler	071831MR88
Varian 3400G Gas Chromatograph	1044
Varian 8030 Autosampler	920130SE83
Varian 3400G Gas Chromatograph	4644
Varian 8035 Autosampler	013828JN85
Varian 3400G Gas Chromatograph	10557
Varian 8100 Autosampler	1419
Labdata Data Station (Commodore A2000)	CA1082343
Mitsubishi Diamond Scan Monitor	AUM-1381A134307
Panasonic KX-P1191 Printer	OJMASJF42107
Waters 712WISP HPLC Autosampler	712-007118
Waters 600E HPLC System Controller	600EPD383
Waters HPLC Pump	600PF2990
Waters 440 UV Detector	420-015041
Labdata Data Station (Commodore A2000)	CA1070372
Mitsubishi Diamond Scan Monitor	AUM-1381A103851
Panasonic KX-P1191 Printer	9AKASA19948
Labdata Work Station (Commodore A2000)	JA1018923
Mitsubishi Diamond Scan Monitor	AUM-1381117984
Panasonic KX-P1191 Printer	9AKASA19979

TABLE 9-1 (cont.)

INVENTORY OF LABORATORY EQUIPMENT
GC/HPLC ANALYSIS

EQUIPMENT DESCRIPTION	SERIAL NO.
Labdata Work Station (Commodore A2000)	CA1082971
Misubishi Diamond Scan Monitor	AUM-1381A134428
Panasonic KX-P1191 Printer	OJMASJF42126

TABLE 9-1 (cont.)

INVENTORY OF LABORATORY EQUIPMENT
ATOMIC SPECTROSCOPY

EQUIPMENT DESCRIPTION	SERIAL NO.
Thermo Jarrell Ash ICAP61	6092,3092
NEC Powermate 286 Plus	0102967UB
NEC Pinwriter P220XE Printer	610126600
TJA AS300 Autosampler	0173
Varian Spectraa-400Z Atomic Absorption Spectrometer	00110099
Varian GRA-96Z Graphite Tube Atomizer	0011202
IBM PS-2 Computer	23-9806876
Epson FX-850 Printer	ODN0036521
Varian PSD96 Autosampler	001132
Perkin-Elmer 3030 Atomic Absorption Spectrometer	123294
Perkin-Elmer AS-40 Autosampler	5697
Perkin-Elmer HGA-400 Furnace Controller	3214
Perkin-Elmer Graphite Furnance Module	2655
Perkin-Elmer Flame Atomixer Module	----
Perkin-Elmer PR-110 Printer	A08038
Spectro Products, Inc. HG-4 Mercury Analyzer	2254
Four(4) Thermolyne Type 2200 Hotplates	247901022578 247901022575 41100918 41100913
Blue M Model MW-1130A-1 Water Bath	MW-1851
Four (4) Associated Design and Mfg TCLP Filter Units	----
Three (3) x 7-slot TCLP tumblers	----
Six (6) Associated Design and Mfg ZHE Tumbler/Filter Units	----

TABLE 9-1 (cont.)

INVENTORY OF LABORATORY EQUIPMENT
WET CHEMISTRY

EQUIPMENT DESCRPITION	SERIAL NO.
IBM PS-2 Computer	-----
Okidata Printer	GE 82853A
Alpkem RFA300 Autoanalyzer	-----
Alpkem Autosampler	000650
Alpkem Pump	000553
Alpkem Cartridge Holder	0001503
Alpkem Power Pack	000604
Alpkem Interface	000153
Alpkem Oil Bath	0004518
Two(2) Hach Module 456000 Cod Reactor	900303263 900101636
Two(2) Sanyo SR1090W Refrigerators	900100140 900100383
Mitsubishi TOX-10-C TOX Analyzer	43C00454
Mitsubishi TOX-10-A Sample Preparator	43A00454
Mitsubishi TOX-10-A Sulphur-Chlorine Preparator	43AC0136
Dohrmann TOC Analyzer	
Dohrmann 183S/SS Solids Analyzer	HJ3920
Dohrmann ASM-1 Autosampler	ASHJ3927
Dohrmann DC-80 Reaction Module	RMHJ3715
Beckman 8211 Infrared Analysis Bench	1000270
Samsung SR-005G Refrigerator	70402292
Sanyo SR1287X Refrigerator	900206997

TABLE 9-1 (cont.)

INVENTORY OF LABORATORY EQUIPMENT
WET CHEMISTRY

EQUIPMENT DESCRIPTION	SERIAL NO.
Sanyo SR1090W Refrigerator	900100385
Accumet 950 pH/ION Meter-	9062
Milton Roy SPEC21 Spectrophotometer	3111232010
Buck Scientific HC-404 IR Spectrophotometer	032
Thernolyne Type 220 Hotplate	23717991
Wheaton 8000 60 Second BOD Dissolved Oxygen Meter	8952Q
Mettler Balance	40019078
Fisher Scientific 5300D Balance	22016
Fisher Scientific Dessicator	-----
Lab-Line Dessicator	-----
Boekel Dessicator	-----
Two(2) Fisher Scientific 630G Oven	91102205 00100035
Fisher Scientific 307 Low Temp. Incubator	WB00101036
Thermolyne Type 1500 Furnace	32708805
Two(2) Fisher Vacuum Pumps	1189
Blue M Constant Temp. Bath	MW1853
Corning 220 pH Meter-	7818
Two(2) Precision 535 Vacuum Pumps	-----
Orion 250A pH Meter	001302
Hach 2100A Turbidimeter	890820502
YSI Model 35 Conductance Meter	90A011651
Precision Scientific 18EG Oven	10-AV-9
Sartorius B120S Analytical Balance	40030037
Fisher Scientific Pensky-Martens Closed-Cup Flashpoint Tester, Model A-6	710

TABLE 9-1 (cont.)

INVENTORY OF LABORATORY EQUIPMENT
SAMPLE RECEIVING

EQUIPMENT DESCRIPTION	SERIAL NO.
Epson Equity 11+ Computer	0261009553
IBM3151 Computer Terminal	88-W8964
Epson FX-850 Printer	ODN1051984
Dataproducts L8300-102 Printer	26-F04067-L831

TABLE 9-1 (cont.)

INVENTORY OF LABORATORY EQUIPMENT
DATA MANAGEMENT

EQUIPMENT DESCRIPTION	SERIAL NO.
Compaq Deskpro 386S	4006HT3H0599
Epson LQ-1050 Printer	OFG0024745
IBM Model 3151 Computer Terminal	88-APNB8
Epson Equity 11E Computer	21X2003986
Epson LQ-1050 Printer	OFG1004814
Epson Equity 1+ Computer	ONM2001127
Epson LQ-1050 Printer	OFG0024742

CLP EVIDENTIARY SOP

John M Flaherty
John M. Flaherty, Laboratory Manager — 11/30/93 Date

David F. Brennan
David F. Brennan, CLP Project Manager — 11/30/93 Date

Renée M Gigliotti
Renee M. Gigliotti, CLP QA Officer — 11/30/93 Date

1. SCOPE AND APPLICATION

   The Evidentiary SOP is derived from the compilation of various SOPs developed to address receipt of samples, chain-of-custody, sample identification, sample storage, sample tracking, document control, and review and assembly of completed data.

2. DEFINITIONS - Not applicable

3. PROCEDURES

   See References (Section 8) to SOPs.

4. QUALITY CONTROL LIMITS - Not Applicable

5. CORRECTIVE ACTION - Not Applicable

6. DOCUMENTATION DESCRIPTION - Not Applicable

7. NOTES AND PRECAUTIONS - Not Applicable

8. REFERENCES

   8.1 Sample Receiving SOP (Chapter 11)

   8.2 Document Control/Sample Tracking SOP (Chapter 3)

   8.3 Sample Identification SOP (Chapter 3)

   8.4 Intra-laboratory Chain-of-Custody SOP (Chapter 12)

   8.5 Sample Storage SOP (Chapter 15)

8.6 Laboratory and Sample Security SOP (Chapter 4)

8.7 Report Assemply SOP (computer data security) (Chapter 20)

QUANTERRA SOPs, PITTSBURGH FACILITY

Procedural:		
LP-WALP-1000	Expanded Deliverables SOP	Rev.2.0
LP-WALP-1001	Solvent Testing SOP	Rev. 0
LP-WALP-1002	ASTM Type II Water	Rev. 0
LP-WALP-1003	Standards Labelling and Traceability	Rev. 0
LP-WALP-1200	Refrigeration SOP	Rev. 0
LP-WALP-1300	Sample Receiving SOP	Rev.1.0
LP-WALP-1350	Bottle Blank SOP	Rev.1.0
LP-WALP-1355	Shipper Preparation SOP	Rev.2.0
LP-WALP-1360	Glassware Washing SOP	Rev. 0
LP-WALP-1400	Sonicator Tuning	Rev.1.0
GC/MS:		
LM-WALP-3005	GC/MS Volatile Organic Compds (524.2)	Rev. 0
LM-WALP-3010	GC/MS Volatile Organic Compds (624)	Rev. 0
LC-WALP-3015	GC/MS Volatile Organic Compds (CLP)	Rev. 0
LM-WALP-3020	GC/MS Volatile Organic Compounds (8240)	Rev.1.0
LM-WALP-3022	GC/MS Volatile Organic Compounds (8260)	Rev.1.1
LM-WALP-3030	GC/MS Semivolatile Organics (625)	Rev. 0
LM-WALP-3040	GC/MS Semivolatile Organics (8270)	Rev.1.1
LM-WALP-3050	Dioxin Screen (625)	Rev. 0
LC-WALP-3055	GC/MS Semivolatile Organics (CLP)	Rev. 0
GC and HPLC:		
LM-WALP-4000	Method 502.2	Rev. 0
LM-WALP-4010	Method 504-EDB and DBCP by GC	Rev. 0
LM-WALP-4011	Method 8011-EDB and DBCP by GC	Rev. 0
LM-WALP-4030	GC Volatile Organic Compounds (8010/20)	Rev.1.0
LM-WALP-4031	GC Volatile Organic Compds (601/602)	Rev.1.0
LM-WALP-4032	GC Volatile Organic Compounds (8021)	Rev. 0
LM-WALP-4033	GRO by Wisconsin Method	Rev. 0
LM-WALP-4037	ASTM D3695, Non-Halogenated VOCs	Rev. 0
LM-WALP-4040	Phenols by GC (8040)	Rev. 0
LM-WALP-4045	Phenols by GC (604)	Rev. 0
LM-WALP-4048	Pentachlorophenol - Derivatized	Rev. 0
LM-WALP-4050	Organochlorine Pesticides/PCBs (608)	Rev. 0
LC-WALP-4055	Organochlorine Pesticides/PCBs (CLP)	Rev. 0
LM-WALP-4060	Organochlorine Pesticides/PCBs (8080)	Rev. 0
LM-WALP-4061	PCB Wipes (8080)	Rev. 0
LM-WALP-4062	Chlorinated Hydrocarbons by GC (8121)	Rev. 0
LM-WALP-4080	Organophosphorous Pesticides (614)	Rev. 0
LM-WALP-4081	Organophosphorous Pesticides (8141)	Rev. 0
LM-WALP-4090	Phthalate Esters by GC, Method 8061	Rev. 0
LM-WALP-4110	Herbicide Analysis by 8150	Rev. 0
LM-WALP-4121	TPH by GC (8015 - mod)	Rev. 0
LM-WALP-4123	DRO by Tennessee Method	Rev. 0
LM-WALP-4124	DRO by Wisconsin Method	Rev. 0
LM-WALP-4200	PAH by GC (8100)	Rev. 0
LM-WALP-6000	PAH by HPLC (8310)	Rev.1.0
LM-WALP-6010	Phthalic Acid by HPLC	Rev. 0
LM-WALP-6020	PAH by HPLC (610)	Rev.1.0

LM-WALP-6030	Explosives - Nitroaromatics and Nitramines (8330)	Rev. 0
#LM-WALP-6031	Tetrazene by HPLC (8331)	Rev.1.0
LM-WALP-6040	Benzidine by HPLC, Method 605 MODIFIED	Rev. 0

Extractions and Cleanups:

