

QUALITY ASSURANCE MANUAL

Columbia Analytical Services, Inc

19408 Park Row, Suite 320

Houston, TX 77084


Phone: 713-266-1599

Fax: 713-266-0130

Effective: 10/17/08

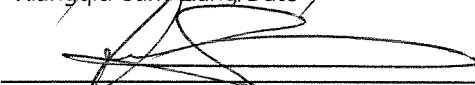
APPROVED BY

Laboratory Director:

 10/17/08


Xiangqiu 'Sam' Liang/Date

Quality Assurance Program Manager:

 10/17/08

Andrew Biddle/Date

Technical Director:

 10/17/08

Dr. Lan Le/Date

UNCONTROLLED DOCUMENT

WILL NOT BE UPDATED

2.0 TABLE OF CONTENTS

Section	Heading	Page
1.0	Title Page with Signatures.....	1
2.0	Table of Contents.....	2
3.0	Introduction and Company Quality Assurance Policy.....	4
4.0	Program Description.....	5
5.0	Statement of Professional Conduct and Laboratory Practice.....	10
6.0	Laboratory Organization.....	13
7.0	Sample Preservation, and Handling Procedures.....	18
8.0	Sample Management.....	24
9.0	Quality Control Objectives.....	28
10.0	Quality Control Procedures.....	30
11.0	Calibration Procedures and Frequency.....	37
12.0	Data Reduction, Validation, and Reporting.....	39
13.0	System and Performance Audits.....	52
14.0	Preventive Maintenance.....	53
15.0	Corrective Action.....	56
16.0	Quality Assurance Reports.....	58
17.0	Training.....	59
18.0	References for Analytical Procedures.....	61
 Tables		 Page
Table 6-1	Summary of Technical Qualifications.....	17
Table 7-1	Sample Preservation and Holding Times.....	20

Figures Page

Figure 4-1	CAS/Houston Laboratory Floor Plan	9
Figure 7-1	Sample Cooler Custody Seal	22
Figure 7-2	Sample Bottle Label	22
Figure 7-3	Chain of Custody Form	23
Figure 8-1	Cooler Receipt and Preservation Form	26
Figure 8-2	Sample Acceptance Policy	27
Figure 12-1	Evaluation of Initial Calibration	43
Figure 12-2	Evaluation of Continuing Calibration	44
Figure 12-3	Evaluation of Method Blank and Instrument Blank Results	45
Figure 12-4	Evaluation of Sample Results	46
Figure 12-5	Evaluation of Labeled Standards.....	47
Figure 12-6	Evaluation of Precision (LCS/DLCS or MS/DMS) Results.....	48
Figure 12-7	Evaluation of Matrix Spike Recoveries	49
Figure 12-8	Evaluation of Laboratory Control Sample Recoveries.....	50
Figure 12-9	Data Packages.....	51
Figure 14-1	Preventive Maintenance Procedures.....	55
Figure 15-1	Nonconformity and Corrective Action.....	57

Appendices

Appendix A	Major Analytical Equipment
Appendix B	Organizational Chart
Appendix C	Data Quality Capabilities
Appendix D	Abbreviations and Data Qualifiers
Appendix E	Current Certifications
Appendix F	CAS/Houston Signatories
Appendix G	List of Current SOPs

3.0 INTRODUCTION AND COMPANY QUALITY ASSURANCE POLICY

Columbia Analytical Services, Inc (CAS) in Houston, Texas, is a professional consulting laboratory performing chemical testing by High-Resolution Mass-Spectrometry on a wide variety of sample matrices; including drinking water, groundwater, surface water, wastewater, soil, sediment, sludge, tissue, waste streams, ambient air, industrial air, foods and products.

The quality assurance program of Columbia Analytical Services, Inc (CAS) provides sufficient quality control activities to ensure all analytical data generated and processed is scientifically sound, legally defensible, of known and documented quality, and accurately reflects the measurements performed. We satisfy our quality assurance requirements by evaluating the quality control measures from each analytical process, and by auditing our procedures and data on a regular basis. We strive for continuous improvement.

Quality assurance requires an ethical commitment to data integrity by each person in the organization. As an integral part of the QA program at CAS, every employee is required to sign two policy statements annually; *CAS Holdings Commitment to Excellence in Data Quality* and *CAS Holdings Inc. Confidentiality and Conflicts of Interest Employee Agreement*.

The information in the CAS-Houston Quality Assurance Manual has been organized according to the rules and regulations described in *National Environmental Laboratory Accreditation Conference (NELAC) Quality Systems Standards*, June 2003, and *Interim Guidance for the Preparation of Quality Assurance Project Plans*, QAM-005, USEPA, 1980; and *Guidance on Preparation of Laboratory Quality Assurance Plans*, USEPA, February 14, 1991.

The information within this document is confidential and is intended for use only by the receiving party. Unauthorized distribution of this document is unlawful and strictly prohibited. Outdated versions of this document shall be discarded and a new revision requested.

4.0 PROGRAM DESCRIPTION

The QA program at CAS ensures our clients are provided analytical results that are scientifically sound, of known and documented quality, legally defensible, and satisfy client-specific requirements. Our vision of quality assurance is reflected in the CAS Mission Statement:

“The mission of Columbia Analytical Services, Inc. is to provide high quality, cost-effective and timely professional testing services to our customers. We recognize that our success as a company is based on our ability to maintain customer satisfaction. To do this requires constant attention to customer needs, maintenance of state-of-the-art testing capabilities and successful management of our most important asset – our people – in a way that encourages professional growth, personal development and company commitment.”

In support of our mission, our quality assurance program addresses all aspects of laboratory operations, including laboratory organization and personnel, standard operating procedures, sample management, sample and quality control data, calibration practices, standards traceability data, equipment maintenance records, method proficiency data (such as Initial Precision Requirements and Continuing Demonstration of Capability), document control/storage and staff training records.

4.1 Facilities and Equipment

CAS/Houston has 12,000 square feet of laboratory and administrative workspace. The layout of the facility provides safeguards against the cross-contamination of samples. The facility is organized into segregated laboratory areas according to primary function. The ventilation system has been specially designed to meet the procedural needs of each area. In addition, the segregated laboratory areas are designed for the safe and efficient handling of a variety of sample types.

The specialized laboratory areas include:

- Sample management/shipping & receiving
- Laboratories for sample preparation and extraction
- High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS) instrumentation
- Report processing/data review
- Data archives
- Sample kit/cooler storage

- Administration offices: Laboratory Director/Technical Director/Project Managers/QA Program Manager

Figure 4-1 shows the facility floor plan. The laboratory is equipped with state-of-the-art analytical and administrative support equipment. The equipment and instrumentation is appropriate for the testing procedures performed.

Appendix A lists the major analytical equipment supporting the laboratory's testing capabilities.

4.2 Technical Elements of the Quality Assurance Program

4.2.1 Standard Operating Procedures (SOPs) and Laboratory Notebooks

CAS/Houston shares administrative procedures (SOPs) with the other laboratories in the CAS network. The administrative SOPs are designed to standardize the administrative practices for each of the CAS network laboratories. These shared procedures are prepared, reviewed and updated through our CAS/Corporate Quality Assurance Department. Two examples of administrative SOPs include: Instructions for the preparation of a CAS SOP document (**ADM-SOP**) and instructions for controlling documents throughout each laboratory (**ADM-DOCCTRL**). Each administrative SOP begins with the prefix, **ADM**.

The CAS/Corporate Chief Quality Officer is responsible for the administrative SOPs. Each person on the CAS/Houston team is responsible for reading and following the administrative SOPs. The document control process ensures the most recent version of an SOP is used for training and operational guidance.

CAS/Houston has laboratory-specific procedural SOPs as well as technical SOPs detailing the measurements performed by the laboratory. The QA Program Manager is responsible for the preparation and implementation of the SOPs created by CAS/Houston. The QA Program Manager maintains a file of the current technical and procedural SOPs used to perform analyses. Controlled paper copies of the SOPs relevant to a work area are kept in a binder in the department, following the SOP for *Document Control*, **ADM-CTRL**.

Laboratory logbooks are bound controlled documents. A master logbook of the logbooks is kept by the CAS/Houston QA Program Manager. Blank logbooks and archived logbooks are stored in a bookcase in the QA Program Manager's office. Entries into logbooks are made according to the CAS administrative SOP, *Making Entries into Logbooks and onto Bench Sheets* (**ADM-DATANTRY**). The entries made onto bench sheets and into laboratory notebooks are reviewed and approved by a second analyst.

4.2.2 Standard Reference Materials

All analytical measurements generated by CAS/Houston are performed using materials and/or processes that are traceable to a Standard Reference Material (SRM). Metrology equipment (e.g. analytical balance and thermometer) is calibrated using SRMs traceable to the National Institute of Standards and Technology (NIST).

Consumable SRMs routinely purchased by the laboratory (e.g. primary stock standards) are purchased from nationally recognized, reputable vendors. Most vendors have fulfilled the requirements for ISO 9001 certification.

Traceability of materials used throughout the laboratory is accomplished by following the guidelines set within the technical SOPs.

All sampling containers are purchased as pre-cleaned containers, with certificates of analysis available for each bottle type. Certificates of Analyses, provided by the vendors of reference materials and bottles, are kept on file by the laboratory.

4.2.3 Operational Assessments

CAS/Houston's laboratory management team, consisting of the Laboratory Director, Technical Director, Business Development Manager, QA Program Manager, Departmental Supervisors, and Project Managers, examines the projected up-coming workload at the beginning of each month.

The Laboratory Director assesses the laboratory facility and resources when anticipating an increased workload. Monthly lab management meetings, tracking proposals and an accurate, current forecast of incoming projects assist the management staff in properly allocating resources to satisfy client requirements and avoid an over-capacity situation.

4.2.4 Deviation from Standard Operating Procedures

When a customer requests a modification to an SOP, the Project Manager handling that project discusses the proposed deviation with the Laboratory Director to obtain approval for the deviation. A detailed description of the deviation is attached to the quotation and the service is documented on the Service Request (SR) and in CAS LIMS when logging in the samples.

4.3 Subcontracting

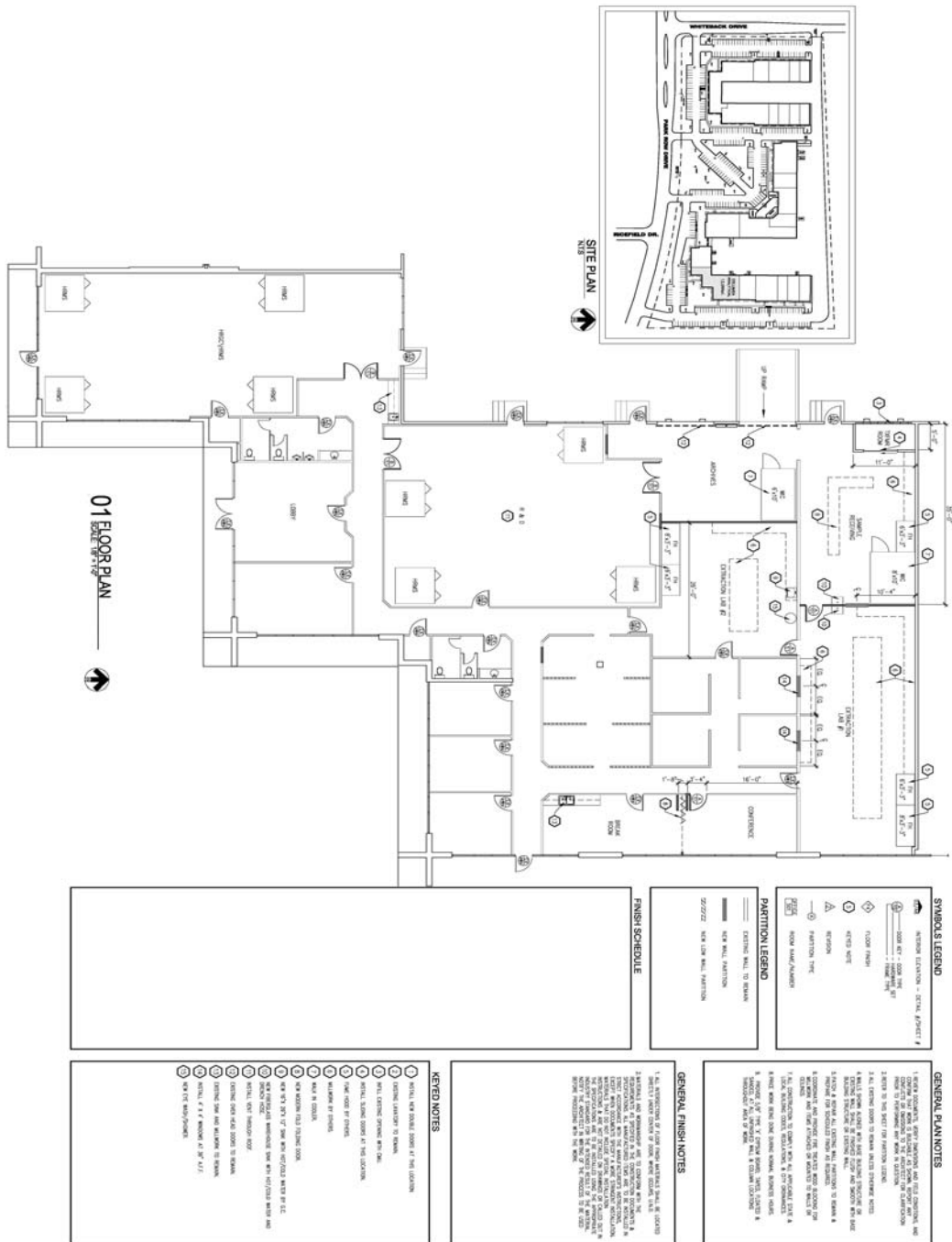
CAS/Houston performs HRGC/HRMS tests only and organizes projects with samples split in the field and sent to the appropriate lab by the client. This arrangement allows us to receive only HRGC/HRMS samples and avoids subcontracting. If we were to

subcontract, as a project specification, we would use the procedures described in the SOP for *Qualification of Subcontract Laboratories Outside of CAS Network (ADM-SUBLAB)*.

4.4 Certification

CAS/Houston is certified under numerous accrediting authorities based on compliance with method specific requirements. Certification is required by many states before work can be performed on samples within their jurisdictions. Certificates are posted on the wall in the CAS/Houston lobby and are available as pdf for distribution by email to clients. Appendix E reflects our current certifications.

Figure 4-1 CAS/Houston Laboratory Floor Plan



SYMBOLS LEGEND

ARCHITECTURE - SEE PLAN SHEET #

- DOOR SW - OPENING SW
- DOOR SW - OPENING SW
- FLOOR FINISH
- KEYED WARE
- KEYED WARE
- PARTITION TYPE
- KEYED WARE/NUMBER

PARTITION LEGEND

- EXPOSED WALL TO BE DEMOL
- NEW WALL PARTITION
- NEW LOW WALL PARTITION

FINISH SCHEDULE

GENERAL FINISH NOTES

- 1. ALL FINISHES TO BE APPLIED TO ALL WALLS, CEILING AND FLOOR SURFACES UNLESS OTHERWISE NOTED.
- 2. FINISHES TO BE APPLIED TO ALL WALLS, CEILING AND FLOOR SURFACES UNLESS OTHERWISE NOTED.
- 3. FINISHES TO BE APPLIED TO ALL WALLS, CEILING AND FLOOR SURFACES UNLESS OTHERWISE NOTED.
- 4. FINISHES TO BE APPLIED TO ALL WALLS, CEILING AND FLOOR SURFACES UNLESS OTHERWISE NOTED.
- 5. FINISHES TO BE APPLIED TO ALL WALLS, CEILING AND FLOOR SURFACES UNLESS OTHERWISE NOTED.
- 6. FINISHES TO BE APPLIED TO ALL WALLS, CEILING AND FLOOR SURFACES UNLESS OTHERWISE NOTED.
- 7. FINISHES TO BE APPLIED TO ALL WALLS, CEILING AND FLOOR SURFACES UNLESS OTHERWISE NOTED.
- 8. FINISHES TO BE APPLIED TO ALL WALLS, CEILING AND FLOOR SURFACES UNLESS OTHERWISE NOTED.
- 9. FINISHES TO BE APPLIED TO ALL WALLS, CEILING AND FLOOR SURFACES UNLESS OTHERWISE NOTED.
- 10. FINISHES TO BE APPLIED TO ALL WALLS, CEILING AND FLOOR SURFACES UNLESS OTHERWISE NOTED.

KEYED NOTES

- 1. REMOVE EXISTING PARTITION WALLS IN ALL AREAS INDICATED BY DASHED LINES.
- 2. REMOVE EXISTING PARTITION WALLS IN ALL AREAS INDICATED BY DASHED LINES.
- 3. REMOVE EXISTING PARTITION WALLS IN ALL AREAS INDICATED BY DASHED LINES.
- 4. REMOVE EXISTING PARTITION WALLS IN ALL AREAS INDICATED BY DASHED LINES.
- 5. REMOVE EXISTING PARTITION WALLS IN ALL AREAS INDICATED BY DASHED LINES.
- 6. REMOVE EXISTING PARTITION WALLS IN ALL AREAS INDICATED BY DASHED LINES.
- 7. REMOVE EXISTING PARTITION WALLS IN ALL AREAS INDICATED BY DASHED LINES.
- 8. REMOVE EXISTING PARTITION WALLS IN ALL AREAS INDICATED BY DASHED LINES.
- 9. REMOVE EXISTING PARTITION WALLS IN ALL AREAS INDICATED BY DASHED LINES.
- 10. REMOVE EXISTING PARTITION WALLS IN ALL AREAS INDICATED BY DASHED LINES.



STATE OF TEXAS
COUNTY OF []
CERTIFICATE OF RECORDATION
THIS IS TO CERTIFY THAT THE FOREGOING INSTRUMENT WAS RECORDED IN MY OFFICE ON [] DAY OF [] 2008.

MANAGEMENT REALTY INVESTORS

10000 WESTHELVEN DRIVE, SUITE 1000
HOUSTON, TEXAS 77036
TEL: 713.867.1100
WWW.MANAGEMENTREALTY.COM

D
IDENTIFIERS

10000 WESTHELVEN DRIVE, SUITE 1000
HOUSTON, TEXAS 77036
TEL: 713.867.1100
WWW.MANAGEMENTREALTY.COM

LEASE SPACE FOR COLUMBIA ANALYTICAL

WESTHELVEN SUBDIVISION
10000 WESTHELVEN DRIVE, SUITE 1000
HOUSTON, TEXAS 77036

REFERENCE NUMBER: []
DATE: []

01 FLOOR PLAN
A1.0

5.0 STATEMENT OF PROFESSIONAL CONDUCT AND LABORATORY PRACTICE

The success of Columbia Analytical Services, Inc (CAS), as a company, is reflected in the emphasis placed on the integrity of the data provided. This success relies on the professional conduct of all employees within CAS, as well as on consistent quality laboratory practices.

5.1 Professional Conduct

CAS requires specific professional standards of conduct and ethical performance among employees. The following examples of documented CAS policy are representative of these standards, and are not intended to be limiting or all-inclusive.

- 5.1.1 Under no circumstances is the willful act of fraudulent manipulation of analytical data condoned. Such acts are to be reported immediately to senior management for appropriate corrective action.
- 5.1.2 Unless specifically required in writing by a client, alteration, deviation, or omission of written contractual requirements is not permitted. Such changes must be in writing and approved by senior management.
- 5.1.3 Falsification of data in any form will not be tolerated. While much analytical data is subject to professional judgment and interpretation, outright falsification, whenever observed or discovered, will be documented, and appropriate remedies and punitive measures will be taken toward those individuals responsible.
- 5.1.4 Unauthorized release of confidential information about the company, its clients, or concerning national security is taken very seriously and is subject to formal disciplinary action.

5.2 Prevention and Detection of Improper, Unethical or Illegal Actions

It is the intention of CAS to proactively prevent and/or detect any improper, unethical or illegal action conducted within the laboratory. This is performed by the implementation of a program designed for not only detection but also prevention. Prevention consists of educating all laboratory personnel in their roles and duties as employees, company policies, inappropriate practices, and the corresponding implications of inappropriate practices, as described in Section 5.3 of this document.

In addition to education, appropriate practices are detailed in SOPs such as manual integration, data review and technical procedures. Other aspects of the prevention program

include electronic data tape audits, post-analysis. All aspects of this program are documented and retained on file according to the company policy on record retention.

5.3 CAS Ethics Training Plan (Data Integrity Training)

Laboratory ethics training (8 hours within the first year with CAS) is held annually for every new on-site employee including full and part time personnel. The training includes at a minimum the following legal and ethical topics:

- Triggers and types of unethical behavior
- CAS Employee Handbook (overview including mechanism for reporting and seeking advice on ethical decisions)
- CAS' Commitment to Excellence in Data Quality (overview including legal consequences)
- Measures taken to prevent and detect fraud
- Examples of data falsification or misrepresentation
- Acceptable and unacceptable solutions to typical laboratory problems
- Data validation
- Implications of laboratory data fraud
- Potential punishments and penalties for improper, unethical, or illegal actions

The Quality Assurance Program Manager periodically audits the ethics training plan for completeness. All employees are trained on the appropriate mechanism for reporting unethical behaviors in co-workers. The CAS Employee Handbook and the CAS Commitment to Excellence in Data Quality Policy Statement also contain detailed information regarding CAS' standards of professional conduct. The Excellence in Data Quality Statement (data integrity document) is signed on an annual basis by all laboratory personnel. All employees are required to complete a semi-annual ethics "refresher" training (approximately 1-hour) session. The subject and content of the refresher are generally at the discretion of the CAS/Corporate Quality Assurance Department.

5.4 Laboratory Practices Affecting Personnel

CAS/Houston makes every attempt to ensure that employees are free from any commercial, financial, or other undue pressures that might adversely affect their quality of work. This is accomplished by using each of the following policies, programs, and procedures:

- Ethics Point Reporting System - The Ethics Point Reporting System provides several ways of reporting issues of concern. The reporting can be done anonymously or named, as desired by the reporter. Training on the Ethics Point Reporting System is conducted during the initial 8 hour Ethics Training for new employees.
- Open Door Policy (CAS Employee Handbook) - Employees are encouraged to bring any work related problems or concerns to the attention of local

management or their Human Resources representative. However, depending on the extent or sensitivity of the concern, employees are encouraged to directly contact any member of upper management.

- Project Scheduling - When upcoming project information is provided by the client, projects are forecast and summarized in a table by the Business Development Manager. Project scheduling is done so management and analysts can be better prepared for flexible work schedules to maintain the high level of CAS/Houston's quality during peak work loads.
- Laboratory Capacity - The maximum number of samples that can be analyzed by a particular department in a typical five-day week has been determined. The incoming sample load is used to estimate the laboratory's ability to accept new work and rush work during peak sample loads.
- Flexible Work Hours - Analysts are able to work flexible work hours (with management approval). Additionally, analysts may "team" with a co-worker (again with approval) and work split shifts to extend the work day and increase the number of samples that can be analyzed.
- Gifts and Favors (CAS Employee Handbook) - To avoid possible conflict of interest implications, employees do not receive unusual gifts or favors to, nor accept such gifts or favors from, persons outside the Company who are, or may be, in any way concerned with the projects on which the Company is professionally engaged. Anything beyond an occasional meal, an evening's entertainment, or a nominal holiday gift is considered an "unusual gift or favor".
- Using CAS Resources for Personal Gain (CAS Employee Handbook) - Employees are not allowed to use company resources; such as phones, computers, copiers, faxes or their time while at work, to work on personal or non-CAS business. The resources available at CAS are for working exclusively on CAS-related work.
- Internet access (CAS Employee Handbook) - CAS employees must limit internet access using a CAS computer to work-related web searches only. All other searches are forbidden, as are videos and RSS feeds that use bandwidth.

6.0 LABORATORY ORGANIZATION AND RESPONSIBILITIES

The CAS/Houston staff, consisting of approximately nineteen employees, includes chemists and support personnel. They represent diverse educational backgrounds and experience, and provide the comprehensive skills that an HRGC/HRMS analytical laboratory requires.

Columbia Analytical Services, Inc is committed to providing an environment that encourages excellence. Everyone within CAS/Houston shares the responsibility for maintaining and improving the quality of our analytical services. The responsibilities of key personnel within the laboratory are described below. An organizational chart of the laboratory can be found in Appendix B. CAS Resumes are kept by Corporate Human Resources. A job description is sent to each employee with his/her annual performance appraisal.

