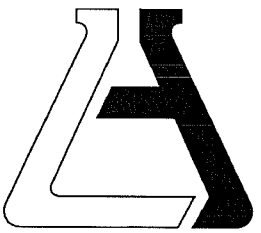

QUALITY ASSURANCE MANUAL

Revision 7/2009

Effective July 2009

Quality Assurance Guidelines Applicable
to all Chemical Testing

ASSOCIATED LABORATORIES
806 N. BATAVIA
ORANGE, CA 92868
714-771-6900

SIGNATURES AND APPROVALS:

PRESIDENT:

Tito Parola — Date: 07/14/09

VICE PRESIDENT:

Robert Webber — Date: 7/13/09

VICE PRESIDENT, TECHNICAL DIRECTOR:

Edward S. Behare, PhD — Date: 7/09/09

MANAGER OF QUALITY ASSURANCE:

Hongling Cao — Date: 7/14/09

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APPENDICES

MANAGEMENT QUALITY POLICY STATEMENT

It is the policy of Associated Laboratories to provide all clients with test results that are accurate and legally defensible. Associated Laboratories management is committed to good professional practices and quality in environmental testing and calibration as documented in the Quality Assurance Manual and all applicable NELAC standards.

This policy has the full support of Management and must be accomplished with the cooperation of all employees. All personnel concerned with environmental testing and calibration activities within the laboratory are required to familiarize themselves with the quality documentation and implement the policies and procedures in their work.

ORGANIZATION AND MANAGEMENT STRUCTURE

Associated Laboratories is a privately owned, independent laboratory incorporated in California (DePar, Inc.). The laboratory is actively managed by three directors. The laboratory is organized into Departments as follows:

1. Sample Receiving
2. Sample Custodian and Sample Storage
3. General Chemistry
4. Metals (ICP/AA)
5. Pesticides Analysis
6. Hydrocarbons Analysis
7. Volatile Organic Compounds GCMS
8. Semi-Volatile Organic Compounds GCMS
9. Microbiology
10. Fish Bioassay
11. TOC / Radioactivity
12. Sampling and Sample Pickup
13. QA Department

Each Department is managed by a Department Supervisor who reports to the Laboratory Directors.

The Quality Assurance Department operates independently from the other Departments. The Quality Assurance Director reports directly to the Laboratory Directors.

An Organization Chart is attached in Appendix G.

The Directors manage all operations of the laboratory and are the official signatories for all Laboratory Analysis Reports and other official documents of the Laboratory. The QA Director is the official signatory for Quality Assurance documents and may also sign Laboratory Analysis Reports. The signature page of this document includes all approved laboratory signatories.

All personnel are employees of the laboratory. Where contracted and additional technical and key support personnel are used, the laboratory ensures that such personnel are supervised and competent and that they work in accordance with the laboratory' s quality system.

RELATIONSHIP BETWEEN MANAGEMENT, TECHNICAL OPERATIONS, SUPPORT SYSTEMS AND THE QUALITY SYSTEM

The Laboratory Directors manage all operations of the laboratory and all technical operations support systems. The Quality System operates independently of other laboratory operations and reports directly to the Laboratory Directors.

JOB DESCRIPTIONS OF KEY STAFF

The job descriptions of key staff are attached in Appendix A.

FACILITIES, MAJOR EQUIPMENT AND SERVICES

ASSOCIATED LABORATORIES is located in two buildings:

Main Office and Laboratory: 806 North Batavia Street, Orange, CA 92868

Annex: 1108 West Barkley, Orange, CA.

Telephone: 714-771-6900
Fax No: 714-538-1209

Associated Laboratories has been in operation for over 80 years and is currently employing 75+ personnel.

Our main facility occupies 10,000 square feet, 8,000 square feet is laboratory space and 2,000 square feet office space. The Annex occupies 7,500 square feet and is maintained free of organic solvent vapors for analysis of volatile organic compounds. The annex also contains the microbiology and metals laboratories.

Refrigeration and freezers are provided for sample storage according to the method requirements. Samples are always stored in refrigerators and freezers separate from analytical standards to avoid cross contamination.

The laboratory monitors, controls and records environmental conditions as required by the relevant specifications, methods and procedures or where they influence the quality of the results. If specific environmental conditions are specified in a test method or by a regulation then the environmental conditions are documented on the sample preparation documents or separate monitoring document. Special procedures are prepared when necessary to meet environmental conditions.

The latest equipment inventory is attached (Appendix D)

ACCREDITATIONS

Associated Laboratories is accreditated by the following agencies:

- State of California, Department of Health Services, Environmental Laboratory Accreditation Program, Berkeley, Certificate No. 1338
- State of Hawaii, Department of Health, Safe Drinking Water Branch.
- State of Nevada, Department of Human Resources, Health Division, Bureau of Licensure and Certification.
- U.S. Army Corps of Engineers, Dept. of the Army, Omaha, NE.
- U.S. Food and Drug Administration, Department of Health and Human Services.

A listing of all test methods accredited by California is attached in Appendix K.

PERSONNEL QUALIFICATIONS

The laboratory management shall ensure the competence of all who operate specific equipment, perform environmental tests and/or calibrations, evaluate results, and sign test reports and calibration certificates. The laboratory management shall be responsible for checking the qualification of person before hiring based on the minimal level of qualification, experience and skills necessary for all positions in the laboratory (see Appendix A, Laboratory Job Descriptions). In addition to education and/or experience, basic laboratory skills such as using a balance, colony counting, aseptic or quantitative techniques shall be considered. Any falsification or inaccuracy of the employment application or educational diploma will be cause for the termination of employment. A copy of educational diplomas or certificates will be required to be included in the personnel file of new employees.

Records of personnel qualifications, training and experience are maintained in the employee training files maintained by the QA Department. The Laboratory training program is detailed below.

PERSONNEL TRAINING PROGRAM

All personnel shall be responsible for complying with all quality assurance/quality control requirements that pertain to their organizational/technical function. Each technical staff member must have a combination of experience and education to adequately demonstrate a specific knowledge of their particular function and a general knowledge of laboratory operations, test methods, quality assurance/quality control procedures and records management.

All current as well as new technical personnel are required to become familiar with the the following documents:

Laboratory Safety Manual - A formalized laboratory safety training course has been established, including a video discussion of safety and a written test. An attendance log and the test results are filed in the Employee Safety Documentation File. Each employee is also given a copy of the Laboratory Safety Manual.

Quality Assurance Manual - A copy of the Quality Assurance Manual is available in all departments. All employees are required to understand and follow the appropriate Quality Assurance guidelines and procedures.

Standard Operating Procedures - Standard Operating Procedures (SOP's) are available to all analysts for most analytical methods. For analytical methods, the SOP provides details regarding specific procedures and QA acceptance limits. SOP's are also available for most laboratory operations. Analysts are required to understand and follow the standard method requirements as detailed in the SOP for each analytical method. Each SOP is reviewed at least annually by the analysts and department manager to insure that the SOP accurately describes the analytical procedure. All SOP's are approved by the department manager and the QA Director.

The Department Supervisor is responsible for ensuring that all department personnel read and understand the Safety Manual, QA Manual, standard methods and appropriate SOP's. Completion of these requirements and all other specific training are documented in the employee training records. Training records are filed in the employee training file maintained for each technical employee. Successful completion of training courses and other formalized training are also filed in the employee training files.

In addition, the following training is conducted:

Technicians are also given on-the-job training for each new method or procedure by the supervisor or an experienced analyst designated by the supervisor. During the training period the supervisor or experienced analyst continues to be responsible for all analytical results produced by the trainee. This training is also documented on the employee's training record.

Competence to perform each analysis is determined by the supervisor's direct evaluation and successful analysis of Lab Control Samples and/or Performance Evaluation Samples.

Periodically, analysts are encouraged to attend outside classes or other relevant training to increase their job knowledge. Attendance at these courses/seminars are also recorded on the training record.

Training Files

Training files for each employee are maintained by the QA Department. The training files contain training logs, sign-off sheets for the QA Manual, Standard Operating Procedures and Initial and Continuing Demonstration of Capability Certificates and supporting documentation. The training files are updated on an annual basis. Annually each employee signs a form that demonstrates that they have read, understood, and is using the latest version of the laboratory's in -house quality documentation, which relates to his/ her job responsibilities.

Demonstration of Capability

For NELAP certified tests an Initial Demonstration of Capability (IDOC) must be performed prior to using any test method, and at any time there is a change in instrument type, personnel or test method (NELAC, Quality Systems Revision 16, Appendix C, July 12, 2002). The Demonstration of Capability is updated annually, and a signed certification is placed in the employee training file for each method. When a work cell is employed, the performance of the group is linked to the training record of the individual members of the work cell.

The analyst training on each method shall be considered up to date if the employee training file contains a certification that the analyst has read, understood and agreed to perform the most recent version of the test method (the approved method or standard operating procedure as defined by the laboratory document control system) and documentation of continued proficiency by at least one of the following once per year:

a. acceptable performance of a blind sample (single blind to the analyst);

b. another demonstration of capability;

c. successful analysis of a blind performance sample on a similar test method using the same technology (e.g., GC/MS volatiles by purge and trap for Methods 524.2, 624 or 5035/8260) would only require documentation for one of the test methods;

d. at least four consecutive laboratory control samples with acceptable levels of precision and accuracy; or

e. if a-d cannot be performed, analysis of authentic samples with results statistically indistinguishable from those obtained by another trained analyst.

f) A certification statement is completed to document the completion of each demonstration of capability. A copy of the certification statement is retained in the personnel records of each affected employee.

Ethics Policy and Data Integrity Training

To prevent Data Fraud/Inappropriate Practices, all technical personnel are trained in ethical and legal responsibilities. Examples of Data Fraud are identified below:

a) Inappropriate use of manual integrations to meet calibration or method QC criteria would be considered fraud. For example, peak shaving or peak enhancement are considered fraudulent activities if performed to meet QC requirements.

b) Time travel of analyses to meet method holding time requirements.

c) Falsification of results to meet method QA requirements.

d) Reporting of results without analyses to support the results.

e) Selective exclusion of data to meet QC criteria (i.e. initial calibration points dropped without technical or statistical justification)

f) Misrepresentation of laboratory performance by presenting calibration data or QC data within data reports which are not linked to the data set reported.

g) Notation of matrix interference as basis for exceeding acceptance limits (typically without implementing corrective actions) in interference-free matrices (e.g. MB or LCS)

The potential punishments and penalties for improper, unethical or illegal actions include immediate dismissal, and possible legal court action.

All technical personnel are required to sign an Ethics and Data Integrity Agreement Form. These forms are filed in the QA Office.

The Ethics and Data Integrity Training and Agreement Form is updated annually for each employee.

Internal audits are performed periodically which include monitoring of data integrity. Any allegations of improper reporting or manipulation of data are investigated promptly.

DOCUMENT CONTROL AND RECORD KEEPING

All documents relating to laboratory analyses and reporting are kept a minimum of seven years. After that time the records will be destroyed, unless special arrangements are made.

The laboratory maintains a tracking system for Standard Operating Procedures, MDL determinations, training documentation and corrective actions. These records are kept by the QA Department.

A Lab Request is created by the Laboratory LIMS system for each group of samples received from a client to enable organization and tracking of the analyses and final reporting. All analytical results are reported in the LIMS database system, including date of analysis and analyst initials. All documentation other than bound laboratory notebooks relating to the analyses of a client's samples including a copy of the final report, Chain of Custody, all sample preparation worksheets and analytical raw data is attached to each Lab Request. Lab Requests including all relevant data are filed for a minimum of seven years. Other relevant analysis data may be written in bound laboratory notebooks which are maintained in each laboratory department. All calibration data and other relevant data such as calibration checks, which may apply to multiple Lab Requests are filed and retained in the individual departments.

Corrections

All generated data is recorded in permanent ink. Entries in records shall not be obliterated by methods such as erasures, overwritten files or markings. All corrections to record-keeping errors shall be made by one line marked through the error. The individual making the correction shall sign (or initial) and date the correction.

The document control system establishes procedures to ensure that all records required under the laboratory certification are retained. Procedures for control and maintenance of documentation through a document control system ensures that all standard operating procedures (SOPs), manuals, or documents clearly indicate the time period during which the procedure or document was in force.
Document control procedures are defined in the Standard Operating Procedure for Document Control.

REVIEW OF CLIENT PROJECTS

New projects and contracts are reviewed by laboratory management to ensure that the laboratory has the technical capability and resources to meet the requirements. Any potential conflict of interest or other problem noted in the review is discussed with the client prior to acceptance of the contract or samples. Refer to the SOP for Project Management.

The laboratory will afford clients or their representative 's cooperation to clarify the client' s requests and monitor the laboratory 's performance in relation to the work performed.

Client confidentiality is a high priority and the laboratory will ensure confidentiality to each client's work while providing service to other clients.

PROTECTION OF CLIENT CONFIDENTIALITY

Associated Laboratories recognizes the importance of client confidentiality. Each Lab Report contains the following statement: "The reports of Associated Laboratories are the confidential property of our clients and may not be reproduced or used for publication in part or in full without our written permission. This is for the mutual protection of the public, our clients, and ourselves." Analysis results are released to third parties only with the permission of the client.

Confidentiality agreements may be signed by Laboratory management to maintain confidentiality of analysis results between the Laboratory and the client.

SAMPLE RECEIVING AND CUSTODY

All sample receiving and log-in is handled by the Sample Receiving Department.

1. All samples are assigned a laboratory identification number during the log-in process. This number is a unique identifier assigned by the laboratory LIMS system.

2. All samples received from a client on the same day on the same Chain of Custody (COC) are normally grouped together in a unique Laboratory Request Number. The Laboratory Request Number is also assigned by the laboratory LIMS system.

3. A Laboratory Request Summary is prepared which includes: date, client name, client sample ID, corresponding laboratory sample number, all analyses to be performed, laboratory area designations and other special instructions.

Procedures for sample receiving and chain of custody for samples are detailed in the Sample Receiving SOP, attached to this document as Appendix B.

SAMPLE HANDLING PRACTICES AND CHAIN OF CUSTODY

1. After samples are logged in, they are transferred to the Sample Custodian.

2. All transfer of samples out of and into storage are documented on the Sample Control Record Book.

3. *Samples are stored according to the conditions specified by preservation protocols. Samples which require thermal preservation are stored under refrigeration which is +/-2 of the specified preservation temperature unless method specific criteria exist. For samples with a specified storage temperature of 4°C, storage at a temperature above the freezing point of water to 6°C is considered acceptable.*

4. Samples are stored away from all standards, reagents, food and other potentially contaminating sources. Samples are stored in such a manner to prevent cross contamination.

5. Sample fractions, extracts, leachates and other sample preparation products are stored according to #3 above or according to specifications in the test method.

6. The temperature of each refrigerator used for sample storage is monitored each working day, and recorded on the Temperature Control Record. This record is attached to each refrigerator. When the record is completely filled in, it is filed for future reference. If the temperature is out of control limits, the laboratory manager must be notified immediately.