LM-WALP-4510	Continuous Liquid/Liquid Extraction	Rev. 0
LM-WALP-4511	Continuous L/L Extraction for Meth 8121	Rev. 0
LM-WALP-4540	Sonication Extraction for Solid Samples	Rev. 0
LM-WALP-4541	Sonication Extraction for Method 8121	Rev. 0
LM-WALP-4550	Waste Dilution	Rev. 0
LM-WALP-4560	Herbicide Diazomethane/Extraction	Rev.1.0
LM-WALP-4570	Wipe Extraction Method 8080	Rev. 0
LM-WALP-4580	Soxhlet Extraction of PCP, Derivatized	Rev. 0
LM-WALP-4900	GPC Cleanup	Rev. 0
LM-WALP-4910	Florisil Column Cleanup	Rev. 0
LM-WALP-4940	Sulfuric Acid Cleanup	Rev. 0
LM-WALP-4950	Silica Gel Cleanup	Rev. 0
LM-WALP-4990	Copper Cleanup	Rev. 0

Wet Chemistry:

LM-WALR-1000	pH - Paper Method	Origin.
LM-WALR-1001	pH - Soils, Electrometric	Origin.
LM-WALR-1002	pH - Waters, Electrometric	Origin.
LM-WALP-1010	Acidity	Rev. 0
LM-WALP-1020	Alkalinity-Total, Phenolphthalein, Carbonate, Bicarbonate, Hydroxide	Rev. 0
LM-WALP-1030	Total Volatile Solids and Ash Content	Rev. 0
LM-WALP-1031	Percent Ash, ASTM D482-80	Rev. 0
LM-WALP-1040	Biochemical Oxygen Demand	Rev.1.0
LM-WALP-1041	Carbonaceous Biochemical Oxygen Demand	Rev. 0
LM-WALP-1051	Chlorine - BombTOX	Rev. 0
LM-WALP-1052	Sulfur, General Bomb Method	Rev.1.1
LM-WALP-1070	TOC in waters	Rev. 0
LM-WALP-1071	TOC in solids, Walkley-Black	Rev. 0
LM-WALP-1072	TOC in solids, Automated	Rev. 0
LM-WALP-1090	Chloride, Titrimetric	Rev. 0
LM-WALP-1092	Residual Chlorine	Rev. 0
LM-WALP-1110	Ferrous Iron	Rev. 0
LM-WALP-1120	Color	Rev. 0
LM-WALP-1130	Corrosivity	Rev. 0
LM-WALP-1131	Langelier Index	Rev. 0
LM-WALP-1141	Cyanide, Automated	Rev. 0
LM-WALP-1142	Free Cyanide	Rev. 0
LM-WALP-1145	Reactive Cyanide	Rev. 0
LM-WALP-1151	Flashpoint, Closed Cup	Rev. 0
LM-WALP-1160	Fluoride	Rev. 0
LM-WALP-1170	Total Hardness	Rev. 0
LM-WALP-1190	Nitrite - Automated	Rev. 0
LM-WALP-1191	Nitrite - Manual	Rev. 0
LM-WALP-1192	Nitrate - Brucine Method	Rev. 0
LM-WALP-1193	Nitrate/Nitrate-Nitrite Automated	Rev. 0

LM-WALP-1201	Ammonia Nitrogen, Distillation/Potentio	Rev. 0
LM-WALP-1203	Ammonia Nitrogen, Automated	Rev.1.0
LM-WALP-1210	Odor	Rev. 0
LM-WALP-1220	Oil and Grease, Gravimetric, Solid	Rev. 0
LM-WALP-1221	Oil and Grease, Gravimetric, Waters	Rev. 0
LM-WALP-1230	Paint Filter	Rev. 0
LM-WALP-1243	TRPH-IR, Liquid	Rev. 0
LM-WALP-1244	TRPH-solid, sonication	Rev. 0
LM-WALP-1251	Phenolics (Automated)	Rev. 0
LM-WALP-1260	Phosphate-Total and Organic	Rev. 0
LM-WALP-1300	Total Solids in Aqueous Samples	Rev. 0
LM-WALP-1301	Total Suspended Solids	Rev. 0
LM-WALP-1302	Total Dissolved Solids	Rev. 0
LM-WALP-1303	Percent Solids	Rev. 0
LM-WALP-1310	Specific Conductance	Rev.1.0
LM-WALP-1320	Sulfate, Turbidimetric	Rev. 0
LM-WALP-1330	Sulfide	Rev. 0
LM-WALP-1335	Reactive Sulfide	Rev. 0
LM-WALP-1340	Sulfite, titrimetric	Rev. 0
LM-WALP-1360	MBAS	Rev. 0
LM-WALP-1380	TOX in solids	Rev.1.0
LM-WALP-1381	TOX in waters	Rev. 0
LM-WALP-1390	Turbidity	Rev. 0
LM-WALP-1440	Specific Gravity	Rev.1.0
LM-WALP-1450	COD - Colorimetric	Rev. 0
LM-WALP-1800	Solid Extraction for Wet. Chem.	Rev. 0
LM-WALP-2020	Hexavalent Chromium	Rev. 0
LM-WALP-2045	Calcium and Calcium Hardness	Rev. 0

Metals:

LM-WALP-1100	Cation-Exchange Capacity	Rev. 0
LM-WALP-2000	Flame AA Analysis	Rev. 0
LM-WALP-2010	GFAA Analysis	Rev. 0
LM-WALP-2030	Mercury Water Analysis	Rev. 0
LM-WALP-2031	Mercury Soil Analysis	Rev. 0
LM-WALP-2040	ICP Analysis	Rev.2.0
#LM-WALP-2041	ICP Analysis - Trace ICP	Rev. 0
LM-WALP-2510	Aqueous Prep. for GFAA Analysis	Rev. 0
LM-WALP-2530	Solid Metals Preparation	Rev. 0
LM-WALP-2540	EP Toxicity Procedure	Rev. 0
LM-WALP-2550	TCLP Procedure	Rev. 0
LM-WALP-2551	ZHE Procedure	Rev. 0
LM-WALP-2560	Aqueous Prep. for ICP Analysis	Rev. 0

CLP SOPs:

MC-WALP-0001	CLP Evidentiary SOP, Chapter 1	Rev.1.0
MC-WALP-0002	CLP Quality Control Manual Proc, Ch2	Rev.1.0
MC-WALP-0003	CLP Document Control/Sample Tracking,Ch3	Rev.1.0
MC-WALP-0004	CLP Laboratory and Sample Security, Ch4	Rev.2.0
MC-WALP-0005	CLP Visitor SOP, Chapter 5	Rev.1.0
LCS-WALP-0001	CLP Reagent and Chemical Procurement,Ch6	Rev.2.0

LCS-WALP-0002	CLP Analytical Standards, Chapter 7	Rev.3.0
MC-WALP-0006	CLP Internal and External Audit SOP,Ch8	Rev.2.0
MC-WALP-0007	CLP Technical and Managerial Review, Ch9	Rev.1.0
MC-WALP-0008	CLP QA Officer Responsibilities SOP,Ch10	Rev.1.0
LC-WALP-8001	CLP Sample Receiving SOP, Chapter 11	Rev.3.0
LCP-WALP-0001	CLP Intra-Laboratory C-O-C, Ch12	Rev.1.0
LCP-WALP-8002	CLP Sample Identification SOP, Ch 13	Rev.2.0
LCP-WALP-8003	CLP Sample Delivery Group (SDG) SOP,Ch14	Rev.3.0
LCP-WALP-0002	CLP Sample Storage, Chapter 15	Rev.3.0
LCP-WALP-0003	CLP Sample and Extract Storage, Holding, and Disposal, Chapter 16	Rev.1.0
AC-WALP-0001	CLP Form Instruction Guide, Chapter 17	Rev.0
AC-WALP-0002	CLP Case File Preparation, Inventory, & Shipping, Chapter 18	Rev.2.0
MC-WALP-0009	CLP Confidential Document SOP, Ch 19	Rev.1.0
AC-WALP-0003	CLP Report Assembly SOP, Chapter 20	Rev.0
LCS-WALP-0003	CLP Standard/Reagent SOP, Chapter 21	Rev.1.0
LCP-WALP-0004	CLP Calibrations, Chapter 22	Rev.1.0
LCP-WALP-0005	CLP Glassware Washing SOP, Chapter 23	Rev.1.0
MC-WALP-0010	CLP Laboratory Personnel Training, Ch25	Rev.orig
LCP-WALP-0006	CLP Target Analyte List and Contract Required Detection Limits, Chapter 24	Rev.1.0
MC-WALP-0011	CLP Sample Cooler Return SOP, Ch 26	Rev.1.0
AC-WALP-0004	CLP Automated Data Management SOP, Ch27	Rev.0
LCM-WALP-2001	CLP Method for Acid Digestion of Aqueous Samples for Total Metals by ICP and FLAA,Ch28	Rev.3.0
LCM-WALP-2002	CLP Acid Digestion of Aqueous Samples GFAA Analysis, Chapter 29	Rev.3.0
LCM-WALP-2003	CLP Method for Acid Digestion of Soils, Sediments, and Sludges for Metals Analysis by GFAA, FLAA, or ICP, Chapter 30	Rev.3.0
#LCM-WALP-2004	CLP ICP Analysis of Water and Solid Digestates, Chapter 31	Rev.5.0
LCM-WALP-2005	CLP Method for Graphite Furnace Analysis Aqueous and Solid Digestates, Chapter 32	Rev.3.0
LCM-WALP-2006	CLP Method for Mercury Dig. and Anal. of Solid Samples by Manual Cold Vapor, Ch33	Rev.3.0
LCM-WALP-2007	CLP Method for Mercury Dig. and Anal. of Water Samples by Manual Cold Vapor, Ch34	Rev.3.0
LCM-WALP-1001	CLP Cyanide Preparation and Analysis for Automated Pyridine-Barbituric Acid, Ch35	Rev.3.0
LCM-WALP-1002	CLP Method for Percent Solids, Ch 36	Rev.2.0
LCE-WALP-2001	ICP Maintenance SOP, Chapter 37	Rev.0
LCE-WALP-2002	Graphite Furnace Maintenance SOP, Ch38	Rev.1
LCE-WALP-2003	CLP Mercury Cold Vapor Maintenance, Ch39	Rev.1
LCE-WALP-1001	CLP Alpkem RFA Maintenance Log, Ch 40	Rev.0

The following Enseco-Corporate SOPs are in effect (see the QC Department for information):

M-EQA-0001	Documentation SOP for Environmental Labs.	Rev.3.0
M-EQA-0002	Internal QD Checks, Lab. Performance QC	Rev.2.0

M-EQA-0003	Matrix-Specific QC	Origin.
M-EQA-0004	Rounding and Significant Figures	Rev.1.0
M-EQA-0005	Regulatory Certifications and Approvals	Rev.1.0
M-EQA-0006	Internal Certification Process (Draft)	Rev.1.0
M-EQA-0007	Internal Quality Assurance Audits	Origin.
M-EQA-0008	External Audit Procedures (Capabilities Audits)	Origin.
M-EQA-0009	Subpoenas	Origin.
M-EQA-0011	Contract Compliance Assurance Program	Origin.
M-EQA-0012	Contract Compliance Training	Origin.
LP-RMA-0013	Labeling of Stock and Standard Solutions	Origin.
LP-RMA-0018	Standard Preparation of Stock Solutions	Rev.1.0
LP-RMA-0019	Verification of Standard Analytical Reference Materials (SARMS)	Rev.1.0
M-EIS-0006	Enseco Standard Backup Policies	Origin.
M-EIS-0008	Enseco Standard Database Defragmentation Policies	Origin.

The following Enseco (Eastern Region) SOPs are in effect (see the QC Department for information):

M-WALR-0001	Documentation SOP	Rev.1.0
A-WALR-1000	Laboratory Personnel Training	Origin.
A-WALR-2000	Health and Safety Training	Origin.
ETC-LM-0001	Accelerated One-Step CLLE for Semivolatiles	Origin.