- The **Laboratory Director** provides technical, operational, and administrative leadership through planning, allocation and management of personnel and equipment resources. The Laboratory Director supports the CAS quality assurance program and is responsible for the quality, staffing, production capacity and financial performance of the Houston facility. The Laboratory Director also provides resources for implementation of the laboratory's quality program. The Laboratory Director approves technical documents. He/she leads the laboratory team in the continuous development and improvement of our HRGC/HRMS business by emphasizing quality, service and management in all lab activities.

The Laboratory Director provides resources required to resolve corrective actions. He/she is a technical leader and is responsible for setting high standards of performance for the CAS/Houston team. The Laboratory Director is responsible for compliance with the requirements of NELAC.

- The **Technical Director** provides technical and operational leadership through planning, allocation and management of personnel and equipment resources. The Technical Director also supports the CAS quality assurance program and is responsible for the quality and production capacity of the Houston facility. The Technical Director also provides resources for implementation of the laboratory's quality program. The Technical Director approves technical documents. The Technical Directors encourages and directs development and application of state-of-the-art methodologies and techniques.

The Technical Director also provides resources required to resolve corrective actions. He/she is a technical leader and is responsible for setting high standards of performance for the CAS/Houston team. The Technical Director is responsible for compliance with the requirements of NELAC.

- The **Quality Assurance Program Manager (QAPM)** oversees the implementation of the quality program and coordinates QA activities within the laboratory. The QA Program Manager works with the laboratory departments to establish and maintain effective quality control procedures. The QAPM prepares documents, including the Quality Assurance Manual. The QAPM also writes, reviews, approves and controls SOPs. He/she schedules PE sample analyses, and prepares corrective action reports for any missed PE sample results. The QAPM audits reports and electronic data, maintains the laboratory's certifications, performs internal audits, prepares QA reports and performs other QA activities as needed. The QAPM facilitates QA training of employees in every department.

The QAPM establishes corrective action procedures. He/she is a technical leader and is responsible for reporting the laboratory's quality measurements; including reports to senior management, certification and accreditation, reference sample analyses and special studies. The QAPM is also responsible for compliance with the requirements of NELAC.

The QAPM is given the authority to stop work at any time during a breach in quality practices. If a breach in quality occurs, the QAPM has the authority to keep the work stopped until an acceptable level of quality has been restored.

- The **CAS/Corporate Chief Quality Officer (CQO)** is responsible for the integrity of the QA program throughout the CAS laboratory network. The Chief Quality Officer is responsible for performing one annual on-site audit at each CAS laboratory and preparing a written report; maintaining a database of information about state certifications and accreditation programs; writing laboratory-wide SOPs; maintaining a database of CAS approved subcontract laboratories; providing assistance to all QA staff and laboratory managers; preparing an annual QA activity report for the CAS/Board of Directors, and other quality related activities as needed.
- The **Environmental Health & Safety Officer (EH&S)** is responsible for the administration of the laboratory health and safety policies. This includes formulating and implementing health and safety practices, supervising new employee safety training, reviewing incidents, the CAS/Houston Chemical Hygiene Plan, monitoring hazardous waste disposal and conducting safety inspections. The EH&S officer is also designated as the Chemical Hygiene Officer.
- The **Sample Management Office (SMO)** plays a key role in the laboratory QA program by maintaining custody for all samples received by the laboratory. The Sample Management Office is responsible for the proper storage and disposal of samples.
- The **Project Managers** are senior level chemists who are responsible for ensuring the data produced by the laboratory meets all project, contract, and regulatory-specific

requirements. Responsive, technical, professional and thorough communication is integral to the successful translation of client project requirements (compound lists, flagging, satisfying minimum compliance levels, EDD specifications, delivery schedules, etc.) into the appropriate instructions for the laboratory.

Analytical work is performed only with the approval of the client. If a portion of a project requires subcontracting, the CAS/Houston Project Managers notify the client and obtain written approval for any subcontracting activities.

- The **CAS/Houston Testing Laboratory** is divided into four departments; the Extraction Laboratory/Sample Management Department, the HRMS Instrumentation Department, the Reporting/Processing Department and the Administration Department. Each department is responsible for establishing, maintaining and documenting their portion of the CAS/Houston QA program. Each analyst is responsible for testing samples/extracts or reporting data according to the standard operating procedures and quality control guidelines in his/her department.
- The **Extraction Laboratory/Sample Management** department is responsible for receiving, storing, archiving and disposing samples. This department is also responsible for entering sample information into CAS LIMS, preparing bottle orders and returning coolers. This group also extracts and cleans up solid, aqueous, wipe, air, tissue, food and product samples according to established methods. The products of this department are the sample extracts and the extraction bench sheets.
- The **HRMS Instrumentation** department is responsible for loading the extracts into the auto-samplers, creating the associated run logs, tuning and trouble-shooting the instrumentation, keeping the instrument maintenance logs, preparing dilutions and verifying the initial and continuing calibrations are met.
- The **Reporting/Processing** department is responsible for processing data sequences using HRMS Opus Quan software, uploading data into CAS LIMS, assembling reports, writing case narratives and reviewing continuing calibrations. This group is also responsible for paginating, mailing and filing analytical reports, the production of electronic data, backing up electronic data and archiving analytical reports.
- The **Administration** department is responsible for reviewing and complying with contracts attached to client files in CAS LIMS, setting up new project requirements with clients, preparing quotations, reviewing reports for project compliance, responsive consultation with clients by phone or email, facilitating the set up of electronic data deliverables with the (CAS/Corporate) IT department and facilitating CAS/Houston's response to data validation questions.

6.1 Nominated Deputies

Deputies will be nominated just prior to each scheduled absence of the Laboratory Director, Technical Director, and Quality Assurance Program Manager. The following personnel are designated signatories for unscheduled absences:

Acting Laboratory Director	Technical Director
Acting Technical Director	Laboratory Director
Acting Quality Assurance Program Manager	Technical Director

6.2 Signatories

The Laboratory Director and Technical Director will be designated as signatories for the CAS/Houston laboratory. When representatives for CAS are required to sign critical documents, it is the responsibility of these individuals to verify CAS/Houston's compliance. If neither of these individuals are available, the Senior Vice President of the Eastern Region should be contacted for representation.

Any employee of CAS/Houston may sign for the delivery of packages or coolers in sample receiving. It is the responsibility of all employees to know the procedure outlined for sample receipt, in the situation that they are the only employees available at a particular time (primarily Saturday delivery).

A list of all CAS/Houston signatories can be found in Appendix F.

**Table 6-1
Summary of Technical Qualifications**

<i>Team Member</i>	<i>Degree/Major</i>	<i>Years of Experience</i>	<i>Team Role</i>
Xiangqiu 'Sam' Liang	MS/Chemistry	18	Laboratory Director & Signatory
Dr. Lan Le	BS/Chemical Eng.; PhD/Analytical Chemistry	19	Technical Director & Signatory
Karen Verschoor	BS/Chemistry	22	BD & Project Management
Andrew Biddle	BS/Astrophysics	2	QA Program Manager
Jeremiah Beck	BS/Biochemistry	3	HRMS Analyst
Darren Biles	BS/Biochemistry	3	Proj. Mgmt. & HRMS Analyst
Nicole Brown	BS/Biology	1	HRMS Analyst
Michael Cosson	BS/Biochemistry	3	HRMS Analyst
Karen Crawford	NA	9	Administration
Gisela Cruz	BS/Biology	3	HRMS Analyst
Rolando Diaz	BA/Microbiology	19	HRMS Analyst
Christopher Elhardt	BA/Zoology; MS/Labs	18	HRMS Analyst
Alexander Ennis	BS/Chemistry	1	HRMS Analyst
Claire Freemyer	NA	1	Report Assembly
Jane Freemyer	BA/Chemistry; MA/OrgMgmt	31	Project Management
Arthi Kodur	MS/Criminology	1	HRMS Analyst
Stefan Malhotra	BS/Biology	2	HRMS Analyst
Joseph Diaz	BS/Biology	1	HRMS Analyst
Pavai Shanmugam	MS/Rehabilitation Science	6	HRMS Analyst

7.0 SAMPLE PRESERVATION AND HANDLING PROCEDURES

The sample handling factors that are taken into account to ensure accurate, defensible analytical test results include:

- Amount of sample extracted
- Type of sample container used
- Type and amount of sample preservation
- Sample storage temperature
- Custodial documentation while in the laboratory
- Holding time
- Laboratory spiked XAD resin (air samples only)

The quality of analytical test results depends upon the quality of the procedures used to collect, preserve and store samples. CAS/Houston recommends that clients follow the sampling guidelines described in the specific reference methods, including, the Environmental Protection Agency (EPA), Safe Drinking Water Act (SDWA), Clean Water Act (CWA), Resource Conservation and Recovery Act (RCRA), Office of Air and Radiation (OAR) and Food and Drug Administration (FDA).

Approval from the appropriate federal, state or local regulatory agency is recommended prior to sample collection, since many tests are performed to comply with local, state and federal regulations.

Samples should be shipped to the laboratory using the most expedient means available. Potentially hazardous samples must comply with the US Department of Transportation shipping standards.

CAS/Houston routinely provides sample containers for our clients. The containers are pre-cleaned to EPA's Level 1 status. Certificates of analysis for the sampling containers are available upon request. Crushed ice and frozen blue/gel ice are the temperature preservatives used by CAS/Houston, unless otherwise specified by the client.

Our sample kits typically consist of lined, clean shipping coolers, sample containers, blank sample labels, blue ice, cooler temperature blank, bubble wrap packing material, blank chain-of-custody (COC) forms, and custody seals. Examples of a custody seal and sample container label are shown in Figures 7-1 and 7-2, respectively. Figure 7-3 shows the chain-of-custody form routinely used by CAS/Houston.

No chemical preservative is added to the pre-cleaned containers. CAS/Houston keeps client-specific shipping requirements on file and uses major transportation carriers to ensure shipping requirements are met.

For large shipments, the sample containers may be shipped in their original boxes. Such shipments consist of unopened boxes of sample containers and sufficient materials (such as; bubble wrap, labels, cooler temperature blanks, COC forms, custody seals, and coolers) to allow the sampling crew to prepare their own sample kits at the field site.

In the very rare event environmental samples are shipped from CAS/Houston to other CAS laboratories for testing, each sample bottle is individually wrapped in bubble wrap or a plastic sleeve. Any samples designated for volatiles analyses are also individually sealed in zip lock bags to avoid the possibility of cross-contamination. Proper laboratory practices are followed by Sample Management in the case that samples must be transferred.

**Table 7-1
Sample Preservation and Holding Times**

Dioxin/Furan Testing

Method	Matrix	Container	Preservation (upon receipt)	Holding Time	Amount of sample required
EPA 8290/8280A	Aqueous	1 L amber glass	4°C	30 days; 1 year, if frozen	2 x 1 L
EPA 8290/8280A	Solid	4-oz. glass jar	4°C	30 days; 1 year, if frozen	50 g
EPA 1613B	Aqueous	1 L amber glass	4°C	1 year	2 x 1 L
EPA 1613B	Solid	4-oz. glass jar	<-10°C (Frozen)	1 year	50 g
EPA 23	Air	XAD-filled glass trap; spiked with labeled standards; plus filter	Ambient	28 days from the day the labeled standards are spiked into the XAD	Entire contents of the glass trap; plus filter
EPA 1613B/8290	Tissue	4-oz glass jar	<-10°C (Frozen)	1 year, if frozen	50 g
EPA TO-9A	Air	PUF plug with quartz filter and wire screen, spiked with labeled standards	4°C	7 days until extraction	PUF plug, filter, and screen

**Table 7-1 (cont.)
Sample Preservation and Holding Times**

PCB Testing

Method	Matrix	Container	Preservation (upon receipt)	Holding Time	Amount of sample required
EPA 1668A	Aqueous	1 L amber glass	4°C	1 year	2 x 1 L
EPA 1668A	Solid	4-oz. glass jar	4°C	1 year	50 g
EPA 1668A	Tissue	4-oz glass jar	<-10°C (Frozen)	1 year, if frozen	50 g
CARB 428	Air	XAD-filled glass trap; spiked with labeled standards; plus filter	Ambient	45 days	Entire contents of the glass trap; plus filter

PAH Testing



Method	Matrix	Container	Preservation (upon receipt)	Holding Time	Amount of sample required
CARB 429	Air	XAD-filled glass trap; spiked with labeled standards; plus filter	4°C	21 days	Entire contents of the glass trap; plus filter

**Figure 7-1
Sample Cooler Custody Seal**

Custody Seal

Date _____ Project _____
Signature _____ Container# _____ of _____

**Figure 7-2
Sample Bottle Label**

 		Specially Cleaned Sample Container LOT NO: _____
DATE:	TIME:	COLLECTED BY:
SAMPLING SITE:		
SAMPLING TYPE:		
<input type="checkbox"/> Composite <input type="checkbox"/> Crab <input type="checkbox"/> Other		
TESTS REQUIRED:		PRESERVATIVE

**Figure 7-3
 Chain of Custody Form**

Columbia Analytical Services, Inc
 19408 Park Row, Suite 320 Houston, TX 77084
 (713) 266-1599 FAX (713) 266-0130

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

PAGE _____ OF _____

PO #: _____ Project Manager: _____ Project: _____ Company/Address: _____ Phone: _____ City, State, Zip: _____ FAX: _____ Sampler's Signature: _____					Number of Containers	Analysis Requested					
Sample I.D.		Date	Time	Sample Matrix						REMARKS	
TURNAROUND TIME _____ 72 hr _____ One week _____ Standard (14 days emailed results; 21 days hardcopy report)		QC-LEVEL NEEDED _____ I. Results, method blank, labeled std. rec. _____ II. QC Summary Reports: reports batch QC _____ III. Data Validation Report (without raw data) _____ IV. Data Validation Report (includes raw data)				Comments/Special Instructions:					
RELINQUISHED BY: Signature: _____ Printed Name: _____ Firm: _____ Date/Time: _____		RECEIVED BY: Signature: _____ Printed Name: _____ Firm: _____ Date/Time: _____			RELINQUISHED BY: Signature: _____ Printed Name: _____ Firm: _____ Date/Time: _____		RECEIVED BY: Signature: _____ Printed Name: _____ Firm: _____ Date/Time: _____				

8.0 SAMPLE MANAGEMENT

Standard Operating Procedures have been established for sample receiving, storage and disposal. These procedures ensure samples are tested according to the project requirements as listed on the chain-of-custody form.

8.1 Sample Receiving and Acceptance

Samples are delivered to the CAS-Houston sample management office (SMO) by either commercial carrier or local courier and are received by a sample custodian. The chain-of-custody (COC) is reviewed for completeness and accuracy. The cooler receipt and preservation form (CRPF; Figure 8-1) is used to assess the shipping cooler and its contents as received by the laboratory personnel. Verification of sample integrity by the sample custodian includes the following documentation:

- Assessment of custody seal presence/absence, location and signature;
- Temperature of sample containers upon receipt;
- Chain of custody documents properly used (entries in ink, signature present, etc.):
 - Entries should be made in waterproof ink and at a minimum shall include sample identification, matrix, date (and time) of sample collection, the name and signature(s) of the sample collector any intermediate sample custodian(s), date and time of each sample transfer, and signature, date, time and temperature of the cooler by the CAS sample custodian upon receipt.
- Sample containers checked for integrity (broken, leaking, etc.);
- Sample is clearly marked with the sample ID, date and time of collection;
- Appropriate containers (size, type) are received for the requested analyses;
- Sample container labels and/or tags agree with chain-of-custody entries (identification, required analyses, etc.); and
- Assessment of proper sample preservation (if inadequate, corrective action is required).

The shipment is compared to the Sample Acceptance Policy (Figure 8-2.) Any anomalies or discrepancies observed during the initial observations are recorded on the CRPF and chain-of-custody documents. All potential problems with a sample shipment are addressed by contacting the client, through the assigned CAS/Houston Project Manager, and discussing the pertinent issues. When a satisfactory resolution has been reached by the Project Manager and client, the log-in process is completed and analysis may begin. During the log-in process, each sample is given a unique laboratory code and a service request form is generated. The laboratory code consists of an order number and a sample submission number. Each sample

is given a consecutive order number in CAS LIMS based upon order of log-in. A submission number is assigned to a particular job in the same manner. The submission number is coded with the month and year of log-in as follows:

No. E0800692 = E (CAS/Houston's assigned alpha code in CAS)
 08 (year/2008)
 00692 (job number/692nd job logged in 2008)

The service request contains detailed client information, sample descriptions, sample matrix, requested analyses and compound lists, sample collection dates, due dates and other pertinent contract and testing information. The service request is reviewed by the Project Manager for accuracy, completeness, consistency of requested analyses, for client project objectives and chain of custody.

Laboratory internal chain-of-custody documents are stored in CAS LIMS each time a sample's barcode label is scanned into CAS LIMS. The samples are scanned into CAS LIMS upon sample receipt. The samples are scanned out of the refrigerator on the day of extraction and are scanned back into the refrigerator before the end of the work day. The extracts are delivered to the HRMS department, along with the folders containing all pertinent project information, such as the Service Request Summary, invoice, and extraction laboratory bench sheets. The sample IDs from the extracts are hand-written into the appropriate instrument log book when the auto-sampler is loaded. The sample IDs are verified against the computer-generated Opus Quan instrument log. The sample containers are archived in the refrigerator prior to disposal.

All samples, with the exclusion of sample extracts, are stored under refrigeration until they are analyzed or disposed. CAS/Houston stores samples in a walk-in refrigerator. The temperature of each storage facility used at CAS/Houston is monitored daily and the data recorded in a bound logbook.

After the analytical report is sent, aqueous and soil samples are stored in a 4°C refrigerator for 30 days. The samples are manifested and disposed according to the SOP **SMO-WASTDISP**. Contract-specified archiving requirements and samples received from outside the continental US are detailed in CAS LIMS by the folder number.

It should be noted that all waste produced at the laboratory, including the laboratory's own hazardous waste, is treated in accordance with all applicable local and federal laws. Complete internal chain-of-custody documentation is maintained in CAS LIMS for each sample, from initial receipt through final disposal. This ensures an accurate history of each sample is documented.

Figure 8-1 Cooler Receipt and Preservation Check Form

Client/Project: _____ Service Request: E08 _____
Received: _____ Opened (Date/Time): _____ By: _____

1. Samples were received via? *US Mail Fedex UPS DHL Courier Hand Delivered*
 2. Samples were received in: (circle) *Cooler Box Other _____ NA*
 3. Were custody seals present on coolers? *Y N* If yes, how many and where? _____
If present, were custody seals intact? *Y N* If present, were they signed and dated? *Y N*
 4. Is shipper's air-bill filed? *NA Y N* If not, record air bill number: _____
-
5. Temperature of cooler(s) upon receipt (°C): _____
 6. If applicable, list Chain of Custody numbers: _____
 7. Were custody papers properly filled out (ink, signed, etc.)? *NA Y N*
 8. Packing material used: *Inserts Bubble Wrap Blue Ice Wet Ice Sleeves Other _____*
 9. Were the correct types of bottles used for the tests indicated? *Y N*
Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* *Y N*

Sample ID	Bottle Count	Bottle Type	Out of Temp	Broken	Initials

10. Were all bottle labels complete (i.e. analysis, ID, etc.)? *Y N*
Did all bottle labels and tags agree with custody papers? *Indicate in the table below.* *Y N*

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

11. Additional notes, discrepancies, and resolutions: _____

Figure 8-2 Sample Acceptance Policy

Custody Seals (desirable, mandatory if specified in SAP):

- ✓ On outside of cooler
- ✓ Seals intact, signed and dated

Chain-of-Custody documentation (mandatory):

- ✓ Properly filled out in ink & signed by the client
- ✓ Sign and date the coc for CAS/HOU upon cooler receipt
- ✓ Coc must list method number
- ✓ If no coc was submitted with the samples, complete a CAS/HOU coc for the client

Sample Integrity (mandatory):

- ✓ Sample containers must arrive in good condition (not broken or leaking)
- ✓ Sample IDs on the bottles must match the sample IDs on the coc
- ✓ The correct type of sample bottle must be used for the method requested
- ✓ The correct number of sample containers received must agree with the documentation on the coc
- ✓ The correct sample matrix must appear on the coc
- ✓ An appropriate sample volume or weight must be received

Temperature Preservatives (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6°C
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10°C
- ✓ Air samples can be shipped and stored at ambient temperature, ~23°C
- ✓ The sample temperature must be recorded on the coc
- ✓ Notify a Project Chemist if any samples are outside the acceptance temperature or have compromised sample integrity – the client must decide re: replacement sample submittal or continue with the analysis

Cooler Receipt Form, CRF (mandatory):

- ✓ Cooler receipt forms must be completed for each coc & SR#
- ✓ Sample integrity issues must be documented on the CRF
- ✓ A scan of the carrier and the airbill number must be recorded in CAS LIMS

Sample Integrity Issues/Resolutions (mandatory):

- ✓ Sample integrity issues are documented on the CRF and given to the Project Chemist for resolution with the client
- ✓ Client resolution is documented in writing (typically email or on the CRF) and filed in the project folder(s)

9.0 QUALITY CONTROL OBJECTIVES

A primary focus of Columbia Analytical Services Quality Assurance (QA) Program is to ensure the accuracy, precision and comparability of all analytical results. CAS has established Quality Control (QC) objectives for precision and accuracy that are used to determine the acceptability of the data that is generated in its laboratories. These QC limits are either specified in the methodology or are statistically derived based on the laboratory's historical data for each analytical method. The QC objectives are defined below and the numeric values are shown in the table in Appendix C.

9.1 Accuracy

Accuracy is a measure of the closeness of an individual measurement (or an average of multiple measurements) to the true or expected value. Accuracy is determined by calculating the mean value of results from ongoing analyses of standard reference materials, laboratory control samples and labeled, internal standards. In addition, matrix-spiked samples are also measured; this indicates the accuracy or bias in the actual sample matrix. Accuracy is expressed as percent recovery (% Rec) of the measured value, relative to the true or expected value.

The acceptance limits for accuracy (Appendix C) originate from two different sources. Where acceptance limits are defined and stated in the individual methods, CAS has adopted the limits without modification. Where no acceptance limits are given in a method, CAS adopts the limits derived from control charts that are generated for each method. These control charts are updated once a year for the associated labeled standards, laboratory control samples and matrix spike compounds.

$$\text{Accuracy (\%Rec)} = \frac{A - B}{C} \times 100$$

Where A = Analyte total concentration from spiked sample

B = Analyte concentration from unspiked sample

C = Concentration of spike added

9.2 Precision

Precision is the ability of an analytical method or instrument to reproduce its own measurement. It is a measure of the variability, or random error, in sampling, sample handling and in laboratory analysis.

Precision is measured through the use of replicate sample analyses within the same batch and is expressed as the relative percent difference (RPD) between replicate measurements.

$$RPD = \frac{(D_1 - D_2)}{D_{ave}} \times 100$$

Where D_1 = Original result

D_2 = Duplicate result

D_{ave} = Average result of original and duplicate measurements.

9.3 Method Reporting Limits

The MRLs used at CAS/Houston are the lowest limits of quantification. The MRLs are specified in the methodology.

9.4 Representativeness

Representativeness is the degree to which the field sample represents the overall sample site or material. This can be extended to the sample itself, in that representativeness is the degree to which the subsample that is analyzed gives results identical to analysis of the entire field sample. CAS has sample handling procedures and protocols to ensure that the sample used for analysis is representative of the entire sample. Analytical SOPs specify appropriate sample handling and sample sizes to ensure the sample aliquot that is analyzed is representative of the entire sample.

9.5 Completeness

Completeness is a measure of the amount of valid data that is obtained, compared to the amount that is expected. It is expected that all analyses conducted in accordance with the approved analytical methods and standard laboratory operating procedures will meet QC acceptance criteria for 95% of the samples tested.

$$\text{Completeness (\%)} = \frac{\text{valid data obtained}}{\text{total data planned}} \times 100$$

9.6 Comparability

Comparability expresses the confidence with which one data set can be compared to another. To ensure comparability, standard operating procedures are used for the preservation, handling, and analysis of all samples. Data is reported in units specified by the customer.

10.0 QUALITY CONTROL PROCEDURES

The specific types, frequencies, and processes for quality control sample analysis are described in detail in method-specific standard operating procedures. These sample types and frequencies have been adopted for each method and a definition of each type of QC sample is provided below. In addition, a number of other quality control processes which may affect analytical results are also described below.