7. Unless notified in writing, all samples will be discarded by appropriate disposal protocol 30 days from the date reported. Samples are discarded in the designated hazardous waste disposal containers. These containers are picked up periodically by a hazardous waste disposal company.

SAMPLE CONTAINERS, PRESERVATION AND HOLDING TIMES

In general, the shorter the time that elapses between collection of a sample and the analysis, the more reliable will be the analytical results. Preservation is necessary when the interval between sample collection and analysis is long enough to produce changes in either the concentration or the physical state of the constituent to be measured. Preservation of samples is specified in many EPA methods and when possible is confirmed by the laboratory during the sample log in process. The holding time of an analysis is the maximum time that samples may be held before analysis for the analysis to be considered valid. Each department is familiar with the holding times for sample analysis which they perform. The supervisor is responsible for ensuring that these holding times are met for all analyses. If holding times are not able to be met, then every effort is made to notify the client and if necessary send the samples to another laboratory.

Appendix C contains sample container guidelines and holding times as specified by the USEPA for environmental samples.

LABORATORY LIMS SYSTEM

Laboratory Information Management System (LIMS)

The laboratory information management system (LIMS) is a client-server network of computers used to login samples, track samples during and after analysis, and report the final results to the client. In addition the LIMS software which is database driven is able to generate historical reports and trends and generate other types of reports such as electronic deliverables which are increasingly used by clients to transfer data into their own computer systems without having to do manual data entry. The LIMS system is also used to track laboratory data such as detection limits (MDL) and reporting limits for analytes.

The hardware components of the LIMS include two servers and approximately twenty-five PC compatible computers running Windows 98 - 2000. The LIMS Software consists of Varian Starlims 7.0 with an Oracle 7 database system.

Security consists of a password login system and nightly tape backups. All reports are reviewed and signed by designated managers before release to the client. Tracking reports are generated daily from the LIMS system to insure timely analysis and reporting of all client samples.

Electronic Delivery Capabilities - laboratory data can be delivered to the client in electronic data deliverable (EDD) formats such as: spreadsheet (Lotus, Excel); standard database file formats (dB, Paradox, etc); delimited or fixed field formatted ASCII; or word processing formatted. The data files can be transmitted to the client either by diskette or directly using e-mail or FTP protocols.

STANDARD TEST METHODS

Essentially all laboratory analyses are conducted using published standard methods. Standard method sources which are available for use are listed below.

Analytical Standard Procedures for Environmental Analyses:

Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79- 020,3/1983

Standard Methods for the Examination of Water and Wastewater (American Public Health Association)

40 CFR, Appendix A to part 136-Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater (600-series methods)

Methods for the Determination of Organic Compounds in Drinking Water, Supplement III, EPA-600/R-95/131, August 1995. (500-series methods)

Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993

Methods for the Determination of Metals in Environmental Samples, Supplement I EPA/600/R-94/111, May 1994

Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition.

NELAC Quality Systems Revision 16, July 12, 2002.

Analytical Standard Procedures for Food, Feeds, Oil/Fats and Pharmaceuticals:

Association of Official Analytical Chemists (AOAC).

The American Oil Chemists' Society (AOCS).

Methods of the U.S. Department of Agriculture (USDA).

FDA Pesticide Analytical Manual (PAM).

US Pharmacopeia/National Formulary (USP/NF).

Food Chemicals Codex (FCC).

American Society for Testing and Materials (ASTM)

Note:

A listing of all environmental test methods for which Associated Laboratories is accredited by California is attached in Appendix H.

Methods Not Covered by Standard Methods

When it is necessary to use methods not covered by standard methods, these methods are subject to agreement with the client. This agreement includes a clear specification of the client' s requirements and the purpose of the environmental test and/ or calibration. The method is validated appropriately before use.

STANDARD OPERATING PROCEDURES

Standard Operating Procedures (SOP) are available for most methods to indicate specific procedures, instrumentation, data needs and laboratory data quality requirements. Standard Operating Procedures are available to the analyst and are updated at least annually to insure

that method and quality assurance requirements are being met. The original version of the SOPs are filed in the QA Department and controlled copies made available to the department. An inventory list of all current SOP's is maintained by the QA Department and are listed in Appendix H.

Each test method shall include or reference where applicable:

1) identification of the test method;
2) applicable matrix or matrices;
3) detection limit;
4) scope and application, including components to be analyzed;
5) summary of the test method;
6) definitions;
7) interferences;
8) safety;
9) equipment and supplies;
10) reagents and standards;
11) sample collection, preservation, shipment and storage;
12) quality control;
13) calibration and standardization;
14) procedure;
15) calculations;
16) method performance;
17) pollution prevention;
18) data assessment and acceptance criteria for quality control measures;
19) corrective actions for out-of-control data;
20) contingencies for handling out-of-control or unacceptable data;
21) waste management;
22) references; and,
23) any tables, diagrams, flowcharts and validation data.

TRACEABILITY OF MEASUREMENTS

Traceability of measurements is achieved by using standards for calibration and calibration checks which are traceable to primary NIST standards. Certificates of Analysis or purity are kept on file for each standard purchased, showing the traceability of the standard to a primary NIST standard. All balances are calibrated and certified annually using NIST certified weights. Thermometers are also calibrated at least annually using a thermometer certified against an NIST temperature standard.

When standard solutions, spiking solutions and calibration check solutions are prepared, the following information is recorded in a Standards Traceability Notebook maintained by each Laboratory Department:

a. The identifying name of the Working Standard consists of the Working Standard Identification and the date of preparation. This name must be unique and apply to only one standard solution, such that the standard can be unequivocally traced back to the

date of preparation, analyst and identification of all original standards and reagents used to prepare the standard.

b. Date and analyst initials

c. The name, manufacturer and lot number of each analytical standard, reagent and acid used in the solution.

d. The volume of each standard, reagent and acids used, and the final volume of the solution.

e. The calculated concentration of all analytes in the final solution.

The final standard solutions are transferred to a storage container and labeled with the identifying Working Standard ID, date of preparation, expiration date, concentration and initials of the analyst who prepared the solution.

All commercially prepared standards have a maximum expiration date of one year from the date of receipt or other expiration date as established and documented by the supplier.

Reagents are purchased from established commercial suppliers as specified by the laboratory standard methods or SOP. Reagents are stored at the appropriate temperature (refrigeration, freezing, room temp) as specified by the supplier.

Lot numbers of reagents are recorded on sample preparation log sheets or in analysis log books to enable traceability.

CALIBRATION AND VERIFICATION PROCEDURES

Initial Calibrations

Criteria for Initial Calibrations are specified in the applicable method and Standard Operating Procedure for each method.

The following items are essential elements of initial instrument calibration:

a) The details of the initial instrument calibration procedures including calculations, integrations, acceptance criteria and associated statistics are included or referenced in the test method SOP.

b) Sufficient raw data records are retained to permit reconstruction of the initial instrument calibration, e.g., calibration date, test method, instrument, analysis date, each analyte name, analyst's initials or signature; concentration and response, calibration curve or response factor; or unique equation or coefficient used to reduce instrument responses to concentration.

c) Sample results must be quantitated from the initial instrument calibration and may not be quantitated from any continuing instrument calibration verification unless otherwise required by regulation, method, or program.

d) All initial instrument calibrations must be verified with an **Initial Calibration Verification** standard (ICV) obtained from a second manufacturer or lot number. Standards for the initial calibration are traceable to a national standard such as NIST (National Institute of Standards and Technology), when available.

e) Criteria for the acceptance of an initial instrument calibration must be established, e.g., correlation coefficient or relative percent difference. The criteria used must be appropriate to the calibration technique employed.

f) Results of samples outside of the concentration range established by the initial calibration must be reported with defined qualifiers or flags or explained in the case narrative. The lowest calibration standard must be above the detection limit (MDL).

g) If the initial instrument calibration results are outside established acceptance criteria, corrective actions must be performed and all associated samples reanalyzed. If reanalysis of the samples is not possible, data associated with an unacceptable initial instrument calibration are reported with appropriate data qualifiers.

h) Calibration standards must include concentrations at or below the regulatory limit/decision level, if these limits/levels are known by the laboratory, unless these concentrations are below the laboratory's demonstrated detection limits.

i) The number of points for establishing the initial instrument calibration are determined by the method and regulatory guidelines and are stated in the SOP for each method.

Continuing Calibration Verification (CCV)

When an initial instrument calibration is not performed on the day of analysis, the validity of the initial calibration is verified prior to sample analyses by a continuing instrument calibration verification with each analytical batch. The following items are essential elements of continuing instrument calibration verification:

a) The details of the continuing instrument calibration procedure, calculations and associated statistics must be included or referenced in the test method SOP.

b) A continuing instrument calibration verification must be repeated at the beginning and end of each analytical batch. The concentrations of the calibration verification shall be varied within the established calibration range. If an internal standard is used, only one continuing instrument calibration verification must be analyzed per analytical batch.

c) Sufficient raw data records must be retained to permit reconstruction of the continuing instrument calibration verification, e.g., test method, instrument, analysis date, each analyte name, concentration and response, calibration curve or response factor, or unique equations or coefficients used to convert instrument responses into concentrations. Continuing calibration verification records must explicitly connect the continuing verification data to the initial instrument calibration.

d) Criteria for the acceptance of a continuing instrument calibration verification must be established, e.g., relative percent difference.

e) If the continuing instrument calibration verification results obtained are outside established acceptance criteria, corrective actions must be performed. If routine corrective action procedures fail to produce a second consecutive (immediate) calibration verification within acceptance criteria, then either the laboratory has to demonstrate performance after corrective action with two consecutive successful calibration verifications, or a new initial instrument calibration must be performed. If the laboratory has not demonstrated acceptable performance, sample analyses shall not occur until a new initial calibration curve is established and verified. However, sample data associated with an unacceptable calibration verification may be reported as qualified data under the following special conditions:

1) when the acceptance criteria for the continuing calibration verification are exceeded high, i.e., high bias, and there are associated samples that are non-detects, then those non-detects may be reported. Otherwise the samples affected by the unacceptable calibration verification shall be reanalyzed after a new calibration curve has been established, evaluated and accepted.

2) when the acceptance criteria for the continuing calibration verification are exceeded low, i.e., low bias, those sample results may be reported if they exceed a maximum regulatory limit/decision level. Otherwise the samples affected by the unacceptable verification shall be reanalyzed after a new calibration curve has been established, evaluated and accepted.

METHOD DETECTION LIMITS

Method Detection Limits (MDL) are normally determined by taking seven or more aliquots of a sample containing the compounds of interest at a concentration 1 to 5 times the estimated detection limit and processing each sample through the entire analytical method. The MDL is calculated from the standard deviation of the replicate measurements (MDL = 3.143 x Standard Deviation for seven replicate measurements). MDL studies for each method are normally performed at least annually or when a major modification is made to the method or instrumentation used for analysis. Reference: 40 CFR, Ch. 1, Part 136, Appendix B (7-1-86 Ed.).

Method Detection Limits are updated in the laboratory information management system (LIMS) and tracked by the QC Department. The SOP for determination of MDL is attached (Appendix E).

PROCEDURES FOR REPORTING ANALYTICAL RESULTS

Final Reports issued to clients contain at a minimum the following information:

1. The report identification (Lab Request number) and page number is printed at the bottom of each page.

2. The Cover Page(s) include the Laboratory name and address, phone number, name and signature of person authorizing the report. The Cover page(s) also include the Client name,

address, Client ID number, project identification, contact or project manager, date of sample receipt at the laboratory and a cross-reference of lab identification numbers and client sample identifications. The Cover Page includes the statement: "*The reports of the Associated Laboratories are confidential property of our clients and may not be reproduced or used for publication in part or in full without our written permission. This is for the mutual protection of the public, our clients, and ourselves.*"

3. The Lab Report pages detail the date and time of sample collection, the test results, analysis units, methods of analysis, detection limits, dates of analyses and analyst initials. The time of analysis is reported when the holding time for preparation or analysis is 72 hours or less.

4. The original copy of the chain-of-custody is attached to the final report

5. A copy of the *Sample Receiving Checklist is attached to the final report.*

6. For NELAC reports and data packages, a case narrative is attached. The case narrative describes where the analyses were performed if not performed at the main address of the laboratory. Normally all analyses for volatile organic chemicals, organic volatiles in air, metals and microbiology are performed in the laboratory annex, located at 1108 West Barkley (one half block from the main laboratory building.

7. The case narrative also lists the number and identification of all discrete pages in the report and the total number of pages in the complete report.

8. A statement is included in the Narrative that the test results meet all requirements of NELAC or provide reasons and/or justification if they do not.

9. In addition to the requirements listed above, test reports shall, where necessary for the interpretation of the test results, include the following:

> *a) deviations from (such as failed quality control), additions to, or exclusions from the test method, and information on specific test conditions, such as environmental conditions and any non-standard conditions that may have affected the quality of results, including the use and definitions of data qualifiers;*
>
> *b) where relevant, a statement of compliance/non-compliance with requirements and/or specifications, including identification of test results derived from any sample that did not meet NELAC sample acceptance requirements such as improper container, holding time, or temperature;*
>
> *c) where applicable, a statement on the estimated uncertainty of measurement; information on uncertainty is needed in test reports when it is relevant to the validity or application of the test results, when a client's instruction so requires, or when the uncertainty affects compliance to a specification limit;*
>
> *d) where appropriate and needed, opinions and interpretations;*
>
> *e) additional information which may be required by specific methods, clients or groups of clients;*

f) clear identification of numerical results with values outside of quantitation limits.

10. In addition to the requirements listed above, test reports containing the results of sampling shall include the following, where necessary for the interpretation of test results:

a) the date of sampling;

b) unambiguous identification of the substance, material or product sampled (including the name of the manufacturer, the model or type of designation and serial numbers as appropriate);

c) the location of sampling, including any diagrams, sketches or photographs;

d) a reference to the sampling plan and procedures used;

e) details of any environmental conditions during sampling that may affect the interpretation of the test results;

f) any standard or other specification for the sampling method or procedure, and deviations, additions to or exclusions from the specification concerned.

DATA REVIEW

All data generated from each analysis are recorded either in a bound laboratory notebook or on worksheets which are attached to the Lab Request package.

Copies of the lab notebook page(s), worksheets, instrument readouts, chromatograms, QC forms and other data pertinent to the analysis are attached to the Laboratory Request Sheet.

In addition to the analytical results and calculations, the manufacturer and lot number of all reagents used must be included. Also the assigned code numbers of all prepared reagent and standard solutions are included for traceability purposes.

The review process includes at least three separate review stages:

The analyst reviews all data and calculations and also checks data for completeness and that any special requirements have been met.

The Lab Supervisor reviews the results and initials the report to signify his/her approval.

After the final report is completed, the Laboratory Manager or signatory of the report reviews the final report and signs the report to signify his/her final approval.

The QA Department reviews a proportionate amount of all QC data generated (at least ten percent) and also reviews all corrective action reports that are submitted by the Departments.