Technical Procedures Evaluation Checklist
Organics

			Yes	No
I	**Sample Receipt and Storage Area**			
	(Evaluate with I-III of Evidentiary Audit)			
	1.	Are sample shipping coolers opened in a contamination-free are - e.g., fume hood or vented area?	☐	☐
	2.	Are adequate facilities provided for the cold storage of samples and unused samples for 60 days after data submission?	☑	☐
		a) Is the temperature of the cold storage recorded daily in a logbook?	☑	☐
		b) Are temperature excursions noted and appropriate actions taken when required? (Check SOP)	☑	☐
	3.	Are volatile samples stored separately from semi-volatile samples and extracts?	☑	☐
	4.	Are VOA holding blanks present in the volatile sample storage facility? (One per case) → in 'K' lab-up refrigerator	☑	☐
	5.	Are sample extracts properly stored (2-6°C, separate) and easy to located by reference to a logbook?	☑	☐
II	**Sample Preparation Area**			
	1.	Is the laboratory maintained in a clean and organized manner appropriate for trace level analyses (contamination free)?	☑	☐
	2.	Does the laboratory appear to have adequate work space. (6 linear feet or unencumbered benchtop/analyst)?	☑	☐
	3.	Are laboratory benches made of suitable chemically resistant materials?	☑	☐
	4.	Are sufficient, functional hoods available?	☑	☐

Usually on counter top, one small hood used only on suspect coolers (odor is present)

		Yes	No
5.	Is documented organic free water for standards, blanks, dilutions available ?	☑	☐
6.	Are analytical balances located away from drafts and areas subject to rapid temperature changes?	☑	☐
	a) Are the balances checked routinely (e.g., before each weighing session) with the appropriate range of weights and results recorded in a permanent notebook?	☑	☐
	- Are routine weights checked against class S weights at least once a month and results recorded in a permanent notebook?	☑	☐
	b) Have the balances been calibrated within one year by a certified technician?	☑	☐
7.	Are sample preparation SOPs readily available?	☑	☐
	- Are sample preparation SOPs followed by laboratory personnel?	☑	☐
8.	Are glassware preparation/cleaning SOPs readily available?	☑	☐
	- Are they followed by laboratory personnel?	☑	☐
9.	Is all required sample preparation equipment available:		
a)	Sonicator		
	Make_____ Model_____ Backup Yes (Y/N)?	☑	☐
b)	GPC		
	Make_____ Model_____ Backup No (Y/N)?	☑	☑
c)	GPC UV Detector		
	Make_____ Model_____	☑	☐
	- Do GPC logs indicate corrective actions are taken when there is a problem with calibration?	☑	☐
d)	Continuous liquid/liquid extractors? Number 60 ?	☑	☐

see instrument inventory list

		Yes	No
10.	Do analysts record bench data in a neat and accurate manner?	☑	☐
11.	Do analysts record lot number of solvents, spiking solutions, etc., on bench sheets? prepared in SV lab	☑	☐
12.	Is there evidence of a secondary review of all documents and logbooks by someone other than the person generating the documents?	☑	☐

III Standards Preparation and Storage

1.	Are SOPs for standards preparation readily available?	☑	☐
	- Are they followed by laboratory personnel?	☑	☐
2.	Are reagent grade or higher purity chemicals used to prepare standards?	☑	☐
3.	Are standards properly labeled with concentrations, date of preparation, expiration date, and/or a traceable reference code number? stds. logs	☑	☐
4.	Are spiking/calibration standards preparation and tracking logbooks maintained for:		
	Semivolatiles? ULTRA low-type AZLA unit	☑	☐
	Pesticides? not audited at Pittsburg lab	☐	☐
	Volatiles?	☑	☐
	- Are logbook numbers and series of stock solutions and reagents recorded?	☑	☐
5.	If the laboratory purchases commercially prepared standard mixes, is appropriate documentation (manufacturer's "Certificate of analyses") available?	☑	☐

IV Analytical Instrumentation and Analyses-Specific Items

A. GC/MS's (for up to 200 samples/month)

1. Instrument needs

		Yes	No
a)	1 VOA GC/MS/DS with purge and trap device	☑	☐
b)	2 Semi-VOA GC/MS	☑	☐
c)	1 Backup GC/MS/DS and purge and trap device	☑	☐

GC/MS/DS			Purge & Trap	
Instr ID	Manu/ Model	Software Revision	Instr ID	Manu/ Model

see pre-audit questionnaire, Section 9.1 of QUANTERRA instrumentation inventory

2. Are manufacturers' operating manuals readily available? ☑ ☐

3. Does lab have service contracts? ☐ ☑

   a. Does lab have extensive replacement parts available? ☑ ☐

4. Is a permanent service record maintained for each instrument? — in house ☑ ☐

5. Does the lab use a recent mass spectral library? ☑ ☐

			Yes	No
6.	Magnetic tape storage of GC/MS electronic data:			
	a.	Are raw data, including quantitative output files and libraries archived on magnetic tape?	☑	☐
	b.	Is a log of raw data contents of tapes maintained? referenced on run log	☑	☐
7.	VOA analyses:			
	a.	Is equipment available for heated purge and trap for low level soil analyses?	☑	☐
?	b.	Are VOA holding blanks results available.	☑	☐
8.	Can instrument operator show from the run log that corrective actions have been taken for (e.g.)			
	a.	Reanalyses when internal standard areas are out of control?	☑	☐
	b.	Dilutions when calibration range is exceeded?	☑	☐
	c.	Blanks when previous sample showed saturation?	☑	☐
9.	Are SOPs, readily available for GC/MS analyses and logbook completion?		☑	☐
	-	Are they followed by laboratory personnel?	☑	☐
10.	Is there evidence of a secondary review of all documents and logbooks by someone other than the person generating the documents?		☑	☐

B. GC/EC's (for up to 200 sample/month) NOT AUDITED AT PITTSBURGH LAB

1.	Instrument needs			
	a.	2 GC/EC/DS with dual columns	☐	☐
	b.	1 backup GC/EC	☐	☐

	GC/EC		Data System
Instr ID	Manu/ Model	Detector Type	Manu/ Model

		Yes	No
2.	Are manufacturers' operating manuals readily available?	☐	☐
3.	Does the lab have service contracts?	☐	☐
	a. Does the lab have extensive replacement parts available?	☐	☐
4.	Is a permanent service record maintained for each instrument?	☐	☐
5.	Are SOPs readily available for GC/EC analyses and logbook completion?	☐	☐
	- Are they followed by laboratory personnel?	☐	☐
6.	Is there evidence of a secondary review of all documents and by someone other than the person generating the document?	☐	☐

John Flaherty for GC/MS deliverables

V Data Handling and Review (GALP)

		Yes	No
1.	Are data calculations spot checked by a second person? Level I review in all cases	☑	☐
2.	Do records indicate appropriate corrective action when QC criteria are not met?	☑	☐
3.	Do supervisory personnel review the data and QC result prior to submission?	☑	☐
4.	Are SOPs for data handling/review readily available?	☑	☐
	- Are they followed?	☑	☐
5.	Are data and file access user ID or file password protected?	☑	☐
6.	Are deliverables checked for completeness and accuracy? (Hardcopy and electronic) same software	☑	☐
	Resubmittals?	☑	☐
7.	Is the monthly data entry error rate determined and recorded? N/A	☐	not used ☐
8.	When changes to deliverables are required, are the changes properly documented? (Rationale, review, initials.)	☑	☐
9.	Are user manuals and operations/systems manuals available?	☐	☑
10.	Is a written software test and acceptance plan available for installation of system changes?	☐	☑

VI	Quality Assurance (QA) Internal Inspections	Yes	No
1.	Is there an internal QA inspection procedure?	☑	☐
2.	Does the QA officer report to senior management?	☑	☐
3.	Are corrective actions documented?	☑	☐
4.	What kinds of internal audits are performed?	☑	☐
a)	Blind PE samples?	☑	☐
b)	Other: annual corporate QA audits		
5.	What kinds of QA records are kept?		
a)	PE sample results?	☑	☐
b)	Records of recoveries (extractions, etc.)	☑	☐
c)	Training/experience records of personnel?	☑	☐
d)	Method sensitivities?	☑	☐
e)	Control charts for QC purposes?	☑	☐
f)	Other WP-series USEPA/~~QAP quality~~ PE results		

VII	Quality Assurance Plan (QAP)		
1.	Is a QAP available?	☑	☐
2.	Does it address the following?	☐	☐
a)	Organization & philosophy	☑	☐
b)	Facilities & equipment	☑	☐
c)	Document control	☑	☐
d)	Analytical methodology	☑	☐
e)	Data generation	☑	☐
f)	QA	☑	☐
g)	QC	☑	☐
h)	Corporate ethics policy (but not in QAP)	☑	☐

VII Standard Operating Procedures

			Yes	No
1.	Are SOPs available for the following (many already addressed earlier during audit)?			
? a)	Evidentiary		☑	☐
b)	Sample Receipt and storage		☑	☐
c)	Sample preparation		☑	☐
d)	Glassware cleaning	VO in UC lab; SW in prep lab	☑	☐
e)	Calibration (balance)		☐	☐
f)	Calibration (instruments)		☑	☐
g)	Analytical procedures (for each system)		☑	☐
h)	Maintenance activities (for each system)		☐	☐
i)	Analytical standards		☑	☐
j)	Data reduction procedures	(in several SOP's)	☑	☐
k)	Documentation policy/procedures		☐	☐
l)	Data validation/self inspection procedures		☐	☐
m)	Data management and handling	(in several SOP's)	☑	☐

IX Organization and Personnel Summary
(see "Key Personnel" list - attached)

		Yes	No
1.	Do personnel assigned to this project have the appropriate educational background to successfully accomplish the objectives of the program?	☑	☐
2.	Is the organization adequately staffed to meet project commitments in a timely manner?	☑	☐
3.	Were all key personnel available? List those not present.	☑	☐

Name	Position

X Laboratory Capacity

		Yes	No
1.	Does the laboratory have sufficient analytical instrumentation to analyze the needed number of samples?	☑	☐
2.	Does the laboratory have sufficient technical administrative personnel to deliver the number of needed analyses?	☑	☐
3.	Does the laboratory have an adequate sample and data tracking system to handle the needed number of analyses?	☑	☐

~~X~~ Summary

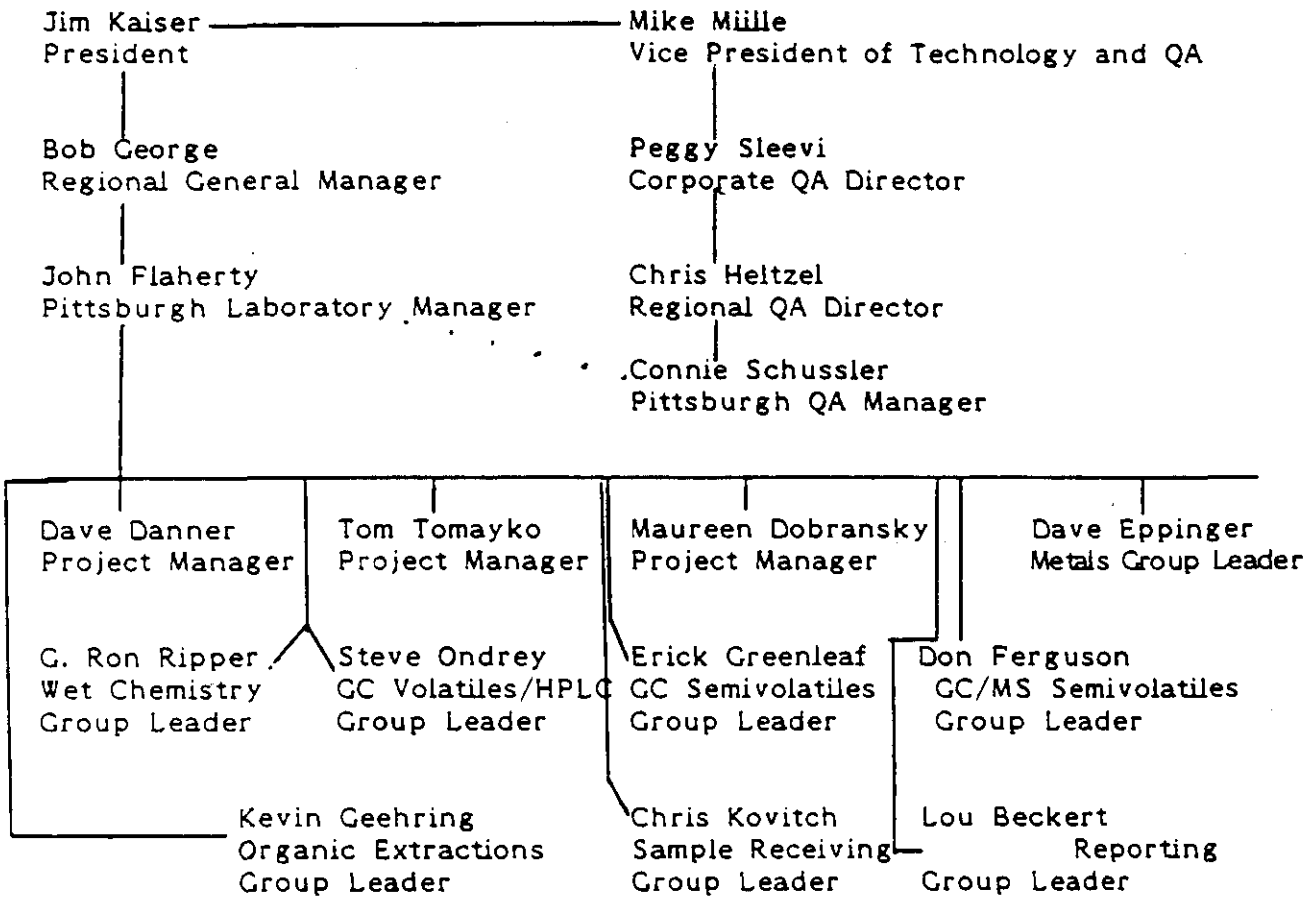
Provide an overall evaluation of the laboratory's apparent technical capability to perform the needed work .