10.1 Modified Procedures

CAS/Houston strives to perform published methods as described in the referenced documents. If there is a material deviation from the published method, the method is cited as a "Modified" method in the analytical report. Standard operating procedures are available to analysts and are also available to our clients for review. If the modification is such that the method becomes "Performance Based," client approval is obtained for the use of the method prior to the performance of the analysis.

10.2 Procedures for Accepting New Work

Due to the increase in analytes used in the industry and found in the environment, analytes new to the laboratory may be requested for analysis using existing methodologies and/or new methodologies. These requests must be reviewed prior to accepting new work and creating new methodologies. These requests typically include:

- The addition of analytes to an existing scan.
- Complete start-up of an established method.
- Analyte(s) requested with no established method.

10.2.1 The addition of analytes to an existing scan

The analytical method is reviewed to determine if the method is appropriate for the new analyte. The analyte standards are purchased from a commercial vendor and prepared. If the analyte is available from more than one source, a second source may be purchased to verify the calibration standard. A reference is spiked with a mid-level concentration of the appropriate standard and analyzed to determine retention time, resolution, etc. Temperature programs and instrument conditions may be modified to optimize resolution for the analyte. The detection limit will follow the other signal/noise detection limit standards established in similar HRMS methods. An in-house SOP may be written or modified to include the analyte.

10.2.2 Complete start-up of an established method

The method is obtained and reviewed by the analyst, Technical Director, and/or supervisor to determine if the instrumentation and reagents needed by the method are available. If the required instrumentation is available, then reagents, standards, equipment, and supplies are gathered and purchased. If the analyte(s) are available from more than one source, a second source may be purchased to verify the calibration source. A qualified analyst performs the method, elution times are determined, temperature programs are optimized, and batch QC is performed to monitor accuracy and precision. Each analyst performing the method must complete an Initial Demonstration of Capability (IDC) study. An internal SOP is written and used by the analysts.

10.2.3 Analyte(s) requested with no established method

The analyte to be analyzed is researched and reviewed by the technical manager for chemical nature, formula, and other related information. The Merck Index and CRC Handbook are reviewed for boiling point and vapor pressure to determine the type of compound. After determining the type of compound, it is assumed that it can be analyzed by an existing method. If not, perhaps a modification of a method or the creation of a method could be tried. The different approaches to testing the analyte may be tried, comparing the efficiency of the various approaches. The method which allows for acceptable precision and accuracy shall be used.

10.3 Analytical Batch

The basic unit for analytical quality control is the analytical batch. The overriding principle for describing an analytical batch is that all the samples in a batch, both field samples and quality control samples are to be handled and processed in exactly the same way, and all of the data from each analysis is to be manipulated in exactly the same manner.

The minimum requirements of an analytical batch are:

10.3.1 The number of (field) samples in a batch is not to exceed 20.

10.3.2 All (field) samples in a batch are of the same matrix. Soils, wipes and tissues are all considered different matrices.

10.3.3 The QC samples to be processed with the (field) samples include:

- Method Blank - to determine possible laboratory contamination.
- Laboratory Control Sample - to assess method performance.
- Duplicate Laboratory Control Sample - to assess batch precision.

Note: The assessment of possible matrix problems can be determined by an evaluation of the labeled standard recoveries for each sample.

10.3.4 Reagent lots are not changed in the middle of a batch of samples.

10.3.5 Each task within the analysis is performed by a single analyst or by a defined team of analysts.

10.3.6 A batch cannot exceed 24-hours from beginning to end. Allowances are made for instrumentation constraints, such as soxhlet extraction time.

10.3.7 (Field) samples are assigned to batches starting at the time sample extraction begins. Proficiency Testing (PT) samples are considered field samples.

10.3.8 The batch QC samples are analyzed in conjunction with the associated field samples prepared with them.

10.3.9 Batch QC refers to the QC samples that are analyzed in a batch of (field) samples.

10.3.10 Specific project, program, or method SOP requirements may be exceptions. The more stringent QC requirements shall be followed in all cases.

10.3.11 'Prep/Hold' samples must be 'held' as extracts only and not in an intermediary solvent step of the procedure.

10.4 Method Blank

The method blank is analyte-free water, analyte-free soil (when available), or analyte-free fish tissue subjected to the entire analytical process. When analyte-free soil is not available, anhydrous sodium sulfate, organic-free sand, or an acceptable substitute may be used instead. The method blank is analyzed to demonstrate the analytical system is not contaminated with the analytes being measured. The method blank results should be below the Method Reporting Limit (MRL) for the analytes being tested, with the exception of OCDD and/or OCDF. These two compounds are allowed to be reported at three times the MRL in the method blank according to the *National Functional Guidelines, September 2005*. A method blank is included with the analysis of every analytical batch.

10.5 Calibration Blank

Calibration blanks are prepared along with calibration standards in order to create a calibration curve. Calibration blanks are free of the analyte of interest, and provide the zero point of the calibration curve. The term, 'calibration blank' is used interchangeably with the term, 'instrument blank.'

10.6 Calibration Standards

Calibration standards are solutions of known concentration prepared from primary standard solutions which are prepared from stock standard materials. Calibration standards are used to calibrate the instrument response for the analyte concentration. Standards are analyzed in accordance with the requirements stated in the particular method being used.

10.7 Continuing Calibration Verification Standards

Continuing calibration verification standards (CCVs) are midrange standards that are analyzed in order to verify the 'daily' calibration of the analytical system is still acceptable. The frequency of CCV analysis is either once every ten samples, or as indicated in the method.

10.8 Labeled standards

Labeled standards are organic compounds which are similar in chemical composition and chromatographic behavior to the analytes of interest, but which are not normally found in environmental samples. The method-specific labeled standards are added to method blanks, laboratory control samples, and client samples, including matrix spike samples, duplicate matrix spike samples, and duplicate field samples prior to extraction and analysis. The purpose of the labeled standard is to monitor the method performance of each sample. The percent recovery is calculated for each labeled standard and the recovery is a measurement of the overall method performance. The acceptance criteria for these various analytes are listed in Appendix C, along with other method acceptance criteria.

10.9 Matrix Spikes

Matrix-spiked samples are aliquots of samples to which a known amount of the target analytes has been added. The matrix-spiked samples are extracted along with the samples. The matrix spike recovery measures the effects of interferences caused by the sample matrix and reflects the accuracy of the method for the particular matrix in question. Matrix spike recoveries are calculated as follows:

$$\text{Recovery (\%)} = \frac{S - A}{T} \times 100$$

Where: S = The observed concentration of analyte in the spiked sample;
 A = The analyte concentration in the original sample; and
 T = The theoretical concentration of analyte added to the spiked sample.

Matrix spiked samples are prepared and analyzed as indicated by the client on the chain-of-custody documentation.

10.10 Duplicate Matrix Spikes

Duplicate matrix spikes are additional replicates of matrix spiked samples that are subjected to the same preparation and analytical scheme as the original sample. A matrix spiked sample and duplicate matrix spiked sample (MS/DMS) is analyzed upon request by the client on the chain-of-custody. The relative percent difference between an MS and DMS is a measure of the precision for a given method and analytical batch. The relative percent difference (RPD) for these analyses is calculated as follows:

$$RPD = \frac{S_1 - S_2}{S_{ave}} \times 100$$

Where: S_1, S_2 = The observed concentrations of analyte in the sample and its duplicate, or in the matrix spike and its duplicate matrix spike; and
 S_{ave} = The average of observed analyte concentrations in the sample and its duplicate, or in the matrix spike and its duplicate matrix spike.

A batch precision measurement (either MS/DMS or LCS/DLCS) is performed for each analytical batch. If the batch precision is determined using MS/DMS, a DLCS does not need to be performed.

A sample identified as field blank, equipment blank, or trip blank is not to be used for a precision sample measurement (MS/DMS.)

10.11 Laboratory Control Samples

The laboratory control sample and duplicate laboratory control sample (LCS/DLCS) are aliquots of analyte-free water, analyte-free soil (or anhydrous sodium sulfate or equivalent) or analyte-free tissue to which a known amount of the method analytes are added. [A standard reference material (SRM) of known matrix type, containing certified amounts of target analytes, may also be used as an LCS.] The LCS/DLCS sample is prepared and analyzed in the same analytical batch, and in exactly the same manner, as the other field samples. The percent recoveries of the target analytes in the LCS/DLCS

assist in determining whether the methodology is in control and whether the laboratory is capable of making accurate and precise measurements. Comparison of batch-to-batch LCS/DLCS analyses enables the laboratory to evaluate batch-to-batch precision and accuracy. Acceptance criteria for LCS/DLCS analyses are based on EPA methods. An LCS/DLCS is prepared and analyzed with every analytical batch.

If an analytical batch contains an MS/DMS requested by the client on the chain-of-custody, a DLCS is not required for batch quality control.

10.12 Source and Preparation of Standard Reference Materials

CAS relies on several primary vendors for the majority of its analytical supplies and reagents. Consumable primary stock standards are obtained from a certified commercial source. Cambridge Isotope Laboratories (CIL) supplies the primary stock standards used by CAS/Houston. The primary stock standards are stored under the conditions suggested by the supplier. These conditions provide maximum protection against deterioration and contamination.

All reference materials that are received by CAS/Houston are recorded by an analyst in the appropriate logbook. The logbook entry includes such information as an assigned logbook identification code, the source of the material, solvents, concentrations of analytes, reference to the certificate of analysis and an assigned expiration date. In addition, the date the standard is received in the laboratory is marked on the container as well as in the logbook.

When the container containing the primary stock standard is used for the first time, the date opened and the initials of the analyst are also recorded on the container. Stock solutions and/or calibration standard solutions are prepared as often as necessary to maintain their stability. After preparation, all standard solutions are labeled with the name, concentration, date, preparer, and expiration date. These entries are also recorded in the standards notebook.

To ensure traceability, all prepared standards are labeled with an in-house code that can be traced back to the original stock standard received by the vendor and thus to the certificate of analysis.

An independent source of reference material, purchased from Wellington Laboratories, is used to verify the mid-point of each new initial calibration curve.

10.13 Proficiency Testing Participation

Each test method is monitored using NIST approved vendors for Proficiency Testing on an annual basis. Results of the proficiency samples are reviewed by the Laboratory Director, the QAPM and the laboratory staff. Any problems surfacing during the review

are investigated, and corrective action is taken regarding deficiencies. See the SOP for *Proficiency Testing Sample Analysis, ADM-PTS*, for more information.

10.14 Cleaning Glassware and Equipment

Glassware washing plays a crucial role in the daily operation of a laboratory. The glassware used at CAS-Houston undergoes a rigorous cleansing procedure prior to every usage. The procedures for cleaning the various types of glassware used by CAS/Houston are included in the SOP *Washing Glassware, SMO-WASH*.

The technical SOPs also detail any cleaning instructions for specific equipment. In addition, other equipment that may be routinely used at the laboratory is also cleaned following instructions in the appropriate SOP.

11.0 CALIBRATION PROCEDURES AND FREQUENCY

All equipment and instrumentation used at CAS/Houston is operated, maintained and calibrated according to the manufacturer's guidelines and recommendations, along with the criteria set forth in the analytical methodology. Only personnel who have been properly trained in these procedures perform operation and calibration. Documentation of calibration information is maintained in appropriate reference files. Brief descriptions of the calibration procedures for our major laboratory equipment and instrumentation are described below.

11.1 Temperature Control Devices

Temperatures are monitored and recorded for the laboratory's temperature-regulating devices including ovens and refrigerators. Bound logbooks are kept which contain daily recorded temperatures, identification of equipment, acceptance criteria and the initials of the analyst who performed the measurements. The procedure for performing these measurements is provided in the *SOP Calibration Check of Measuring Devices (SMO-DALYCK.)* The thermometers are identified according to serial number, and the calibration of these thermometers has been certified by the manufacturer.

11.2 Analytical Balances

Analytical balances are serviced on an annual basis by a professional metrology organization. New certificates of calibration for each balance are issued to the laboratory. The calibration of each analytical balance is checked daily with three class-S or S-1 weights, which assess the accuracy of the balance at low, mid-level and high ranges. As needed, the balances are recalibrated using the manufacturer's recommended operating procedures. Bound logbooks are kept which contain the recorded measurements, identification and location of equipment, acceptance criteria and the initials of the technician who performed the checks. The procedure for performing these measurements is provided in *SMO-DALYCK.*

11.3 Water Purification System

CAS purchases drinking water for the preparation of standards and reagents. This purchased water meets specifications for ASTM Type I water.

11.4 High-Resolution GC/MS Systems

The HRMS instruments are calibrated at five different concentration levels for the analytes of interest (unless specified otherwise) using procedures outlined in the CAS Standard Operating Procedures and/or appropriate USEPA method citations. All standard reference materials used for this function are "EPA-Certified" standards. Method-specific instrument tuning is regularly checked using perfluorokerosene (PFK). Mass spectral peaks for the tuning compounds must conform to the mass numbers and relative intensity criteria before analyses can proceed.

11.5 Pipets

The calibration of pipets and automatic pipettors used to make critical-volume measurements is verified following the SOP ***SMO-DALCYK***. Both accuracy and precision verifications are performed. Auto-pipet calibration is verified each day of use. The results of all calibration verifications are recorded in bound logbooks.

12.0 DATA REDUCTION, VALIDATION, AND REPORTING

CAS reports the analytical data produced in its laboratories to the client via the certified analytical report. This report typically includes a transmittal letter, a case narrative, client project information, specific test results, quality control data, chain of custody information, and any other project-specific support documentation. The following procedures describe the data reduction, validation and reporting procedures.

12.1 Sample Login System

CAS/Houston maintains a login and reporting database through CAS LIMS.

12.2 Data Reduction and Data Custody

All data is initially reviewed and processed by analysts using appropriate technical software. A file of all raw data is printed, reviewed for completeness and quality criteria against an in-house checklist and signed off by the analyst. A second chemist/scientist reviews all reported data against the raw data; validating completeness and quality. The final data package is then reviewed by the Project Manager for compliance with previously established project requirements.

Assessment of the analytical data includes a check on data consistency by looking for comparability of duplicate analyses, comparability of previous data from the same sampling location (if available), adherence to accuracy and precision control limits, and anomalous low or high parameter values. The results of this review will be discussed with either the departmental supervisor or Laboratory Director for resolution prior to final release of the package.

Once the data has been checked for accuracy and acceptability, the final report and raw data is forwarded to the Laboratory Director or QAPM, who further reviews the data package for errors. When the entire data set has been found to be acceptable the Laboratory Director signs the report, the report is distributed and the raw data is filed for approximately one year; after which it is archived. All hard copy and electronic backups are archived in a secured file room for a period of at least 5 years from the date of the final report. It is not unusual to have various clients require a 10-year retention of records, therefore, the archivist, Project Manager, and possibly the client are consulted prior to destruction of the records.

12.3 Confirmation Analysis of 2,3,7,8-tetrachlorodibenzofuran (2,3,7,8-TCDF)

12.3.1 All positive results of the 2,3,7,8-TCDF that are quantified on the DB-5 column, are confirmed by a second (DB-225) column.

When sample results are confirmed by two dissimilar columns, the agreement between quantitative results must be evaluated.

12.3.2 Confirmation Data

Confirmation data will be provided as specified in the method. Identification criteria for high-resolution GC/MS methods are summarized below:

- High-resolution GC/MS methods – criteria used to verify identification:
 1. Elution of the analyte in the sample will occur at the same relative retention time (RRT) as that of the analyte in the standard.
 2. Signal/noise ratio (S/N) \geq 2.5.
 3. Satisfy ion abundance ratio criteria.

12.4 Data Validation

The integrity of the data generated in the laboratory is primarily assessed by the analyst, supervisor and Project Manager through the use of a variety of measures that may include reagent blanks, laboratory fortified blanks, duplicates, matrix spikes and QC samples. The numerical criteria for evaluation of these QC samples are listed in Appendix C; these various QC sample analyses are evaluated using the flow diagrams found in Figures 12-1 through 12-8. Other validation measures of the data include a check of the linearity of the calibration curve, an accuracy check of the QC standards and a check of the system sensitivity. Data transcriptions and calculations are also reviewed. Specific calculations used for determining the concentrations, or values, of the measured parameters from the raw data are given in each of the analytical methods or CAS SOPs.

12.5 Data Reporting

When an analyst determines that the data has met the data quality objectives (and/or any client-specific data quality objectives) of the method and has qualified any anomalies in a clear, acceptable fashion, the data is validated by the supervisor. Prior to release of the report to the client, the Project Manager must also review the entire body of data for completeness and to ensure that any and all client-specified objectives were successfully achieved. Sample toxicities are reported to the client using procedures outlined in the methods and interpretation is left up to the judgment of the client. CAS/Houston provides unbiased reports and cannot be held liable for decisions made based upon delivered data. A case narrative may be written

by the Project Manager to explain any unusual problems with a specific analysis or sample, client-specific objectives, exceedences, etc. The original raw data, along with a copy of the final report, is archived. CAS maintains control of analytical results by adhering to standard operating procedures and by observing sample custody requirements. All data are calculated and reported in units consistent with project specifications, to enable easy comparison of data from report to report. Typical qualifiers used to flag analytical results are listed in Appendix D.

12.6 Documentation

A document control system ensures that all documents are accounted for when the project is complete. A service request number is assigned to each project for reporting and filing purposes. This number is associated with each order number (sample).

12.6.1 Documentation and Archiving of Routine Analysis Data

The archiving system includes all of the following items for each set of analyses performed:

- Chain-of-custody documentation
- Bench sheets describing sample preparation
- Sample analysis sequence
- Analysis bench sheets and instrument printouts
- Chromatograms and peak integration reports for all samples, standards, blanks, spikes and reruns
- Logbook ID number for the appropriate standards
- Copies of report submitted to the client
- Copies of Nonconformity and Corrective Action Report (NCAR) forms, if needed

Individual sets of analyses are indexed by analysis date and/or service request number. Since many analyses are performed with computer-based data systems, the final sample concentrations can be automatically calculated. If additional calculations are needed, they are written on the integration report or securely stapled to the chromatogram, if done on a separate sheet.

The archive room is an off-site file room in which files shall be maintained for a period of at least five years (from date of report issue). It is not unusual to have various clients require 10-year retention of records, therefore, the archivist, project manager, and possibly the client are consulted prior to destruction of the records. The archive cabinet and/or off site storage area is kept locked and access keys are controlled. All documents must be signed out if needed outside of the archive room and returned in a timely manner. A designated archivist monitors filing, incoming, and outgoing data from the archive.

12.6.2 Reporting Deliverables

In order to meet individual project needs, CAS provides several levels of analytical reports. Basic specifications for each level of deliverable are described in Figure 12-9. Turnaround time and package level are negotiable on a project to project basis.

12.6.3 Electronic Data Deliverables (EDD)

CAS/Houston offers standard Excel format as well as a variety of custom developed EDDs such as ASCII, dBase, and GISKEY. EDDs are available upon request on a project to project basis.

12.6.4 In the event that the laboratory transfers ownership or goes out of business, laboratory records shall be maintained for a minimum of five years or for the contracted period (if it exceeds five years) or transferred according to the clients' instructions. In addition, in cases of bankruptcy, appropriate regulatory and state legal requirements concerning laboratory records shall be followed.