A copy of the test report and all supporting raw data for each Lab Request are maintained on file by the laboratory.

The minimum period of retention for the records is seven (7) years.

PROCEDURE FOR HANDLING CUSTOMER'S COMPLAINTS

Associated Laboratories encourages feedback from customers. Complaints such as improper billing or incorrect sample identifications are normally handled by client project managers, who make every effort to resolve the problem as quickly as possible. Where the complaint involves problems which can not be readily corrected, then the customer's complaints are recorded on a Customer Complaint Form which contains the following information:

Date of complaint
Name of company
Name of person submitting the complaint
How the complaint was submitted
Name of person receiving complaint by phone
Nature of complaint
Department(s) involved

The customer's complaint form is submitted to the department(s) involved for investigation and resolution of the complaint.

The results of the investigation and resolution of the complaint are recorded on the complaint form, signed and dated by the individual handling the complaint and submitted to the Lab Manager to be reviewed and approved.

The customer is notified of the results of the investigation and resolution of the complaint by the Lab Manager or by a person authorized by the Lab Manager, either verbally, by phone, or in the form of a letter.

The Complaint Form and all other documents pertinent to the complaint, including emailed communications and the investigations and corrective actions taken by the laboratory, are filed in the Complaint File maintained by the QA Department.

QUALITY ASSURANCE PROCEDURES

The laboratory has established quality control procedures for monitoring the validity of environmental tests and calibrations undertaken. The resulting data is recorded in such a way that trends are detectable and, where practicable, statistical techniques can be applied to the reviewing of the results. This monitoring includes the following:

a) regular use of certified reference materials and/or internal quality control using secondary reference materials (Laboratory Control Samples);

b) participation in inter-laboratory comparison or proficiency-testing programs (WS, WP and Hazardous Waste PE samples);

c) replicate tests or calibrations using the same or different methods;

d) retesting of retained samples;

e) correlation of results for different characteristics of a sample (for example, total phosphate should be greater than or equal to orthophosphate).

Routine Quality Control Samples

Quality Control samples are normally analyzed with each batch of samples for each analysis. For environmental samples the Quality Control samples include a Method Blank (MB), Laboratory Control Sample (LCS) and a Matrix Spike and Matrix Spike Duplicate. These QC samples are included in each batch of twenty samples or less for each matrix (frequency equivalent to 5% of all samples analyzed). If spike analyses are not feasible, a duplicate sample analysis is generally performed (eg TDS, dissolved oxygen, turbidity).

1. The Method Blank (negative control sample) is used to assess the preparation batch for possible contamination during the preparation and processing steps. The method blank is processed along with and under the same conditions as the associated samples to include all steps of the analytical procedure. Procedures are included in the method to determine if a method blank is contaminated. Any affected samples associated with a contaminated method blank are reprocessed for analysis or the results reported with appropriate data qualifying codes.

2. The Laboratory Control Sample (LCS) (Positive Control Sample) is used to evaluate the performance of the total analytical system, including all preparation and analysis steps. Results of the LCS are compared to established criteria and, if found to be outside of these criteria, indicate that the analytical system is "out of control". Any affected samples associated with an out of control LCS are reprocessed for re-analysis or the results reported with appropriate data qualifying codes. The Laboratory Control Sample (LCS) is run at the same frequency as QC samples for each type of matrix. The LCS is obtained when possible from a source external to the laboratory. The LCS may be prepared by the laboratory using certified standards from a different source or a different lot number from the source used for calibration standards. For NELAP accredited tests, all analytes are included in the LCS spike mixture over a two year period.

3. A Matrix Spike and Matrix Spike Duplicate sample (replicate samples) are normally analyzed with each batch of twenty samples or less. Matrix spikes are duplicate aliquots of a sample which are spiked with the analytes of interest and taken through the same analytical procedures. The recovery of the analyte concentration is calculated to indicate the accuracy of the analysis in the sample matrix. The relative percent difference between the Matrix Spike and Matrix Spike Duplicate sample provides a measure of precision of the analyses in the sample matrix. For NELAP accredited tests, all analytes are included in the matrix spike mixture over a two year period.

4. Surrogate spike analyses are performed for all organic analyses when required by the method. Surrogates are used most often in organic chromatography test methods and are chosen to reflect the chemistries of the targeted components of the method. Added prior to sample preparation/extraction, they provide a measure of recovery for every sample matrix. The surrogate spike solution is added to all samples, standards and blanks. The results are compared to the acceptance criteria as published in the mandated test method or laboratory generated acceptance criteria. Results reported from analyses with surrogate recoveries outside the acceptance criteria *must* include appropriate data qualifiers.

5. All other QC requirements (tuning, multiple points calibration, daily calibration check, etc.) are performed as specified in the method.

6. All QC data are to be recorded on the appropriate forms and kept on file by each department. Copies of these forms must be attached to the Lab Requests for all samples associated with that particular QC sample. Accuracy and precision data may be used to generate control charts.

7. Acceptance limits for QC samples are detailed in the Standard Operating Procedure for each method, and may be established by the original reference source or statistical analysis of the historical data for each type of QC sample, method and matrix using control charts.

8. When QC acceptance criteria are exceeded, corrective actions are to be taken as specified in the method or as instructed by the Department Supervisor.

9. Non-conformances such as QA limit failures which cannot be corrected by re-analyses, client requirements which cannot be met or standard method modifications are documentated by initiating a Non-Conformance Document Form (NCD). Appendix F describes the use of the Non-Conformance Document Form.

Other Essential Quality Control Procedures

1. Method capabilities are measured by determination of detection limits and quantitation limits. This is done on an annual basis or more often as needed (page 18).

2. Selection of appropriate formulae to reduce raw data to final results such as regression analysis, comparison to internal/external standard calculations, and statistical analyses is detailed in the method Standard Operating Procedures for each method.

3. Selection and use of reagents and standards of appropriate quality is included in the method Standard Operating Procedures.

4. Measures to assure the selectivity of the test for its intended purpose is assessed on a continuing basis by analysis of QA samples as detailed above.

5. Measures are taken as necessary to assure constant and consistent test conditions (both instrumental and environmental) where required by the test method such as temperature, humidity, light, or specific instrument conditions.

6. All quality control measures are assessed and evaluated on an on-going basis, and quality control acceptance criteria are used to determine the usability of the data.

7. The laboratory will develop acceptance/rejection criteria where no method or regulatory criteria exist.

8. The quality control protocols specified by the laboratory's Standard Operating Procedure for each method is to be followed. The laboratory shall ensure that the essential standards outlined in NELAC, Quality Systems, Appendix D or the mandated methods or regulations (whichever are more stringent) are incorporated into their Standard Operating Procedures. When it is not apparent which is more stringent the QC in the mandated method or regulations is to be followed.

QUALITY ASSURANCE DEPARTMENT FUNCTIONS

Internal Audits and Data Review

Various types of internal audits are performed on Laboratory activities on a routine basis. These audits should reflect as closely as possible, the Laboratory performance under normal operating conditions.

Performance Audits: Evaluation of data reports generated by the laboratory. All technical, clerical and administrative aspects of the data report are reviewed. Errors observed during these ongoing audits are categorized as they relate to the technical accuracy and legal defensibility of data.

Internal audits of each department are conducted at least annually. Routine quality control checks, for example checking laboratory notebooks, daily calibrations, quality control sample frequency are also done on a random basis. Results of internal audits *(including the completed checklist, deficiencies, responses and corrective actions)* are documented in the internal audits files *maintained in the QA Office. The results of internal audits are* reported to the Audit Committee designated by the Laboratory management.

A system audit is the physical inspection and review of the entire laboratory operation to verify compliance with the QA Program objectives as stated in the Laboratory's QA Manual. System audits are conducted periodically by external auditors, such as state regulatory agencies, commercial clients or independent auditors representing these clients or agencies.

In response to deficiencies or recommendations from auditing activities, corrective actions reports are required to document the corrective actions taken to correct the deficiencies. The Laboratory management has established an *internal* audit committee to oversee audit activities and establish corrective actions where necessary. *The internal audit committee members will meet quarterly.All committee meeting minutes and memos will be maintained in the QA Office.*

Internal audit procedures are detailed in the SOP for Internal Audits.

When audit findings cast doubt on the effectiveness of the operations or on the correctness or validity of the laboratory' s environmental test or calibration results, the laboratory will notify

clients in writing if investigations show that the laboratory results may have been affected.

The laboratory will notify clients promptly, in writing, of any event such as the identification of defective measuring or test equipment that casts doubt on the validity of results given in any calibration certificate, test report or test certificate or amendment to a report or certificate.

External Proficiency Testing and Verification Practices

The QA Department is responsible for organizing Proficiency Testing (PT) Programs, including WS and WP Studies, and other studies as required by accrediting agencies.

Proficiency Testing samples are obtained from NELAP approved external sources on a semi-annual basis. Results must be satisfactory (within acceptance limits) or a corrective action report is initiated. Proficiency Testing samples are analyzed semiannually or more often for all NELAP accredited tests. PT samples for ELAP accredited tests may be analyzed annually or semiannually. To demonstrate proficiency under NELAP guidelines, the laboratory must pass two of the three most recent PT samples for each accredited test.

Corrective Action Reports and Departures from Documented Policies

A Non-Conformance Document (NCD) may be required when certain Quality Control criteria are exceeded in a sample analysis batch.

1. Non-conformances such as a sample exceeding holding time, QA limit failures which can not be corrected by re-analyses, client requirements which cannot be met, or standard method modifications are documented by initiating a Non-Conformance Document Form (NCD). A copy of the NCD Standard Operating Procedure and Form is attached (Appendix F).

2. The NCD form is initiated by the analyst in the event of a sample exceeding holding time, Quality Control sample results outside control limits or other known non-conformance to the analytical method or client requirements. The NCD form may also be initiated by the project manager or department manager in the event client requirements are not met or other analytical problems are discovered.

3. After the NCD Form is initiated, the corrective action, if any, must be agreed upon by the department manager or supervisor and the QA Manager. If appropriate, the procedure for corrective actions starts with an investigation of the root cause(s) of the problem. The potential corrective actions shall be identified, selected and implemented to eliminate the problem and to prevent recurrence. Corrective actions shall be to a degree appropriate to the magnitude and the risk if the problem. This is documented and signed by the department manager in the second part of the NCD Form. The form is then forwarded to the QA Manager.

4. The QA Manager then completes and signs the final part of the form. If necessary, verification of the corrective action is documented in this section. If necessary the results will be monitored to ensure that the corrective actions taken have been effective. All follow-ups shall be completed and documented by the QA office.

5. A copy of the form is included in the affected data package or the client is notified as appropriate. The original is filed in the Corrective Actions File which is maintained by the QA Manager.

When there are deviations from the requirements by the specific method, such as insufficient sample volume, improper preservation, the client will be notified as soon as possible. If the client agrees to the deviation, then an explanation of the deviation or non-compliance is required to be attached to the data package and final report.

Laboratory Standard Operating Procedures and QA Manual

The QA Department is responsible for ensuring that all Laboratory Standard Operating Procedures and the QA Manual are current. A tracking system is in place to ensure that copies of Standard Operating Procedures are controlled such that only current approved versions are in use in the laboratory.

Procedures for tracking SOP documents are detailed in the Standard Operating Procedure for SOPs.

MANAGEMENT REVIEWS

In accordance with a predetermined schedule and procedure, the laboratory's executive management will periodically and at least annually conduct a review of the laboratory's quality system and environmental testing and/or calibration activities to ensure their continuing suitability and effectiveness, and to introduce necessary changes or improvements. The review shall take account of:

a) The suitability of policies and procedures;
b) Reports from managerial and supervisory personnel;
c) The outcome of recent internal audits;
d) Corrective and preventive actions;
e) Assessments by external bodies;
f) The results of inter-laboratory comparisons or proficiency tests;
g) Changes in the volume and type of the work;
h) client feedback;
i) complaints;
j) other relevant factors, such as quality control activities, resources and staff training.
k) Nonconforming work

Findings from management reviews and the actions that arise from them shall be recorded. The management shall ensure that those actions are carried out within an appropriate and agreed timescale. The laboratory shall have a procedure for review by management and maintain records of review findings and actions. The QA office is responsible for scheduling reviews as needed and maintenance of all records.

PERMITTED DEPARTURES FROM DOCUMENTED POLICIES AND PROCEDURES

Any departures from documented policies and procedures or changes in standard methods must be approved by a Laboratory Director or the QA Manager. The deviation from standard methodology must be explained on the final report and the results flagged to indicate the use of a non-standard method. The * flag or qualifier is used to note non-standard methodology and the explanation is noted in the comments section of the Lab Report.

CONTROL OF NONCONFORMING ENVIRONMENTAL TESTING WORK

When any aspect of its environmental testing work, or the results of this work, do not conform to its own procedures or the agreed requirements of the client, the QA manager shall be informed and the actions below shall be taken:

a): As necessary, the work shall be halted and the test reports shall be withhold;
b): An evaluation of the significance of the nonconforming work is made by the QA Manager and the Technical Director;
c): Corrective actions are taken immediately, together with any decision about the acceptability of the nonconforming work;
d): Where the data quality is or may be impacted, the client is notified.
e): The NCD form may be used to record actions. Any required changes resulting from corrective action investigations shall be implemented and documented.
f): The QA manager is responsible for authorizing the resumption of work.
g): As necessary, the investigation results, corrective actions and follow-ups for the non conforming work shall be reviewed by the Laboratory Management immediately.

PREVENTIVE ACTIONS

Preventive action is a process to identify opportunities for improvement rather than a reaction to the identification of problems or complaints. Needed improvements and potential sources of nonconformance, either technical or concerning the quality system, are identified. If preventive action is required, action plans are developed, implemented and monitored to reduce the likelihood of the occurrence of such non- conformances and to take advantage of the opportunities for improvement. Procedures for preventive actions include the initiation of such actions and application of controls to ensure that they are effective.

EQUIPMENT MAINTENANCE

Written records are kept for each analytical instrument to document inspections, maintenance, troubleshooting, or modifications. Records contain the date, nature of the problem, repair/corrective action taken and the name of the person performing the work. A Maintenance Log Book may be kept for each individual instrument for the purpose of recording any maintenance, repairs, and other associated downtime.

Operational performance of analytical instrumentation is monitored by daily, documented performance checks and calibration verifications in accordance with the Standard Operating Procedures for each type of instrumentation.

Support equipment such as analytical balances, ovens, refrigerators and water baths are checked daily for performance within acceptance limits. This information is recorded in a log book maintained for the equipment. Weights used to check the balances are traceable to NIST standards. In addition all balances are inspected and certified by a licensed specialist at least annually.

REFERENCES:

NELAC Quality Systems, Revision 16, July 12,2002.

NELAC Quality Systems Checklist, Revision Ch5 Rev1e.