APPENDIX C
ORGANIZATION CHART

Figure 4.1

ORGANIZATIONAL CHART

Enseco-Wadsworth/ALERT Laboratories, Pittsburgh



APPENDIX D
RESUMES OF KEY PERSONNEL

David F. Brennan

Education:

B.S. Indiana University of Pennsylvania
Degree awarded August 1980
Major: Biology
Minor: Chemistry

Experience:

1/90 to Present — Wadsworth/ALERT Laboratories, Inc., Pittsburgh, PA
Inorganics Laboratory Manager

Responsible for the development and operation of the Inorganic Section of the Laboratory. Responsible to assure that all samples are analyzed in an efficient, accurate manner employing correct quality control procedures.

3/87 to 1/90 — Keystone Environmental Resources, Inc., Monroeville, PA
Inorganics Laboratory Manager

Responsible for the daily operation of the Atomic Spectrocopy Department. Managed and participated in the Lab's successful bid to become a participant in the USEPA Inorganic Contract Laboratory Program under SOW 7/87 and 7/88.

9/84 to 3/87 — International Technology Corporation
Metals Group Leader

Responsible for the dialy operation of the Metals Department. Successfully participated in several programs directed at certifying the laboratory for metals analysis. Successfully certified the laboratory for analysis of lead in blood through the Center of Disease Control and Pennsylvania Department of Health Certification Programs.

Fields of Competence:

Administrative Development and Management

Project Development and Management - Laboratory Quality Control Procedures and Programs; Laboratory Data Management and Analytical Program Documentation, and CLP Management.

Technical Research, Development, and Management

Analytical Methods and Instrumentation - Metals Analysis by ICP Optical Emission Spectrometer, Flame AA Spectrometers, Graphite Furnace AA Spectrometers, Cold Vapor Mercury Spectrometers, Adiabatic Calorimeters.

AR304155

DONALD FERGUSON

Education: Bachelors of Science, Wildlife Biology
West Virginia University, 1981

Work Experience:

1989 - Present	Enseco-Wadsworth/ALERT Laboratories; Pittsburgh Laboratory. GC/MS Semivolatiles Group Leader
1988 - 1989	Three Rivers Analytical Laboratory: GC/MS Operator
1983 - 1988	Homer City Coal Laboratory: Shift Supervisor

Summary of Work:
Supervision and Management of Organic Analytical Groups involved in RCRA, CERCLA, NPDES, and SDWA Protocols.

Fields of Competence:

Analytical Methods and Instrumentation: CLPSOW OLM01.8, NYSDEC ASP, SW 846, EPA, Organics by GC/MS

AR304156

JOHN M. FLAHERTY

Education: Bachelor Degree in Chemistry/Physics
University of Pittsburgh, 1980

Work Experience:

2/90 - Present	Quanterra Environmental Services (formerly Enseco-Wadsworth/ALERT Laboratories) Pittsburgh Laboratory, Manager
1989 - 1990	Keystone Environmental Resources, Inc.; Laboratory Manager
1988 - 1989	Keystone Environmental Resources, Inc.; Project Manager
1985 - 1988	Koppers Company, Inc.; Quality Assurance Manager
1983 - 1985	Microbac Laboratories, Inc.; Laboratory Director
1981 - 1983	Microbac Laboratories, Inc.; Chemist

Summary of Work:

Supervision and Management of Technical and Analytical Programs for: CERCLA-Environmental Assessments and Restorations; RCRA Corrective Action, Industrial Waste Management and Groundwater Monitoring; SDWA-Drinking Water Standards Compliance Monitoring and Water/Wastewater Treatment Evaluations; NPDES-Industrial Effluents Discharge and Pretreatment Permitting and Monitoring; Surface Water Evaluations; TSCA-PCB Surveys; OSHA-Industrial Hygiene Analysis.

Fields of Competence:

Administrative Development and Management

Project Development and Management: Analytical Methods Research, Development, and Implementation; Laboratory Quality Control Procedures and Programs; Laboratory Data Management and Analytical Program Documentation; Technical Report Writing; Regulatory Agency Liaison.

Technical Development and Management

Environmental Analytical Programs: Analysis of Air, Water, and Soil; Complete Organic Chemical Characterization by GC, HPLC, Herbicides, Pesticides, PCBs; Metals by AA, ICAP; TOC; TOX; Conventional Pollutants by UV/VIS Spec., Wet Chemistry.

KEVIN GEEHRING

Education: Southmoreland High School
Diploma, 1979

Work Experience:

1990 - Present	Enseco-Wadsworth/ALERT Laboratories; Pittsburgh Laboratory, Organic Extractions Group Leader
1986 - 1990	Keystone Environmental Resources, Inc.; Laboratory Technician
1978 - 1986	Microbac Laboratories, Inc.; Fuel Department Supervisor

Summary of Work:
Supervision and Management of Organic Preparation Group. Analysis of Fuels by ASTM Methods.

Fields of Competence:

Analytical Methods and Instrumentation: CLP SOW OLM01.8, NYSDEC ASP, SW 846, EPA, ASTM, Organic extraction and sample preparation by continous liquid-liquid, Soxhlet, Sonication, Alumina Column Clean-up, Florisil Column Clean-up, Silica Gel Clean-up, Gel Permeation Clean-up, Acid-Base Partition Clean-up, Sulfur Clean-up.

CHRISTINA M. KOVITCH

Education: Pennsylvania State University of New Kensington.

Work Experience:

1990 - Present ENSECO-Wadsworth/ALERT Laboratories; Pittsburgh Laboratory, Sample Receiving

Summary of Work:

Ensures proper bottles and preservatives are distributed to clients on time. Correct log-in of samples upon receipt with correct files are entered daily.

Resolution of sample discrepancy concerning internal as well as external personnel.

Documentation and control of samples while in house are provided through sample receiving.

Final disposal of samples according to regulation.

CONNIE L. SCHUSSLER

Education: Bachelor of Science, Chemistry and Zoology
Olivet Nazarene University, 1981

Work Experience:

1993 - Present	Enseco-Wadsworth/ALERT Laboratories; Quality Assurance Director
1992 - 1993	Enseco-Wadsworth/ALERT Laboratories; Pesticide Residue Analyst
1988 - 1992	Wadsworth/ALERT Laboratories; Quality Control Manager
1987 - 1988	Wadsworth/ALERT Laboratories; Senior Chemist
1986 - 1987	Armour Pharmaceutical Company; QC Group Coordinator
1981 - 1986	Armour Pharmaceutical Company; Quality Control Analyst

Summary of Work

Management of Laboratory Quality Assurance/Quality Control Programs for: CERCLA-Environmental Assessments and Restorations; RCRA-Industrial Waste Management and Groundwater Monitoring; SDWA-Drinking Water Standards Compliance Monitoring and Water/Wastewater Treatment Evaluations; NPDES-Industrial Effluent Discharge and Pretreatment Permitting and Monitoring; Surface Water Evaluations; TSCA-PCB Surveys.

Fields of Competence:

Administrative Development and Management

Project Development and Management: - Laboratory Quality Assurance/Quality Control Program Administration; Laboratory Data Management and Analytical Program Documentation.

Technical Research, Development, and Management

Environmental Assessment Programs - Analysis of Air, Water, and Soil: Surface Water Evaluations; Groundwater Monitoring; Industrial Discharge Monitoring; Soil Surveys; Subsurface Investigations.

Analytical Methods and Instrumentation - CLP SOW OLM01.8, NYSDEC ASP, SW 846, EPA, HPLC, GC/P&T.

Laboratory Quality Control Program - Formulation of Laboratory Quality Control Sample Spikes, Reference Samples, Control Charts, Accuracy Statements, etc.

THOMAS TOMAYKO

Education: Associate of Science, Chemistry
Boyce Community College, 1979

Work Experience:

1990 - Present	Enseco-Wadsworth/ALERT Laboratories: Pittsburgh Laboratory, Project Manager
1986 - 1990	Antech, Ltd; Assistant Laboratory Manager
1982 - 1986	Antech, Ltd; Organics Group Leader
1977 - 1982	D'Appalonia Consulting Engineers; Analyst

Fields of Competence:

Administrative Development and Management

Project Development and Management: Analytical Methods, Development and Implementation: Technical Report Writing; Client Liaison; Laboratory Quality Control Procedures; Proposal Preparation and Presentation.

Technical Development and Management: Environmental Analytical Programs. Analysis of Water, Soil, and Waste (solid and liquid); Chemical Characterization by GC, GC/MS, AA, Graphite Furnace, TOC,TOX, Wet Chem, UV/VIS Spec., for Priority Pollutant and TCL Parameter.

APPENDIX E
INTERNAL QA DOCUMENTS

ENSECO-WADSWORTH/ALERT LABORATORIES, PITTSBURGH
LEVEL I DATA REVIEW CHECKLIST
FOR GC/MS

Lot Number:_____ Client:_____

A. Calibration Review
   1. Did the initial calibration curve meet method criteria?
   2. Is a copy of the initial curve included with the data package (For Expanded Deliverables)
   3. Did the continuing calibration verification meet criteria?
   4. Do the continuing calibration verifications contain all target analytes in the samples?
   5. Are copies of the continuing calibrations included in the data package (For Expanded Deliverables)?
   6. Were the continuing calibrations analyzed at the required frequency?
   7. Were tuning criteria met?
   8. Were TICs required? Are spectra included in the data package for all positive hits?

B. QC Data
   1. Did surrogate recoveries meet acceptance criteria?
   2. Were the method blank, check sample, and MS/MSD analyzed with every 20 samples or batch of samples, and did they meet acceptance criteria?
   3. Are copies of the method blank, check sample, and MS/MSD (only for the sample spiked) included with the data package? (Including quant reports, chromatograms, etc for Expanded Deliverables)
   4. Did internal standard areas meet acceptance criteria?

C. Documentation
   1. Were all analytical problems or method deviations documented?
   2. Are copies of narratives, Holding Time Violation forms, or Corrective Action forms included with the data package, as needed?
   3. Are copies of the logbook pages included with the data package (for Expanded Deliverables)?

Analyst's signature_____Date_____

LEVEL II DATA REVIEW CHECKLIST

A. Data
   1. Were the calculations of at least two samples in the batch rechecked? Which ones?
   2. Were deviations from the SOP pre-approved?

B. Documentation
   1. Are copies of narratives, Holding Time Violation forms, or Corrective Action forms included with the data package, as needed?
   2. Are copies of logbook pages, initial calibration curves, continuing calibration verifications, sample chromatograms and quant reports, QC chromatograms and quant reports, Levels I and II reviews, included with the data package for Expanded Deliverables?
   3. Did the surrogates, MS/MSDs, check samples, method blank, initial calibration curves, and continuing calibration verifications meet criteria?

Reviewer's signature_____Date_____

Rev. 1-27-94

HOLDING TIME VIOLATION / CORRECTIVE ACTION FORM

DATE:_____

Project Manager:_____ Client:_____

Lab #:_____ # of Samples_____ # of Samples Affected:_____

Work Order #'s_____

Parameter (one per violation form):_____

Holding Time Required:_____ Days/_____ Hours

Date Sampled:_____ Date Received:_____

	Code #	Definition
_____	1	Sample received after expired
_____	2	Parameter requested by client after expired
_____	3	Sample was initially extracted/analyzed after expired
_____	4	Sample was re-extracted/reanalyzed after expired. Reanalysis confirmed the original results.
_____	5	Sample was re-extracted/reanalyzed after expired. Reanalysis did not confirm the original analysis.
_____	6	Expired due to sample log-in delays.
_____	7	Expired due to instrument failure.
_____	8	Expired due to analyst oversight.
_____	9	Expired due to sample load.
_____	10	Other.