Figure 12-1
Evaluation of Initial Calibration

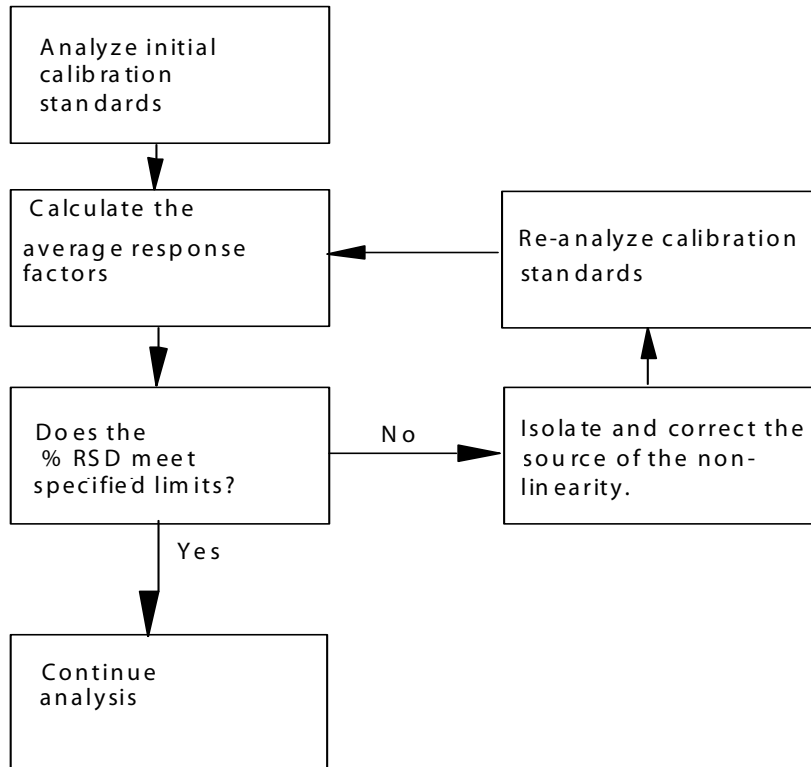


Figure 12-2
Evaluation of Continuing Calibration

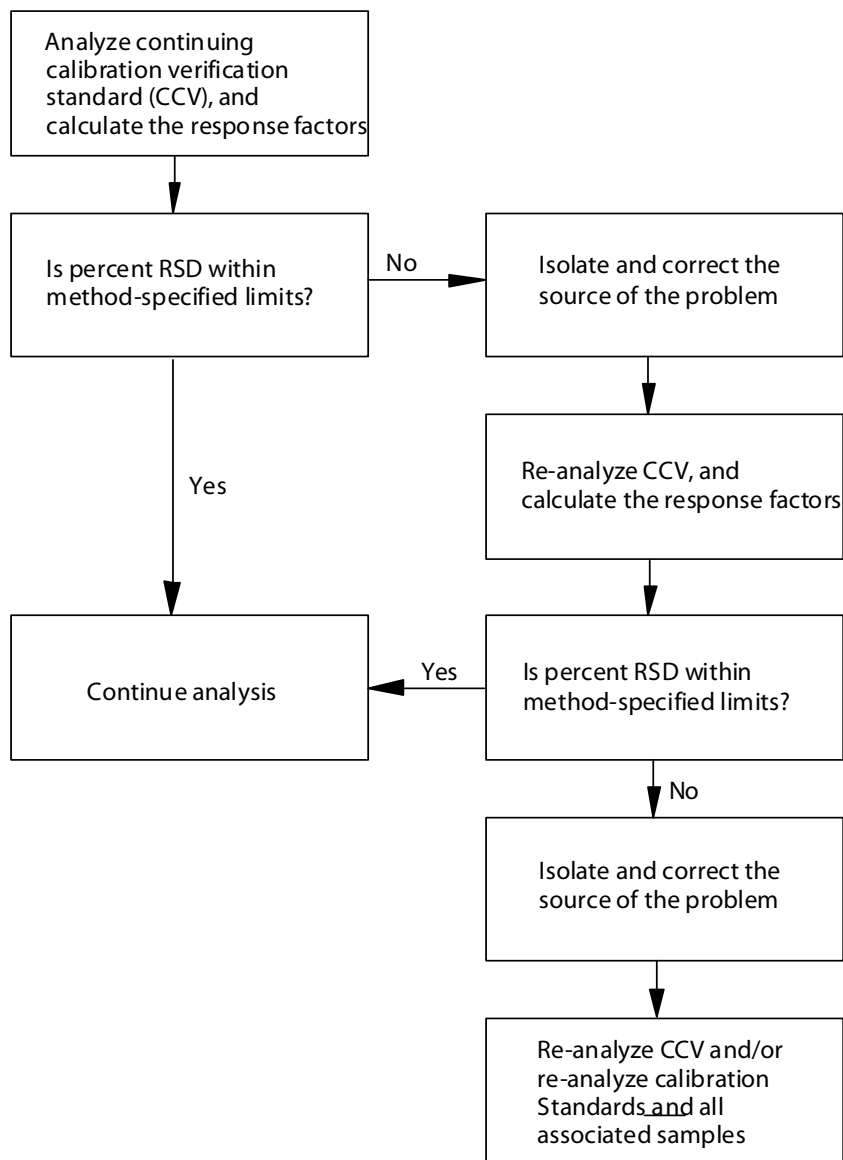


Figure 12-3
Evaluation of Method Blank and Instrument Blank Results

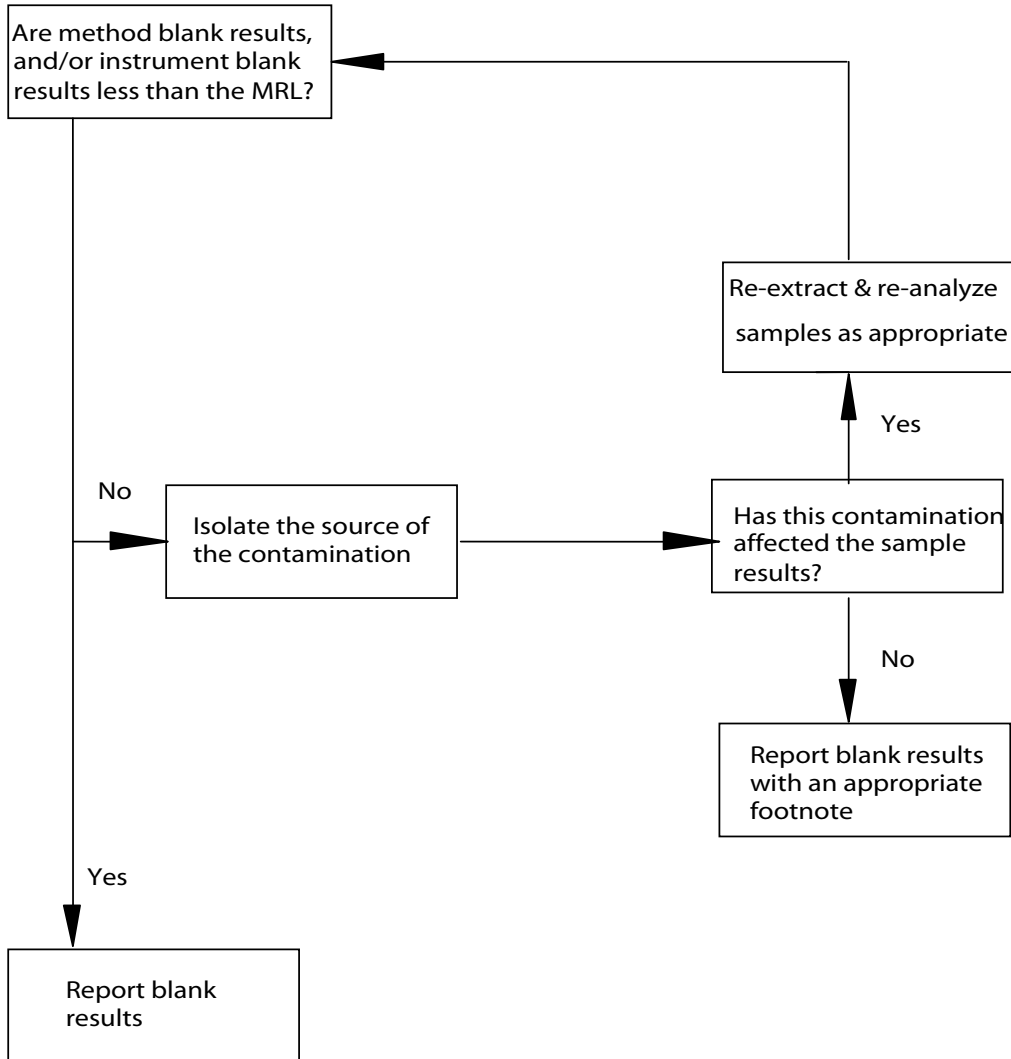


Figure 12-4
Evaluation of Sample Results

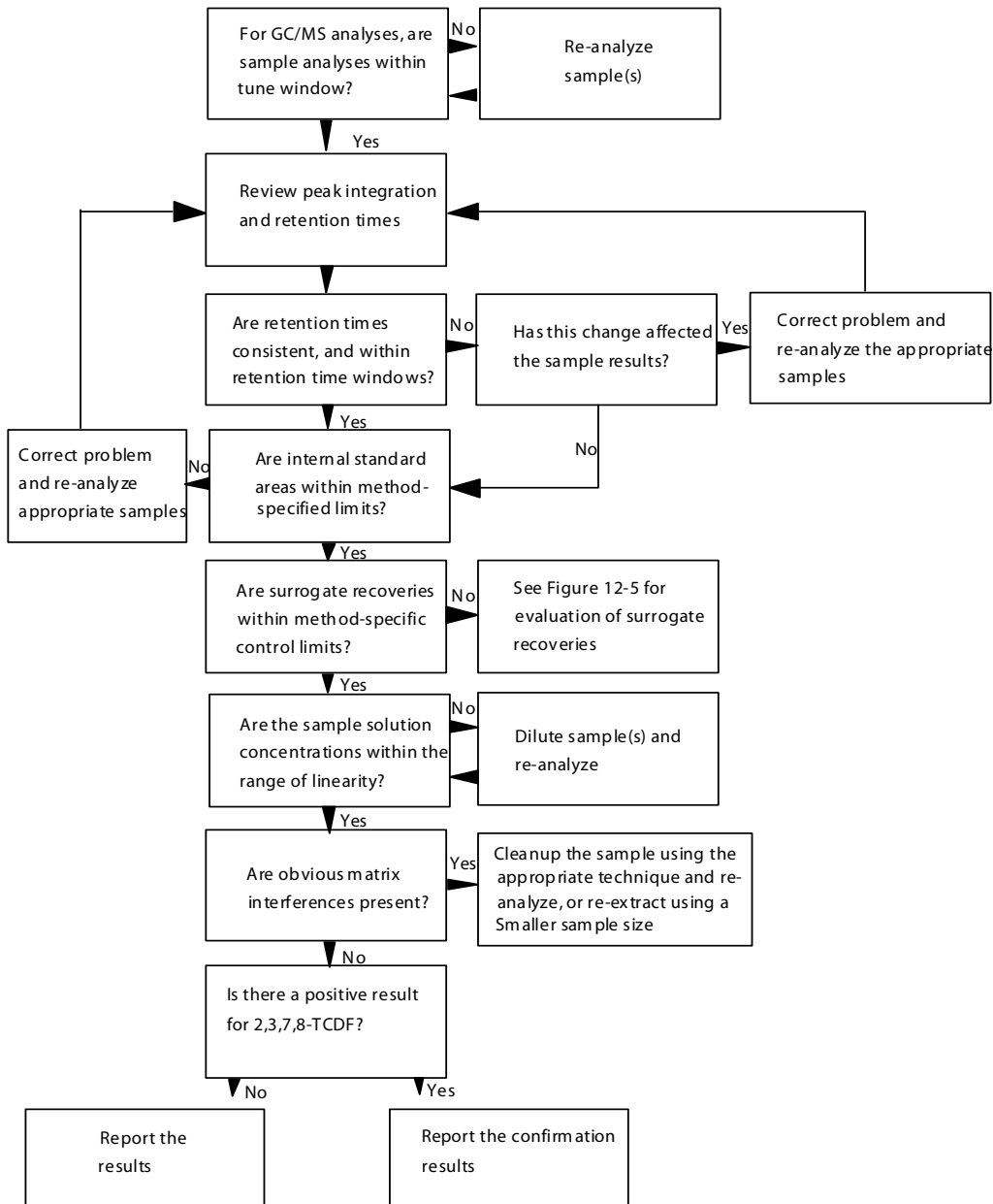


Figure 12-5
Evaluation of Labeled Standards

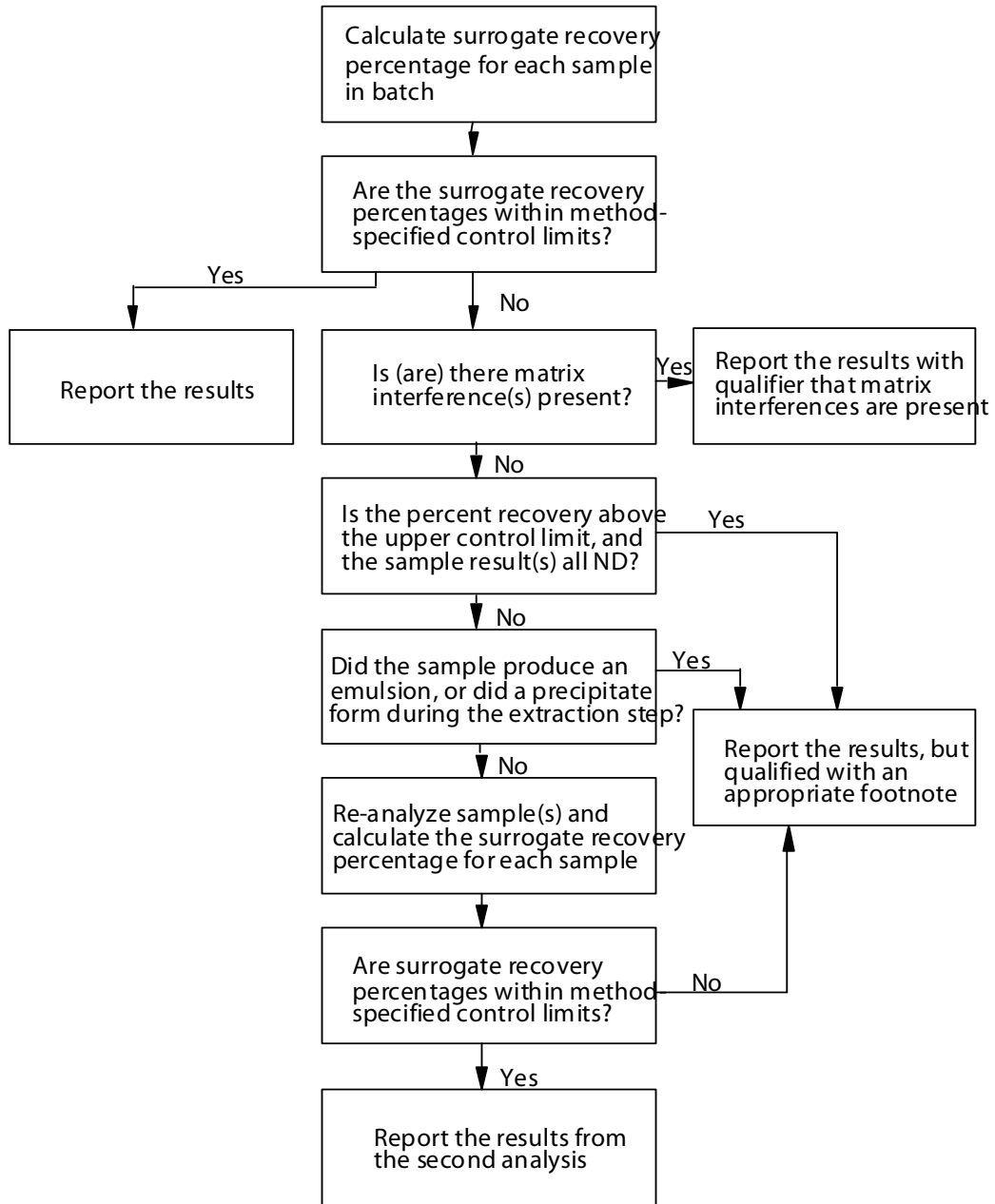


Figure 12-6
Evaluation of Precision (LCS/DLCS or MS/DMS) Results

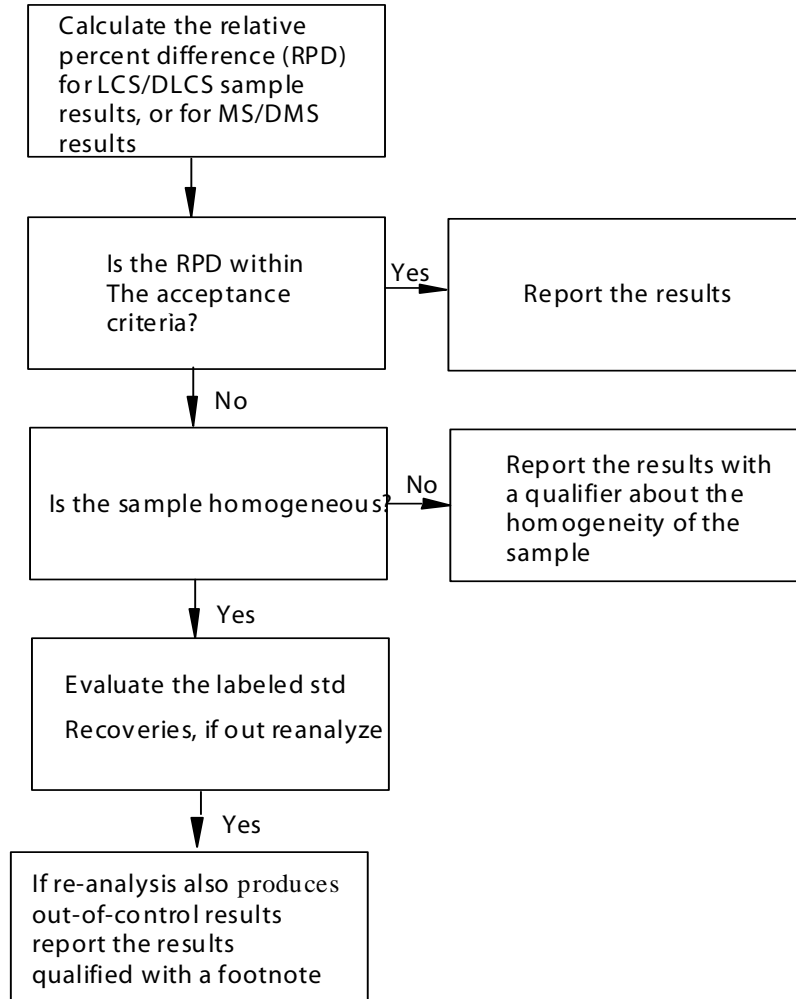


Figure 12-7
Evaluation of Matrix Spike Recoveries

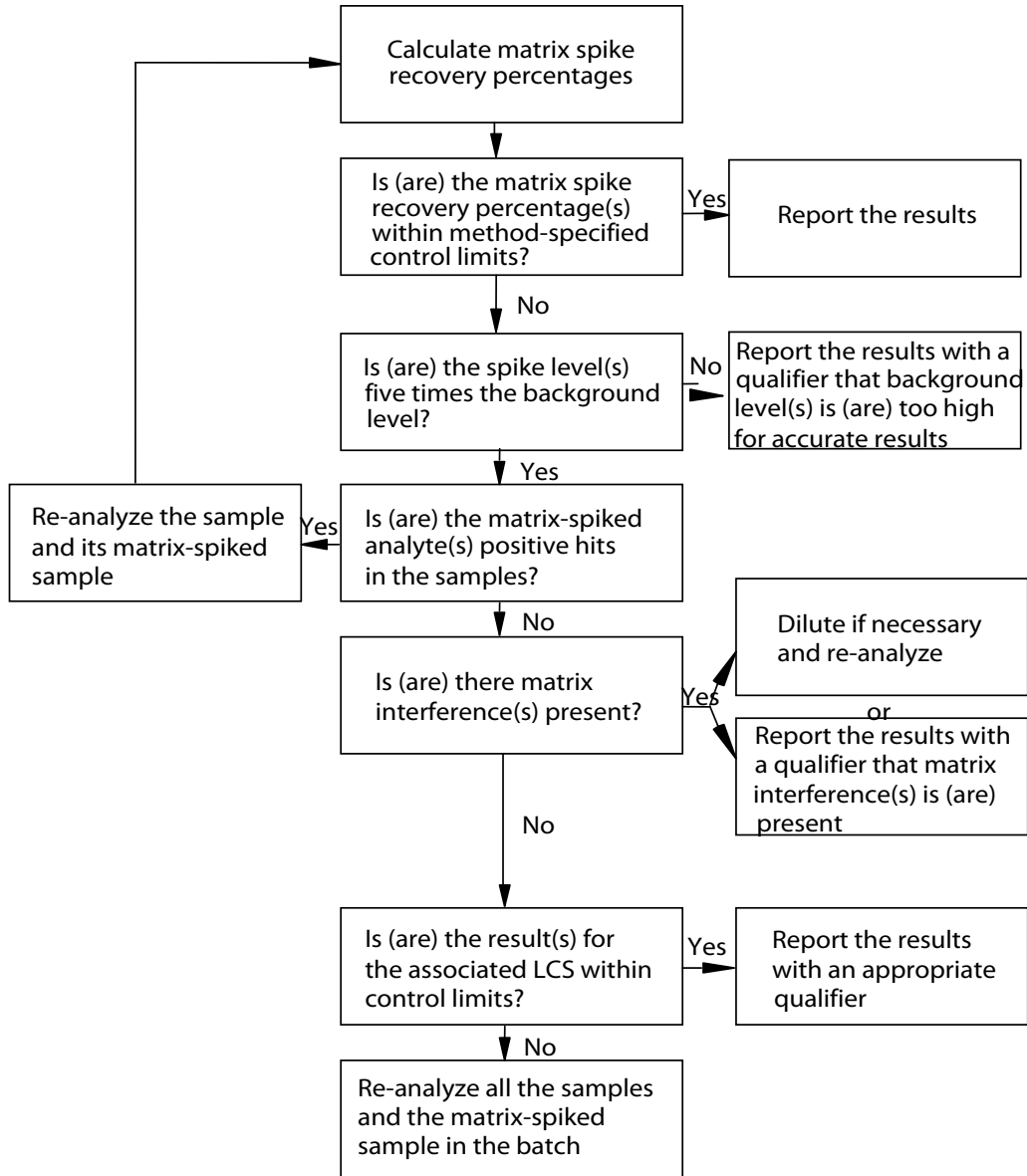


Figure 12-8
Evaluation of Laboratory Control Sample Recoveries

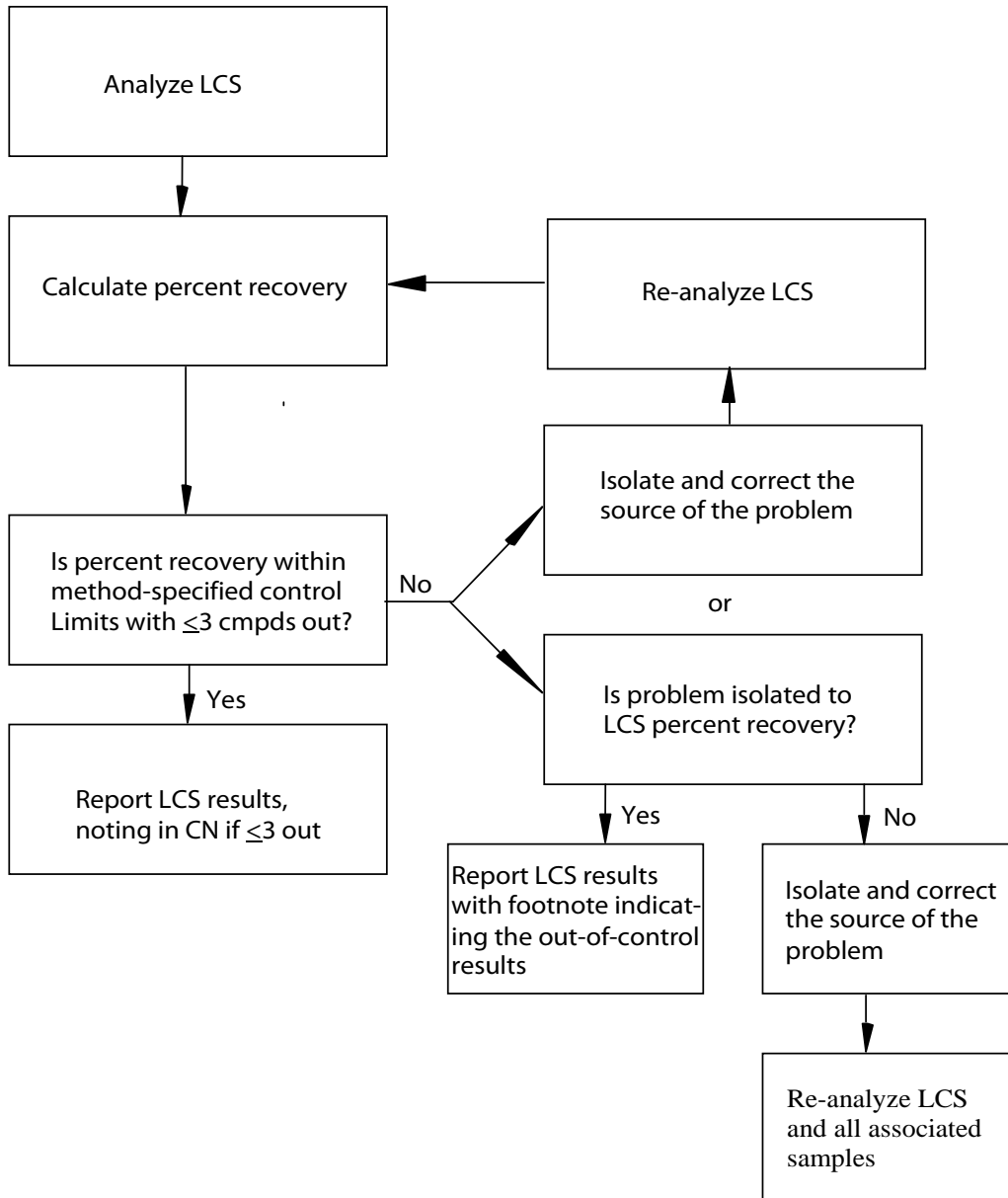


Figure 12-9 Data Packages

Tier 1 A Certified Analytical Report includes the following

1. Transmittal Letter
2. Case Narrative
2. Method Blank Results
3. Analytical Results
4. Surrogate Recovery Results, including associated acceptance criteria
5. Chain of Custody Documents

Tier 2 In Addition to the Tier 1 deliverables, this report includes the following:

1. Batch Quality Control summaries and results

Tier 3 In Addition to the Tier 2 deliverables, this report includes the following:

1. Selected ion monitoring summaries (without chromatograms)
2. Continuing calibration summaries (without chromatograms)
3. Initial calibration summaries (without chromatograms)

Tier 4 In Addition to the Tier 2 deliverables, this report includes the following:

1. Chromatograms and selected ion monitoring
2. Continuing calibration summaries and results
3. Initial calibration summaries and results

DLM02.0 Includes everything listed in Tier 4, presented in CLP format

1. Results and calibrations on DLM02.0 forms
2. Data packages organized according to DLM02.0 instructions

13.0 SYSTEM AND PERFORMANCE AUDITS

Quality Control (QC) audits are an essential part of CAS's QA program. There are two types of audits used at the facility: System Audits are conducted to qualitatively evaluate the operational details of the field and laboratory QA program, while Performance Audits are conducted by analyzing performance evaluation samples in order to quantitatively evaluate the outputs of the various measurement systems.

The system audit examines the presence and appropriateness of laboratory systems. External system audits of CAS are conducted regularly by various regulatory agencies and clients. Appendix E summarizes some of the major programs in which CAS/Houston participates. Additionally, internal system audits of CAS/Houston are conducted regularly by the Quality Assurance Program Manager and by the CAS/Corporate Chief Quality Officer. The internal system audits are scheduled as auditing events as follows:

- Comprehensive lab-wide system audit - annually
- Comprehensive "vertical" project audits examining compliance with all QA program requirements as applied to selected projects and implementation of QA program requirements - 1 per year
- Focused audits examining the lab-wide implementation of a selected QA program requirement – 1 per year

The results of each audit are reported to the Laboratory Director for review and comment. Any deficiencies noted by the auditor are summarized in an audit report and corrective action is taken within a specified length of time to correct each deficiency. If problems impacting data quality are found during an internal audit, any client whose data is adversely impacted will be given written notification if not already provided.

Additionally, CAS/Houston participates in the analysis of performance evaluation (PE) samples. Results of the performance evaluation samples and audits are reviewed by the Laboratory Director, the QA Program Manager, the CAS/Corporate Chief Quality Officer and the laboratory staff. Any problems surfacing during the audit are investigated, and corrective action is taken regarding any and all deficiencies.