QUALITY ASSURANCE MANUAL REVISION HISTORY

Revision 09/2004: QA Manual all sections re-written to incorporate NELAC guidelines.
Added sections for:
- Demonstration of Capability
- Review of New Projects
- Protection of Client Confidentiality
- Calibration and Verification Procedures

Updated Appendix A, Laboratory Job Descriptions
Updated Appendix B, Standard Operation Procedures for Sample Receiving
Updated Appendix D, Equipment Inventory

Revision 05/2005: QA Manual re-written to incorporate more NELAC requirements.
Added Appendix G, Organization Chart
Added Appendix H, Listing of CA Accredited Methods
Added references to SOPs for Document Control

Revision 10/2005: Sections added in response to NELAC Audit.
Added section for personnel qualifications, pg. 8.
Added training program requirements, pg. 8.
Rewrote Demonstration of Capability, pg.10.
Rewrote procedures for reporting analytical results, pgs. 19-21.
Added section for ensuring the validity of environmental tests, pg.22.
Added section for essential Quality Control Procedures, pg. 24.
Edited section for Internal Audits, pg. 25.
Added section for management review, pg. 27.
Rewrote sample handling practices and chain of custody, pg. 13.

Revision 7/2008: Sections added or re-written in response to NELAC Audit:
Added current ELAP and NELAP certificate test lists.
Added to the section for Handling Customer Complaints, pg. 22.
Added to the section for Corrective Action Reports, pg. 26.
Added to the section for Management Review, pg. 27.
Added Section for Control of Nonconforming Testing Work, pg. 28.

Revision 7/2009: Added Hongling Cao, Manager of Quality Assurance to signature page to replace James McCall.
Added provision for "instant read" thermometer, pg. 35, B.2.e.
Updated Inventory List, Organization Chart, Sample Acceptance Checklist and Sample Containers and Preservation Guide.

APPENDIX A

LABORATORY JOB DESCRIPTIONS

Technical Director (Lab Director)

Education: Bachelors degree or equivalent in the chemical, environmental, biological sciences, physical sciences or engineering, with at least 24 college semester credit hours in chemistry.

Experience: At least two years of experience in the environmental analysis of representative inorganic and organic analytes for which the laboratory seeks or maintains accreditation. A masters or doctoral degree in one of the above disciplines may be substituted for one year of experience

Job Description: The technical director(s) means a full-time member of the staff of an environmental laboratory who exercises actual day-to-day supervision of laboratory operations for the appropriate fields of accreditation and reporting of results. This person's duties shall include, but not be limited to, monitoring standards of performance in quality control and quality assurance; monitoring the validity of the analyses performed and data generated in the laboratory to assure reliable data.

Responsibilities: Overall responsibility for management of all laboratory operations.

Quality Assurance Manager

Education: Bachelor's degree in chemistry or other scientific/engineering discipline or equivalent experience.

Experience: Three or more years experience in a chemistry laboratory.

Job description: The quality manager (and/or his/her designees) shall:

1. Serve as the focal point for QA/QC and be responsible for the oversight and/or review of quality control data;

2. Have functions independent from laboratory operations for which they have quality assurance oversight;

3. Be able to evaluate data objectively and perform assessments without outside (e.g., managerial) influence;

4. Have documented training and/or experience in QA/QC procedures and be knowledgeable in the quality system as defined under NELAC;

5. Have a general knowledge of the analytical test methods for which data review is performed;

6. Arrange for or conduct internal audits as per 5.4.13 annually; and,

7. Notify laboratory management of deficiencies in the quality system and monitor corrective action.

Responsibilities: Overall development and management of the laboratory quality assurance system as defined by California Dept of Health / ELAP and NELAP requirements.

Laboratory Supervisor

Education: Bachelor's degree in chemistry or other scientific/engineering discipline or equivalent experience.

Experience: Three or more years experience in a chemistry laboratory.

Job Description: Responsible for the overall technical and personnel management of a laboratory area or work group. This includes:

1. Interfacing with and taking direction from the Department Head or immediate supervisor.

2. Proper training of personnel in analytical techniques, reporting, quality, assurance and lab safety.

3. Maintaining the orderly flow of work and the timely analyses of samples.

4. Organizing and assigning work duties of the group supervised.

5. Checking QA/QC records for completeness and proper frequency.

6. Providing for technical expertise as required in the group or department.

7. Evaluating and working to constantly improve the quality of data that is being generated (including QA data)

Responsibility, Supervisors are ultimately responsible for:

1. The accuracy, completeness and integrity of all analyses completed by their group or department.

2. Safe practices of their employees.

3. Maintaining effective communication with their employees and upper management of the laboratory.

4. Complete documentation of all analyses and related QA/QC.

5. Any deviation from standard methods or laboratory standard operating procedures.

Analyst

Education: Requires minimum of Bachelor's degree in chemistry or any scientific/engineering discipline or equivalent experience.

Experience: Once or more years experience in a chemistry laboratory operating and maintaining analytical instrumentation such as AA, ICP, GC, HPLC, etc.

Job Description: Conducts analyses in laboratory using specialized analytical equipment. Analyses are done using standard protocols such as EPA, EPA/CLP, or in-house SOP's). Must understand the theory, use and maintenance of specialized analytical equipment. Must be able to follow written procedures and SOP's and calculate final results, including QA results. Must understand the importance of good lab practices and quality assurance and be able to evaluate the quality of data that is being generated.

Responsibility: Analysts are responsible for the accuracy, completeness and integrity of all work that they have been assigned. If they have questions or problems, this must be communicated to their immediate supervisor. No deviations from standard methods are permitted unless approved by the lab supervisor.

Lab Technician

Education: Requires high school diploma with one year of chemistry course work or one year of Chemistry course work or one year experience in a laboratory.

Experience: One or more years experience in a laboratory (preferably a chemistry lab). Must have proficiency in operation of analytical balance, pipetting and common laboratory equipment and glassware.

Job Description: Conducts analyses in laboratory using standard methods (EPA, AOAC, USP, ASTM, or in-house methods). Must understand lab nomenclature and be proficient in the use of standard lab equipment such as pipets , balances, separatory funnels burets, etc. Must be able to follow written procedures and SOP's and calculate final results. Must understand the importance of good lab practices and quality assurance.

Responsibility: Lab Technicians are responsible for the accuracy, completeness and integrity of all work that they have been assigned. If they have questions or problems, this must be communicated to their immediate supervisor. No deviations from standard methods are permitted unless approved by the lab supervisor.

APPENDIX B

STANDARD OPERATING PROCEDURE FOR SAMPLE RECEIVING

TABLE OF CONTENTS

I. INITIAL RECEIPT OF SAMPLES

This section describes how samples are received and logged into the laboratory. "Logging" refers to the process of documenting receipt of each sample, verification of the analyses requested and entry of information about the sample into the laboratory computer system (LIMS). The sample logging process generates one label for each sample container, a Lab Request Summary on blue paper and a blue Results Worksheet for each department. A copy of the Lab Request Summary and the blue Results Worksheet is transferred to each department which will be analyzing the sample. No sample is analyzed without being properly logged into the laboratory data system, even if the sample is not to be billed.

A. Handling of Samples Received by Client Delivery:

When a client delivers a sample for analysis, it is important that information about the sample be as complete as possible. This is best done with a properly completed and signed Chain of Custody form. The following information must be obtained before the sample can be accepted:

1. Client's name and address

2. Person to contact regarding the sample(s) and phone number (also fax number if information is to be faxed).

3. Method of payment, does client have an account? If client does not have an account, payment will have to be in advance or "pickup and pay". If the client has an account, a purchase order number is often needed.

4. If the Client wishes to open an account, the accounting department should be notified to be sure the client receives the proper forms and information, this is currently handled by Bill Utter.

5. Before entering a new client into the computer system a unique account code number must be obtained from the accounting department or office supervisor.

6. Both the client and lab employee receiving the sample must both sign the completed Chain of Custody form. The Chain of Custody will normally contain detailed information on the samples. Refer to Section II for a list of required information to be included on this form.

7. The client receives the pink copy of the Chain of Custody. The other copies are attached to the Lab Request Summary.

8. Samples must be checked for temperature and sample preservation as noted in B.2. and B.6 below.

B. Sample pick-up by our personnel:

1. All samples received from our drivers should be accompanied by a completed Chain-of-Custody form - signed by the client and by the driver.

2. All coolers received must have a temperature reading immediately upon opening.

   a. This reading will be taken by placing the metal probe of the thermometer either into a temperature blank (if provided) or between the respective samples and the cooling media (ice, dry ice, or blue ice).

   b. The thermometer should remain in place for 60 seconds to ensure a proper reading.

   c. The exact temperature will then be read from the thermometer. The temperature should be in the range of 2 - 6 degrees C. Samples that are hand delivered to the laboratory immediately after collection are considered acceptable if there is evidence that the chilling process has begun, such as arrival on ice.

   d. The temperature will be noted on the Sample Receipt Form.

   e. The temperature may also be determined using an "instant read" thermometer which reads the surface temperature of the samples in the cooler.

3. The Chain of Custody and samples must be checked to make sure that all information is in agreement.

4. When the driver relinquishes the samples to the Sample Receiving Department, he or she must require that the Associated Laboratories Chain of custody be signed by an employee of the Sample Receiving Department. A sample receipt form must be filled out for all coolers received by the Department.

5. All samples brought to the laboratory by a driver will remain under his or her custody until the Associated Laboratories Chain of custody is signed by an employee of the Sample Receiving Department.

6. If necessary, the pH of aqueous samples may be measured at the Sample Receiving Department. The result shall be reported on a pH reporting form. This form is attached to the Chain of Custody. To avoid contamination of the sample, a portion of the sample is poured into a separate container for pH determination or directly onto the pH paper. The procedure for checking pH is detailed in the SOP for pH Measurement.

7. Any problems with improper preservation, sample container type, volumes, etc. are to be noted on the Sample Receipt Form. This is to document problems which may interfere with a proper analysis of the sample. The project manager should be notified so that the client can be contacted as soon as possible.

8. Information on the sample pickup is also logged into the bound Driver's Logbook.

9. All organic volatile samples (VOA) must be stored in the Sample Receiving refrigerator until they are labeled.

10. All information is checked to be sure it is complete as noted in Section A.1-6 (Client's name/ address/ contact name/ phone number/ account information/ PO number/ complete sample

information/ analyses requested).

11. All samples are checked to be sure they match the paperwork.

12. The client must be contacted if the information is not complete or if there are any questions about the samples, analyses requested, or if samples are received broken or missing.

C. Samples received by mail, UPS, Federal Express, etc.

Samples received by mail, UPS and Federal Express are handled in the same manner as samples received from our drivers with the exception that samples are not relinquished by the client. All coolers received must have a temperature reading as in section B.2. and all samples must be verified against the Chain of Custody or paperwork as noted above. *The sample shipping receipts shall be attached to the original Lab Sheet.*

D. In-house samples

In-house samples consist of samples such as QA/QC check samples and hazardous waste disposal samples. These samples are written up using the same procedures as any other sample. (They will not normally be billed.)

E. Priority samples

1. Samples are logged in the following priority:

   a. Bacteriology

   b. Rushes (Same Day, 24 Hour, 48 Hour)

   c. Tests such as BOD, Chlorine, pH, Dissolved Oxygen, Sulfite, Sulfide, Hexavalent Chromium, fish toxicity, nitrate, nitrite, MBAS, turbidity must be logged the same day as received due to the very short holding times.

   d. Regular Turn-Around

2. NOTE: It is important that this priority be followed for all customers to insure that accurate results are obtained for samples which have a very short holding time.

3. Regular turn-around samples are written up in the order received and may be held to the next day if necessary.

4. When a client requests a completion date, or we commit to a completion date, this information must be clearly stated (and highlighted) on the lab request summary.

Note: the affected lab manager must be consulted prior to committing to a completion date.

5. If a client wishes samples to be handled on a priority basis, such as 24 or 48 hours, there is an additional charge. The priority charge is determined by lab management, and should be clearly stated to the client.

6. Priority samples are written up and labeled before being transferred to the laboratory. These samples are recorded in the Sample Rush Log Book and the lab personnel receiving the samples must sign for all priority samples (which include a copy of the chain of custody).

F. Special Handling of Samples for Microbiological Testing

1. Due to the short holding times for microbiological samples, these must be handled on a first- priority basis.

2. The Chain-of-Custody for samples for microbiological testing must state the date and time of sampling, as well as complete sample identification. For potable water samples this should also include the system name and sample location.

3. Drinking water samples (potable water) should be analyzed as soon as possible after sampling (30 hours maximum time from sampling to analysis). Samples must be maintained at 2 - 6 degrees C during transport and storage. Potable water samples cannot be analyzed after 30 hours, these samples should be refused.

4. Waste water and surface water samples must be analyzed within 6 hours after collection (6 hours maximum holding time). Samples must be maintained at 2 - 6 degrees C during transport and storage. Water/ waste water samples older than six hours should be refused.

5. Upon receipt in Sample Receiving, check samples immediately for proper temperature and holding time. Samples should be transported in a cooler with blue ice or regular ice. Check Chain-of-Custody form to be sure samples are within holding times. If samples are outside holding time or not held at proper temperature, notify the Microbiology Department supervisor or project manager immediately. The Chain-of-Custody shall also state the conditions of the samples as received (cooled, frozen, room temp. etc.).

6. Check condition of samples received for microbiological testing for potential contamination of samples. Containers must be sealed with no evidence of leakage. Containers must be protected from melted ice or other potential contamination. Notify the Microbiology supervisor if problems are noted. If there is evidence of contamination the client should be notified that the samples are potentially contaminated.

7. Samples should be refrigerated or placed in a cooler with blue ice upon receipt and logged in immediately. The Microbiology Department will sign the original chain of custody to show receipt of samples prior to logging.

G. Sample storage during login process

1. When possible samples are written up as soon as received.

3. A designated sample storage refrigerator is used for storage of samples which need to be refrigerated during the login process (samples for volatile organics analysis are stored in a separate refrigerator).

3. As soon as possible after each group of samples is logged in, they are transferred to the Sample Custodian in the Sample Storage Area. Most samples are stored in refrigerators or the walk-in cooler until analyses are completed. The sample storage refrigerators and the walk-in cooler are kept locked overnight for sample security.

4. If special handling instructions are provided with the sample, these instructions must be noted on the Chain of Custody and sample login analysis request forms.

H. **Hold samples**

1. When a client wishes to put samples on hold, this must be clearly noted on a Chain-of-Custody form. The length of time requested for hold should be noted.

2. If the hold order is given over the phone, a note is made on the COC referring to the person authorizing the hold, with complete information on the samples to be held. The person taking the call should sign and date the note. Any changes to the Chain of Custody by the client should be followed by a fax from the client detailing the changes in writing.

3. Complete information on hold samples are filed with the Chain-of-Custody and given with the samples to the Sample Custodian for storage until the Client or project manager releases the samples from hold status. If hold samples are disposed of, they are logged out by the Sample Custodian.

4. After 7 days, if the client has not contacted us regarding the samples, sample receiving personnel or the project manager should call the client for instructions.