Explanation and corrective actions taken:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Project Manager Informed: ☐Yes ☐No Client Informed: ☐Yes ☐No

Instructions: ☐Proceed With Work ☐Stop Work

If instructions are to proceed, date of reprep/analysis:_____

Signature of Group Leader:_____

Copy to PM Copy to Lab Director Copy to QA Office

WADSWORTH/ALERT LABORATORIES, PITTSBURGH

Corrective Action Form

Method: _____

Reason for Corrective Action:

	(Problem Source)	(Explanation)
____	Calibration Standard(s)	_____
____	Check Standard	_____
____	Blank	_____
____	MS/MSD	_____
____	Duplicates	_____
____	Surrogate(s)	_____
____	Sample	_____
____	Holding Time	_____
____	OTHER	_____

Check Action Taken:

		(Date)	(Outcome)
____	Reanalysis	_____	_____
____	Repreparation/Reanalysis	_____	_____
____	Reagent Repreparation	_____	_____
____	Dilution	_____	_____
____	Instrumentation	_____	_____
____	OTHER	_____	_____

Comments:

_____

_____

_____

_____

_____

_____

_____

ANALYST: _____ Supervisor: _____

Date: _____ Date: _____

Original: Lot File
Copies: QA Office, Department Corrective Action File

AR304165

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL MONITORING SYSTEMS LABORATORY-LAS VEGAS
P.O. BOX 93478
LAS VEGAS, NEVADA 89193-3478
702/798-2100

Rec'd ITP* 6/27/94

cc SHC JFS KLS LSL MTH

Mr. Joseph Smith
IT Analytical Services - Export
5103 Old William Penn Hwy
Export, PA 15632

Dear Mr. Smith:

The Individual Laboratory Summary Report (ILSR) summarizing your laboratory's results for the most recent Quarterly Blind (QB) Performance Evaluation (PE) Sample QB3, FY94 is enclosed for your information and review. Please review your score as listed on the ILSR to determine the actions which are required to correct any deficiencies. The wording of these Performance Categories below was established by your contract and the Administrative Project Officers of the National Program Office:

- o Acceptable, No Response Required (Score greater than or equal to 90 percent):

  Data meets most or all of the scoring criteria. No response is required.

- o Acceptable, Response Explaining Deficiency(ies) Required (Score greater than or equal to 75 percent but less than 90 percent):

  Deficiencies exist in the Contractor's performance.

Within 14 days of receipt of this notification from EPA, the Contractor shall describe the deficiency(ies) and the action(s) taken to correct the deficiency(ies) in a letter to the Administrative Project Officer, the Technical Project Officer and the Environmental Monitoring Systems Laboratory-Las Vegas (EMSL-LV)

- o Unacceptable, Response Explaining Deficiency(ies) Required (Score less than 75 percent):

  Deficiencies exist in the Contractor's performance to the extent that the National Program Office has determined that the Contractor has not demonstrated the capability to meet the contract requirements.

Within 14 days of receipt of notification from EPA, the Contractor shall describe the deficiency(ies) and the action(s) taken to correct the deficiency(ies) in a letter to the Administrative Project Officer, the Technical Project Officer, and EMSL-LV.

The Contractor shall be notified by the Technical Project Officer or Administrative Project Officer concerning the remedy for their unacceptable performance. A Contractor may expect, but the Agency is not limited to, the following actions: reduction of the number of samples sent under the contract, suspension of sample shipment to the Contractor, an On-Site laboratory evaluation, GC/MS tape audit, data package audit, remedial performance evaluation sample, and/or a contract sanction, such as a Cure Notice.

Note: A Contractor's prompt response demonstrating that corrective actions have been taken to ensure the Contractor's capability to meet contract requirements may facilitate continuation of full sample delivery.

Your initial response, if any, to this letter should be to your Regional EPA Technical Project Officer for your contract.

Sincerely,

Larry C. Butler
Research Chemist
Analytical Sciences Division

Enclosures
Individual Laboratory Summary Report

INORGANIC PERFORMANCE EVALUATION SAMPLE
INDIVIDUAL LABORATORY SUMMARY REPORT
FOR QB 3 FY 94

LABORATORY NAME: IT Analytical Services (PA) [R2] (ITPA)
PERFORMANCE LEVEL: ACCEPTABLE
LABORATORY RANK: Above = 2 Same = 0 Below = 11

% Score: 98.2
REPORT DATE: 6/8/1994
MATRIX: SOIL

ELEMENT	PREDICTION INTERVALS WARNING LOWER	WARNING UPPER	ACTION LOWER	ACTION UPPER	LABORATORY REPORTED VALUE	Q	#LABS NOT-ID	#LABS MIS-QUANT	PROGRAM DATA #LABS FALSE POS	#LABS MSPK OUT	#LABS DUP OUT	TOTAL #LABS
ALUMINUM	2820	12600	1740	13700	8530		0	0	0	0	1	14
ANTIMONY	12.0	13.2	12.0	14.3	9.4	BN	0	2	0	10	0	14
ARSENIC	32.4	51.8	30.3	53.9	42.4		0	0	0	0	0	14
BARIUM	4030	10200	3360	10900	8790		0	0	0	0	0	14
BERYLLIUM	1.0	1.1	1.0	1.2	0.6	B	0	0	0	0	0	14
CADMIUM	1.0	3.4	1.0	3.7	2.7		0	0	0	0	0	14
CALCIUM	20900	25500	20600	25800	23400		0	1	0	0	0	14
CHROMIUM	592	723	589	726	638		0	0	0	0	0	14
COBALT	d	d	d	d	10	B	0	0	0	0	0	
COPPER	102	132	98.7	136	111		0	0	0	1	0	
IRON	10000	20600	8880	21800	15400		0	0	0	0	0	14
LEAD	903	1260	864	1290	1090		0	0	0	0	0	14
MAGNESIUM	2640	3670	2520	3780	3260		0	0	0	0	0	14
MANGANESE	1010	1230	1000	1240	1160		0	1	0	0	0	14
MERCURY	0.61	1.5	0.51	1.6	1.3		0	0	0	2	7	14
NICKEL	18.5	29.6	17.3	30.8	24.8		0	1	0	0	1	14
POTASSIUM	1000.0	2080	1000.0	2210	1600		0	0	0	0	0	14
SELENIUM	1.0	2.5	1.0	2.7	2.4		0	1	0	5	0	14
SILVER	4.0	6.8	3.7	7.1	5.4		0	0	0	1	0	14
SODIUM	d	d	d	d	387	B	0	0	1	0	0	14
THALLIUM	c	c	c	c	0.75	U	0	0	1	2	0	14
VANADIUM	79.7	118	75.5	123	88.5		0	0	0	1	0	14
ZINC	200	287	191	297	235		0	0	0	2	0	14

OF ELEMENTS NOT-IDENTIFIED: 0
OF ELEMENTS MIS-QUANTIFIED: 0
OF FALSE POSITIVES: 0

OF MATRIX SPIKES OUT: 1
SOIL : Sb

OF DUPLICATES OUT: 0
SOIL :

AR304169

INORGANIC PERFORMANCE EVALUATION SAMPLE
INDIVIDUAL LABORATORY SUMMARY REPORT
FOR 08 3 FY 94

LABORATORY NAME: IT Analytical Services (PA) [R2] (ITPA)
PERFORMANCE LEVEL: ACCEPTABLE
LABORATORY RANK: Above = 2 Same = 0 Below = 11

% Score: 98.2
REPORT DATE: 6/8/1994
MATRIX: WATER 1

ELEMENT	PREDICTION INTERVALS WARNING LOWER	WARNING UPPER	ACTION LOWER	ACTION UPPER	LABORATORY REPORTED VALUE	Q	PROGRAM DATA #LABS NOT-ID	#LABS MIS-QUANT	#LABS FALSE POS	#LABS MSPK OUT	#LABS DUP OUT	TOTAL #LABS
UMINUM	1330	1630	1330	1630	1540		0	0	0	0	0	14
..TIMONY	274	368	264	378	324		0	1	0	0	0	14
ARSENIC	118	158	113	162	139		0	1	0	2	0	14
BARIUM	706	863	706	863	819		0	0	0	0	0	14
BERYLLIUM	39.8	49.5	38.7	50.6	45		0	0	0	0	0	14
CADMIUM	42.6	55.8	41.2	57.2	51.8		0	0	0	1	0	14
CALCIUM	11000	13400	10900	13600	12400		0	0	0	0	0	14
CHROMIUM	44.5	55.8	43.3	57.0	51.5		0	1	0	0	0	14
..ALT	154	190	150	194	181		0	0	0	0	0	14
ER	100	123	100	123	116		0	1	0	0	0	14
..UN	593	786	572	806	719		0	1	0	1	1	14
LEAD	33.2	45.4	31.9	46.7	40.9		0	1	0	1	2	14
MAGNESIUM	6540	8150	6360	8330	7500		0	0	0	0	0	14
MANGANESE	102	124	101	125	119		0	1	0	0	0	14
MERCURY	4.6	6.1	4.5	6.2	5.2		0	2	0	0	0	14
NICKEL	72.4	112	68.1	117	97.6		0	0	0	0	0	14
..SSIUM	5260	6730	5100	6890	6370		0	1	0	0	0	14
SELENIUM	31.1	46.2	29.4	47.8	38.6		0	0	0	1	0	14
SILVER	c	c	c	c	11.6	#	0	0	2	0	0	14
SODIUM	10300	12600	10300	12600	12100		0	0	0	0	0	14
THALLIUM	35.4	48.4	34.0	49.8	41.8		0	0	0	4	0	14
VANADIUM	259	317	259	317	288		0	1	0	0	0	14
ZINC	520	636	514	642	605		0	0	0	0	0	14

OF ELEMENTS NOT-IDENTIFIED: 0
OF ELEMENTS MIS-QUANTIFIED: 0
OF FALSE POSITIVES: 1

OF MATRIX SPIKES OUT: 0
WATER :

..F DUPLICATES OUT: 0
WATER :

AR304170

INORGANIC PERFORMANCE EVALUATION SAMPLE
INDIVIDUAL LABORATORY SUMMARY REPORT
FOR QB 3 FY 94

LABORATORY NAME: IT Analytical Services (PA) [R2] (ITPA) % Score: 98.2
PERFORMANCE LEVEL: ACCEPTABLE REPORT DATE: 6/8/1994
LABORATORY RANK: Above = 2 Same = 0 Below = 11 MATRIX: WATER 2

ELEMENT	PREDICTION INTERVALS WARNING LOWER	WARNING UPPER	ACTION LOWER	ACTION UPPER	LABORATORY REPORTED VALUE	Q	PROGRAM DATA #LABS NOT-ID	#LABS MIS-QUANT	#LABS FALSE POS	#LABS MSPK OUT	#LABS DUP OUT	TOTAL #LABS
ALUMINUM	767	937	767	937	848		0	1	0	0	0	14
ANTIMONY	280	426	264	442	338		0	0	0	0	0	14
ARSENIC	91.0	120	87.9	123	103		0	1	0	2	0	14
BARIUM	388	474	388	474	438		0	0	0	0	0	14
BERYLLIUM	35.7	43.6	35.7	43.6	39.4		0	1	0	0	0	14
CADMIUM	22.8	32.9	21.6	34.0	29.7		0	0	0	1	0	14
CALCIUM	10900	13300	10900	13300	12100		0	1	0	0	0	14
CHROMIUM	61.2	74.8	61.2	74.8	67		0	1	0	0	0	14
COBALT	233	285	231	287	267		0	0	0	0	0	1
COPPER	90.0	110	90.0	110	101		0	0	0	0	0	1
IRON	517	653	502	668	588		0	2	0	1	1	14
LEAD	32.8	41.4	31.8	42.4	36.5		0	0	0	1	2	14
MAGNESIUM	7420	9060	7370	9110	8280		0	0	0	0	0	14
MANGANESE	48.6	60.0	47.4	61.2	55.3		0	1	0	0	0	14
MERCURY	3.0	4.6	2.8	4.8	3.4		0	0	0	0	0	14
NICKEL	85.4	116	82.1	119	103		0	0	0	0	0	14
POTASSIUM	12000	14600	11800	14800	13800		0	0	0	0	0	14
SELENIUM	31.8	46.6	30.2	48.2	40		0	0	0	1	0	14
SILVER	10.0	33.0	10.0	36.6	32.6		0	0	0	0	0	14
SODIUM	16200	19900	16200	19900	18600		0	0	0	0	0	14
THALLIUM	40.9	63.0	38.4	65.5	53.8		0	0	0	4	0	14
VANADIUM	115	141	115	141	126		0	1	0	0	0	14
ZINC	99.2	132	95.5	136	120		0	1	0	0	0	14

OF ELEMENTS NOT-IDENTIFIED: 0
OF ELEMENTS MIS-QUANTIFIED: 0
OF FALSE POSITIVES: 0

OF MATRIX SPIKES OUT: 0
WATER :

OF DUPLICATES OUT: 0
WATER :

AR304171

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

January 28, 1994
Laboratory I.D. #02-416
Certified Mail P-030 439 415

Enseco-Wadsworth/Alert Laboratories (EPA# PA00164)

Dear Laboratory Director: Re: Water Pollution Study 031

Recently a set of chemical Performance Evaluation samples was sent to you for analysis through EPA's Quality Assurance program. The results of your analyses, the true values, warning limits, and acceptance limits are provided on the attached data report. Based on this report, your current status in the Oil & Gas Accreditation Program in Pennsylvania is as shown below:

LABORATORY CERTIFICATION STATUS

Certified for the contaminants listed below, in compliance with the Pennsylvania Oil and Gas Act.