14.0 PREVENTIVE MAINTENANCE

Preventive maintenance is a crucial element of Columbia Analytical Services Quality Assurance program. Instruments at CAS (e.g., high-resolution GC/MS systems, analytical balances, etc.) are maintained under commercial service contracts. All instruments are operated and maintained according to the instrument operating manuals and technical SOPs. All routine and special maintenance activities pertaining to the instruments are recorded in instrument maintenance logbooks. The maintenance logbooks used at CAS contain relevant information about the instruments used at the laboratory.

A system calibration check (CCV) is performed to demonstrate a return to analytical control after an analytical instrument has undergone maintenance, before sample analysis is resumed. System calibration checks bracket sample analysis, as described in the analytical methods. Instrument failure or anomalies determined to have an impact on previous calibrations or tests are investigated and documented using Nonconformity and Corrective Action Reports. These reports are filed in the analytical project files by SR#.

An initial demonstration of analytical control is required on each instrument used at CAS before proceeding with sample analyses. If an instrument is modified or repaired, a return to analytical control is required before subsequent sample analyses can continue. When an instrument is acquired at the laboratory, the following information is noted in a bound maintenance logbook specifically associated with the new equipment:

- The equipment's serial number.
- Date the equipment was received.
- Date the equipment was placed into service.
- Condition of equipment when received (new, used, reconditioned, etc...)
- Prior history of damage, malfunction, modification or repair (if known).

Preventative maintenance procedures, frequencies, etc. are available for each instrument used at CAS. They may be found in the various SOPs for routine methods performed on an instrument and may also be found in the operating or maintenance manuals provided with the equipment at the time of purchase. Responsibility for ensuring that routine maintenance is performed lies with the laboratory director. Each laboratory maintains a critical parts inventory. The parts inventories include the items needed to perform the preventative maintenance procedures listed in Table 14-1. This inventory or "parts list" also includes the items needed to perform any other routine maintenance and certain in-house non-routine repairs.

When performing maintenance on an instrument (whether preventative or otherwise), additional information about the problem, attempted repairs, etc. is also recorded in the logbook. Typical logbook entries include the following information:

- Details and symptoms of the problem.
- Repairs and/or maintenance performed.
- Description and/or part number of replaced parts.
- Source(s) of the replaced parts.
- Analyst signature and date.
- Demonstration of return to analytical control.

For most major equipment, back-up equipment is available to avoid downtime. All major analytical equipment is summarized in Appendix A. The Laboratory Director coordinates repair with the manufacturer. The Project Manager shall assess the effect of the downtime on the samples in-house and notify the appropriate clients of any delays and/or the possibilities of subcontracting within 24 to 48 hours.

**Table 14-1
Preventive Maintenance Procedures**

Instrument	Activity	Frequency
Refrigerators and coolers	<ul style="list-style-type: none"> ▪ Record temperatures ▪ Clean coils ▪ Check coolant 	<ul style="list-style-type: none"> ▪ Daily ▪ Annually ▪ Annually
Vacuum Pumps	<ul style="list-style-type: none"> ▪ Clean and change pump oil 	<ul style="list-style-type: none"> ▪ Monthly
Fume Hoods	<ul style="list-style-type: none"> ▪ Face velocity measured ▪ Sash operation ▪ Change filters ▪ Inspect fan belts 	<ul style="list-style-type: none"> ▪ Quarterly ▪ As needed ▪ Annually ▪ Annually
Ovens	<ul style="list-style-type: none"> ▪ Clean ▪ Record temperatures 	<ul style="list-style-type: none"> ▪ Annually ▪ Daily
Analytical Balances	<ul style="list-style-type: none"> ▪ Check alignment ▪ Check calibration ▪ Clean pans 	<ul style="list-style-type: none"> ▪ Daily ▪ Daily ▪ After each use
High Resolution GC/MS	<ul style="list-style-type: none"> ▪ Check gas supplies ▪ Change in-line filters ▪ Change septum ▪ Change injection port liner ▪ Clip first foot of capillary column ▪ Change guard column ▪ Replace analytical column ▪ Clean source ▪ Change pump oil 	<ul style="list-style-type: none"> ▪ Daily; replace when pressure reaches 50psi ▪ Quarterly ▪ Daily ▪ As needed ▪ As needed ▪ As needed ▪ As needed ▪ As needed ▪ As needed ▪ Every six months

15.0 CORRECTIVE ACTION

Failure to meet established analytical controls, such as the quality control objectives outlined in Section 9.0, prompts corrective action. In general, corrective action may take several forms and may involve a review of the calculations, a check of the instrument maintenance and operation, a review of analytical technique and methodology, and reanalysis of quality control and field samples. If a potential problem develops that cannot be solved directly by the responsible analyst, the Laboratory Director, the Technical Director, and/or the Quality Assurance Program Manager may examine and pursue alternative solutions. In addition, the appropriate Project Manager may be notified in order to ascertain if contact with the client is necessary. If contact is needed, the client must be notified within 24 to 48 hours of the final assessment of the problem. This is to ensure the client's feedback can be taken into consideration when implementing a corrective action.

If the Quality Assurance Program Manager initiates corrective action due to a performance audit or check sample problem; the affected laboratory personnel are promptly informed.

A Nonconformity and Corrective Action Report is generated, following the guidelines in the SOP for *Corrective Action*, **ADM-CA**, to document and notify the appropriate personnel of the nonconformity. Nonconformity can include, but is not limited to, method blank contamination, re-extractions, dilutions, etc. Nonconformity reports are assigned time frames for completion. It is the responsibility of the QAPM to ensure that the corrective action is implemented and maintained.

In special cases, the Laboratory Director may give permission to the analyst or Project Manager to deviate from CAS Policy. A Nonconformity form must be signed by the Quality Assurance Program Manager.

In cases where there are complaints from the clients, follow policy procedures outlined in the SOP, **ADM-CMPLT** (*Dealing with Complaints*).

Figure 15-1 Nonconformity and Corrective Action Report

NONCONFORMITY

PROCEDURE (SOP or METHOD):	
EVENT:	<input type="checkbox"/> Missed Holding Time <input type="checkbox"/> QC Failure <input type="checkbox"/> Lab Error (spilled sample, spiking error, etc.) <input type="checkbox"/> Method Blank Contamination <input type="checkbox"/> Login Error <input type="checkbox"/> Project Management Error <input type="checkbox"/> Equipment Failure <input type="checkbox"/> Unacceptable PT Sample Result <input type="checkbox"/> SOP Deviation <input type="checkbox"/> Other (describe):
SAMPLES / PROJECTS / CUSTOMERS / SYSTEMS AFFECTED	
DETAILED DESCRIPTION	
ORIGINATOR:	DATE: _____

CORRECTIVE ACTION AND OUTCOME

<i>Re-establishment of conformity must be demonstrated and documented. Describe the steps that were taken, or are planned to be taken, to correct the particular Nonconformity <u>and</u> prevent its reoccurrence. Include any Project Manager instructions here.</i>	
Is the data to be flagged in the Analytical Report with an appropriate qualifier?	<input type="checkbox"/> No <input type="checkbox"/> Yes

APPROVAL AND NOTIFICATION

Supervisor Verification and Approval of Corrective Action _____ Date: _____ Comments:
QA PM Verification and Approval of Corrective Action _____ Date: _____ Comments:
Customer Notified by <input type="checkbox"/> Telephone <input type="checkbox"/> Fax <input type="checkbox"/> E-mail <input type="checkbox"/> Narrative <input type="checkbox"/> Not notified
Project Manager Verification and Approval of Corrective Action _____ Date: _____ Comments:
(Attach record or cite reference where record is located.) Project folder archives

16.0 QUALITY ASSURANCE REPORTS

Quality assurance requires an active, ongoing commitment by CAS personnel at all levels of the organization. Information flow and feedback mechanisms are designed so that analysts, supervisors and managers are aware of quality assurance issues in the laboratory.

Analysts performing routine tests in the laboratory are aware of the various method acceptance criteria and in-house control limits that must be met in order to generate acceptable results. Any non-conformities and corrective actions may also be attached to the data prior to review. Supervisors review all of the completed analytical batches to ensure that all QC criteria have been examined and any deficiencies noted and corrected if possible.

It is the responsibility of each laboratory unit to provide the Project Manager with a final report of the data, accompanied by signature approval. Footnotes and/or narrative notes must also accompany any data package if problems were encountered that require further explanation to the client. Each data package is submitted to the appropriate Project Manager, who in turn reviews the entire collection of analytical data for completeness. The Project Manager must also review the entire body of data to ensure that any and all client-specified objectives were successfully achieved. A case narrative may be written by the Project Manager to explain any unusual problems with a specific analysis or sample, etc.

The Quality Assurance Program Manager (QAPM) provides overview support to the Project Managers if required to do so (e.g. contractually specified, etc.) The QAPM is also responsible for the oversight of all internal and external audits, for all performance evaluation sample and analysis programs, and for all laboratory certification/accreditation responsibilities.

The QAPM also prepares quarterly reports for the Laboratory Director which summarize the various QA/QC activities that have occurred during the previous quarter. These reports may include a summary of the findings of the various audits performed during the last quarter, copies of audit-deficiency correspondence between the laboratory and external auditors, new accreditations/certifications received by the laboratory, scores of the most current performance evaluation studies, updates/revisions to controlled documents, etc. Any problems noted by the Laboratory Director are then discussed during the regularly-scheduled staff operations meetings with all appropriate staff.

Annually, the QAPM must facilitate a management review, to be performed by the Laboratory Director. This review is designed to ensure the continuing suitability and effectiveness of the laboratory's quality systems and testing activities and to introduce any necessary changes or improvements. More information can be found in the SOP for *Managerial Review of the Laboratory's Quality Systems*, **ADM-MGMTRVW**.

17.0 TRAINING

Technical position descriptions are available for all employees, regardless of position or level of seniority. These documents are maintained by the QA Program Manager and Human Resources. In order to assess the technical capabilities and qualifications of a potential employee, all candidates for employment at CAS are evaluated, in part, against the appropriate technical description.

Information of previously acquired skills and abilities for a new employee is entered into a centralized database maintained by Human Resources. The database is also used to record the various technical skills and abilities acquired and maintained by an employee while employed by CAS. Information in the database includes the employee's name, a description of the skill including the appropriate method reference, the name of the supervisor who certified completion of the training, and the date the training was completed. Technical training is documented following CAS SOP requirements. CAS/Houston maintains a training summary file for all Houston employees. The training summary lists all Standard Operating Procedures for the facility and is a tool for tracking individual employee training status for those procedures. The training summary is a tracking and scheduling tool for the employee. This summary can also be used to track procedural training, as well. The training summary for all employees within a department are analyzed to ensure there is adequate training for all procedures, such that the absence of one employee will not cause an entire procedure to go idle.

Training begins the first day of employment at CAS (**ADM-TRANDOC**) when the company policies are presented and discussed. Training in analytical procedures typically begins with the reading of the SOP for the method. Hands-on training begins with the observation of an experienced analyst performing the method, followed by the trainee performing the method under close supervision, and culminating with independent performance of the method on quality control samples. Successful completion of the analysis must include an Initial Demonstration of Capability Study of four replicate quality control samples. Continued demonstration of capability is monitored with batch QC to maintain continuing qualification. Initial Demonstration of Capability is required anytime a new method is used, a new analyst is performing the method, or new instrumentation is installed.

Safety training begins with the reading of the *Chemical Hygiene Plan*, **CHP**. All employees are required to attend quarterly safety meetings during which safety training is presented by the Environmental, Health and Safety Officer. Monthly safety committee meetings shall also be held by the EH&S Officer to discuss safety programs and check vital laboratory safety systems. A representative from each major department is required to attend these meetings. All employees are encouraged to either report safety concerns to their department representative or attend the meetings.

Quality assurance training begins with the reading of the *Quality Assurance Manual*, **QAM**. It is in this document that all major quality assurance and quality control measures are set forth. All employees are required to read this document annually (or when a new revision is distributed.) Annual review of this document is required by the QAPM.

CAS encourages its personnel to continue to learn and develop new skills that will enhance their performance and value to the company. Ongoing training occurs for all employees through a variety of mechanisms. The "CAS University" education system, external and internal technical seminars and training courses, laboratory-specific training exercises and performance of external PE samples analysis are all used to provide employees with professional growth opportunities.

Safety and QA/QC requirements are integral parts of all technical SOPs and, consequently, are integral parts of all processes at CAS.

18.0 REFERENCES FOR ANALYTICAL PROCEDURES

The analytical methods used at CAS generally depend upon the end-use of the data. Since most of our work involves the analysis of environmental samples for regulatory purposes, specified federal and/or state testing methodologies are used and followed closely. Several factors are involved with the selection of analytical methods to be used in the laboratory. These include the method detection limit, the concentration of the analyte being measured, method selectivity, accuracy and precision of the method, the type of sample being analyzed, and the regulatory compliance objectives. Typical methods used at CAS are taken from the following references:

- ❖ *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Third Edition, 1986 and Updates I (7/92), II (9/94), IIA (8/93), IIB (1/95), and III (12/96). See Chapters 1, 2, 3, and 4.*
- ❖ *Methods for the Determination of Organic Compounds in Drinking Water, EPA 600/4-88-039, December 1988 and Supplement I (7/90) and Supplement II (8/92).*
- ❖ 40 CFR Part 136, Guidelines for Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act.
- ❖ 40 CFR Part 141, National Primary Drinking Water Regulations.
- ❖ EPA Contract Laboratory Program, Statement of Work for Dioxin/Furan Analysis, OLM02.0. May 2003.
- ❖ *U. S. EPA Contract Laboratory Program National Functional Guidelines for Dioxin/Furan Data Review, EPA-540/R-94/012, September 2005.*
- ❖ *Good Automated Laboratory Practices, Principles and Guidance to Regulations For Ensuring Data Integrity In Automated Laboratory Operations, EPA 2185, August 1995.*
- ❖ *National Environmental Laboratory Accreditation Conference, Quality Standards, Chapters 1-5, July 2003.*
- ❖ *Uniform Federal Policy for Implementing Environmental Quality Systems, EPA 505/F-03-001, March 2005.*

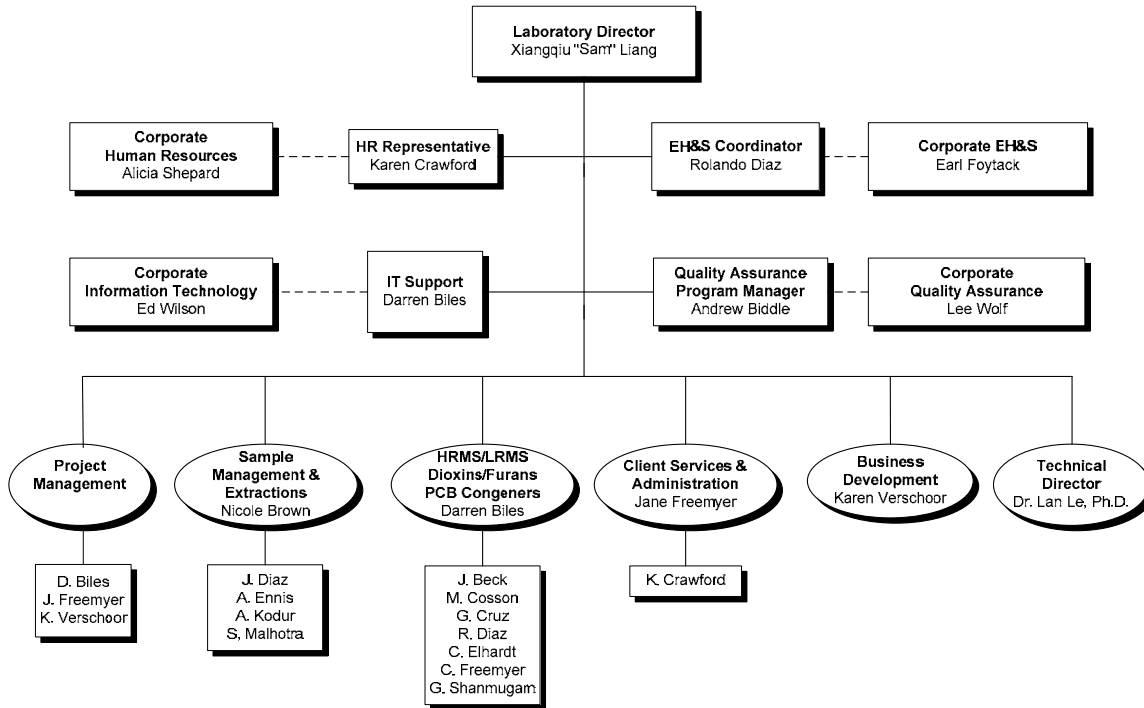
APPENDIX A: MAJOR ANALYTICAL EQUIPMENT

Major Analytical Equipment

Equipment	Machine ID	Year Purchased	Manufacturer Maintained or Laboratory Maintained MM or LM	Number of trained operators
HRMS Systems (5):				
▪ Waters Autospec Ultima HRMS w/Opus Quan data system	E-HRMS-01	2004	MM	4
▪ Waters Autospec Ultima HRMS w/Opus Quan data system	E-HRMS-02	2004	MM	4
▪ VG Analytical HRMS 70S w/Opus Quan data system	E-HRMS-70	2002	LM	4
▪ Waters Autospec Premier HRMS w/Opus Quan data system	E-HRMS-03	2008	MM	4
▪ Waters Autospec Premier HRMS w/Opus Quan data system	E-HRMS-04	2008	MM	4
Extraction Lab:				
Dionex ASE200 Accelerated Solvent Extractor	-	2003	MM/LM	5
Eberbach Shaker	-	2007	LM	5
Rotavap Buchi R-200	-	1999	LM	5
Evaporator NVAPIIIII	-	1999	LM	3
GS Drying Ovens	-	2002	LM	5
Mettler PG603-S Balance	-	2004	LM	5
Clay Adams Centrifuge	-	1999	LM	4
Branson Ultrasonic Cleaner	-	2008	LM	5
Mettler AJ100 Balance	-	1999	LM	5
Denver Instruments XE300 Balance	-	1999	LM	5
Tumbler	-	1999	LM	5
VWR Drying Oven	-	1999	LM	5
Glas-col Combination Mantle (4)	-	2008	LM	5

Appendix B: Organizational Chart

**Columbia Analytical Services, Inc.
 Houston, Texas Laboratory Organization**



Revised 09/03/08

Appendix C: Data Quality Capabilities

Test Methods Performed

Method Number	Method Name	Sample Matrices
EPA 8290	Dioxins & furans	Water, soil, sediment, tissue, industrial products, food, wipes
EPA 8280A	Dioxins & furans	Water, soil, sediment, tissue, industrial products, food, wipes
EPA 1613B	Dioxins & furans	Water, drinking water, soil, sediment, tissue, industrial products, food, wipes
EPA 23/TO9A	Dioxins & furans	Industrial air and ambient air
EPA 1668A	PCB Congeners	Water, soil, sediment, tissue, wipes
CARB 428	PCB Congeners	Air
CARB 429	Polycyclic Aromatic Hydrocarbons	Air

Acceptance Criteria

8290

Laboratory Control Sample Criteria (LCS & DLCS)

Compounds	Accuracy (% Recovery)			Precision (% Difference)		
	Water	Soil	Tissue	Water	Soil	Tissue
2378-TCDD	88-135	87-135	87-135	≤25	≤25	≤25
12378-PeCDD	91-135	88-135	88-135	≤25	≤25	≤25
123478-HxCDD	76-140	81-138	81-138	≤25	≤25	≤25
123678-HxCDD	84-129	82-136	82-136	≤25	≤25	≤25
123789-HxCDD	66-140	77-135	77-135	≤25	≤25	≤25
1234678-HpCDD	92-136	93-144	93-144	≤25	≤25	≤25
OCDD	101-151	93-162	93-162	≤25	≤25	≤25
2378-TCDF	95-126	82-141	82-141	≤25	≤25	≤25
12378-PeCDF	92-130	92-139	92-139	≤25	≤25	≤25
23478-PeCDF	68-151	74-145	74-145	≤25	≤25	≤25
123478-HxCDF	77-137	86-142	86-142	≤25	≤25	≤25
123678-HxCDF	80-148	88-162	88-162	≤25	≤25	≤25
123789-HxCDF	62-147	66-156	66-156	≤25	≤25	≤25
234678-HxCDF	75-137	80-150	80-150	≤25	≤25	≤25
1234678-HpCDF	86-151	91-131	91-131	≤25	≤25	≤25
1234789-HpCDF	86-151	69-169	69-169	≤25	≤25	≤25
OCDF	81-201	82-200	82-200	≤25	≤25	≤25
13C-2378-TCDD	40-135	40-135	40-135	≤25	≤25	≤25
13C-12378-PeCDD	40-135	40-135	40-135	≤25	≤25	≤25
13C-123678-HxCDD	40-135	40-135	40-135	≤25	≤25	≤25
13C-1234678-HpCDD	40-135	40-135	40-135	≤25	≤25	≤25
13C-OCDD	40-135	40-135	40-135	≤25	≤25	≤25
13C-2378-TCDF	40-135	40-135	40-135	≤25	≤25	≤25
13C-12378-PeCDF	40-135	40-135	40-135	≤25	≤25	≤25
13C-123478-HxCDF	40-135	40-135	40-135	≤25	≤25	≤25
13C-1234678-HpCDF	40-135	40-135	40-135	≤25	≤25	≤25

Note: Soils are reported as dry-weight and tissues are reported as wet-weight.

Acceptance Criteria**1613B****Laboratory Control Sample Criteria (LCS & LCSD)**

Compounds	Accuracy (% Recovery)			Precision (% Difference)		
	Water	Soil	Tissue	Water	Soil	Tissue
2378-TCDD	67-158	67-158	67-158	≤50	≤50	≤50
12378-PeCDD	70-142	70-142	70-142	≤50	≤50	≤50
123478-HxCDD	70-164	70-164	70-164	≤50	≤50	≤50
123678-HxCDD	76-134	76-134	76-134	≤50	≤50	≤50
123789-HxCDD	64-162	64-162	64-162	≤50	≤50	≤50
1234678-HpCDD	70-140	70-140	70-140	≤50	≤50	≤50
OCDD	78-144	78-144	78-144	≤50	≤50	≤50
2378-TCDF	75-158	75-158	75-158	≤50	≤50	≤50
12378-PeCDF	80-134	80-134	80-134	≤50	≤50	≤50
23478-PeCDF	68-160	68-160	68-160	≤50	≤50	≤50
123478-HxCDF	72-134	72-134	72-134	≤50	≤50	≤50
123678-HxCDF	84-130	84-130	84-130	≤50	≤50	≤50
123789-HxCDF	78-130	78-130	78-130	≤50	≤50	≤50
234678-HxCDF	70-156	70-156	70-156	≤50	≤50	≤50
1234678-HpCDF	82-132	82-132	82-132	≤50	≤50	≤50
1234789-HpCDF	78-138	78-138	78-138	≤50	≤50	≤50
OCDF	63-170	63-170	63-170	≤50	≤50	≤50
13C-2378-TCDD	25-164	25-164	25-164	≤50	≤50	≤50
13C-12378-PeCDD	25-181	25-181	25-181	≤50	≤50	≤50
13C-123478-HxCDD	32-141	32-141	32-141	≤50	≤50	≤50
13C-123678-HxCDD	28-130	28-130	28-130	≤50	≤50	≤50
13C-1234678-HpCDD	23-140	23-140	23-140	≤50	≤50	≤50
13C-OCDD	17-157	17-157	17-157	≤50	≤50	≤50
13C-2378-TCDF	24-169	24-169	24-169	≤50	≤50	≤50
13C-12378-PeCDF	24-185	24-185	24-185	≤50	≤50	≤50
13C-23478-PeCDF	21-178	21-178	21-178	≤50	≤50	≤50
13C-123478-HxCDF	26-152	26-152	26-152	≤50	≤50	≤50
13C-123678-HxCDF	26-123	26-123	26-123	≤50	≤50	≤50
13C-234678-HxCDF	28-136	28-136	28-136	≤50	≤50	≤50
13C-1234678-HpCDF	28-143	28-143	28-143	≤50	≤50	≤50
13C-1234789-HpCDF	26-138	26-138	26-138	≤50	≤50	≤50

Acceptance Criteria**8280A****Laboratory Control Sample Criteria (LCS & LCSD)**

Compounds	Accuracy (% Recovery)			Precision (% Difference)		
	Water	Soil	Tissue	Water	Soil	Tissue
2378-TCDD	50-150	50-150	50-150	≤20	≤20	≤20
12378-PeCDD	50-150	50-150	50-150	≤20	≤20	≤20
123678-HxCDD	50-150	50-150	50-150	≤20	≤20	≤20
123478-HxCDD	50-150	50-150	50-150	≤20	≤20	≤20
123789-HxCDD	50-150	50-150	50-150	≤20	≤20	≤20
1234678-HpCDD	50-150	50-150	50-150	≤20	≤20	≤20
OCDD	50-150	50-150	50-150	≤20	≤20	≤20
2378-TCDF	50-150	50-150	50-150	≤20	≤20	≤20
12378-PeCDF	50-150	50-150	50-150	≤20	≤20	≤20
23478-PeCDF	50-150	50-150	50-150	≤20	≤20	≤20
123678-HxCDF	50-150	50-150	50-150	≤20	≤20	≤20
123789-HxCDF	50-150	50-150	50-150	≤20	≤20	≤20
123478-HxCDF	50-150	50-150	50-150	≤20	≤20	≤20
234678-HxCDF	50-150	50-150	50-150	≤20	≤20	≤20
1234678-HpCDF	50-150	50-150	50-150	≤20	≤20	≤20
1234789-HpCDF	50-150	50-150	50-150	≤20	≤20	≤20
OCDF	50-150	50-150	50-150	≤20	≤20	≤20
13C-2378-TCDD	25-150	25-150	25-150	≤20	≤20	≤20
13C-123678-HxCDD	25-150	25-150	25-150	≤20	≤20	≤20
13C-OCDD	25-150	25-150	25-150	≤20	≤20	≤20
13C-2378-TCDF	25-150	25-150	25-150	≤20	≤20	≤20
13C-1234678-HpCDF	25-150	25-150	25-150	≤20	≤20	≤20

Note: Soils/solids are reported as dry-weight and tissues are reported as wet-weight.