5. Maximum holding time is 30 days unless special arrangements are made and authorized by the lab management.

6. Unless authorized by the customer, disposal of hold samples must be authorized by the Lab Manager.

I. **Safety Precautions**:

1. The lab does not accept radioactive samples for analysis. A Radiation Monitor is available in the Sample Receiving Department for screening samples if radiation is suspected in any sample.

   a. Any samples received from Department of Energy (DOE) contracts or associated clients must be screened to insure that no radioactivity is present.

   b. If any sample tests higher than background 25 cpm level radiation, the Radiation Safety Officer must be notified immediately.

2. All sample shipments received from hazardous waste sites or labeled as highly toxic must be initially opened in a fume hood or in a well-ventilated area.

3. Plastic gloves are available in the Sample Receiving Area for handling potentially hazardous samples or samples which are leaking.

4. When in doubt about the safe handling of any sample, the Lab Safety Officer or appropriate Lab Manager must be consulted before the sample is logged in.

II. **CHAIN OF CUSTODY FORM**

A. The purpose of the Chain of Custody Form is to legally document the transfer of the sample(s)from the customer to the laboratory. Since any sample may potentially be used as evidence in legal proceedings, it is important that the Chain of Custody Form be filled in completely and accurately.

B. The Chain of Custody Form should furnish an accurate record of the samples received, analyses requested, and any important information from the Client regarding the samples. The information entered on the form should be as complete as possible, including:

1. Client's name and address with zip code

2. Client project manager's name and telephone number

3. Information on custody seals - If present are they intact?

4. Information on Samples:

    a. Is the number of samples listed correctly?

    b. Are all samples individual, or sub-samples of one sample?

    c. Is the description of the samples complete?
    (are samples soil, waste-water, drinking water (if samples are chemicals, a complete description and MSDS information should be furnished.)

    d. Are samples identified correctly? Sample ID numbers or markings should be checked against the Chain of Custody. The date sampled should also be on the chain of custody.

    e. The condition of the samples should be noted.
    - Are samples cool or frozen?
    - Are containers leaking or broken?
    - Damaged containers should be noted on the Sample receipt form under "important information section" and reported to the project manager immediately.

    f. The type of containers must be noted (glass jar, plastic container, brass tube, VOA

vial, etc.)

g. All preservatives added to the samples must be noted on the sample containers and is indicated on the sample pH log form attached to the chain-of-custody.

h. Any inconsistencies in the documentation and samples should be thoroughly investigated. The ideal time to solve a problem is during the log-in process.

5. Analyses requested by the Client must be specific and correspond EXACTLY to our listed analyses profile. If there is any doubt as to the analyses required, the Sample Receiving Person should contact the Client, or the appropriate Lab Manager.

- In the case where subsamples of the same sample are submitted, and different analyses are requested for each sub-sample, all information and the labeling of each container must be made VERY CLEAR to avoid confusion in the laboratories. EACH CONTAINER MUST HAVE A LAB REQUEST NUMBER and an ORDER NUMBER.

6. Any problems with improper preservation, sample container type, volumes, etc. are to be noted on the Chain of Custody. This is to document problems which may interfere with a proper analysis of the sample. A written copy should also be given to the Lab Project Manager or Customer Representative who may need to contact the customer.

7. The Client should sign in the " Relinquished by " space and also in the " Authorization " space when appropriate.

8. The person receiving the sample(s) must sign the Chain of Custody Form in the "Received by Laboratory for Analysis" space, and record the date and time.

9. When the sample is entered into the Laboratory computer system (a Lab Request Summary is generated) the Lab Request Number should be recorded on the Chain of Custody.

10. Distribution of copies:

a. Attach the White and Yellow Copy to the Blue Lab Request Summary.

b. The Pink Copy is given to the Client.

c. A copy of the Chain of Custody should be attached to all copies of the Lab Request Summary.

d. All Lab Requests are checked by the appropriate Project Manager.

III. **SAMPLE CONTROL RECORD** (Internal Chain of Custody)

A. A separate Sample Control Record for sample tracking through the laboratory may be initiated by the Sample Receiving Department if this is required by a client or contract (such as EPA/CLP).

B. Information to be entered into the Sample Control Record (refer to the attached copy):

1. The Lab Request Number is written at the top of the Form.

2. The Client's Name and Date is recorded.

3. All individual samples are recorded in the Sample ID space. Samples are identified by the Lab Request Number assigned at the time of sample Log-In. This number is generated by the computer when the sample(s) are logged-in to the computer system.

C. Storage of samples requiring Sample Control Record (Legal Samples).

1. After the samples are logged into the computer system and labeled, they are transferred to a locked storage refrigerator in the Sample Storage Area.

2. Document the transfer of all samples to and from the Sample Custodian with the date and time samples were transferred. Both the Sample Receiving person and Sample Custodian sign the Sample Control Record.

3. For Legal Samples (including EPA/CLP samples), the samples must be kept in locked storage. In this case the Sample Control Record is kept by the designated Sample Custodian who also controls access to the samples. When samples are removed from storage they are logged out on the Sample Control Record which records the date, time and person removing the samples. When the samples are returned they are logged back in with the date, time and initials of the person returning the samples. Samples are not removed from locked storage overnight. The person who removes the samples is responsible for the custody of the samples, and for their return to storage before the end of the working day.

D. Sample Control Record Tracking

1. Each time samples are transferred to or from the Sample Custodian, the Sample Control Record for those samples must be signed.

2. Each person receiving the samples in each department must sign for those samples received and also note the date and time samples are received. Fill in Received By - Dept., Person and Date/Time when samples are delivered to each department and again when the samples are returned to the Sample Custodian.

3. Only one sample control record will be completed for each lab request number (Sample Log In Sheet). No copies are to be made unless clearly labeled as a copy.

4. The Sample Control Record is kept on file by the Sample Custodian and attached to the file when all analyses are completed.

IV. **SAMPLE ACCEPTANCE POLICY**

Sample acceptance policy determines if the sample is identified correctly, with proper documentation, packaging, adequate volume for the analyses requested and correct preservatives.

1. Sample identification (is the sample waste water, drinking water, hazardous waste, unknown?). For accurate analysis, the sample and sample source must be identified correctly. If there is an obvious discrepancy between the sample and documentation, this is normally investigated first by the Sample Receiving Personnel. If the problem cannot be resolved, then the appropriate lab manager is notified.

2. Documentation with the sample (is it adequate?). Sufficient documentation should be supplied with the sample to fill in the Chain of Custody completely. If there are any doubts as to the sample identification or analyses requested, the client should be called immediately.

3. Documentation generated during sample login. All communications *via fax, email or mail* and decisions regarding the client samples should be documented and signed in writing and attached to the original Lab Sheet (and all copies if necessary).

4. Sample condition (sufficient volume, correct preservative, correct container type, condition of sample, etc). The employee receiving the sample must note on the Chain-of-Custody form or an attached Sample Receipt Form the following information for each sample and fraction:

    a. Container Type (Glass, Amber glass, plastic, brass tube, etc.).

    b. Volume in container (1 L, 500 ml, etc.)

    c. Temperature (Room temp., cool, frozen)

    d. If samples are in a cooler, the temperature in the cooler.

    e. Preservatives added must be listed on the sample container and/or the Chain of Custody form.

    f. The sample must be within the specified holding times for the analyses requested.

    g. Any irregularities noted in the samples (leaking, air bubble in VOA vial, improper packaging, etc.).

5. Responsibility for contacting the customer about problems. The Sample Receiving personnel have primary responsibility for contacting the project manager or client immediately for routine problems with samples. Each client is normally assigned to a project manager, and the person logging the sample is also responsible for informing the project manager of any problems. This may be done with notes on a copy of the lab sheet or chain of custody. Generally all information and decisions must be documented in writing with a date and signature.

6. *A sample receiving checklist must be completed and attached to the final report. See Appendix I for Sample Receiving Checklist.*

V. SAMPLE LOGGING PROCEDURES

A. Description of Computer Logging Procedure:

1. The LIMS system will be used to record and track all samples received at the laboratory. Completed test results should be turned in to the project manager as designated on the Lab Request Summary.

2. Each Department should report the results of all analyses on the blue Results Worksheet and turn this in to the project manager, along with all worksheets and raw data generated in analyzing the samples.

3. When samples are logged into the LIMS system, the system will create one label for each sample container, a Lab Request Summary on blue paper, and a Results Worksheet for each lab department on blue paper. When samples are logged into the LIMS, they are assigned a unique sample number (order number) and all samples in the same group, received on the same day are normally assigned to a unique Lab Request Number.

4. The Sample Receiving personnel will make copies of the login documents as follows: A copy of the Lab Request Summary and the chain-of-custody for each Results Worksheet.

5. Copies of the login documents will be distributed as follows:

   a. Project Manager: The Lab Request Summary and one copy of the Chain of Custody.

   b. Each Department: The blue (original) Results Worksheet + copy of the Lab Request Summary + copy of the Chain of Custody.

   c. Attach the original Chain of Custody to the original Lab Request Summary.

   d. A Posting Log Book is maintained to verify that a copy of the Lab Request and Worksheets was distributed to each affected Department.

6. If problems are noticed with the test codes, analyte list or detection limits (DLR) please correct the Worksheet and give a copy to Jim or Steve as soon as possible so corrections can be made in the LIMS.

B. **Description of Lab Request Summary**

1. A Lab Request Summary is prepared which includes:

a. Client name, address and client ID number.

b. Person to whom final report is to be sent.

c. Date sample received.

d. A complete description of the sample(s) including client identification number(s), sample matrix, date /time sampled.

e. A Lab Request Number and an order Number is generated by the computer for each sample.

f. A complete list of all analyses to be completed on each sample, including Method Number, Profile and Service Group / Department.

g. Login information including ID of person logging in the sample, date and time.

h. Order numbers and corresponding customer ID numbers for each sample.

i.A Sample Control Record (Internal Chain of Custody) is completed if needed. This document is used to record the transfer of the samples to departments (see section III).

See Appendix J for a sample of Lab Request Summary.

C. Sample Labeling

Each sample is labeled with the label generated by the computer. The label contains the Lab Request Number, Order Number, Client sample ID and log date.

For Orders where multiple containers are submitted (multiple fractions for different analyses), each separate container (fraction) should be labeled with the order number + A , B , C , etc. to designate fractions for each separate analysis. This fraction designation is then recorded by the custodian and analyst on the sample preparation log to document that the correct sample fraction was analyzed for each analysis method.

D. Procedure for Logging in Additional Analyses.

1. If additional analyses are requested by a client after the samples have been initially logged in and distributed to the labs, an amended Lab Request Summary may be generated for the additional analyses (using the same Lab Request number). The amended Lab Request Summary will note the additional tests in the Comments section.

2. Additional analyses may also be noted using an additional analyses request form to notify all affected departments of the additional tests. Information required is as follows:

a. Name of client
b. Previous Lab ID#
c. Sample type
d. Sample ID
e. Additional analyses
f. Date of request
g. Signature of employee

3. A new Lab Request will be generated if necessary. The new Lab Request Summary will have a new Lab Request Number for the additional analyses, and the samples will be relabeled with the new Lab Request Number. The original Lab Request Number will be retained on the samples.

a. The new Lab Request Summary must clearly reference the original Lab Request number and explain that analyses requested are in addition to the previous analyses (or other reasons for the new Lab Request Summary).

b. Copies of the new Lab Requests are forwarded to all departments affected.

E. **Backup Logging Procedure in Event of Computer System Failure**.

1. Temporary lab Request Summaries have been designed and are available in the Sample Receiving Department.

2. In the event the computer system is non-functional, the Sample Receiving Supervisor will issue temporary lab Request Summaries along with a temporary login reference number (eg. A100).

3. The supervisor will keep a list of assigned numbers and corresponding information (client, departments receiving lab Request Summaries, person writing the ticket).

4. When the computer is functional, standard lab Request Summaries will be issued.Samples that have received temporary numbers will be retrieved and re-numbered with the computer assigned lab Request Numbers. The standard lab Request Summaries will be attached to each corresponding temporary lab Request Summary that was issued.

VI. HANDLING OF THE SAMPLES AFTER LOGGING

A. Handling of the logged-in samples in the laboratory

1. After the samples are logged into the computer system and labeled, they are transferred to the Sample Custodian in the Sample Storage Area. All samples are logged into the Sample Control Log Book organized by Lab Request number. The client

name, number and type of containers are entered. The Sample Custodian must sign the Log Book for all containers received.

2. The samples are stored in locked refrigerators or the locked walk-in cooler prior to analysis.

3. All samples transferred to the Sample Storage Area are logged into a Sample Logbook in the Sample Storage Area. The Sample Logbook is maintained by the Sample Custodian.

4. When samples are picked up by laboratory personnel for analyses, the samples are signed out, and when returned, they are signed back into Sample Storage.

5. When samples are disposed of, this is noted in the Sample Logbook.

6. During weekends and evenings, only designated personnel have access to the Sample storage areas. All samples removed must be documented in the Sample Custodian Logbook.

B. Handling of samples to be sent out to other labs.

1. Arrangements to send samples out for analysis are handled by the project manager and must have the Client's consent.

2. Samples to be transferred to another lab are logged into the LIMS for "Send Out" and the Information is posted on the "Out Board" similar to posting to an in-house department. Samples to be sent out are subsampled and shipped by the Sample Custodian.

2. A portion of each sample to be sent out is retained in the original container. Procedures for sending out samples to other labs is described in the SOP for Subcontracting Analyses and the SOP for Soil Sub-Sampling and Compositing Procedures.

C. Returning samples to the client.

1. When a client requests that the samples be returned to them upon completion of the analyses, the sample receiving personnel should make sure that a notification is made on the lab sheet and that it is clearly visible

2. When all analyses are completed, a note is given to the Sample Custodian listing the samples to be returned and address to be used.

3. If the sample is returned by UPS, the sample pickup record will document that the sample was returned. If the sample is delivered by our driver or picked up by the client, the client should sign the chain of custody or a receipt to show the samples were returned to them. A record book is maintained in Sample Receiving to document the return of samples.