Parameters: pH, Alkalinity, TDS, Specific Conductance, Chloride, Sulfate, Calcium, Manganese, Magnesium, Iron, Sodium, Potassium, Barium**, Oil & Grease.

Provisionally Certified - Unacceptable performance evaluation samples in two consecutive series of tests for the same parameter will result in revocation of certification.

Parameters: Hardness*

Other Comments: *Please state to DER the corrective action taken.
**Barium was not contained in this study but the laboratory successfully analyzed this parameter on the previous WS study (WS032).

"Provisionally Certified" replaces the previous term "Intention to Classify as "Not Certified"".

If you have any questions on your laboratory's status, contact James Yoder at (717) 783-7150.

Sincerely,

Ted Lyter

P. Ted Lyter, Chief
Laboratory Accreditation Section
Bureau of Laboratories

AR304172

PERFORMANCE EVALUATION REPORT DATE: 12/27/

WATER POLLUTION STUDY NUMBER WP031

LABORATORY: PA164

ANALYTES	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
TRACE METALS IN MICROGRAMS PER LITER:						
ALUMINUM	1	690	681	550- 734	579- 755	ACCEPTAB
	2	144	140	107- 182	117- 173	ACCEPTAB
ARSENIC	1	489	492	408- 587	430- 565	ACCEPTAB
	2	72.2	74.3	56.7- 92.9	61.2- 88.4	ACCEPTAB
BERYLLIUM	1	403	461	382- 533	401- 514	ACCEPTAB
	2	208	240	198- 276	208- 268	ACCEPTAB
ADMIUM	1	161	165	138- 194	145- 187	ACCEPTAB
	2	59.5	61.0	50.8- 72.0	53.5- 69.4	ACCEPTAB
COBALT	1	833	860	775- 980	801- 954	ACCEPTAB
	2	51.6	53.8	45.4- 61.9	47.5- 59.8	ACCEPTAB
CHROMIUM	1	717	730	604- 843	634- 813	ACCEPTAB
	2	23.6	23.4	17.4- 29.0	18.9- 27.6	ACCEPTAB
COPPER	1	605	601	524- 657	541- 640	ACCEPTAB
	2	19.2	18.7	13.6- 24.1	14.9- 22.8	ACCEPTAB
IRON	1	57.1	58.0	43.5- 72.5	47.2- 68.8	ACCEPTAB
	2	1070	1100	950- 1270	991- 1230	ACCEPTAB
ERCURY	1	9.78	9.38	7.31- 11.9	7.89- 11.3	ACCEPTAB
	2	6.56	6.67	5.00- 8.48	5.44- 8.04	ACCEPTAB
MANGANESE	1	597	600	536- 660	551- 644	ACCEPTAB
	2	73	73.5	64.0- 82.7	66.4- 80.4	ACCEPTAB
NICKEL	1	842	860	766- 952	789- 928	ACCEPTAB
	2	332	340	296- 383	307- 372	ACCEPTAB
LEAD	1	1220	1200	1060- 1350	1100- 1310	ACCEPTAB
	2	769	738	636- 833	661- 809	ACCEPTAB

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY

PERFORMANCE EVALUATION REPORT DATE: 12/27

WATER POLLUTION STUDY NUMBER WP031

LABORATORY: PA164

ANALYTES	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
TRACE METALS IN MICROGRAMS PER LITER:						
SELENIUM	1	212	228	156- 277	171- 262	ACCEPTA
	2	382	387	268- 486	296- 459	ACCEPTA
VANADIUM	1	954	940	832- 1040	860- 1020	ACCEPTA
	2	173	170	146- 188	151- 183	ACCEPTA
ZINC	1	819	842	737- 947	763- 921	ACCEPTA
	2	48.6	46.3	37.5- 56.1	39.8- 53.7	ACCEPTA
ANTIMONY	3	85.0	94.5	56.4- 119	64.3- 111	ACCEPTA
	4	172	189	108- 244	125- 227	ACCEPTA
SILVER	3	74.2	73.9	60.6- 86.9	63.9- 83.5	ACCEPTA
	4	25.1	25.8	21.1- 30.4	22.2- 29.2	ACCEPTA
THALLIUM	3	64.3	62.8	47.0- 77.3	50.8- 73.4	ACCEPTA
	4	544	539	421- 643	450- 615	ACCEPTA
MOLYBDENUM	3	23.7	24.5	18.6- 30.6	20.2- 29.0	ACCEPTA
	4	75.1	81.6	64.4- 95.0	68.3- 91.1	ACCEPTA
STRONTIUM	3	16.5	19.1	14.4- 23.3	15.5- 22.1	ACCEPTA
	4	69.0	73.4	62.0- 84.5	64.9- 81.5	ACCEPTA
TITANIUM	3	132	130	109- 151	114- 145	ACCEPTA
	4	35.6	43.0	34.0- 53.4	36.5- 50.9	CHECK FOR E
MINERALS IN MILLIGRAMS PER LITER: (EXCEPT AS NOTED)						
PH-UNITS	3	9.47	9.50	9.19- 9.75	9.26- 9.68	ACCEPTA
	4	4.72	4.70	4.62- 4.77	4.64- 4.75	ACCEPTA
SPEC. COND. (UMHOS/CM AT 25 C)	1	876	899	840- 930	857- 963	ACCEPTA
	2	385	398	368- 435	377- 427	ACCEPTA

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSAR

PERFORMANCE EVALUATION REPORT DATE: 12/27/

WATER POLLUTION STUDY NUMBER WP031

LABORATORY: PA164

ANALYTES	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
MINERALS IN MILLIGRAMS PER LITER: (EXCEPT AS NOTED)						
TDS AT 180 C	1	717	577	396- 759	441- 713	CHECK FOR E
	2	249	223	168- 284	183- 269	ACCEPTA
TOTAL HARDNESS (AS CACO3)	1	316	279	236- 307	245- 298	NOT ACCEPTA
	2	72	57.4	51.2- 63.8	52.8- 62.2	NOT ACCEPTA
CALCIUM	1	117	110	87.4- 126	92.2- 121	ACCEPTA
	2	7.32	7.00	5.95- 8.19	6.23- 7.91	ACCEPTA
MAGNESIUM	1	1.05	0.960	0.771- 1.18	0.822- 1.13	ACCEPTA
	2	10.1	9.70	8.38- 11.0	8.71- 10.6	ACCEPTA
SODIUM	1	63.4	61.7	56.2- 67.8	57.6- 66.3	ACCEPTA
	2	26.4	26.3	23.6- 29.2	24.3- 28.5	ACCEPTA
POTASSIUM	1	7.91	7.50	6.39- 8.91	6.70- 8.50	ACCEPTA
	2	41.0	40.0	34.5- 45.6	35.9- 44.2	ACC
TOTAL ALKALINITY (AS CACO3)	1	119	120	106- 133	109- 130	ACCEPTA
	2	11.1	11.0	7.85- 15.3	8.77- 14.3	ACCEPTA
CHLORIDE	1	201	199	183- 213	187- 210	ACCEPTA
	2	40.7	41.2	36.5- 45.4	37.6- 44.3	ACCEPTA
LUORIDE	1	3.13	3.30	2.83- 3.77	2.95- 3.65	ACCEPTA
	2	0.405	0.380	0.319-0.457	0.336-0.439	ACCEPTA
SULFATE	1	13.0	14.0	10.8- 16.8	11.5- 16.0	ACCEPTA
	2	88.5	92.0	78.1- 105	81.5- 102	ACCEPTA
NUTRIENTS IN MILLIGRAMS PER LITER:						
AMMONIA-NITROGEN	1	7.79	7.70	6.10- 9.16	6.47- 8.79	ACCEPTA
	2	0.747	0.730	0.491-0.982	0.550-0.923	ACCEPTA

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSAR

PERFORMANCE EVALUATION REPORT DATE: 12/27

WATER POLLUTION STUDY NUMBER WP031

LABORATORY: PA164

ANALYTES	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
NUTRIENTS IN MILLIGRAMS PER LITER:						
NITRATE-NITROGEN	1	0.507	0.520	0.378-0.658	0.412-0.625	ACCEPTA
	2	10.4	11.0	8.84- 13.0	9.34- 12.5	ACCEPTA
ORTHOPHOSPHATE	1	0.154	0.150	0.114-0.187	0.122-0.178	ACCEPTA
	2	4.49	4.10	3.48- 4.68	3.62- 4.54	ACCEPTA
TOTAL PHOSPHORUS	3	0.695	7.40	5.57- 8.05	5.96- 7.75	NOT ACCEPTA
	4	4.62	0.490	0.341-0.569	0.369-0.542	NOT ACCEPTA
DEMANDS IN MILLIGRAMS PER LITER:						
COD	1	84.1	70.8	52.4- 84.6	56.5- 80.5	CHECK FOR E
	2	220	207	163- 230	172- 221	ACCEPTA
TOC	1	27.1	28.0	23.9- 32.8	25.0- 31.6	ACCEPTA
	2	83.2	82.0	69.5- 95.3	72.8- 91.9	ACCEPTA
DAY BOD	1	31.9	44.9	26.1- 60.1	30.3- 55.8	ACCEPTA
	2	182	131	75.4- 190	88.5- 167	NOT ACCEPTA
CARBONACEOUS BOD	1	31.2	38.5	16.5- 60.4	22.5- 54.4	ACCEPTA
	2	102	112	52.8- 171	69.0- 155	ACCEPTA
PCB'S IN MICROGRAMS PER LITER:						
PCB-AROCLOR 1254	1	2.72	1.87	0.988- 2.71	1.21- 2.49	NOT ACCEPTA
PCB-AROCLOR 1260	2	5.83	4.63	2.79- 5.96	3.19- 5.56	CHECK FOR E

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSAR

PERFORMANCE EVALUATION REPORT DATE: 12/27/

WATER POLLUTION STUDY NUMBER WP031

LABORATORY: PA164

ANALYTES	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
PCB'S IN OIL IN MILLIGRAMS PER KILOGRAM:						
PCB IN OIL- 1016/1242	2	44.1	35.3	8.02- 46.6	13.0- 41.6	CHECK FOR E
PCB IN OIL- 1254	1	52.2	43.9	13.5- 61.8	19.8- 55.5	ACCEPTA
PESTICIDES IN MICROGRAMS PER LITER:						
CHLORDANE	3	3.84	8.21	4.91- 9.72	5.52- 9.11	NOT ACCEPTA
	4	0.640	2.21	1.07- 2.77	1.29- 2.56	NOT ACCEPTA
ALDRIN	1	0.546	0.539	0.122-0.754	0.202-0.674	ACCEPTA
	2	0.093	0.086	.0171-0.121	.0303-0.108	ACCEPTA
DIELDRIN	1	0.601	0.475	0.203-0.710	0.267-0.645	ACCEPTA
	2	0.214	0.173	.0861-0.239	0.106-0.219	ACCEPTA
DDD	1	1.03	0.866	0.433- 1.15	0.524- 1.06	ACC
	2	0.277	0.202	.0956-0.268	0.117-0.246	NOT ACC
DDE	1	0.639	0.539	0.235-0.756	0.301-0.690	ACCEPTA
	2	0.205	0.173	.0788-0.236	.0989-0.216	ACCEPTA
DDT	1	0.981	0.796	0.362- 1.06	0.450-0.972	CHECK FOR E
	2	0.182	0.142	.0570-0.215	.0772-0.196	ACCEPTA
HEPTACHLOR	1	0.759	0.669	0.187-0.918	0.279-0.825	ACCEPTA
	2	0.246	0.216	.0756-0.269	0.100-0.245	CHECK FOR E
HEPTACHLOR EPOXIDE	1	0.569	0.478	0.260-0.640	0.308-0.592	ACCEPTA
	2	0.200	0.174	.0858-0.235	0.105-0.216	ACCEPTA