Acceptance Criteria

23/TO-9A

Laboratory Control Sample Criteria (LCS & LCSD)

Compounds	Accuracy (% Recovery)	Precision (% Difference)
	Air	Air
2378-TCDD	70-130	≤30
12378-PeCDD	70-130	≤30
123478-HxCDD	70-130	≤30
123678-HxCDD	70-130	≤30
123789-HxCDD	70-130	≤30
1234678-HpCDD	70-130	≤30
OCDD	70-130	≤30
2378-TCDF	70-130	≤30
12378-PeCDF	70-130	≤30
23478-PeCDF	70-130	≤30
123478-HxCDF	70-130	≤30
123678-HxCDF	70-130	≤30
123789-HxCDF	70-130	≤30
234678-HxCDF	70-130	≤30
1234678-HpCDF	70-130	≤30
1234789-HpCDF	70-130	≤30
OCDF	70-130	≤30
13C-2378-TCDD	50-120	≤30
13C-12378-PeCDD	50-120	≤30
13C-123678-HxCDD	50-120	≤30
13C-1234678-HpCDD	40-120	≤30
13C-OCDD	40-120	≤30
13C-2378-TCDF	50-120	≤30
13C-12378-PeCDF	50-120	≤30
13C-123678-HxCDF	50-120	≤30
13C-1234789-HpCDF	40-120	≤30
13C-123478-HxCDD	50-120	≤30
13C-23478-PeCDF	50-120	≤30
13C-123478-HxCDF	50-120	≤30
13C-1234789-HpCDF	40-120	≤30

Acceptance Criteria

1668A

Laboratory Control Sample Criteria (LCS & LCSD)

Chlorination Level	Accuracy (% Recovery)			Precision (% Difference)		
	Water	Soil	Tissue	Water	Soil	Tissue
Monochlorobiphenyl	15-150	15-150	15-150	≤50	≤50	≤50
Dichlorobiphenyl	50-150	50-150	50-150	≤50	≤50	≤50
Trichlorobiphenyl	50-150	50-150	50-150	≤50	≤50	≤50
Tetrachlorobiphenyl	50-150	50-150	50-150	≤50	≤50	≤50
Pentachlorobiphenyl	50-150	50-150	50-150	≤50	≤50	≤50
Hexachlorobiphenyl	50-150	50-150	50-150	≤50	≤50	≤50
Heptachlorobiphenyl	50-150	50-150	50-150	≤50	≤50	≤50
Octachlorobiphenyl	50-150	50-150	50-150	≤50	≤50	≤50
Nonachlorobiphenyl	50-150	50-150	50-150	≤50	≤50	≤50
Decachlorobiphenyl	50-150	50-150	50-150	≤50	≤50	≤50
13C-2-MoCB	15-140	15-140	15-140	≤50	≤50	≤50
13C-4-MoCB	15-140	15-140	15-140	≤50	≤50	≤50
13C-2,2'-DiCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-4,4'-DiCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,2',6-TrCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-3,4,4'-TrCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,2',6,6'-TeCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-3,3',4,4'-TeCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-3,4,4',5-TeCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,2',4,6,6'-PeCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,3,3',4,4'-PeCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,3,4,4',5-PeCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,3',4,4',5-PeCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2',3,4,4',5-PeCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-3,3',4,4',5-PeCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,2',4,4',6,6'-HxCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,3,3',4,4',5-HxCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,3,3',4,4',5'-HxCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,3',4,4',5,5'-HxCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-3,3',4,4',5,5'-HxCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,2',3,4',5,6,6'-HpCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2',3,3',4,4',5,5'-HpCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,2',3,3',5,5',6,6'-OxCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,3,3',4,4',5,5',6-OxCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,2',3,3',4,4',5,5',6-NoCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,2',3,3',4,5,5',6,6'-NoCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,2',3,3',4,4',5,5',6,6'-DeCB	25-150	25-150	25-150	≤50	≤50	≤50
13C-2,4,4'-TrCB	30-135	30-135	30-135	≤50	≤50	≤50
13C-2,3,3',5,5'-PeCB	30-135	30-135	30-135	≤50	≤50	≤50
13C-2,2',3,3',5,5',6-HpCB	30-135	30-135	30-135	≤50	≤50	≤50

Appendix D: Abbreviations and Data Qualifiers

Abbreviations, acronyms and definitions

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

Data Qualifiers (Flags)

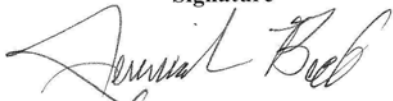

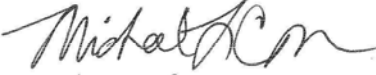


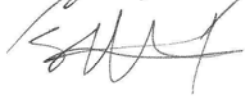


- **B** Indicates the associated analyte is found in the method blank, as well as in the sample.
- **C** Confirmation of the TCDF compound: When 2378-TCDF is detected on the DB-5 column, confirmation analyses are performed on a second column (DB-225). The results from both the DB-5 column and the DB-225 column are included in this data package. The results from the DB-225 analyses should be used to evaluate the 2378-TCDF in the samples. The confirmed result should be used in determining the TEQ value for TCDF.
- **E** Indicates an estimated value – used when the analyte concentration exceeds the upper end of the linear calibration range.
- **J** Indicates an estimated value – used when the analyte concentration is below the method reporting limit (MRL) and above the estimated detection limit (EDL).
- **K** EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.
- **U** Indicates the compound was analyzed and not detected
- **Y** Samples that had recoveries of labeled standards outside the acceptance limits are flagged with 'Y'. In all cases, the signal-to-noise ratios are greater than 10:1, making these data acceptable.
- **ND** Indicates concentration is reported as 'Not Detected.'
- **S** Peak is saturated; data not reportable.
- **Q** Lock-mass interference by ether compounds.

Appendix E: Current Certifications (dated 08/27/08)**Laboratory Certifications****2008 - 2009**

STATE/PROGRAM	AGENCY	CERT#	EXP DATE	CERTIFIED?
ARIZONA	AZ-DHS	AZ0725	05/27/09	Yes
ARKANSAS	ADEQ	08-056-0	06/16/09	Yes
CALIFORNIA	CA-ELAP	2452	02/28/09	Yes
FLORIDA/NELAP	FL-DOHS	E87611	06/30/09	Yes
HAWAII	HI-DOH	N/A	06/30/09	Yes
ILLINOIS/NELAP	IL-EPA	002122	10/06/09	Yes
LOUISIANA/NELAP	LELAP	03048	06/30/09	Yes
MAINE	ME-DOHS	TX901	06/05/10	Yes
MINNESOTA	MDH	048-999-427	03/25/10	Yes
NEVADA	NDEP	N/A	07/31/09	Yes - Extension
NEW JERSEY	NJDEP	TX008	06/30/09	Yes
NEW YORK/NELAP	NY-DOH	11707	04/01/09	Yes
NFESC/NAVY	NFESC	N/A	01/09/10	Yes
OKLAHOMA	OKDEQ		08/31/09	Yes
OREGON/NELAP	ORELAP	TX200002-005	03/24/09	Yes
TENNESSEE	TNDEC	04016	06/30/09	Yes
TEXAS/NELAP	TCEQ	T104704216-06-TX	06/30/09	Yes
UTAH/NELAP	UTELCP	COLU2	06/30/09	Yes
SOIL IMPORT PERMIT	USDA	S-76664	12/31/09	Yes
WASHINGTON/NELAP	WA-Ecology	C291	11/14/08	Yes
WEST VIRGINIA	WVDEP	347	06/30/09	Yes

Appendix F: CAS/Houston Signatories

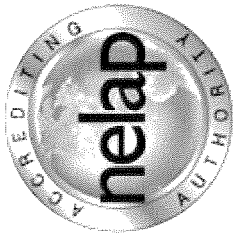
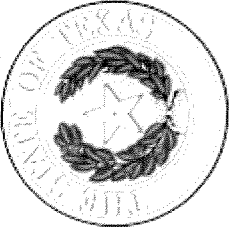
Columbia Analytical Services, Inc. Houston Signatories

Analyst	Signature	Initials
Jeremiah Beck		JB
Andrew Biddle		AS
Darren Biles	Darren Biles	DB
Nicole Brown	Nicole Brown	NB
Michael Cosson		MC
Karen Crawford	Karen Crawford	KC
Gisela Cruz	Gisela Cruz	GC
Rolando Diaz		RD
Christopher Elhardt	Christopher E. Elhardt	CE
Alexander Ennis	Alexander Ennis	AE
Claire Freemyer		CF
Jane Freemyer	Jane Freemyer	JF
Arthi Kodur	Arthi Kodur	AK
Xiangqiu Liang	Xiangqiu Liang	KL
Stefan Malhotra		SM
Pavai Shanmugam	P. Gnanapouran	PS
Karen Verschoor	Karen Verschoor	KV
Lan Le		LL
Joseph Diaz		JD

Appendix G: List of Current SOPs

Preparation of SOPs	ADM-SOP
Document Control	ADM-DOC_CTRL
Documentation of Training	ADM-TRANDOC
Purchasing Through CAS Purchasing Department in Kelso	ADM-PUR
Checking New Lots of Chemicals for Contamination	ADM-CTMN
Sample Batches	ADM-BATCH
Making Entries into Logbooks and onto Benchsheets	ADM-DATANTRY
Determination of Method Detection Limits	ADM-MDL
Significant Figures	ADM-SIGFIG
Determination of Control Limits	ADM-CTRL_LIM
Manual Integration of Chromatographic Peaks	ADM-INT
Corrective Action	ADM_CA
Handling Customer Feedback	ADM-FDBK
Software Quality Assurance Plan	ADM_SQAP
Preparation of Electronic-Data for Organic Analyses for Electronic-Data Audits	ADM-E_DATA
Estimation of Uncertainty Measurements	ADM-UNCERT
Confirmation of Organic Analyte Identification and Quantitation	ADM-CONFIRM
Managerial Review of the Laboratory's Quality Systems	ADM-MGMTRVW
Data Recall	ADM-DATARECALL
Proficiency Testing Sample Analysis	ADM-PTS
Sample Receiving	SMO-WET
Waste Disposal	SMO-WASTDISP
HRMS Data Review & Reporting	HRMS-DATAREV
Data Archiving - Reports	REPORT-ARCH
Chemical Hygiene Plan	CHP
Bottle Order Preparation and Shipping	SMO-BOT
Washing Glassware	SMO-WASH
Archiving Data for HRMS	ARCH_HRMS
Air Sampling Trap Preparation	PREP_XAD_TRAP
Percent Lipids in Tissues or Solids	PREP-LIPIDS
Method 1613B: Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS	HRMS-1613B
Method 8290: Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	HRMS-8290
Method 23: Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	HRMS-M23
Method 8280A: Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/LRMS	HRMS-8280A
Method 1668A: Chlorinated Biphenyl Congeners in Water, Soil, Sediment Biosolids and Tissue by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry (GC/HRMS)	HRMS-1668A
Method TO9A: Dibenzo-p-Dioxins and Dibenzofurans in Ambient Air	HRMS-TO9A
Method 428: Determination of Polychlorinated dibenzo-p-dioxin (PCDD), Polychlorinated Dibenzo-p-furan (PCDF) and Polychlorinated biphenyl Emissions from Stationary Sources	HRMS/CA-428
Method VCP - Tetra- Through Octa-Chlorinated Dioxins and Furans By Isotope Dilution GC/HRMS	HRMS-VCP
Method 429: Determination of Polycyclic Aromatic Hydrocarbon (PAH) Emissions From Stationary Sources	HRMS/CA-429
Screening of Dioxins & Furans	D&F Screening
Quality Assurance Manual/CAS-Houston	QAM
Calibration Check of Measuring Devices	WET-DALCYK
Best Practices Initiative #2 Project Management	HOU-PM
Internal Quality Audits	QA-INT-AUD
Total Solids	SMO-TS

Changed	Item	Revisions (from/to)	Date/initials
Cover letter	Address changed	6-7	11/17/07jf
Table 7-1	Holding times corrected	6-7	11/17/07jf
Format	Consistent	7.1-7.2	08/27/08asb
Minor text alterations	QA Manager to QAPM	7.1-7.2	08/27/08asb
Acceptance Criteria	Added	7.1-7.2	08/27/08asb



Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

COLUMBIA ANALYTICAL SERVICES, INC. - HOUSTON
19408 PARK ROW, SUITE 320
HOUSTON, TX 77084-4949

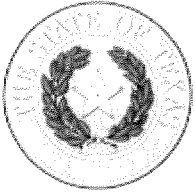
in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Certificate Number: T104704216-08-TX
Effective Date: 7/1/2008
Expiration Date: 6/30/2009

A handwritten signature in black ink, appearing to read "D. B. White".

Executive Director
Texas Commission on Environmental Quality



Texas Commission on Environmental Quality



NELAP - Recognized Laboratory Fields of Accreditation

Columbia Analytical Services, Inc. - Houston
19408 Park Row, Suite 320
Houston, TX 77084-4949

Certificate **T104704216-08-TX**
Issue Date: **7/1/2008**
Expiration Date: **6/30/2009**

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: Drinking Water

Category / Method: EPA 1613

Analytes:	Code	AA	Analytes:	Code	AA
2 3 7 8-Tetrachloro dibenzo- p-dioxin	9618	TX			

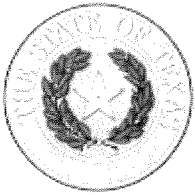
Matrix: Solid and Chemical Materials

Category / Method: EPA 1668

Analytes:	Code	AA	Analytes:	Code	AA
Decachlorobiphenyl	9105	TX	Dichlorobiphenyls	464	TX
Heptachlorobiphenyls	486	TX	Hexachlorobiphenyls	487	TX
Monochlorobiphenyls	501	TX	Nonachlorobiphenyls	507	TX
Octachlorobiphenyls	508	TX	Pentachlorobiphenyls	515	TX
Tetrachlorobiphenyls	528	TX	Trichlorobiphenyls	541	TX

Category / Method: EPA 8280A

Analytes:	Code	AA	Analytes:	Code	AA
1 2 3 4 6 7 8 9-Octachlorodibenzofuran (OCDF)	9516	TX	1 2 3 4 6 7 8 9-Octachlorodibenzo-p-dioxin (OCDD)	9519	TX
1 2 3 4 6 7 8-Heptachlorodibenzofuran (1 2 3 4 6 7 8-hpcdf)	9420	TX	1 2 3 4 6 7 8-Heptachlorodibenzo-p-dioxin (1 2 3 4 6 7 8-hpcdd)	9426	TX
1 2 3 4 7 8 9-Heptachlorodibenzofuran (1 2 3 4 7 8 9-hpcdf)	9423	TX	1 2 3 4 7 8-Hxcdd	9453	TX
1 2 3 4 7 8-Hxcdf	9471	TX	1 2 3 6 7 8-Hxcdd	9456	TX
1 2 3 6 7 8-Hxcdf	9474	TX	1 2 3 7 8 9-Hxcdd	9459	TX
1 2 3 7 8 9-Hxcdf	9477	TX	1 2 3 7 8-Pecdd	9540	TX
1 2 3 7 8-Pecdf	9543	TX	2 3 4 6 7 8-Hxcdf	9480	TX
2 3 4 7 8-Pecdf	9549	TX	2 3 7 8-TCDD	9606	TX
2 3 7 8-TCDF	9612	TX	Hpcdd total	9438	TX
Hpcdf total	9444	TX	Hxcdd total	9468	TX
Hxcdf total	9483	TX	Pecdd total	9555	TX
Pecdf total	9552	TX	TCDD total	9609	TX
TCDF total	9615	TX			



Texas Commission on Environmental Quality



NELAP - Recognized Laboratory Fields of Accreditation

Columbia Analytical Services, Inc. - Houston
19408 Park Row, Suite 320
Houston, TX 77084-4949

Certificate **T104704216-08-TX**
Issue Date: **7/1/2008**
Expiration Date: **6/30/2009**

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: Solid and Chemical Materials

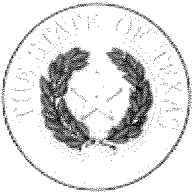
Category / Method: EPA 8290

Analytes:	Code	AA	Analytes:	Code	AA
1 2 3 4 6 7 8 9-Octachlorodibenzofuran (OCDF)	9516	TX	1 2 3 4 6 7 8 9-Octachlorodibenzo-p-dioxin (OCDD)	9519	TX
1 2 3 4 6 7 8-Heptachlorodibenzofuran (1 2 3 4 6 7 8-hpcdf)	9420	TX	1 2 3 4 6 7 8-Heptachlorodibenzo-p-dioxin (1 2 3 4 6 7 8-hpcdd)	9426	TX
1 2 3 4 7 8 9-Heptachlorodibenzofuran (1 2 3 4 7 8 9-hpcdf)	9423	TX	1 2 3 4 7 8-Hxcdd	9453	TX
1 2 3 4 7 8-Hxcdf	9471	TX	1 2 3 6 7 8-Hxcdd	9456	TX
1 2 3 6 7 8-Hxcdf	9474	TX	1 2 3 7 8 9-Hxcdd	9459	TX
1 2 3 7 8 9-Hxcdf	9477	TX	1 2 3 7 8-Pecdd	9540	TX
1 2 3 7 8-Pecdf	9543	TX	2 3 4 6 7 8-Hxcdf	9480	TX
2 3 4 7 8-Pecdf	9549	TX	2 3 7 8-TCDD	9606	TX
2 3 7 8-TCDF	9612	TX	Hpcdd total	9438	TX
Hpcdf total	9444	TX	Hxcdd total	9468	TX
Hxcdf total	9483	TX	Pecdd total	9555	TX
Pecdf total	9552	TX	TCDD total	9609	TX
TCDF total	9615	TX			

Matrix: Non-Potable Water

Category / Method: EPA 1613

Analytes:	Code	AA	Analytes:	Code	AA
1 2 3 4 6 7 8-Heptachlorodibenzofuran (1 2 3 4 6 7 8-hpcdf)	9420	TX	1 2 3 4 6 7 8-Heptachlorodibenzo-p-dioxin (1 2 3 4 6 7 8-hpcdd)	9426	TX
1 2 3 4 7 8 9-Heptachlorodibenzofuran (1 2 3 4 7 8 9-hpcdf)	9423	TX	1 2 3 4 7 8-Hxcdd	9453	TX
1 2 3 4 7 8-Hxcdf	9471	TX	1 2 3 6 7 8-Hxcdd	9456	TX
1 2 3 6 7 8-Hxcdf	9474	TX	1 2 3 7 8 9-Hxcdd	9459	TX
1 2 3 7 8 9-Hxcdf	9477	TX	1 2 3 7 8-Pecdd	9540	TX
1 2 3 7 8-Pecdf	9543	TX	2 3 4 6 7 8-Hxcdf	9480	TX
2 3 4 7 8-Pecdf	9549	TX	2 3 7 8-TCDD	9606	TX
2 3 7 8-TCDF	9612	TX	Hpcdd total	9438	TX
Hpcdf total	9444	TX	Hxcdd total	9468	TX
Hxcdf total	9483	TX	Octachlorodibenzofuran	10294	TX
Octachlorodibenzo-p-dioxin	10310	TX	Pecdd total	9555	TX
Pecdf total	9552	TX	TCDD total	9609	TX
TCDF total	9615	TX			



Texas Commission on Environmental Quality



NELAP - Recognized Laboratory Fields of Accreditation

Columbia Analytical Services, Inc. - Houston
19408 Park Row, Suite 320
Houston, TX 77084-4949

Certificate **T104704216-08-TX**
Issue Date: **7/1/2008**
Expiration Date: **6/30/2009**

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

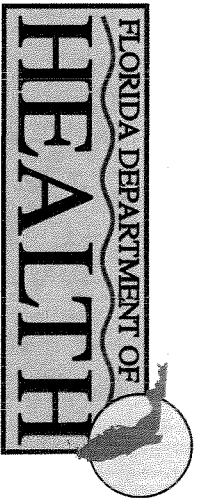
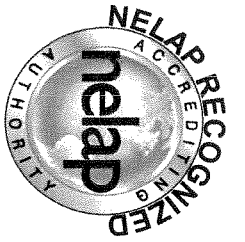
Matrix: Non-Potable Water

Category / Method: EPA 8280A

Analytes:	Code	AA	Analytes:	Code	AA
1 2 3 4 6 7 8 9-Octachlorodibenzofuran (OCDF)	9516	TX	1 2 3 4 6 7 8 9-Octachlorodibenzo-p-dioxin (OCDD)	9519	TX
1 2 3 4 6 7 8-Heptachlorodibenzofuran (1 2 3 4 6 7 8-hpcdf)	9420	TX	1 2 3 4 6 7 8-Heptachlorodibenzo-p-dioxin (1 2 3 4 6 7 8-hpcdd)	9426	TX
1 2 3 4 7 8 9-Heptachlorodibenzofuran (1 2 3 4 7 8 9-hpcdf)	9423	TX	1 2 3 4 7 8-Hxcdd	9453	TX
1 2 3 4 7 8-Hxcdf	9471	TX	1 2 3 6 7 8-Hxcdd	9456	TX
1 2 3 6 7 8-Hxcdf	9474	TX	1 2 3 7 8 9-Hxcdd	9459	TX
1 2 3 7 8 9-Hxcdf	9477	TX	1 2 3 7 8-Pecdd	9540	TX
1 2 3 7 8-Pecdf	9543	TX	2 3 4 6 7 8-Hxcdf	9480	TX
2 3 4 7 8-Pecdf	9549	TX	2 3 7 8-TCDD	9606	TX
2 3 7 8-TCDF	9612	TX	Hpcdd total	9438	TX
Hpcdf total	9444	TX	Hxcdd total	9468	TX
Hxcdf total	9483	TX	Pecdd total	9555	TX
Pecdf total	9552	TX	TCDD total	9609	TX
TCDF total	9615	TX			

Category / Method: EPA 8290

Analytes:	Code	AA	Analytes:	Code	AA
1 2 3 4 6 7 8 9-Octachlorodibenzofuran (OCDF)	9516	TX	1 2 3 4 6 7 8 9-Octachlorodibenzo-p-dioxin (OCDD)	9519	TX
1 2 3 4 6 7 8-Heptachlorodibenzofuran (1 2 3 4 6 7 8-hpcdf)	9420	TX	1 2 3 4 6 7 8-Heptachlorodibenzo-p-dioxin (1 2 3 4 6 7 8-hpcdd)	9426	TX
1 2 3 4 7 8 9-Heptachlorodibenzofuran (1 2 3 4 7 8 9-hpcdf)	9423	TX	1 2 3 4 7 8-Hxcdd	9453	TX
1 2 3 4 7 8-Hxcdf	9471	TX	1 2 3 6 7 8-Hxcdd	9456	TX
1 2 3 6 7 8-Hxcdf	9474	TX	1 2 3 7 8 9-Hxcdd	9459	TX
1 2 3 7 8 9-Hxcdf	9477	TX	1 2 3 7 8-Pecdd	9540	TX
1 2 3 7 8-Pecdf	9543	TX	2 3 4 6 7 8-Hxcdf	9480	TX
2 3 4 7 8-Pecdf	9549	TX	2 3 7 8-TCDD	9606	TX
2 3 7 8-TCDF	9612	TX	Hpcdd total	9438	TX
Hpcdf total	9444	TX	Hxcdd total	9468	TX
Hxcdf total	9483	TX	Pecdd total	9555	TX
Pecdf total	9552	TX	TCDD total	9609	TX
TCDF total	9615	TX			



State of Florida
 Department of Health, Bureau of Laboratories
 This is to certify that

E87611

COLUMBIA ANALYTICAL SERVICES, INC. - TX
 19408 PARK ROW, SUITE 320
 HOUSTON, TX 77084

has complied with Florida Administrative Code 64E-1,
 for the examination of Environmental samples in the following categories

DRINKING WATER - DIOXIN, NON-POTABLE WATER - EXTRACTABLE ORGANICS, NON-POTABLE WATER - PESTICIDES-HERBICIDES-PCB'S, SOLID AND CHEMICAL MATERIALS - EXTRACTABLE ORGANICS, SOLID AND CHEMICAL MATERIALS - PESTICIDES-HERBICIDES-PCB'S, BIOLOGICAL TISSUE - EXTRACTABLE ORGANICS, BIOLOGICAL TISSUE - PESTICIDES-HERBICIDES-PCB'S

Continued certification is contingent upon successful on-going compliance with the NELAC Standards and FAC Rule 64E-1 regulations. Specific methods and analytes certified are cited on the Laboratory Scope of Accreditation for this laboratory and are on file at the Bureau of Laboratories, P. O. Box 210, Jacksonville, Florida 32231. Clients and customers are urged to verify with this agency the laboratory's certification status in Florida for particular methods and analytes.