APPENDIX C

Sample Container and Preservation Guide

Updated: April 17, 2009

	Method	Container[1]	Suggested Volume	Preservative	Holding Time[2]
Volatile Organics					
(VPH) Gasoline	(5030) 8015 B	VOA-glass	2 40ml vials	Cool 6 C	7 days[3]/14 soil(6)/3day air
(VPH) Gasoline/BTEX	(5030) 8015B/8021B	VOA-glass	2 40ml vials	Cool 6 C	7 days[3]/14 soil (6)/3day air
Purgeables	624/8260B	VOA-glass	2 40ml vials	Cool 6 C	14 days/3day air
Purgeables in DW	524.2	VOA-glass	2 40ml vials	Cool 6 C, Ascorbic Acid + HCl	14 days/3day air
Semi-Volatile Organics					
(EPH) Diesel(Carbon Chair	8015B	glass-amber	1 L	Cool 6 C	7 days/14 soil[4]
Semi-Volatiles (BNAs)	625/8270	glass-amber	1 L	Cool 6 C	7 days/14 soil[4]
Pesticides & PCBs	608/8081	glass-amber	1 L	Cool 6 C	7 days/14 soil[4]
Phosphorous Pests.	614, 622/8141	glass-amber	1 L	Cool 6 C	7 days/7 soil[4]
Herbicides	615/8151	glass-amber	1 L	Cool 6 C	7 days/14 soil[4]
Polynuclear Aromatics	610, 8310	glass-amber	1 L	Cool 6 C	7 days/14 soil[4]
Haloacetic Acids	552.2	glass-amber	250 ml	Cool 6 C, 5mg NH_4Cl/50ml	14 days[4]
Carbamate Pesticides	632	glass-amber	1 L	Cool 6 C	7 days[4]
EDB/DBCP	504	glass	2 40ml vials	Cool 6 C, Na2S2O3	14days
Metals					
Mercury	245.1/7470	poly	500 ml	HNO_3 to pH<2	28 days
Chromium VI	218.6/SM3500 Cr-D	poly	500 ml	Cool 6 C/filter, NH4/SO4 to pH9.3-9.7	28days
	7199/7196	poly	500 ml	Cool 6 C	24 hours
Organic Lead	DHS (LUFT)	glass-amber	1 L	Cool 6 C	14 days
All Other Metals	200/6000/7000	poly	500 ml	HNO_3 to pH<2	6 months

Inorganic & Wet Chemistry

Alkalinity	310.1/SM2320B	poly or glass	500 ml	Cool 6 C	14 days
COD	410.4/SM5220C/SM5220D	poly or glass	500 ml	Cool 6 C, H_2SO_4 to pH<2	28 days
BOD	405.1/SM5210B	poly or glass	1L	Cool 6 C	48 hours
Chloride	300	poly or glass	500 ml	None	28 days
Cyanide	335.1/335.2/9010B/4500CN 335.4/9012A	poly or glass	1 L	Cool 6 C, NaOH to pH>12[5]	14 days
Flashpoint	1010/1030	poly or glass	500 ml	None	N/A
Fluoride	300.0/340.2/SM4110B/SM 4500-FC	poly or glass	500 ml	None	28 days
Hardness	200.7/SM2340B/SM3120B	poly or glass	500 ml	HNO_3 or H_2SO_4 to pH<2	6 months
Nitrate, Nitrite	353.2/SM4500-NO3F/300.0/SM4110B	poly or glass	500 ml	Cool 6 C	48 hours
Total Nitrate/Nitrite-N	353.2/SM4500-NO3F/300.0/SM4110B	poly or glass	500 ml	Cool 6 C, H_2SO_4 to pH<2	28days
Oil & Grease	1664A/SM5520B	glass-amber	1 L	Cool 6 C, H_2SO_4 to pH<2	28 days
Phenols	420.1	glass-amber	1 L	Cool 6 C, H_2SO_4 to pH<2	28 days
Phosphorous (Total)	365.2/SM 4500-PE	poly or glass	500 ml	Cool 6 C, H_2SO_4 to pH<2	28 days
Phosphate (Ortho)	365.2/SM 4500-PE	poly or glass	500 ml	Cool 6 C	48 hours
pH	150.1/SM4500-HB/9040B/9045C	poly or glass	500 ml	None	Immediate
Solids (TDS, TSS, TS)	160.1/160.2/160.3/SM2540C	poly or glass	500 ml	Cool 6 C	7 days
Specific Conductance	120.1/SM2510B	poly or glass	500 ml	Cool 6 C	28 days
Total Sulfide	376.2/SM4500-SDF/9034	poly or glass	500 ml	Cool 6 C, $ZnCO_2CH_3$+NaOH pH>9	7 days
Soluble Sulfide	376.2/SM4500-SDF/9034	poly or glass	500 ml	Cool 6C	Immediate
TRPH	418.1	glass-amber	1 L	Cool 6 C, H_2SO_4 to pH<2	28 days
TOC	415.1/SM5310B	glass-amber	250 ml	HCL to pH<2	7 days
TOX	9020	glass-amber	500 ml	HNO_3 to pH<2	28 days
Ammonia	350.2/SM4500-NH3C,G	poly or glass	500 ml	Cool 6 C, H_2SO_4 to pH<2	28 days
TKN	351.2	poly or glass	500 ml	Cool 6 C, H_2SO_4 to pH<2	28 days
Chlorite	300	poly or glass	500 ml	Cool 6 C, EDA	48 hours
Radioactivity	9000	Any	1 L	HNO_3 to pH<2	7 days
Bioassay (Effluent)	600/4-85/01	poly or glass	5 Gallons	Cool 6 C	36hr

Notes:

(1) Soil samples are typically collected in brass or steel tubes and wide mouth jars (500ml)
(2) Unless otherwise stated, holding times apply to soil and water matrices.
(3) To extend the holding time to 14 days, prepare bottle with HCL to pH<2
(4) Holding times shown are days until extraction. Samples have a 40-day (7-day for 552.2) holding time after extraction.
(5) If chlorinated, add 0.6g Ascorbic Acid
(6)If soil samples are in EnCore, the holding time is 48hours. Freezing the unpreserved sample can extend the holding time up to seven days.

APPENDIX D

Capital Equipment Inventory

Last Update: June 2009

Department	Instrument Description	Quantity	Serial No.	Date
Chemistry	Perkin Elmer FIMS400 Flow Injection Mercury Analyzer with AS90 Autosampler and Data System	1	4543/3670	
Chemistry	Lachat FIA+ Quickchem 8000 Flow Injection Analyzer with Autosampler and Data System	1	A83000-1315	
Chemistry	Lachat Colorimeter (10mm path)	1		
Chemistry	Lachat Manifold (NO2/NO3)	1	10_107_04_O	
Chemistry	Lachat Manifold (NH3-N)	1	10_107_06_1-A	
Chemistry	Lachat Manifold (TKN)	1	10_107_06_2-E	
Chemistry	Lachat Manifold (CN)	1	10_204_00_1-A	
Chemistry	Lachat Manifold (TKP)	1	10_115_01_1-P	
Chemistry	Dionex 2000 Ion Chromatograph with Autosampler, ASRS Supressor, CD20 Conductivity Detector and data system – System I	1	96030596	
Chemistry	Dionex 2000 Ion Chromatograph with Autosampler, ASRS Supressor, ED40 Electrochemical Detector and data system – System I	1	97020907D991001	
Chemistry	Dionex 2000 Ion Chromatograph with Autosampler, ASRS Supressor, CD25 Conductivity Detector and data system (perchlorate analysis) – System II	1	01090605	

Chemistry	Dionex 2000 Ion Chromatograph with Autosampler, AD25 Absorbance Detector and data system (hexavalent chromium analysis) – System I1	1	01120109	
Chemistry	Dionex 3000 Ion Chromatography with AS Autosampler, Dual Pump, EG 11 KOH cartridge, EG, CR-ATC Continuously Regenerated Anion Trap Column and CD conductivity Detector	1	08110325 08110200	
Chemistry	Tekmar Dohrman DX-2000 TOX Analyzer with data system	1	98023001	
Chemistry	Horizon Oil and Grease Analyzer System	1	06-2059	2006
Chemistry	Shamidzu Spectrophotometer UV1700	1	A110244	2007
Chemistry	Mettler AE163 Scale	1	D14314	
Chemistry	Mettler AE163 Scale	1	WB1225	
Chemistry	Mettler AE200 Scale	1	J79480	
Chemistry	Mettler PE3000 Scale	1	F17120	
Chemistry	Denver APX-323 Scale	1	A33015028	
Chemistry	Sartorius BA61 Scale	1	30701480	
Chemistry	Labconco 65200-00 Rapidstill II		051044717E	
Chemistry	Labconco 65200-00 Rapidstill II	1	990192069E	
Chemistry	Fisher Scientific Coulomatic K-F Titrimeter	1	842	
Chemistry	Beckman TJ-6 Centrifuge	1	7A055	
Chemistry	Eppendorf 5415C Centrifuge	1	5415B67934	
Chemistry	Drying Oven Precision/Thelco130DM	1	605031244	
Chemistry	Drying Oven – Scientific Products DX31	1	124030	
Chemistry	PH Meter Beckman 31	1	K711071	
Chemistry	PH Meter Thermo ORION 720A	1	67511	
Chemistry	PH Meter Thermo ORION 710A	1	57736	
Chemistry	Turbidity Meter Hach 2100N	1	99020000-5174	
Chemistry	Conductivity Meter Thermo/Orion 3 Star	1	16835	2007
Chemistry	Fume Hoods	6		
Chemistry	Water Baths	3	2 Fisher120, 1Precision180	
Chemistry	BOD Incubator	3	Fisher307	
Chemistry	Refrigerator	1		
Chemistry	Rapid Digestor Labconco 23012	1	990891743E	
Chemistry	Heater/Stirrer Fisher Isotemp	1	504N0178	

Chemistry	Heater Thermolyne Cimerac 3	1		
Chemistry	Shaker Erbach 6000	1	402N0036	2007
Fish Toxicity	4 Gallon Tanks	40		
Fish Toxicity	Disposable Tanks (approx. 3 Gallons each)	100		
Fish Toxicity	30 Gallon Tank	3		
Fish Toxicity	20 Gallon Tank	1		
Fish Toxicity	Air Pumps	10		
Fish Toxicity	Circulation Pump	1		
Fish Toxicity	pH Meter	1		
Fish Toxicity	Recording Thermograph	1		
Fish Toxicity	YSL Model 50B DO Meter	1		
VOA-GC	Varian 3400 GC with FID & PID (VOA-GC3), concentrator LSC 2000 and Data System	1		1991
VOA-GC	Varian 3400 star GC with FID & PID, Archon autosampler, concentrator Tekmar 3000 and data system (VOA-GC1)	1		1989
VOA-GC	Varian 3300 GC with FID & PID, Archon Aautosampler, concentrator LSC 2000 and data system (VOA-GC2)	1		1989
VOA-GC	Varian 430 GC with FID, autosampler CP 8400 and data system (SVOA-GC22)	1	GC0901B304	2009
VOA-GC	Agilent 6890N GC with FID, autosampler 7683B and data system (SVOA-GC20)	2	CN44130843 CN10540091	2005
VOA-GC	Varian CP-3800 GC with FID & PID, Archon autosampler, concentrator LSC 2000 and data system (VOA-GC6)	1		1999
VOA-GC	Varian CP-3800 GC with FID & PID, Archon autosampler, Tekmar 3000 concentrator and data system (VOA-GC5)	1		2004
VOA-GC	Varian 3300 GC with FID, and data system (VOA-GC4)	1		1986
VOA-GC	Varian 3400 GC with FID, Varian 8100 autosampler and data system (SVOA-GC21)	1		1990
VOA-GC	Varian 3400 GC with TCD (VOA-GC7)	1		1988
VOA-GC	TCLP Rotary Agitators - ZHE	1		
VOA-GC	TCLP ZHE Extractors	4		

VOA-GC	TCLP Pressure Filters	2		
VOA-GC/MS	Varian Model 3800 gas chromatograph with Varian Saturn 2200 MS Detector, Archon Autosampler, Tekmar velocity concentrator and Data Station (VOA-MS7)	1	04575-10060 14086	2003
VOA-GC/MS	Varian Model GC3900 with Saturn 2100T, Archon Autosampler, Teckmar Concentrator LSC3100 and MS Workstation 6.9	1	2100T- 6508102076	2008
VOA-GC/MS	Varian Model 3800 gas chromatograph with Varian Saturn 2000 MS Detector, Archon Autosampler, Tekmar LSC 3000 and Data Station (VOA-MS6)	1	4443-6028 13329	2001
VOA-GC/MS	Varian Model 3800 gas chromatograph with Varian Saturn 2000 MS Detector, Archon Autosampler, Eclipse 4660 and Data Station (VOA-MS5)	1	3810-3780 0632466635 13073	1999
VOA-GC/MS	Varian Model 3800 gas chromatograph with Varian Saturn 2000 MS Detector, Archon Autosampler, LSC 3100 and Data Station (VOA-MS4)	1	3811-3781 13345	1999
VOA-GC/MS	Varian Model 3800 gas chromatograph equipped with Varian Saturn Model 2000 MS Detector (VOA-MS3), Archon Autosampler, Tekmar Velocity XPT autosampler and Data Station	1	Saturn2000-3792 13075	2005
VOA-GC/MS	Varian Model 3800 gas chromatograph equipped with Varian Saturn Model 2000 MS Detector, 2 flame ionization detectors, and a Lotus air sampling system. (VOA-MS1)	1	2000-48397315	2001
Microbiology	Castle Thermatic 60, 20x24 Autoclave, Automatic	1		
Microbiology	Market Forge Sterilmatic Autoclave	1		
Microbiology	Wesco, 4 Objective Microscope	1		
Microbiology	B&L Dissecting Microscope	1		

Microbiology	Lab-Line Imperial III Incubator	1		
Microbiology	Baush & Lomb Refractometer	1		
Microbiology	VWR 1555 Incubator	1		
Microbiology	VWR Incubator, 40 cubic ft.	1		
Microbiology	Thermo Scientific Waterbath	1		
Microbiology	Fisher Scientific CO2 Incubator	1		
Microbiology	Baxter Scientific Product Vortex Mixer	1		
Microbiology	Sartorium Universal Balance	1		
Microbiology	Colony Counter	1		
Office Data Handling	Brother Fax	2	MFC-8460N	
Office Data Handling	Kyocrea Copiers and Printers	6	KM-8030 KM-4050 KM-2560(4)	
Office Data Handling	LIMs Computer System (39 stations)	1		
Office Data Handling	Sample Master Version 8.0	1		
Office Data Handling	HP Laserjet Printers	4		
Office Data Handling	Kyocera Ecosys Printer	2		
Office Data Handling	Lexmark Printers(T-644, 622, 520)	3		
SVOA	Agilent 6890N gas chromatograph with a Agilent 5973 Mass Selective Detector and a Agilent 7683B automatic injector	1	CN10502043 US44647151 Cn45131647	2005
SVOA	Shimadzu 2010 GCMS	1	C70384350031	2006
SVOA	Hewlett Packard 5890A Series II GC, dual ECD detectors, Autosampler and Data Station	1	3022A28956	1990
SVOA	Varian 3400 GC, dual ECD detectors, Autosampler (GC-3400)	1	14304	1991
SVOA	Varian 3800 GC, dual ECD detectors, Autosampler (GC#1)	1	2771	
SVOA	Varian 3800 GC, dual ECD & PFPD detectors, Autosampler (GC#2)	1	6056	2000
SVOA	Varian 3800 GC, dual ECD & PFPD detectors, Autosampler (GC#3)	1	9085	2000
SVOA	Varian 3400 GC, FID detector, Autosampler (GC-Alcohol)	1	6692	1989
SVOA	Waters Dimension II GC, ECD & FID detectors, data system	1	GC2-8901009	