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSAR

PERFORMANCE EVALUATION REPORT DATE: 12/27

WATER POLLUTION STUDY NUMBER WP031

LABORATORY: PA164

ANALYTES	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMAN EVALUATIO
VOLATILE HALOCARBONS IN MICROGRAMS PER LITER:						
1,2 DICHLOROETHANE	1	10.8	15.1	10.2- 20.4	11.5- 19.1	CHECK FOR E
	2	53.2	55.8	36.2- 73.4	40.9- 68.7	ACCEPTA
CHLOROFORM	1	9.0	11.8	7.85- 15.9	8.86- 14.8	ACCEPTA
	2	63.8	64.4	38.3- 86.7	44.4- 80.6	ACCEPTA
1,1,1 TRICHLOROETHANE	1	9.2	13.4	8.68- 18.2	9.89- 17.0	CHECK FOR E
	2	32.2	37.8	22.7- 50.0	26.2- 46.6	ACCEPTA
TRICHLOROETHENE	1	6.2	7.57	5.10- 10.3	5.75- 9.62	ACCEPTA
	2	64.4	62.7	38.6- 80.5	43.9- 75.2	ACCEPTA
CARBONTETRACHLORIDE	1	14.0	16.4	10.9- 22.2	12.3- 20.8	ACCEPTA
	2	39.7	37.1	23.0- 50.1	26.4- 46.6	ACCEPTA
TETRACHLOROETHENE	1	6.6	9.24	6.08- 12.5	6.89- 11.7	CHECK FOR E
	2	46.9	51.3	31.2- 66.7	35.7- 62.2	ACCEPTA
BROMODICHLOROMETHANE	1	8.8	10.8	7.33- 14.2	8.21- 13.3	ACCEPTA
	2	41.4	38.1	24.9- 53.6	28.5- 50.0	ACCEPTA
DIBROMOCHLOROMETHANE	1	10.1	13.1	8.48- 17.0	9.55- 15.9	ACCEPTA
	2	60.2	58.1	34.1- 80.2	39.9- 74.4	ACCEPTA
BROMOFORM	1	11.4	14.5	7.45- 20.0	9.04- 18.4	ACCEPTA
	2	42.9	42.3	25.5- 59.9	29.9- 55.6	ACCEPTA
METHYLENE CHLORIDE	1	8.7	10.6	6.59- 16.1	7.79- 14.9	ACCEPTA
	2	53.1	54.1	30.7- 76.5	36.5- 70.7	ACCEPTA
CHLOROBENZENE	1	11.6	16.0	11.4- 20.1	12.5- 19.0	CHECK FOR E
	2	61.7	63.7	41.3- 79.8	46.2- 74.9	ACCEPTA
VOLATILE AROMATICS IN MICROGRAMS PER LITER:						
BENZENE	1	38.2	40.1	25.7- 56.0	29.5- 52.2	ACCEPTA
	2	6.0	8.25	5.24- 11.6	6.04- 10.8	CHECK FOR E

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSAR

WATER POLLUTION STUDY NUMBER WP031

LABORATORY: PA164

ANALYTES	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMAN EVALUATIO
VOLATILE AROMATICS IN MICROGRAMS PER LITER:						
ETHYLBENZENE	1	67.9	66.9	36.0- 94.3	43.4- 86.9	ACCEPTA
	2	11.1	14.0	9.26- 19.0	10.5- 17.8	ACCEPTA
TOLUENE	1	49.2	49.2	30.2- 65.2	34.6- 60.8	ACCEPTA
	2	7.2	9.51	6.09- 12.8	6.93- 11.9	ACCEPTA
1,2-DICHLOROBENZENE	1	57.9	65.5	32.7- 93.9	40.5- 86.2	ACCEPTA
	2	7.2	8.88	5.85- 11.7	6.59- 11.0	ACCEPTA
,3-DICHLOROBENZENE	1	44.0	47.9	29.4- 61.7	33.5- 57.6	ACCEPTA
	2	12.5	16.6	11.6- 21.1	12.9- 19.9	CHECK FOR E
1,4-DICHLOROBENZENE	1	53.7	62.5	34.4- 85.8	41.0- 79.3	ACCEPTA
	2	9.7	12.4	7.49- 17.8	8.79- 16.5	ACCEPTA
MISCELLANEOUS PARAMETERS:						
TOTAL CYANIDE	1	0.828	0.860	0.598- 1.15	0.668- 1.08	ACC
(IN MG/L)	2	0.154	0.160	0.102-0.208	0.116-0.194	ACC
NON-FILTERABLE RESIDUE	1	55.4	61.0	47.7- 64.6	49.8- 62.5	ACCEPTA
(IN MG/L)	2	76.4	83.0	62.8- 91.3	66.4- 87.8	ACCEPTA
OIL AND GREASE	1	7.4	8.30	3.07- 12.2	4.22- 11.0	ACCEPTA
IN MG/L)	2	44.6	48.4	33.7- 56.0	36.5- 53.2	ACCEPTA
TOTAL PHENOLICS	1	0.481	0.595	0.312-0.878	0.384-0.805	ACCEPTA
(IN MG/L)	2	2.72	3.13	1.66- 4.60	2.04- 4.23	ACCEPTA

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSAR

WADSWORTH/ALERT
LABORATORIES, INC.

SAMPLING INSTRUCTIONS

I. General Instructions for Sampling

A. Each "SAMPLE SHUTTLE" or sampling kit includes the proper bottles, and if necessary, preservatives, chain-of-custody, and security seal.

B. The preservatives are color-coded as follows:

HNO_3	-	Nitric Acid	= Red
H_2SO_4	-	Sulfuric Acid	= Yellow
$NaOH$	-	Sodium Hydroxide	= White
Na_2SO_3	-	Sodium Sulfite	= Green
HCl	-	Hydrochloric Acid	= Blue

C. "Blue Ice" is provided to keep samples cool 4°C. (Freeze "Blue Ice" one day prior to sampling and shipping.)

II. Specific Instructions for each Sample Location

A. Total Coliform Bacteria Sampling
1. See special instructions attached

B. Volatile Organic(VOC) and Total Organic Carbon (TOC) Sampling
1. See special instructions attached

C. Inorganic and Organic Sampling
1. Pre-rinse bottles with sample prior to sampling.

2. Gently fill each indicated bottle on the attached page to the neck of bottle and add color coded preservatives to bottle if indicated. (Note: Wear gloves and safety glasses to prevent irritation from preservative)

3. Cap container.

4. Keep sample cool (4°C) during and after sampling and during shipment.

III. At Completion of Sampling

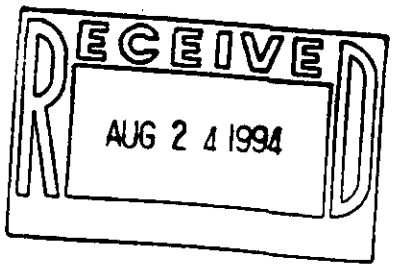
A. Return "SAMPLE SHUTTLE" or sampling kit to:

Wadsworth/Alert Laboratories, Inc.
450 William Pitt Way
Pittsburgh, PA 15238

B. Any questions, contact Sample Receiving at 412-826-5477

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
Post Office Box 1467
Harrisburg, Pennsylvania 17105-1467
August 19, 1994

Bureau of Laboratories



John Flaherty, Laboratory Director
Quanterra-Pittsburgh
450 William Pitt Way
Pittsburgh, PA 15238

RE: Laboratory Certification Status, WP032
DER# 02-416, EPA# PA00164

Dear Mr. Flaherty:

Recently, a set of chemical Performance Evaluation samples were sent to you for analysis through EPA's Quality Assurance Program. The results of your analyses, the true values, and acceptance limits are provided on the attached data report. Based on this report, your current status in the Laboratory Certification Program in Pennsylvania is as shown below:

LABORATORY CERTIFICATION STATUS

Certified for the contaminants listed below, in compliance with the Pennsylvania Oil and Gas Act.

Parameters: pH, Alkalinity, TDS, Chloride, Sulfate, Hardness, Calcium, Manganese, Magnesium, Iron, Sodium, Potassium, Barium**, Oil & Grease.

Provisionally Certified - Unacceptable performance evaluation samples in two consecutive series of tests for the same parameter will result in revocation of certification.

Parameters: *Specific Conductance

Other Comments: *Please state to DER the corrective action taken.
**Barium was not contained in this study but the laboratory successfully analyzed this parameter on the most recent Water Supply Study.

If you have any questions regarding your laboratory certification status, please contact James Yoder at (717) 783-7150.

Sincerely,

Ted Lyter

P. Ted Lyter, Chief
Laboratory Accreditation
Bureau of Laboratories

By Certified Mail P 732 255 795

AR304181

Participant ID: PA00164 Type: OTHER Requesting Office: PA

Sample Number	Reported Value	True Value*	Acceptance Limits	Warning Limits	Performance Evaluation
TRACE METALS IN MICROGRAMS/LITER					
001-ALUMINUM					
01	1248	1301	1080- 1510	1130- 1450	Accept.
02	1741	1801	1500- 2080	1570- 2010	Accept.
002-ARSENIC					
01	221	210	168- 251	179- 241	Accept.
02	389	350	281- 418	299- 401	Accept.
003-BERYLLIUM					
01	26.4	28.0	22.2- 33.6	23.6- 32.1	Accept.
02	81.5	85.2	67.1- 98.2	71- 94.3	Accept.
4-CADMIUM					
01	75.9	78.0	65.8- 91	69- 87.9	Accept.
02	26.2	27.9	22.5- 34	24- 32.6	Accept.
005-COBALT					
01	173	170	149- 190	154- 185	Accept.
02	396	410	363- 456	375- 444	Accept.
006-CHROMIUM					
01	169	169	140- 196	147- 189	Accept.
02	960	955	795- 1100	834- 1060	Accept.
7-COPPER					
01	95.3	98.0	84.7- 111	88- 107	Accept.
02	315	320	280- 358	290- 348	Accept.
008-IRON					
01	298	310	273- 346	282- 337	Accept.
02	2569	2600	2310- 2890	2380- 2820	Accept.
9-MERCURY					
01	0.639	0.615	0.321-0.881	0.391-0.811	Accept.
02	3.39	3.89	2.87- 5.02	3.14- 4.75	Accept.
010-MANGANESE					
01	453	470	420- 518	433- 506	Accept.
02	916	950	851- 1060	877- 1030	Accept.
011-NICKEL					
01	626	660	587- 732	605- 714	Accept.
02	2615	2800	2500- 3100	2570- 3020	Accept.
012-LEAD					
01	107	110	92.9- 127	97.2- 123	Accept.
02	224	220	189- 247	196- 240	Accept.
013-SELENIUM					
01	106	100	67.2- 123	74.2- 116	Accept.
02	93.2	90.2	60.5- 111	66.9- 105	Accept.
014-VANADIUM					
01	1722	1705	1510- 1890	1560- 1840	Accept.
02	7135	7202	6290- 7870	6490- 7670	Accept.
5-ZINC					
01	173	171	150- 194	156- 188	Accept.
02	1758	1710	1500- 1920	1550- 1870	Accept.