EFFECTIVE JULY 29, 2008 THROUGH JUNE 30, 2009

Max Saltinger

Max Saltinger, M.D.
 Chief, Bureau of Laboratories
 Florida Department of Health
 DH Form 1697, 7/04
 NON-TRANSFERABLE E87611-07-07/29/2008
 Supersedes all previously issued certificates



Charlie Crist
Governor



Ana M. Viamonte Ros, M.D., M.P.H.
State Surgeon General

Laboratory Scope of Accreditation

Page 1 of 20

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611 EPA Lab Code: TX01411 (713) 266-1599

E87611
Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084

Matrix: Drinking Water

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,3,7,8-TCDD (Dioxin, 2,3,7,8-Tetrachlorodibenzo-p-dioxin)	EPA 1613	Dioxin	NELAP	7/1/2006

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code:

TX01411

(713) 266-1599

E87611

Columbia Analytical Services, Inc. - TX

19408 Park Row, Suite 320

Houston, TX 77084

Matrix: Non-Potable Water

Analyte	Method/Tech	Category	Certification Type	Effective Date
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	EPA 1613	Extractable Organics	NELAP	7/1/2006
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	EPA 1613	Extractable Organics	NELAP	7/1/2006
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-hpcdf)	EPA 1613	Extractable Organics	NELAP	7/1/2006
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-hpcdf)	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-hpcdd)	EPA 1613	Extractable Organics	NELAP	7/1/2006
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-hpcdd)	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-hpcdf)	EPA 1613	Extractable Organics	NELAP	7/1/2006
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-hpcdf)	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,4,7,8-Hxcdd	EPA 1613	Extractable Organics	NELAP	7/1/2006
1,2,3,4,7,8-Hxcdd	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,4,7,8-Hxcdf	EPA 1613	Extractable Organics	NELAP	7/1/2006
1,2,3,4,7,8-Hxcdf	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,6,7,8-Hxcdd	EPA 1613	Extractable Organics	NELAP	7/1/2006
1,2,3,6,7,8-Hxcdd	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,6,7,8-Hxcdf	EPA 1613	Extractable Organics	NELAP	7/1/2006
1,2,3,6,7,8-Hxcdf	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,7,8,9-Hxcdd	EPA 1613	Extractable Organics	NELAP	7/1/2006
1,2,3,7,8,9-Hxcdd	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,7,8,9-Hxcdf	EPA 1613	Extractable Organics	NELAP	7/1/2006
1,2,3,7,8,9-Hxcdf	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,7,8-Pecdd	EPA 1613	Extractable Organics	NELAP	7/1/2006
1,2,3,7,8-Pecdd	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,7,8-Pecdf	EPA 1613	Extractable Organics	NELAP	7/1/2006
1,2,3,7,8-Pecdf	EPA 8290	Extractable Organics	NELAP	7/1/2006
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (BZ 206)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (BZ 194)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5,6'-Nonachlorobiphenyl (BZ 207)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5,6-Octachlorobiphenyl (BZ 195)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (BZ 196)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5-Heptachlorobiphenyl (BZ 170)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084

Matrix: Non-Potable Water

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,2',3,3',4,4',6,6'+2,2',3,3',4,5,6,6'-Octachlorobiphenyls (BZ 197+200)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',6+2,2',3,3',4,5,6-Heptachlorobiphenyls (BZ 171+173)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4'+2,3,4,4',5,6-Hexachlorobiphenyls (BZ EPA 1668 128+166)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4'-Hexachlorobiphenyl (BZ 128)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,5',6,6'-Nonachlorobiphenyl (BZ 208)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,5',6+2,2',3,3',4,5,5',6'-Octachlorobiphenyls (BZ 198+199)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,5'-Heptachlorobiphenyl (BZ 172)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (BZ 201)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,6'-Heptachlorobiphenyl (BZ 174)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,6-Heptachlorobiphenyl (BZ 175)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,6'-Heptachlorobiphenyl (BZ 177)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5+2,2',3,4,4',5'+2,3,3',4',5,6-Hexachlorobiphenyls (BZ 129+138+163)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5'-Hexachlorobiphenyl (BZ 130)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,6,6'-Heptachlorobiphenyl (BZ 176)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,6-Hexachlorobiphenyl (BZ 131)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,6'-Hexachlorobiphenyl (BZ 132)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4-Pentachlorobiphenyl (BZ 82)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,5',6,6'-Octachlorobiphenyl (BZ 202)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,5',6-Heptachlorobiphenyl (BZ 178)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,5'-Hexachlorobiphenyl (BZ 133)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,6,6'-Heptachlorobiphenyl (BZ 179)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,6'+2,2',3,5,5',6+2,2',4,4',5,6'-Hexachlorobiphenyls (BZ 135+151+154)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,6-Hexachlorobiphenyl (BZ 134)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5-Pentachlorobiphenyl (BZ 83)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',6,6'-Hexachlorobiphenyl (BZ 136)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',6-Pentachlorobiphenyl (BZ 84)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3'+2,3',4',6-Tetrachlorobiphenyls (BZ 40+71)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,5',6-Octachlorobiphenyl (BZ 203)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,5'+2,3,3',4',5,5',6-Heptachlorobiphenyls (BZ 180+193)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,5'-Heptachlorobiphenyl (BZ 180)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,6,6'-Octachlorobiphenyl (BZ 204)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,6+2,2',3,4,5,5',6-Heptachlorobiphenyls (BZ 183+185)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

**Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084**

Matrix: Non-Potable Water

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,2',3,4,4',5,6-Heptachlorobiphenyl (BZ 181)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,6'-Heptachlorobiphenyl (BZ 182)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5',6-Heptachlorobiphenyl (BZ 183)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5-Hexachlorobiphenyl (BZ 137)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5'-Hexachlorobiphenyl (BZ 138)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',6,6'-Heptachlorobiphenyl (BZ 184)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',6+2,2',3,4,4',6'-Hexachlorobiphenyls (BZ 139+140)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4'+2,3,4,5,6+2,3,4',5,6-Pentachlorobiphenyls (BZ 85+116+117)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5,5',6-Heptachlorobiphenyl (BZ 187)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5,5'-Hexachlorobiphenyl (BZ 141)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5,5'-Hexachlorobiphenyl (BZ 146)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5,6,6'-Heptachlorobiphenyl (BZ 186)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5,6,6'-Heptachlorobiphenyl (BZ 188)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5,6+2,2',3,4',5',6-Hexachlorobiphenyls (BZ 147+149)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5,6-Hexachlorobiphenyl (BZ 142)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5,6'-Hexachlorobiphenyl (BZ 143)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5',6-Hexachlorobiphenyl (BZ 144)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5,6'-Hexachlorobiphenyl (BZ 148)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5+2,2',3,4,5'+2,2',3,4',5'+2,2',4,4',6-Pentachlorobiphenyls (BZ 86+87+97+100)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5+2,2',4,5,5'+2,3,3',5',6-Pentachlorobiphenyls (BZ 90+101+113)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5'-Pentachlorobiphenyl (BZ 87)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,6,6'-Hexachlorobiphenyl (BZ 145)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',6,6'-Hexachlorobiphenyl (BZ 150)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,6+2,2',3,4',6-Pentachlorobiphenyls (BZ 88+91)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',6'+2,2',4,5,6'-Pentachlorobiphenyls (BZ 98+102)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,6'-Pentachlorobiphenyl (BZ 89)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4-Tetrachlorobiphenyl (BZ 41)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4'-Tetrachlorobiphenyl (BZ 42)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,5',6-Hexachlorobiphenyl (BZ 151)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,5'-Pentachlorobiphenyl (BZ 92)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,6,6'-Hexachlorobiphenyl (BZ 152)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,6+2,2',4,4',6-Pentachlorobiphenyls (BZ 93+100)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,6'-Pentachlorobiphenyl (BZ 94)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code:

TX01411

(713) 266-1599

E87611

Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084

Matrix: Non-Potable Water

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,2',3,5',6-Pentachlorobiphenyl (BZ 95)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5'+2,2',4,4'+2,3,5,6-Tetrachlorobiphenyls (BZ 44+47+65)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5+2,3',5',6-Tetrachlorobiphenyls (BZ 43+73)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5'-Tetrachlorobiphenyl (BZ 44)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,6,6'-Pentachlorobiphenyl (BZ 96)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,6-Tetrachlorobiphenyl (BZ 45)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,6'-Tetrachlorobiphenyl (BZ 46)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3-Trichlorobiphenyl (BZ 16)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',5,5'+2,3',4,4',5',6-Hexachlorobiphenyls (BZ 153+168)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',5,5'-Hexachlorobiphenyl (BZ 153)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',5,6'-Hexachlorobiphenyl (BZ 154)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',5-Pentachlorobiphenyl (BZ 99)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',6,6'-Hexachlorobiphenyl (BZ 155)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,5,5'-Pentachlorobiphenyl (BZ 101)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,5',6-Pentachlorobiphenyl (BZ 103)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,5'+2,3',4,6-Tetrachlorobiphenyls (BZ 49+69)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,5-Tetrachlorobiphenyl (BZ 48)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,5'-Tetrachlorobiphenyl (BZ 49)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,6,6'-Pentachlorobiphenyl (BZ 104)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,6+2,2',5,6'-Tetrachlorobiphenyls (BZ 50+53)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,6'-Tetrachlorobiphenyl (BZ 51)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4-Trichlorobiphenyl (BZ 17)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',5,5'-Tetrachlorobiphenyl (BZ 52)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',5+2,4,6-Trichlorobiphenyls (BZ 18+30)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',5-Trichlorobiphenyl (BZ 18)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',6,6'-Tetrachlorobiphenyl (BZ 54)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',6-Trichlorobiphenyl (BZ 19)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2'-Dichlorobiphenyl (BZ 4)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5,5',6-Octachlorobiphenyl (BZ 205)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5,5'-Heptachlorobiphenyl (BZ 189)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5,6-Heptachlorobiphenyl (BZ 190)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5',6-Heptachlorobiphenyl (BZ 191)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5+2,3,3',4,4',5'-Hexachlorobiphenyls (BZ 156+157)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5-Hexachlorobiphenyl (BZ 156)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5'-Hexachlorobiphenyl (BZ 157)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084

Matrix: Non-Potable Water

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,3,3',4,4',6-Hexachlorobiphenyl (BZ 158)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4'-Pentachlorobiphenyl (BZ 105)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5,5',6-Heptachlorobiphenyl (BZ 192)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5,5'-Hexachlorobiphenyl (BZ 159)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',5,5'-Hexachlorobiphenyl (BZ 162)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5,6-Hexachlorobiphenyl (BZ 160)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5',6-Hexachlorobiphenyl (BZ 161)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',5',6-Hexachlorobiphenyl (BZ 164)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',5+2,3',4',5,5'-Pentachlorobiphenyls (BZ 107+124)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5-Pentachlorobiphenyl (BZ 106)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',5'-Pentachlorobiphenyl (BZ 122)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',6+2,3,4,4',6-Pentachlorobiphenyls (BZ 110+115)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,6-Pentachlorobiphenyl (BZ 109)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',6-Pentachlorobiphenyl (BZ 110)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4-Tetrachlorobiphenyl (BZ 55)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4'-Tetrachlorobiphenyl (BZ 56)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',5,5',6-Hexachlorobiphenyl (BZ 165)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',5,5'-Pentachlorobiphenyl (BZ 111)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',5,6-Pentachlorobiphenyl (BZ 112)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',5-Tetrachlorobiphenyl (BZ 57)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',5'-Tetrachlorobiphenyl (BZ 58)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',6+2,3,3',6+2,4,4',6-Tetrachlorobiphenyls (BZ 59+62+75)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3'+2,4,4'-Trichlorobiphenyls (BZ 20+28)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,4',5,5'-Hexachlorobiphenyl (BZ 167)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,4',5-Pentachlorobiphenyl (BZ 114)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,4',5-Pentachlorobiphenyl (BZ 118)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,4',5'-Pentachlorobiphenyl (BZ 123)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,4'-Tetrachlorobiphenyl (BZ 60)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,4'-Tetrachlorobiphenyl (BZ 66)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,5,5'-Pentachlorobiphenyl (BZ 120)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,5',6-Pentachlorobiphenyl (BZ 121)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4',5+2,4,4',5+2,3',4',5'-Tetrachlorobiphenyls (BZ 70+74+76)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,5-Tetrachlorobiphenyl (BZ 61)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4',5-Tetrachlorobiphenyl (BZ 63)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

**Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084**

Matrix: Non-Potable Water

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,3',4,5-Tetrachlorobiphenyl (BZ 67)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,5'-Tetrachlorobiphenyl (BZ 68)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,6,7,8-Hxcdf	EPA 1613	Extractable Organics	NELAP	7/1/2006
2,3,4,6,7,8-Hxcdf	EPA 8290	Extractable Organics	NELAP	7/1/2006
2,3,4',6-Tetrachlorobiphenyl (BZ 64)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,7,8-Pecdf	EPA 1613	Extractable Organics	NELAP	7/1/2006
2,3,4,7,8-Pecdf	EPA 8290	Extractable Organics	NELAP	7/1/2006
2,3,4+2,3',4'-Trichlorobiphenyls (BZ 21+33)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4'-Trichlorobiphenyl (BZ 22)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4-Trichlorobiphenyl (BZ 25)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',5,5'-Tetrachlorobiphenyl (BZ 72)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',5+2,4,5-Trichlorobiphenyls (BZ 26+29)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,5-Trichlorobiphenyl (BZ 23)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',5-Trichlorobiphenyl (BZ 26)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',5'-Trichlorobiphenyl (BZ 34)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,6-Trichlorobiphenyl (BZ 24)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',6-Trichlorobiphenyl (BZ 27)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,7,8-TCDD	EPA 1613	Extractable Organics	NELAP	7/1/2006
2,3,7,8-TCDD (Dioxin, 2,3,7,8-Tetrachlorodibenzo-p-dioxin)	EPA 8290	Extractable Organics	NELAP	7/1/2006
2,3,7,8-TCDF	EPA 1613	Extractable Organics	NELAP	7/1/2006
2,3,7,8-TCDF	EPA 8290	Extractable Organics	NELAP	7/1/2006
2,3-Dichlorobiphenyl (BZ 5)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3'-Dichlorobiphenyl (BZ 6)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,4,4'-Trichlorobiphenyl (BZ 28)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,4',5-Trichlorobiphenyl (BZ 31)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,4',6-Trichlorobiphenyl (BZ 32)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,4-Dichlorobiphenyl (BZ 7)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,4'-Dichlorobiphenyl (BZ 8)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,5-Dichlorobiphenyl (BZ 9)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,6-Dichlorobiphenyl (BZ 10)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2-Chlorobiphenyl (BZ 1)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,4',5,5'-Hexachlorobiphenyl (BZ 169)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,4',5-Pentachlorobiphenyl (BZ 126)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,4'-Tetrachlorobiphenyl (BZ 77)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,5,5'-Pentachlorobiphenyl (BZ 127)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,5-Tetrachlorobiphenyl (BZ 78)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084

Matrix: Non-Potable Water

Analyte	Method/Tech	Category	Certification Type	Effective Date
3,3',4,5'-Tetrachlorobiphenyl (BZ 79)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4-Trichlorobiphenyl (BZ 35)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',5,5'-Tetrachlorobiphenyl (BZ 80)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',5-Trichlorobiphenyl (BZ 36)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3'-Dichlorobiphenyl (BZ 11)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4,4',5'-Tetrachlorobiphenyl (BZ 81)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4,4'-Trichlorobiphenyl (BZ 37)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4,5-Trichlorobiphenyl (BZ 38)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4',5-Trichlorobiphenyl (BZ 39)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4+3,4'-Dichlorobiphenyls (BZ 12+13)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,5-Dichlorobiphenyl (BZ 14)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3-Chlorobiphenyl (BZ 2)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
4,4'-Dichlorobiphenyl (BZ 15)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
4-Chlorobiphenyl (BZ 3)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
Decachlorobiphenyl (BZ 209)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
Total Heptachlorodibenzofuran	EPA 1613	Extractable Organics	NELAP	7/1/2006
Total Heptachlorodibenzofuran	EPA 8290	Extractable Organics	NELAP	7/1/2006
Total Heptachlorodibenzo-p-dioxin	EPA 1613	Extractable Organics	NELAP	7/1/2006
Total Heptachlorodibenzo-p-dioxin	EPA 8290	Extractable Organics	NELAP	7/1/2006
Total Hexachlorodibenzofuran	EPA 1613	Extractable Organics	NELAP	7/1/2006
Total Hexachlorodibenzofuran	EPA 8290	Extractable Organics	NELAP	7/1/2006
Total Hexachlorodibenzo-p-dioxin	EPA 1613	Extractable Organics	NELAP	7/1/2006
Total Hexachlorodibenzo-p-dioxin	EPA 8290	Extractable Organics	NELAP	7/1/2006
Total Pentachlorodibenzofuran	EPA 1613	Extractable Organics	NELAP	7/1/2006
Total Pentachlorodibenzofuran	EPA 8290	Extractable Organics	NELAP	7/1/2006
Total Pentachlorodibenzo-p-dioxin	EPA 1613	Extractable Organics	NELAP	7/1/2006
Total Pentachlorodibenzo-p-dioxin	EPA 8290	Extractable Organics	NELAP	7/1/2006
Total Tetrachlorodibenzofuran	EPA 1613	Extractable Organics	NELAP	7/1/2006
Total Tetrachlorodibenzofuran	EPA 8290	Extractable Organics	NELAP	7/1/2006
Total Tetrachlorodibenzo-p-dioxin	EPA 1613	Extractable Organics	NELAP	7/1/2006
Total Tetrachlorodibenzo-p-dioxin	EPA 8290	Extractable Organics	NELAP	7/1/2006

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084

Matrix: Solid and Chemical Materials

Analyte	Method/Tech	Category	Certification Type	Effective Date
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-hpcdf)	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-hpcdd)	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-hpcdf)	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,4,7,8-Hxcdd	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,4,7,8-Hxcdf	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,6,7,8-Hxcdd	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,6,7,8-Hxcdf	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,7,8,9-Hxcdd	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,7,8,9-Hxcdf	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,7,8-Pecdd	EPA 8290	Extractable Organics	NELAP	7/1/2006
1,2,3,7,8-Pecdf	EPA 8290	Extractable Organics	NELAP	7/1/2006
2,2',3,3',4,4',5,5',6'-Nonachlorobiphenyl (BZ 206)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5,5',6'-Octachlorobiphenyl (BZ 194)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl (BZ 207)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5,6-Octachlorobiphenyl (BZ 195)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (BZ 196)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5-Heptachlorobiphenyl (BZ 170)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',6,6'+2,2',3,3',4,5,6,6'-Octachlorobiphenyls (BZ 197+200)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',6+2,2',3,3',4,5,6-Heptachlorobiphenyls (BZ 171+173)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4'+2,3,4,4',5,6-Hexachlorobiphenyls (BZ 128+166)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,5',6,6'-Nonachlorobiphenyl (BZ 208)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,5',6+2,2',3,3',4,5,5',6'-Octachlorobiphenyls (BZ 198+199)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,5'-Heptachlorobiphenyl (BZ 172)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (BZ 201)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,6'-Heptachlorobiphenyl (BZ 174)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5',6-Heptachlorobiphenyl (BZ 175)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5',6'-Heptachlorobiphenyl (BZ 177)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5+2,2',3,4,4',5'+2,3,3',4',5,6-Hexachlorobiphenyls (BZ 129+138+163)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5'-Hexachlorobiphenyl (BZ 130)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,6,6'-Heptachlorobiphenyl (BZ 176)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611 EPA Lab Code: TX01411 (713) 266-1599

E87611
Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084

Matrix: Solid and Chemical Materials

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,2',3,3',4,6-Hexachlorobiphenyl (BZ 131)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,6'-Hexachlorobiphenyl (BZ 132)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4-Pentachlorobiphenyl (BZ 82)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,5',6,6'-Octachlorobiphenyl (BZ 202)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,5',6-Heptachlorobiphenyl (BZ 178)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,5'-Hexachlorobiphenyl (BZ 133)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,6,6'-Heptachlorobiphenyl (BZ 179)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,6'+2,2',3,5,5',6+2,2',4,4',5,6'-Hexachloro biphenyls (BZ 135+151+154)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,6-Hexachlorobiphenyl (BZ 134)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5-Pentachlorobiphenyl (BZ 83)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',6,6'-Hexachlorobiphenyl (BZ 136)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',6-Pentachlorobiphenyl (BZ 84)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3'+2,3',4,6-Tetrachlorobiphenyls (BZ 40+71)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,5',6-Octachlorobiphenyl (BZ 203)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,5'+2,3,3',4',5',6-Heptachlorobiphenyl s (BZ 180+193)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,5'-Heptachlorobiphenyl (BZ 180)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,6,6'-Octachlorobiphenyl (BZ 204)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5',6+2,2',3,4,5,5',6-Heptachlorobiphenyl s (BZ 183+185)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,6-Heptachlorobiphenyl (BZ 181)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,6'-Heptachlorobiphenyl (BZ 182)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5-Hexachlorobiphenyl (BZ 137)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5'-Hexachlorobiphenyl (BZ 138)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',6,6'-Heptachlorobiphenyl (BZ 184)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',6+2,2',3,4,4',6'-Hexachlorobiphenyls (BZ 139+140)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4'+2,3,4,5,6+2,3,4',5,6-Pentachlorobiphenyls (BZ 85+116+117)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5,5',6-Heptachlorobiphenyl (BZ 187)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5,5'-Hexachlorobiphenyl (BZ 141)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5,5'-Hexachlorobiphenyl (BZ 146)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5,6,6'-Heptachlorobiphenyl (BZ 186)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5,6,6'-Heptachlorobiphenyl (BZ 188)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5,6+2,2',3,4',5',6-Hexachlorobiphenyls (BZ 147+149)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5,6-Hexachlorobiphenyl (BZ 142)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5,6'-Hexachlorobiphenyl (BZ 143)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084