SVOA	Shimadzu SCL-10A VP System Controller, LC-10AT Pumps, Autosampler, SPD-M10A VP Diode Array Detector, Data System	1	C2103750927US	2000
SVOA	Shimadzu GC-2010, dual injectors, dual ECD detectors (ECD#1, ECD#2), Autosampler and workstation	1	C11324101922	2003
SVOA	Dionex ASE 200 Accelerated Solvent Extractor and Controller	1	1060057	2001
SVOA	Dionex ASE 200 Accelerated Solvent Extractor and Controller	1	97060620	2000
SVOA	Zymark Turbo Vap II Concentration Workstations	3		2000
SVOA	Ohaus Brainweight B1500D Toploader Balance	1	11532	
SVOA	Boekel 1494 Steambath	1		
SVOA	Fisher Isotemp 228 Steambath	2		2000
SVOA	Fume Hoods	5		
SVOA	Varian 3300 GC (Drying Oven)	1	5415	1988
SVOA	B. Braun Braun-Sonic U Ultrasonic probe and generator	1		
SVOA	VWR 1350G Drying Oven, gravity	1		
SVOA	Precision Scientific 16 Drying Oven, gravity	1		
SVOA	National Appliance Drying Oven, gravity	1		
TOC/RAD	Gas-Flow proportional counting system -- Protean Instr., Model 9025.	1		1991
TOC/RAD	Geiger-Mueller Counter (portable) -- S.E. Intl. Model 4EC	1		1991
TOC/RAD	Infrared Heater and Stand (Fisher Scientific, Model 11-504-5	1		1991
TOC/RAD	Labconco Model 59000 Chemical Fume Hood	1		1991
TOC/RAD	Mettler Model H35AR Analytical Balance	1		
TOC/RAD	Dessicator, Nalgene Model 8-642-21	1		1991
TOC/RAD	TOC Analyzer, Shimadzu, TOC-5000	1		
TOC/RAD	Shimadzu TOC-VCSH Total Organic Carbon Analyzer, A/S	1		2004

	and Data System			
AA/ICP Metals	PE Sciex Elan 6100 ICP-MS with auxiliary data system and Cetac autosampler/diluter	1	1680004	2000
AA/ICP Metals	Perkin Elmer Optima 4300DV ICP with AS93+ autosampler and data system		077N1091901	2001
AA/ICP Metals	Perkin Elmer Aanalyst 100 AA	1	040S0110603	2001
AA/ICP Metals	MSI Computer	1		2006
AA/ICP Metals	TCLP Rotary Agitators	2		
AA/ICP Metals	Air Compressor – Craftsman	1		
AA/ICP Metals	Fume Hood – 6 Ft.	2		
AA/ICP Metals	Safeaire Fume Hood – 4 Ft	2		
AA/ICP Metals	Environmental Express Hot Blocks	3		

APPENDIX E

STANDARD OPERATING PROCEDURE FOR DETERMINATION AND UPDATING OF MDL/DLR DETECTION LIMITS

PURPOSE

1. This Standard Operating Procedure summarizes the procedure for determining MDLs (Method Detection Limit) and DLR (Reporting Detection Limit), in addition to the procedure for updating and revising current MDLs and DLRs.

DETERMINATION OF MDL

1. Prepare and analyze seven replicate spike solutions:

    1.1. Prepare one spiked bulk solution for each matrix at 1-5 times the estimated detection limit. The volume should be sufficient to prepare and analyze seven or more samples. The solution should be spiked with all analytes of interest.

    1.2. Prepare seven or more aliquots of the spiked solution per the normal method of preparation (process through the entire analytical method).

    1.3. Analyze all the aliquots by normal analysis procedures (QA samples such as spikes, duplicates, LCS and PB are not required).

    1.4. Calculate the standard deviation (n-1) of the seven results. For seven replicates multiply by 3.14 to calculate the MDL value for each analyte. (**NOTE:** Use the factor 3.14 only for seven replicates, other factors are given in the EPA reference noted below).

    1.5. More than 7 aliquots can be analyzed. If more than 7 aliquots are analyzed, then all values must be used in calculating the MDL. Use the Student's t value at the 99% confidence level for the number of replicates.

2. The MDL should be determined at least once a year for each analyte, each analytical method and each matrix (solid, water, etc). The MDL should be re-run whenever there is a significant change in instrumentation or procedure.

3. An MDL check sample at approximately 2 x MDL should be analyzed to verify the reasonableness of the MDL values obtained. The MDL check sample should be prepared the same way as the MDL check solutions. All analytes should be detected in the MDL check sample, or the MDL study should be modified and repeated for the analytes which are not detected.

DETERMINATION OF REPORTING DETECTION LIMIT (DLR)

1. Prepare and analyze one or more samples at the estimated reporting limit:

   1.1. Prepare one or more samples at the estimated reporting limit using the normal preparation procedure (process through the entire analytical method). QA samples such as spikes, duplicates, LCS and PB are not required.

   1.2. Analyze the sample by the normal analysis procedure.

   1.3. The analytical result must be 75-125 percent of the spike value. If not, increase the concentration until this accuracy can be achieved.

2. The concentration at which the spike recovery of 75-125% can be achieved is the Reporting Detection Limit (DLR).

UPDATING & REVISING MDL/DLR VALUES:

1. Every year, each department is required to submit their MDLs for each analyte and each analytical method to the QC department.

2. The QC department will then incorporate the current MDLs into the LIMS system for each analytical method (**NOTE:** In the LIMS, there may be several test codes for a particular analytical method. It is important that the MDLs for ALL test codes in the LIMS be updated).

3. After the MDLs for a particular test have been changed, the specs for that test are printed out and kept on file by the QC department, and a copy is returned to the analyst.

4. The QC department shall keep track of all changes in the MDLs through an MDL Master Tracking List, which contains the following information:

   4.1. The date the MDL for a particular test was updated.

   4.2. The date the MDL was run.

   4.3. The LIMS test code and test name for each test in which the MDLs have been updated.

   4.4. The corresponding analytical method for each test.

   4.5. Any additional comments for documenting any pertinent information or noting any unusual peculiarities in the database (e.g., some analytes that are missing DLRs, MDLs that are greater than the DLR, etc.).

5. The MDL must never exceed the DLR. If the MDL is equal to or greater than the DLR then the following steps must be taken:

   5.1. If the MDL is greater than the DLR for one or more analytes, then the MDL should be re-run or the DLR should be adjusted if possible.

5.2. If the MDL is equal to the DLR, then this must be reviewed by the QC department as well as the department supervisor to determine if such a scenario is acceptable.

5.3. All cases in which the MDL is greater than or equal to the DLR, including any steps taken to remedy the situation, must be noted in the MDL Master Tracking List.

REFERENCES:

1. 40 CFR, Chapter 1, Pt. 136, App.B (7-1-86 Ed).

2. NELAC Quality Systems Revision 16, July 12, 2002.

APPENDIX F

NON-CONFORMANCE CRITERIA AND DOCUMENTATION PROCEDURES

QA Samples - Corrective Actions:

1. Lab Control Sample (LCS- W for water samples, S for soil samples), the acceptance criteria for the LCS is 80 - 120 percent of true value or the current control limits. If not, all samples in the batch must be re-prepared and re-analyzed.

2. Method Blank (MBW for water samples, MBS for soil samples), the result must be less than the reporting limit for each element, or less than 1/10 the lowest sample in the batch. If not, all samples in the batch must be re-prepared and re-analyzed.

3. Matrix Spike Sample (MS), recovery should be 75 - 125, if not the sample result should be flagged for potential matrix interference for each element showing poor recovery. (For metals analyses, a post- digestion spike should be done for any element with poor matrix spike recovery).

4. Matrix Spike Duplicate (MSD), the relative percent difference between the MS and MSD should be less than 20 percent. If not the analysis should be repeated or the result flagged for precision out of limits.

5. Surrogate Recovery, the surrogate recoveries should be within the current control limits for all methods where surrogate recoveries apply. If the surrogate recoveries are outside control limits, the results should be flagged for potential matrix interference for each analyte showing recovery outside the control limits. If the surrogate recoveries for the LCS or Method Blank are outside control limits, all samples in the batch must be re-prepared / re-analyzed, unless it can be determined that the poor recovery was due to a problem specific to that sample only.

Non-conformance Documentation Form (NCD):

1. Non-conformances such as QA limit failures which can not be corrected by re-analyses, client requirements which cannot be met or standard method modifications are documentated by initiating a Non-Conformance Document Form (NCD). A copy of the NCD Form is attached.

2. The NCD form is initiated by the analyst in the event of a QC sample exceeding control limits or other known non-conformance to the analytical method or client requirements. The NCM may also be initiated by the project manager or department manager in the event client requirements are not met or other analytical problems are discovered.

3. After the NCD Form is initiated, the corrective action must be determined and agreed upon by the department manager or supervisor and the QA Manager. This is documented and signed by the department manager in the second part of the NCD

Form. The form is then forwarded to the QA Manager.

4. The QA Manager then completes and signs the final part of the form. If necessary, verification of the corrective action is documented in this section.

5. A copy of the form is included in the affected data package or the client is notified as appropriate. The original is filed in the Corrective Actions File which is maintained by the QA Manager.

Associated Laboratories

Non-Conformance Document

Date: _____ Document File #:

_____

Lab Request: _____ Type of

NCD:_____

Client ID: _____ *(QA Limits, Client Req, Other)*

Department: _____

Description of Non-Conformance:
Signed (Initiator) _____ Date: _____

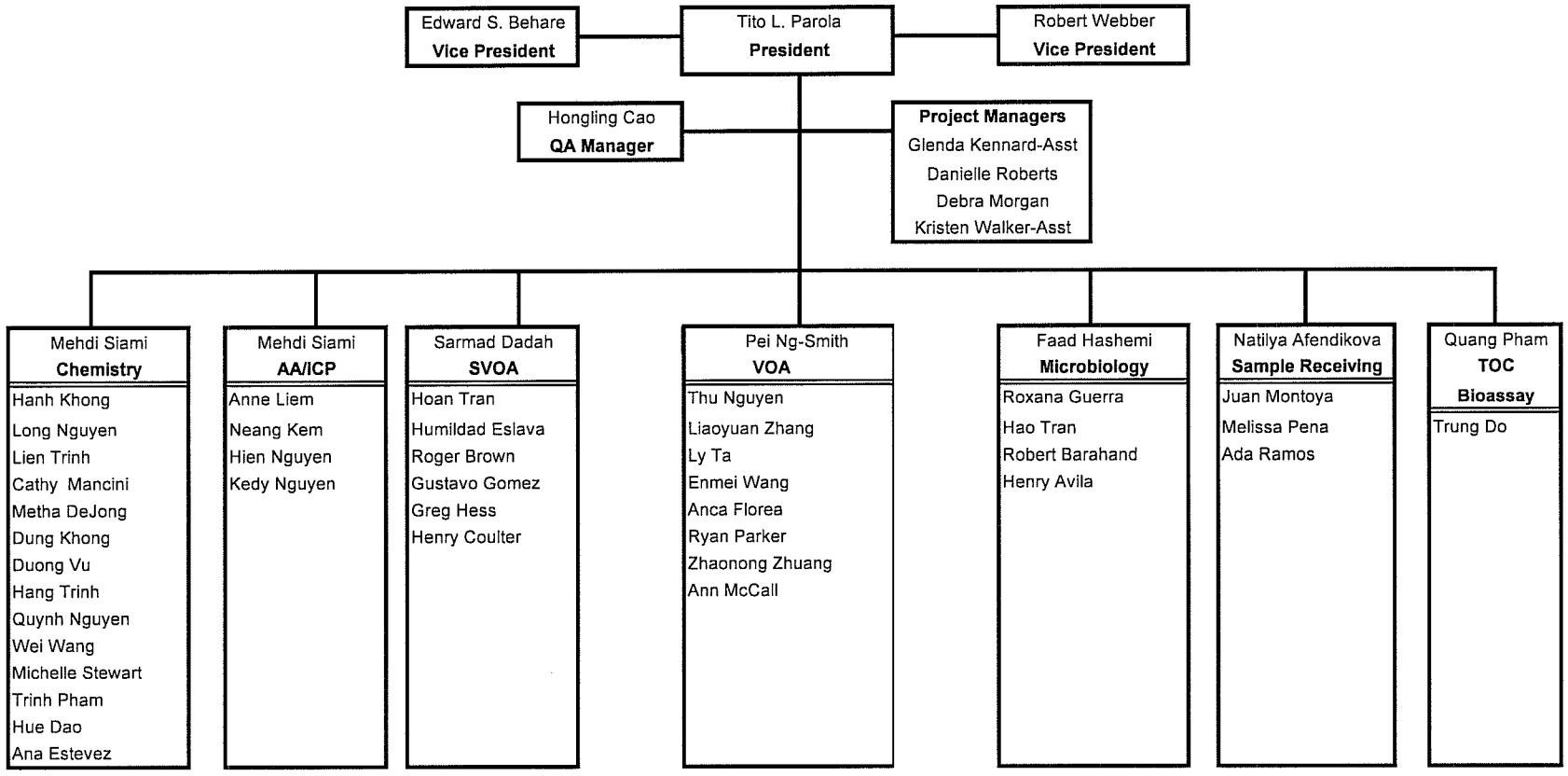
Description of Corrective Action:
Signed (Supervisor): _____ Date: _____

QA Manager Approval:
Signed (QA Manager): _____ Date: _____

APPENDIX G

ORGANIZATION CHART

ASSOCIATED LABORATORIES
LAB ORGANIZATION CHART



APPENDIX H

CURRENT STANDARD OPERATING PROCEDURES

Document #	**SOP**	**Test Method (if applicable)**	**Department**
A-0001	SOP for Writing SOPs		QC
A-0002	Updating/Control of SOPs		QC
QA Manual	SOP for MDLs		QC
A-0004	Control Charts		QC
QA Manual	Non-Conformance		QC
A-0006	Data Packaging		QC
A-0007	Ethics and Data Integrity Policies and Training		QC
A-0008	Internal Quality Audit Program		QC
A-0009	Purchasing services and supplies		QC
A-0010	Document Control		QC
A-0011	Subcontracting Laboratory Analyses		QC
A0012	Data Backup and Verification Procedure		QC
A0013	Data Auditing and Access Procedures		QC
B-0003	8015 Diesel SOP	EPA 8015 Diesel	VOA-GC
B-0004	8015 gas/BTEX SOP	EPA 8015 Gas/8021 BTEX	VOA-GC
B-0005	TRPH SOP	EPA 418.1	VOA-GC
B-0007	Dissolved Gas in Water by GC Headspace	RSK - 175	VOA-GC
B-0008	8015/8021Air		VOA-GC
B-0009	8015CarbonChain	EPA 8015B	VOA-GC
C-0001	Purgeable Organics	EPA 524.2	VOA-GCMS
C-0002	Purgeable Organics	EPA 624	VOA-GCMS
C-0003	SVOCs by GC/MS	EPA 625	VOA-GCMS
C-0004	VOCs by GC/MS	EPA 8260B	VOA-GCMS
C-0005	SVOCs by GC/MS	EPA 8270C	VOA-GCMS
D-0001	Acidity	EPA 305.1 / SM 2310B	Chemistry
D-0002	Alkalinity	EPA 310.1 / SM 2320B	Chemistry
D-0003	pH	EPA 150.1 / SM 4500H-B	Chemistry
D-0004	TDS	EPA 160.1 / SM 2540C	Chemistry
D-0005	TSS	EPA 160.2 / SM 2540D	Chemistry