* Based on theoretical calculations, or a reference value

Participant ID: PA00164 Type: OTHER Requesting Office: FA

Sample Number	Reported Value	True Value*	Acceptance Limits	Warning Limits	Performance Evaluation
016-ANTIMONY					
03	323	320	187- 404	214- 377	Accept.
04	155	159	99.2- 199	112- 187	Accept.
017-SILVER					
03	46.4	47.8	39- 56.3	41.2- 54.1	Accept.
04	93.1	93.1	76.1- 109	80.3- 105	Accept.
018-THALLIUM					
03	310	260	199- 302	212- 289	Not Accept.
04	131	110	85.9- 132	91.8- 126	Ck. for Err.
074-MOLYBDENUM					
03	46.5	44.0	31.7- 52	34.2- 49.4	Accept.
04	139	130	101- 157	108- 150	Accept.
075-STRONTIUM					
03	27.1	26.0	21.2- 30.2	22.4- 29	Accept.
04	8.4	7.62	5.79- 9.75	6.3- 9.24	Accept.
076-TITANIUM					
03	109	97.0	80.3- 111	84.3- 107	Ck. for Err.
04	266	250	214- 283	223- 274	Accept.
MINERALS IN MG/LITER (EXCEPT AS NOTED)					
019-PH-UNITS					
03	6.17	6.20	6.05- 6.33	6.08- 6.3	Accept.
04	8.30	8.40	8.1- 8.71	8.18- 8.63	Accept.
020-SPEC. COND.(UMHOS/CM AT 25 C)					
01	275	475	424- 532	438- 518	Not Accept.
02	549	646	579- 724	597- 706	Not Accept.
1-TDS AT 180 C					
01	288	289	134- 442	173- 403	Accept.
02	374	376	265- 493	293- 464	Accept.
022-TOTAL HARDNESS(AS CACO3)					
01	176	175	158- 192	162- 188	Accept.
02	152	149	135- 167	139- 163	Accept.
023-CALCIUM					
01	39.8	37.0	33- 42.8	34.2- 41.5	Accept.
02	60.3	57.0	51.6- 65	53.3- 63.3	Accept.
024-MAGNESIUM					
01	21.1	20.0	16.9- 23.3	17.7- 22.5	Accept.
02	1.64	1.60	1.31- 1.84	1.37- 1.77	Accept.
025-SODIUM					
01	10.6	9.98	8.64- 11.4	8.99- 11.1	Accept.
02	51.5	50.9	46.5- 56.2	47.7- 55	Accept.
026-POTASSIUM					
01	3.91	3.60	2.85- 4.36	3.04- 4.17	Accept.
02	28.3	27.0	23.4- 30	24.3- 29.2	Accept.
027-TOTAL ALKALINITY(AS CACO3)					
01	17.1	16.1	12.6- 21.4	13.7- 20.3	Accept.
02	67.6	64.0	53.4- 74.7	56.1- 72	Accept.

* Based on theoretical calculations, or a reference value.

Participant ID: PA00164 Type: OTHER Requesting Office: PA

Sample Number	Reported Value	True Value*	Acceptance Limits	Warning Limits	Performance Evaluation
028-CHLORIDE					
01	125	124	114- 134	117- 132	Accept.
02	108	106	98.6- 116	101- 114	Accept.
029-FLUORIDE					
01	1.49	1.50	1.28- 1.7	1.33- 1.65	Accept.
02	0.973	0.980	0.828- 1.12	0.865- 1.08	Accept.
030-SULFATE					
01	5.14	5.60	3.52- 7.88	4.07- 7.34	Accept.
02	75.1	75.0	62.7- 84.9	65.5- 82.1	Accept.
NUTRIENTS IN MILLIGRAMS/LITER					
031-AMMONIA-NITROGEN					
01	10.8	12.0	9.48- 14.3	10.1- 13.7	Accept.
02	2.14	2.30	1.74- 2.86	1.88- 2.73	Accept.
032-NITRATE-NITROGEN					
01	39.7	39.2	31.7- 46.1	33.5- 44.3	Accept.
02	2.65	2.81	2.23- 3.34	2.37- 3.21	Accept.
033-ORTHOPHOSPHATE					
01	1.18	1.20	1.01- 1.38	1.05- 1.34	Accept.
02	0.745	0.749	0.624-0.868	0.654-0.838	Accept.
035-TOTAL PHOSPHORUS					
03	1.24	1.30	0.915- 1.58	1.01- 1.49	Accept.
04	2.71	2.60	1.87- 3.14	2.04- 2.96	Accept.
DEMANDS IN MILLIGRAMS/LITER					
036-COD					
01	109	111	84.7- 128	90.2- 123	Accept.
02	30.5	24.3	12.6- 35.3	15.5- 32.4	Accept.
037-TOC					
01	48.0	44.0	37.8- 51.1	39.5- 49.4	Accept.
02	10.1	9.60	7.97- 11.5	8.43- 11	Accept.
038-5-DAY BOD					
01	58.5	70.9	37.2- 105	45.7- 96.2	Accept.
02	12.3	15.2	8.06- 22.3	9.84- 20.5	Accept.
102-CARBONACEOUS BOD					
01	54.7	64.7	32.9- 96.5	41.3- 88.2	Accept.
02	11.6	13.4	4.72- 22	7.07- 19.7	Accept.
PCB'S IN MICROGRAMS/LITER					
040-PCB-AROCLOR 1016/1242					
01	15.3	12.7	4.33- 16.7	5.88- 15.1	Ck. for Err.
044-PCB-AROCLOR 1248					
02	8.61	5.39	2.71- 7.12	3.26- 6.56	Not Accept.
PCB'S IN OIL IN MILLIGRAMS/KILOGRAM					
050-PCB IN OIL- 1254					
01	11.0	18.5	1.31- 33.7	5.49- 29.5	Accept.

* Based on theoretical calculations, or a reference value w

Participant ID: PA00164 Type: OTHER Requesting Office: FA

Sample Number	Reported Value	True Value*	Acceptance Limits	Warning Limits	Performance Evaluation
101-PCB IN OIL- 1260					
02	15.0	23.6	4.95- 34.4	8.7- 30.7	Accept.
PESTICIDES IN MICROGRAMS/LITER					
047-ALDRIN					
01	0.650	0.626	0.145-0.844	0.234-0.755	Accept.
02	0.133	0.129	0.0417-0.176	0.0585-0.159	Accept.
048-DIELDRIN					
01	0.632	0.582	0.305-0.801	0.368-0.738	Accept.
02	0.170	0.151	0.0942-0.212	0.109-0.197	Accept.
049-DDD					
01	0.755	0.752	0.416-0.998	0.489-0.924	Accept.
02	0.167	0.144	0.0617-0.213	0.0809-0.194	Accept.
050-DDE					
01	0.636	0.626	0.304-0.848	0.373-0.779	Accept.
02	0.227	0.216	0.094-0.299	0.12-0.274	Accept.
051-DDT					
01	1.16	1.14	0.518- 1.57	0.651- 1.44	Accept.
02	0.253	0.227	0.0945-0.333	0.125-0.303	Accept.
052-HEPTACHLOR					
01	0.754	0.733	0.266-0.968	0.355-0.879	Accept.
02	0.238	0.216	0.0742-0.294	0.102-0.267	Accept.
053-CHLORDANE					
03	1.39	1.53	0.577- 2.33	0.798- 2.11	Accept.
04	5.06	5.35	2.28- 8.04	3- 7.31	Accept.
078-HEPTACHLOR EPOXIDE					
01	0.579	0.543	0.255-0.749	0.317-0.687	Accept.
02	0.211	0.195	0.085- 0.28	0.109-0.256	Accept.
VOLATILE HALOCARBONS IN MICROGRAMS/LITER					
054-1,2 DICHLOROETHANE					
01	67.3	60.9	41.2- 80.3	46.1- 75.4	Accept.
02	11.9	11.7	8.65- 15	9.45- 14.2	Accept.
055-CHLOROFORM					
01	55.0	55.9	36.3- 73.6	41- 68.9	Accept.
02	15.7	16.3	11.1- 21.1	12.4- 19.9	Accept.
056-1,1,1 TRICHLOROETHANE					
01	40.3	45.2	27.7- 60.1	31.8- 56	Accept.
02	10.1	11.5	7.48- 14.7	8.4- 13.8	Accept.
057-TRICHLOROETHENE					
01	38.1	43.0	29.5- 54.1	32.6- 51	Accept.
02	10.9	11.8	8.19- 15.2	9.07- 14.3	Accept.
058-CARBONTETRACHLORIDE					
01	40.8	43.9	28- 60.1	32- 56	Accept.
02	13.3	14.7	9.81- 19.8	11.1- 18.5	Accept.
059-TETRACHLOROETHENE					
01	39.7	44.2	29.9- 56.1	33.2- 52.8	Accept.
02	13.3	15.5	10.7- 19.8	11.9- 18.7	Accept.

* Based on theoretical calculations, or a reference value

Participant ID: PA00164 Type: OTHER Requesting Office: PA

Sample Number	Reported Value	True Value*	Acceptance Limits	Warning Limits	Performance Evaluation
060-BROMODICHLOROMETHANE					
01	57.0	53.6	37.3- 71.2	41.6- 66.9	Accept.
02	14.3	13.9	9.56- 18.4	10.7- 17.3	Accept.
061-DIBROMOCHLOROMETHANE					
01	9.7	48.5	33- 64.2	36.9- 60.3	Not Accept.
02	8.9	9.67	6.36- 12.3	7.1- 11.5	Accept.
062-BROMOFORM					
01	58.5	64.1	40.7- 89.3	46.8- 83.2	Accept.
02	10.1	12.8	7.2- 17.8	8.53- 16.4	Accept.
063-METHYLENE CHLORIDE					
01	47.5	43.8	25.6- 62.2	30.2- 57.6	Accept.
02	17.2	15.2	9.04- 21.9	10.7- 20.3	Accept.
064-CHLOROBENZENE					
01	51.1	51.9	37.4- 65	40.9- 61.5	Accept.
02	11.6	11.9	8.91- 14.9	9.66- 14.1	Accept.
VOLATILE AROMATICS IN MICROGRAMS/LITER					
065-BENZENE					
01	14.4	14.2	10- 18.7	11.1- 17.6	Accept.
02	64.7	62.7	43.6- 83	48.5- 78	Accept.
066-ETHYLBENZENE					
01	8.6	8.74	6.63- 10.8	7.16- 10.3	Accept.
02	58.3	54.8	36.5- 72.7	41.1- 68.1	Accept.
067-TOLUENE					
01	12.4	12.1	8.54- 15.5	9.41- 14.6	Accept.
02	41.9	39.9	28.6- 50.4	31.3- 47.7	Accept.
4-1,2-DICHLOROBENZENE					
01	11.7	11.8	8.15- 15.2	9.04- 14.3	Accept.
02	46.6	46.0	30.7- 59.9	34.4- 56.2	Accept.
095-1,4-DICHLOROBENZENE					
01	8.1	8.30	5.64- 11.2	6.34- 10.5	Accept.
02	43.4	42.6	28.2- 56.4	31.8- 52.8	Accept.
096-1,3-DICHLOROBENZENE					
01	8.4	8.86	6.11- 11.3	6.76- 10.6	Accept.
02	48.2	46.6	33.4- 62.2	37- 56.6	Accept.
MISCELLANEOUS PARAMETERS					
071-TOTAL CYANIDE(IN MG/L)					
01	0.046	0.065	0.0362-0.089	0.0429-0.083	Accept.
02	0.272	0.310	0.203-0.402	0.228-0.377	Accept.
072-NON-FILTERABLE RESIDUE(IN MG/L)					
01	47	50.0	35.5- 53.9	37.8- 51.6	Accept.
02	24	26.0	20- 27.9	21- 26.9	Accept.
3-OIL AND GREASE(IN MG/L)					
01	15.0	12.7	5.97- 17.3	7.4- 15.9	Accept.
02	21.0	18.2	11.6- 22.7	13- 21.3	Accept.
097-TOTAL PHENOLICS(IN MG/L)					
01	0.071	0.0862	0.0431-0.129	0.0541-0.118	Accept.
02	0.147	0.177	0.0944- 0.26	0.116-0.239	Accept.

* Based on theoretical calculations, or a reference value

Participant ID: PA00164 Type: OTHER Requesting Office: PA

Sample Number	Reported Value	True Value*	Acceptance Limits	Warning Limits	Performance Evaluation
098-TOTAL RESIDUAL CHLORINE(IN MG/L)					
01	0.300	0.320	0.15-0.453	0.19-0.413	Accept.
02	0.900	0.530	0.302-0.697	0.354-0.645	Not Accept.

********** END OF DATA FOR PA00164 **********
NOTE: FOR LIMITS AND TRUE VALUES, ASSUME THREE SIGNIFICANT DIGITS.
********** END OF REPORT FOR PA00164 **********

* Based on theoretical calculations, or a reference value.