Matrix: Solid and Chemical Materials

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,2',3,4,5',6'-Hexachlorobiphenyl (BZ 144)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5,6'-Hexachlorobiphenyl (BZ 148)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5+2,2',3,4,5'+2,2',3,4',5'+2,2',4,4',6-Pentachlorobiphenyls (BZ 86+87+97+100)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5+2,2',4,5,5'+2,3,3',5',6-Pentachlorobiphenyls (BZ 90+101+113)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5'-Pentachlorobiphenyl (BZ 87)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,6,6'-Hexachlorobiphenyl (BZ 145)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',6,6'-Hexachlorobiphenyl (BZ 150)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,6+2,2',3,4',6-Pentachlorobiphenyls (BZ 88+91)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',6'+2,2',4,5,6'-Pentachlorobiphenyls (BZ 98+102)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,6'-Pentachlorobiphenyl (BZ 89)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4-Tetrachlorobiphenyl (BZ 41)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4'-Tetrachlorobiphenyl (BZ 42)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,5',6'-Hexachlorobiphenyl (BZ 151)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,5'-Pentachlorobiphenyl (BZ 92)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,6,6'-Hexachlorobiphenyl (BZ 152)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,6+2,2',4,4',6-Pentachlorobiphenyls (BZ 93+100)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,6'-Pentachlorobiphenyl (BZ 94)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5',6-Pentachlorobiphenyl (BZ 95)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5'+2,2',4,4'+2,3,5,6-Tetrachlorobiphenyls (BZ 44+47+65)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5+2,3',5',6-Tetrachlorobiphenyls (BZ 43+73)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5'-Tetrachlorobiphenyl (BZ 44)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,6,6'-Pentachlorobiphenyl (BZ 96)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,6-Tetrachlorobiphenyl (BZ 45)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,6'-Tetrachlorobiphenyl (BZ 46)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3-Trichlorobiphenyl (BZ 16)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',5,5'+2,3',4,4',5',6-Hexachlorobiphenyls (BZ 153+168)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',5,5'-Hexachlorobiphenyl (BZ 153)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',5,6'-Hexachlorobiphenyl (BZ 154)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',5-Pentachlorobiphenyl (BZ 99)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',6,6'-Hexachlorobiphenyl (BZ 155)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,5,5'-Pentachlorobiphenyl (BZ 101)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,5',6-Pentachlorobiphenyl (BZ 103)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,5'+2,3',4,6-Tetrachlorobiphenyls (BZ 49+69)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084

Matrix: Solid and Chemical Materials

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,2',4,5-Tetrachlorobiphenyl (BZ 48)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,5'-Tetrachlorobiphenyl (BZ 49)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,6,6'-Pentachlorobiphenyl (BZ 104)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,6+2,2',5,6'-Tetrachlorobiphenyls (BZ 50+53)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,6'-Tetrachlorobiphenyl (BZ 51)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4-Trichlorobiphenyl (BZ 17)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',5,5'-Tetrachlorobiphenyl (BZ 52)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',5+2,4,6-Trichlorobiphenyls (BZ 18+30)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',5-Trichlorobiphenyl (BZ 18)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',6,6'-Tetrachlorobiphenyl (BZ 54)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',6-Trichlorobiphenyl (BZ 19)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2'-Dichlorobiphenyl (BZ 4)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5,5',6-Octachlorobiphenyl (BZ 205)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5,5'-Heptachlorobiphenyl (BZ 189)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5,6-Heptachlorobiphenyl (BZ 190)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5',6-Heptachlorobiphenyl (BZ 191)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5+2,3,3',4,4',5'-Hexachlorobiphenyls (BZ 156+157)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',6-Hexachlorobiphenyl (BZ 158)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4'-Pentachlorobiphenyl (BZ 105)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5,5',6-Heptachlorobiphenyl (BZ 192)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5,5'-Hexachlorobiphenyl (BZ 159)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',5,5'-Hexachlorobiphenyl (BZ 162)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5,6-Hexachlorobiphenyl (BZ 160)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5',6-Hexachlorobiphenyl (BZ 161)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',5',6-Hexachlorobiphenyl (BZ 164)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',5+2,3',4',5,5'-Pentachlorobiphenyls (BZ 107+124)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5-Pentachlorobiphenyl (BZ 106)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',5'-Pentachlorobiphenyl (BZ 122)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',6+2,3,4,4',6-Pentachlorobiphenyls (BZ 110+115)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,6-Pentachlorobiphenyl (BZ 109)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4-Tetrachlorobiphenyl (BZ 55)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4'-Tetrachlorobiphenyl (BZ 56)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',5,5',6-Hexachlorobiphenyl (BZ 165)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',5,5'-Pentachlorobiphenyl (BZ 111)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',5,6-Pentachlorobiphenyl (BZ 112)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084

Matrix: Solid and Chemical Materials

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,3,3',5-Tetrachlorobiphenyl (BZ 57)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',5'-Tetrachlorobiphenyl (BZ 58)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',6+2,3,3',6+2,4,4',6-Tetrachlorobiphenyls (BZ 59+62+75)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3'+2,4,4'-Trichlorobiphenyls (BZ 20+28)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,4',5,5'-Hexachlorobiphenyl (BZ 167)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,4',5-Pentachlorobiphenyl (BZ 114)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,4',5-Pentachlorobiphenyl (BZ 118)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,4',5'-Pentachlorobiphenyl (BZ 123)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,4'-Tetrachlorobiphenyl (BZ 60)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,4'-Tetrachlorobiphenyl (BZ 66)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,5,5'-Pentachlorobiphenyl (BZ 120)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,5',6-Pentachlorobiphenyl (BZ 121)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4',5+2,4,4',5+2,3',4',5'-Tetrachlorobiphenyls (BZ 70+74+76)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,5-Tetrachlorobiphenyl (BZ 61)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4',5-Tetrachlorobiphenyl (BZ 63)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,5-Tetrachlorobiphenyl (BZ 67)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,5'-Tetrachlorobiphenyl (BZ 68)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,6,7,8-Hxcdf	EPA 8290	Extractable Organics	NELAP	7/1/2006
2,3,4',6-Tetrachlorobiphenyl (BZ 64)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,7,8-Pecdf	EPA 8290	Extractable Organics	NELAP	7/1/2006
2,3,4+2,3',4'-Trichlorobiphenyls (BZ 21+33)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4'-Trichlorobiphenyl (BZ 22)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4-Trichlorobiphenyl (BZ 25)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',5,5'-Tetrachlorobiphenyl (BZ 72)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',5+2,4,5-Trichlorobiphenyls (BZ 26+29)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,5-Trichlorobiphenyl (BZ 23)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',5'-Trichlorobiphenyl (BZ 34)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,6-Trichlorobiphenyl (BZ 24)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',6-Trichlorobiphenyl (BZ 27)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,7,8-TCDD (Dioxin, 2,3,7,8-Tetrachlorodibenzo-p-dioxin)	EPA 8290	Extractable Organics	NELAP	7/1/2006
2,3,7,8-TCDF	EPA 8290	Extractable Organics	NELAP	7/1/2006
2,3-Dichlorobiphenyl (BZ 5)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3'-Dichlorobiphenyl (BZ 6)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,4',5-Trichlorobiphenyl (BZ 31)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,4',6-Trichlorobiphenyl (BZ 32)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

**Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084**

Matrix: Solid and Chemical Materials

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,4-Dichlorobiphenyl (BZ 7)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,4'-Dichlorobiphenyl (BZ 8)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,5-Dichlorobiphenyl (BZ 9)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,6-Dichlorobiphenyl (BZ 10)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2-Chlorobiphenyl (BZ 1)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,4',5,5'-Hexachlorobiphenyl (BZ 169)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,4',5-Pentachlorobiphenyl (BZ 126)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,4'-Tetrachlorobiphenyl (BZ 77)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,5,5'-Pentachlorobiphenyl (BZ 127)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,5-Tetrachlorobiphenyl (BZ 78)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,5'-Tetrachlorobiphenyl (BZ 79)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4-Trichlorobiphenyl (BZ 35)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',5,5'-Tetrachlorobiphenyl (BZ 80)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',5-Trichlorobiphenyl (BZ 36)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3'-Dichlorobiphenyl (BZ 11)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4,4',5-Tetrachlorobiphenyl (BZ 81)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4,4'-Trichlorobiphenyl (BZ 37)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4,5-Trichlorobiphenyl (BZ 38)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4',5-Trichlorobiphenyl (BZ 39)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4+3,4'-Dichlorobiphenyls (BZ 12+13)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,5-Dichlorobiphenyl (BZ 14)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3-Chlorobiphenyl (BZ 2)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
4,4'-Dichlorobiphenyl (BZ 15)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
4-Chlorobiphenyl (BZ 3)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
Decachlorobiphenyl (BZ 209)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
Total Heptachlorodibenzofuran	EPA 8290	Extractable Organics	NELAP	7/1/2006
Total Heptachlorodibenzo-p-dioxin	EPA 8290	Extractable Organics	NELAP	7/1/2006
Total Hexachlorodibenzofuran	EPA 8290	Extractable Organics	NELAP	7/1/2006
Total Hexachlorodibenzo-p-dioxin	EPA 8290	Extractable Organics	NELAP	7/1/2006
Total Pentachlorodibenzofuran	EPA 8290	Extractable Organics	NELAP	7/1/2006
Total Pentachlorodibenzo-p-dioxin	EPA 8290	Extractable Organics	NELAP	7/1/2006
Total Tetrachlorodibenzofuran	EPA 8290	Extractable Organics	NELAP	7/1/2006
Total Tetrachlorodibenzo-p-dioxin	EPA 8290	Extractable Organics	NELAP	7/1/2006

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084

Matrix: Biological Tissue

Analyte	Method/Tech	Category	Certification Type	Effective Date
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	EPA 8290	Extractable Organics	NELAP	7/1/2003
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	EPA 8290	Extractable Organics	NELAP	7/1/2003
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-hpcdf)	EPA 8290	Extractable Organics	NELAP	7/1/2003
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-hpcdd)	EPA 8290	Extractable Organics	NELAP	7/1/2003
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-hpcdf)	EPA 8290	Extractable Organics	NELAP	7/1/2003
1,2,3,4,7,8-Hxcdd	EPA 8290	Extractable Organics	NELAP	7/1/2003
1,2,3,4,7,8-Hxcdf	EPA 8290	Extractable Organics	NELAP	7/1/2003
1,2,3,6,7,8-Hxcdd	EPA 8290	Extractable Organics	NELAP	7/1/2003
1,2,3,6,7,8-Hxcdf	EPA 8290	Extractable Organics	NELAP	7/1/2003
1,2,3,7,8,9-Hxcdd	EPA 8290	Extractable Organics	NELAP	7/1/2003
1,2,3,7,8,9-Hxcdf	EPA 8290	Extractable Organics	NELAP	7/1/2003
1,2,3,7,8-Pecdd	EPA 8290	Extractable Organics	NELAP	7/1/2003
1,2,3,7,8-Pecdf	EPA 8290	Extractable Organics	NELAP	7/1/2003
2,2',3,3',4,4',5,5',6'-Nonachlorobiphenyl (BZ 206)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5,5',6'-Octachlorobiphenyl (BZ 194)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5,5',6'-Nonachlorobiphenyl (BZ 207)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (BZ 195)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (BZ 196)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',5-Heptachlorobiphenyl (BZ 170)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',6,6'+2,2',3,3',4,5,6,6'-Octachlorobiphenyls (BZ 197+200)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4',6+2,2',3,3',4,5,6-Heptachlorobiphenyls (BZ 171+173)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,4'+2,3,4,4',5,6-Hexachlorobiphenyls (BZ 128+166)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,5',6,6'-Nonachlorobiphenyl (BZ 208)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,5',6+2,2',3,3',4,5,5',6'-Octachlorobiphenyls (BZ 198+199)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,5'-Heptachlorobiphenyl (BZ 172)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (BZ 201)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,6'-Heptachlorobiphenyl (BZ 174)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,6'-Heptachlorobiphenyl (BZ 175)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5,6'-Heptachlorobiphenyl (BZ 177)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5+2,2',3,4,4',5'+2,3,3',4',5,6-Hexachlorobiphenyls (BZ 129+138+163)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,5'-Hexachlorobiphenyl (BZ 130)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,6,6'-Heptachlorobiphenyl (BZ 176)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084

Matrix: Biological Tissue

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,2',3,3',4,6'-Hexachlorobiphenyl (BZ 131)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4,6'-Hexachlorobiphenyl (BZ 132)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',4-Pentachlorobiphenyl (BZ 82)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,5',6,6'-Octachlorobiphenyl (BZ 202)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,5',6-Heptachlorobiphenyl (BZ 178)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,5'-Hexachlorobiphenyl (BZ 133)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,6,6'-Heptachlorobiphenyl (BZ 179)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,6'+2,2',3,5',6+2,2',4,4',5,6'-Hexachloro biphenyls (BZ 135+151+154)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5,6-Hexachlorobiphenyl (BZ 134)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',5-Pentachlorobiphenyl (BZ 83)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',6,6'-Hexachlorobiphenyl (BZ 136)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3',6-Pentachlorobiphenyl (BZ 84)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,3'+2,3',4',6-Tetrachlorobiphenyls (BZ 40+71)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,5',6-Octachlorobiphenyl (BZ 203)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,5'+2,3,3',4',5,5',6-Heptachlorobiphenyls (BZ 180+193)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,5'-Heptachlorobiphenyl (BZ 180)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,6,6'-Octachlorobiphenyl (BZ 204)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5',6+2,2',3,4,5,5',6-Heptachlorobiphenyls (BZ 183+185)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,6-Heptachlorobiphenyl (BZ 181)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5,6'-Heptachlorobiphenyl (BZ 182)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5-Hexachlorobiphenyl (BZ 137)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',5'-Hexachlorobiphenyl (BZ 138)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',6,6'-Heptachlorobiphenyl (BZ 184)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4',6+2,2',3,4,4',6'-Hexachlorobiphenyls (BZ 139+140)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,4'+2,3,4,5,6+2,3,4',5,6-Pentachlorobiphenyls (BZ 85+116+117)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5,5',6-Heptachlorobiphenyl (BZ 187)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5,5'-Hexachlorobiphenyl (BZ 141)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5,5'-Hexachlorobiphenyl (BZ 146)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5,6,6'-Heptachlorobiphenyl (BZ 186)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5,6,6'-Heptachlorobiphenyl (BZ 188)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5,6+2,2',3,4',5',6-Hexachlorobiphenyls (BZ 147+149)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5,6-Hexachlorobiphenyl (BZ 142)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5,6'-Hexachlorobiphenyl (BZ 143)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

Columbia Analytical Services, Inc. - TX

19408 Park Row, Suite 320

Houston, TX 77084

Matrix: Biological Tissue

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,2',3,4,5',6'-Hexachlorobiphenyl (BZ 144)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5,6'-Hexachlorobiphenyl (BZ 148)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5+2,2',3,4,5'+2,2',3,4',5'+2,2',4,4',6-Pentachlorobiphenyls (BZ 86+87+97+100)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',5+2,2',4,5,5'+2,3,3',5',6-Pentachlorobiphenyls (BZ 90+101+113)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,5'-Pentachlorobiphenyl (BZ 87)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,6,6'-Hexachlorobiphenyl (BZ 145)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',6,6'-Hexachlorobiphenyl (BZ 150)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,6+2,2',3,4',6-Pentachlorobiphenyls (BZ 88+91)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4',6'+2,2',4,5,6'-Pentachlorobiphenyls (BZ 98+102)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4,6'-Pentachlorobiphenyl (BZ 89)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4-Tetrachlorobiphenyl (BZ 41)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,4'-Tetrachlorobiphenyl (BZ 42)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,5',6'-Hexachlorobiphenyl (BZ 151)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,5'-Pentachlorobiphenyl (BZ 92)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,6,6'-Hexachlorobiphenyl (BZ 152)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,6+2,2',4,4',6-Pentachlorobiphenyls (BZ 93+100)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5,6'-Pentachlorobiphenyl (BZ 94)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5',6-Pentachlorobiphenyl (BZ 95)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5'+2,2',4,4'+2,3,5,6-Tetrachlorobiphenyls (BZ 44+47+65)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5+2,3',5',6-Tetrachlorobiphenyls (BZ 43+73)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,5'-Tetrachlorobiphenyl (BZ 44)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,6,6'-Pentachlorobiphenyl (BZ 96)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,6-Tetrachlorobiphenyl (BZ 45)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3,6'-Tetrachlorobiphenyl (BZ 46)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',3-Trichlorobiphenyl (BZ 16)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',5,5'+2,3',4,4',5',6'-Hexachlorobiphenyls (BZ 153+168)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',5,5'-Hexachlorobiphenyl (BZ 153)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',5,6'-Hexachlorobiphenyl (BZ 154)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',5-Pentachlorobiphenyl (BZ 99)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,4',6,6'-Hexachlorobiphenyl (BZ 155)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,5,5'-Pentachlorobiphenyl (BZ 101)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,5',6-Pentachlorobiphenyl (BZ 103)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,5'+2,3',4,6-Tetrachlorobiphenyls (BZ 49+69)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084

Matrix: Biological Tissue

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,2',4,5-Tetrachlorobiphenyl (BZ 48)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,5'-Tetrachlorobiphenyl (BZ 49)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,6,6'-Pentachlorobiphenyl (BZ 104)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,6+2,2',5,6'-Tetrachlorobiphenyls (BZ 50+53)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4,6'-Tetrachlorobiphenyl (BZ 51)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',4-Trichlorobiphenyl (BZ 17)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',5,5'-Tetrachlorobiphenyl (BZ 52)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',5+2,4,6-Trichlorobiphenyls (BZ 18+30)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',5-Trichlorobiphenyl (BZ 18)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',6,6'-Tetrachlorobiphenyl (BZ 54)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2',6-Trichlorobiphenyl (BZ 19)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,2'-Dichlorobiphenyl (BZ 4)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5,5',6-Octachlorobiphenyl (BZ 205)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5,5'-Heptachlorobiphenyl (BZ 189)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5,6-Heptachlorobiphenyl (BZ 190)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5',6-Heptachlorobiphenyl (BZ 191)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',5+2,3,3',4,4',5'-Hexachlorobiphenyls (BZ 156+157)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4',6-Hexachlorobiphenyl (BZ 158)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,4'-Pentachlorobiphenyl (BZ 105)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5,5',6-Heptachlorobiphenyl (BZ 192)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5,5'-Hexachlorobiphenyl (BZ 159)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',5,5'-Hexachlorobiphenyl (BZ 162)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5,6-Hexachlorobiphenyl (BZ 160)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5',6-Hexachlorobiphenyl (BZ 161)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',5',6-Hexachlorobiphenyl (BZ 164)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',5+2,3',4',5,5'-Pentachlorobiphenyls (BZ 107+124)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,5-Pentachlorobiphenyl (BZ 106)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',5'-Pentachlorobiphenyl (BZ 122)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4',6+2,3,4,4',6-Pentachlorobiphenyls (BZ 110+115)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4,6-Pentachlorobiphenyl (BZ 109)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4-Tetrachlorobiphenyl (BZ 55)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',4'-Tetrachlorobiphenyl (BZ 56)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',5,5',6-Hexachlorobiphenyl (BZ 165)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',5,5'-Pentachlorobiphenyl (BZ 111)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',5,6-Pentachlorobiphenyl (BZ 112)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code: TX01411

(713) 266-1599

E87611

Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084

Matrix: Biological Tissue

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,3,3',5'-Tetrachlorobiphenyl (BZ 57)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',5'-Tetrachlorobiphenyl (BZ 58)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3',6+2,3,3',6+2,4,4',6-Tetrachlorobiphenyls (BZ 59+62+75)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,3'+2,4,4'-Trichlorobiphenyls (BZ 20+28)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,4',5,5'-Hexachlorobiphenyl (BZ 167)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,4',5-Pentachlorobiphenyl (BZ 114)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,4',5-Pentachlorobiphenyl (BZ 118)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,4',5'-Pentachlorobiphenyl (BZ 123)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,4'-Tetrachlorobiphenyl (BZ 60)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,4'-Tetrachlorobiphenyl (BZ 66)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,5,5'-Pentachlorobiphenyl (BZ 120)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,5,6-Pentachlorobiphenyl (BZ 121)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,5+2,4,4',5+2,3',4',5'-Tetrachlorobiphenyls (BZ 70+74+76)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,5-Tetrachlorobiphenyl (BZ 61)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4',5-Tetrachlorobiphenyl (BZ 63)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,5-Tetrachlorobiphenyl (BZ 67)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4,5'-Tetrachlorobiphenyl (BZ 68)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,6,7,8-Hxcdf	EPA 8290	Extractable Organics	NELAP	7/1/2003
2,3,4',6-Tetrachlorobiphenyl (BZ 64)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4,7,8-Pecdf	EPA 8290	Extractable Organics	NELAP	7/1/2003
2,3,4+2,3',4'-Trichlorobiphenyls (BZ 21+33)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,4'-Trichlorobiphenyl (BZ 22)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',4-Trichlorobiphenyl (BZ 25)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',5,5'-Tetrachlorobiphenyl (BZ 72)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',5+2,4,5-Trichlorobiphenyls (BZ 26+29)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,5-Trichlorobiphenyl (BZ 23)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',5'-Trichlorobiphenyl (BZ 34)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,6-Trichlorobiphenyl (BZ 24)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3',6-Trichlorobiphenyl (BZ 27)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3,7,8-TCDD (Dioxin, 2,3,7,8-Tetrachlorodibenzo-p-dioxin)	EPA 8290	Extractable Organics	NELAP	7/1/2003
2,3,7,8-TCDF	EPA 8290	Extractable Organics	NELAP	7/1/2003
2,3-Dichlorobiphenyl (BZ 5)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,3'-Dichlorobiphenyl (BZ 6)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,4',5-Trichlorobiphenyl (BZ 31)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,4',6-Trichlorobiphenyl (BZ 32)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009

Laboratory Scope of Accreditation

Attachment to Certificate #: E87611-07, expiration date June 30, 2009. This listing of accredited analytes should be used only when associated with a valid certificate.

State Laboratory ID: E87611

EPA Lab Code:

TX01411

(713) 266-1599

E87611

**Columbia Analytical Services, Inc. - TX
19408 Park Row, Suite 320
Houston, TX 77084**

Matrix: Biological Tissue

Analyte	Method/Tech	Category	Certification Type	Effective Date
2,4-Dichlorobiphenyl (BZ 7)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,4'-Dichlorobiphenyl (BZ 8)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,5-Dichlorobiphenyl (BZ 9)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2,6-Dichlorobiphenyl (BZ 10)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
2-Chlorobiphenyl (BZ 1)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,4',5,5'-Hexachlorobiphenyl (BZ 169)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,4',5-Pentachlorobiphenyl (BZ 126)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,4'-Tetrachlorobiphenyl (BZ 77)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,5,5'-Pentachlorobiphenyl (BZ 127)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,5-Tetrachlorobiphenyl (BZ 78)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4,5'-Tetrachlorobiphenyl (BZ 79)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',4-Trichlorobiphenyl (BZ 35)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',5,5'-Tetrachlorobiphenyl (BZ 80)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3',5-Trichlorobiphenyl (BZ 36)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,3'-Dichlorobiphenyl (BZ 11)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4,4',5-Tetrachlorobiphenyl (BZ 81)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4,4'-Trichlorobiphenyl (BZ 37)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4,5-Trichlorobiphenyl (BZ 38)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4',5-Trichlorobiphenyl (BZ 39)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,4+3,4'-Dichlorobiphenyls (BZ 12+13)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3,5-Dichlorobiphenyl (BZ 14)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
3-Chlorobiphenyl (BZ 2)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
4,4'-Dichlorobiphenyl (BZ 15)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
4-Chlorobiphenyl (BZ 3)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
Decachlorobiphenyl (BZ 209)	EPA 1668	Pesticides-Herbicides-PCB's	NELAP	9/26/2005
Total Heptachlorodibenzofuran	EPA 8290	Extractable Organics	NELAP	7/14/2004
Total Heptachlorodibenzo-p-dioxin	EPA 8290	Extractable Organics	NELAP	7/14/2004
Total Hexachlorodibenzofuran	EPA 8290	Extractable Organics	NELAP	7/14/2004
Total Hexachlorodibenzo-p-dioxin	EPA 8290	Extractable Organics	NELAP	7/14/2004
Total Pentachlorodibenzofuran	EPA 8290	Extractable Organics	NELAP	7/14/2004
Total Pentachlorodibenzo-p-dioxin	EPA 8290	Extractable Organics	NELAP	7/14/2004
Total Tetrachlorodibenzofuran	EPA 8290	Extractable Organics	NELAP	7/14/2004
Total Tetrachlorodibenzo-p-dioxin	EPA 8290	Extractable Organics	NELAP	7/14/2004

Clients and Customers are urged to verify the laboratory's current certification status with the Environmental Laboratory Certification Program.

Issue Date: 7/29/2008

Expiration Date: 6/30/2009