D-0006	Volatile Solids	EPA 160.4 / SM 2540E	Chemistry
D-0007	Anions by IC	EPA 300 / SM 4110	Chemistry
D-0008	Bromide by IC	EPA 300.1	Chemistry
D-0009	Perchlorate	EPA 314	Chemistry
D-0010	Cyanide	EPA 335.1 & 335.2 / SM 4500-CN / SW846 9010B	Chemistry
D-0011	Ammonia-N	EPA 350.1 / SM 4500-NH3-G	Chemistry
D-0012	TKN	EPA 351.2 / SM 4500-Norg	Chemistry
D-0013	TKN	EPA 351.3 / SM 4500-Norg	Chemistry
D-0014	Nitrate/Nitrite-N	EPA 353.2 / SM 4500-NO3-E	Chemistry
D-0015	Total/Ortho-P	EPA 365.2	Chemistry
D-0016	TKP	EPA 365.4	Chemistry
D-0017	Mercury in Water	EPA 245.1 / SW846 7470A	Chemistry
D-0018	Reactive Cyanide	SW846-7.3.3	Chemistry
D-0019	Reactive Sulfide	SW846-7.3.4	Chemistry
D-0020	Oil & Grease	EPA 1664	Chemistry
D-0021	BOD	EPA 405.1 / SM 5210B	Chemistry
D-0022	COD (Hach)	EPA 410.4	Chemistry
D-0023	Silica	EPA 370.1 / SM 4500 Si-D&E	Chemistry
D-0024	Sulfide (Iodometric)	EPA 376.1 / SM 4500S / SW846 9034	Chemistry
D-0026	Total Phenolics	EPA 420.1 / SM 5530 / SW846 9065	Chemistry
D-0027	Chlorine	EPA 330.5 / SM 4500Cl-G	Chemistry
D-0028	UV absorbance	SM 5910B	Chemistry
D-0029	Settleable Solids	EPA 160.5 / SM 2540F	Chemistry
D-0030	Conductivity	EPA 120.1 / SM 2510 / SW846 9050A	Chemistry
D-0031	Turbidity	EPA 180.1 / SM 2130B	Chemistry
D-0032	Corrosivity	EPA 1110	Chemistry

D-0033	COD (Titrimetric)	EPA 410.1, 410.2 & 410.3 / SM 5220B	Chemistry
D-0035	Ignitability	SW846 1010	Chemistry
D-0036	Sulfide (Colorimetric)	EPA 376.2 / SM 4500S-D	Chemistry
D-0037	Fluoride	EPA 340.2 / SM 4500F-C / SW846 9214	Chemistry
D-0038	Cyanide	EPA 335.4 / SW846 9012A	Chemistry
D-0039	Ammonia-N (Titration)	EPA 350.2 / SM 4500-NH3-C	Chemistry
D-0040	Total Solids	EPA 160.3 / SM 2540B	Chemistry
D-0041	Color	EPA 110.2 / SM 2120B	Chemistry
D-0042	Cr (VI)	SM 3500 Cr-D / SW846 7196A	Chemistry
D-0043	Cr (VI) by IC	EPA 218.6	Chemistry
D-0045	MBAS	EPA 425.1 / SM 5540C	Chemistry
D-0046	Chloride (titration)	EPA 325.3 / SM 4500-Cl	Chemistry
D-0047	DO (Probe)	EPA 360.1 / SM 4500-O-G	Chemistry
D-0048	DO (Titration)	EPA 360.2 / SM 4500-O-C	Chemistry
D-0049	pH in Soil	SW846 9045C	Chemistry
D-0050	Mercury in Solid	SW846 7471A	Chemistry
D-0051	Total Sulfides	SW846 9030B	Chemistry
E-0001	Micro- CC	Control Cultures	Microbiology
E-0002	Micro-HPT	Heterotrophic Plate Count	Microbiology
E-0003	Micro-MNO/MUG	Coliform by MNO-MUG	Microbiology
E-0004	Micro-Coliform (MTF)	Coiliform by MTF in Waste Water	Microbiology
E-0005	Micro-Coliform (MTF)	Coliform by MTF in Drinking Water	Microbiology
E-0006	Micro - Strep (MF)	Strep by MF	Microbiology
E-0007	Micro - Strep (MTF)	Strep by MTF	Microbiology
E-0008	Micro - Autoclave	Water Suitability	Microbiology
E-0009	Micro - WS	Coliform by MTF in Drinking Water	Microbiology

E-0010	Micro - Inhibitory Residue		Microbiology
E-0012	Micro – Coliform (MF)	Coliform by MF in Waste Water	Microbiology
E-0014	Micro Sampling		Microbiology
F-0001	Metals by ICP	EPA 200.7	Metals
F-0002	Metals by ICP	EPA 6010B	Metals
F-0003	Metals by ICP-MS	EPA 200.8	Metals
F-0004	Metals by ICP-MS	EPA 6020	Metals
F-0005	Metals by AA	EPA 7420 / SM 3111B	Metals
F-0006	STLC	STLC	Metals
F-0007	TCLP	EPA 1311	All applicable labs
F-0008	Metals Prep	EPA 3010A	Metals
F-0009	Metals Prep	EPA 3050B	Metals
G-0001	TOC	EPA 415.1 / SM 5310B	Radio/Bioassay
G-0005	Aquatic Bioassay 013	EPA 600/4-85/013	Radio/Bioassay
G-0006	Reference Toxicant 013	EPA 600/4-85/013	Radio/Bioassay
G-0007	Aquatic Bioassay 027F	EPA 600/4-85/027F	Radio/Bioassay
G-0008	Reference Toxicant 027F	EPA 600/4-85/027F	Radio/Bioassay
G-0009	Aquatic Bioassay in Hazardous Waste		Radio/Bioassay
G-0010	Reference Toxicant in Hazardous Waste		Radio/Bioassay
H-0001	Organochlorides	EPA 608	Pesticides
H-0002	Organochlorides	EPA 8081	Pesticides
H-0003	PAHs	EPA 8310	Pesticides
H-0004	PCBs	EPA 8082	Pesticides
H-0005	Chlorinated Phenoxy-Herbicides by GC	EPA 8151	Pesticides
H-0006	L-L Extraction	EPA 3510C	Pesticides
H-0007	Ultrasonication	EPA 3550B	Pesticides
H-0008	PF Extraction	EPA 3545	Pesticides
H-0009	EDB, DBCP & TCP by GC	EPA 504.1	Pesticides
H-0010	EDB & DBCP by GC	EPA 8011	Pesticides
H-0011	OP Pesticides by GC	EPA 8141	Pesticides
H-0012	Haloacetic Acids	EPA 552.2	Pesticides
J-0001	Inorganics Glassware Cleaning		All applicable labs
J-0002	Thermometer Cal.		All applicable

		labs
J-0003	Balance Calibration	All applicable labs
J-0004	Reagent Water Mon.	All applicable labs
J-0005	Pipette Calibration	All applicable labs
J-0007	Soil Sub-Sampling and Compositing	All applicable labs
J-0008	Field Sampling	Sample Receiving
J-0009	Organic Glassware Cleaning	All applicable labs
J-0010	Laboratory Hazardous Waste Disposal	All applicable labs
J-0011	Analytical Standards	All applicable labs
J-0012	Project Management	All applicable labs
J-0013	Retention Time Windows	All applicable labs

SOP Revision Schedule

Department	Document #	SOP Revision Month
QC	A-####	July
Gas/BTEX	B-####	July
GCMS	C-####	July
Chemistry	D-####	July
Microbiology	E-####	July
Metals	F-####	August
Radiochemistry/Bioassay/ TOC	G-####	August
Pesticides	H-####	September
Others	J-####	September

APPENDIX I

SAMPLE RECEIVING CHECKLIST

ASSOCIATED LABORATORIES
806 North Batavia – Orange, California 92868 – 714-771-6900 *FAX 714-538-1209*

SAMPLE ACCEPTANCE CHECKLIST

Section 1
Client:_____ Project:_____
Date Received:_____ Sampler's Name: Yes No
Sample(s) received in cooler: Yes No (Skip Section 2)
Shipping Information: _____

Section 2
Was the cooler packed with: ____ Ice ____ Ice Packs ___ Bubble Wrap ___ Styrofoam
____ Paper ____None ___ Other_____
Cooler or box temperature: _____

(Acceptance range is 2 to 6 Deg. C.)

Section 3	YES	NO	N/A
Was a COC received?			
Is it properly completed? (IDs, sampling date and time, signature, test)			
Were custody seals present?			
If Yes – were they intact?			
Were all samples sealed in plastic bags?			
Did all samples arrive intact? If no, indicate below.			
Did all bottle labels agree with COC? (ID, dates and times)			
Were correct containers used for the tests required?			
Was a sufficient amount of sample sent for tests indicated?			
Was there headspace in VOA vials?			
Were the containers labeled with correct preservatives?			
Was total residual chlorine measured (Fish Bioassay samples only)? *			

*: If the answer is no, please inform Fish Bioassay Dept. immediately.

Section 4
Explanations/Comments

Section 5
Was Project Manager notified of discrepancies: Y / N N/A

Completed By: _____ Date: _____

APPENDIX J

SAMPLE OF LAB REQUEST SUMMARY

ASSOCIATED LABORATORIES LAB REQUEST SUMMARY

Client ID: **1000**

Some Client
Attn: BB
1234 Marvel Way
New York, NY 20007

Phone:209-200-2001 Fax: 209-200-2002

Submitter: Client

Project: Some Project

Lab Request: 158450

Date Received: 10/17/2005

Project Mgr.: JMM

REVIEW	BY	DATE
LOG IN		
DATA		
QC		
FINAL RPT		

FAX RESULTS

Order No.: 658819 **Matrix:** WATER **Log Date:** 10/17/2005@15:15 **Due Date:** 10/24/2005
Client Smpl. ID: Sample 1 **Sampled:** 10/17/2005 **Status:** Logged

Method	Profile	Test Name	Analyte	Service Group
120.1		120.1 Conductivity	All	CHEM
150.1		150.1 pH	All	CHEM
1664		1664 Oil and Grease	All	CHEM
300.0		300.0 Nitrate as NO3 by Ion Chromatography	All	CHEM
300.0		300.0 Sulfate by Ion Chromatography	All	CHEM
300.0		300.0 Chloride by Ion Chromatography	All	CHEM

Order No.: 658820 **Matrix:** WATER **Log Date:** 10/17/2005@15:15 **Due Date:** 10/24/2005
Client Smpl. ID: Sample 2 **Sampled:** 10/17/2005 **Status:** Logged

Method	Profile	Test Name	Analyte	Service Group
200.7		200.7 ICP Total Metals - Water Only	Calcium	AA/ICP
200.7			Copper	AA/ICP
200.7			Lead	AA/ICP
200.7			Magnesium	AA/ICP
200.7			Potassium	AA/ICP
200.7			Sodium	AA/ICP
245.1		245.1 Mercury in Water by Manual Cold	All	CHEM

Logged By: JIM

ASSOCIATED LABS RESULTS WORKSHEET FOR LAB REQUEST 158,450

Order #: 658819 **Client Smpl ID:** Sample 1 **Matrix:** WATER

Test #	Analyte	An. Date	Init.	DF	Result	DLR	Units
120.1	Conductivity					1.0	umhos/cm
150.1	pH						NA
1664	Non-Polar Oil and Grease					5	mg/L
1664	Total Oil and Grease					5	mg/L
300.0	Chloride					1.0	mg/L
300.0	Nitrate (as NO3)					0.44	mg/L
300.0	Sulfate					1.0	mg/L

Comments:

Order #: 658820 **Client Smpl ID:** Sample 2 **Matrix:** WATER

Test #	Analyte	An. Date	Init.	DF	Result	DLR	Units
245.1	Mercury					0.0004	mg/L

Comments:

DLR = Detection limit for reporting purposes. DF = Dilution factor. An. Date = Date of analysis. Init = Analyst initials

AA/ICP

ASSOCIATED LABS RESULTS WORKSHEET FOR LAB REQUEST 158,450

Order #: 658820 **Client Smpl ID:** Sample 2 **Matrix:** WATER

Test #	Analyte	An. Date	Init.	DF	Result	DLR	Units
200.7	Calcium					0.10	mg/L
200.7	Copper					0.010	mg/L
200.7	Lead					0.005	mg/L
200.7	Magnesium					0.10	mg/L
200.7	Potassium					0.50	mg/L
200.7	Sodium					0.10	mg/L

Comments: _____

DLR = Detection limit for reporting purposes. DF = Dilution factor. An. Date = Date of analysis. Init = Analyst initials

APPENDIX K

LISTING OF NELAP AND CALIFORNIA ELAP ACCREDITED ENVIRONMENTAL METHODS

CDPH
California Department of
PublicHealth

CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM BRANCH

CERTIFICATE OF ENVIRONMENTAL ACCREDITATION

Is hereby granted to

ASSOCIATED LABORATORIES

806 N BATAVIA

ORANGE, CA 92868

Scope of the certificate is limited to the
"Fields of Testing"
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site, proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **1338**

Expiration Date: **10/31/2010**

Effective Date: **10/01/2008**

Richmond, California
subject to forfeiture or revocation

George C. Kulasingam, Ph.D., Chief
Environmental Laboratory Accreditation Program Branch

State of California—Health and Human Services Agency
California Department of Public Health

MARK B HORTON, MD, MSPH
Director

ARNOLD SCHWARZENEGGER
Governor

October 7, 2008

EDWARD S. BEHARE, Ph.D.
ASSOCIATED LABORATORIES
806 NORTH BATAVIA
ORANGE, CA 92868

Dear EDWARD S. BEHARE, Ph.D.: Certificate No. 1338

This is to advise you that the laboratory named above continues to be certified as an environmental testing laboratory pursuant to the provisions of the Health and Safety Code (HSC), Division 101, Part 1, Chapter 4, Section 100825, et seq. Certification for all currently certified Fields of Testing that the laboratory has applied for renewal shall remain in effect until **10/31/2010** unless it is revoked.

Please note that the renewal application for certification is subject to an on-site process, and the continued use of this certificate is contingent upon:

- **successful completion of the on-site process;**
- **acceptable performance in the required proficiency testing (PT) studies;**
- **timely payment of all fees, including an annual fee due before October 31, 2009;**
- **compliance with Environmental Laboratory Accreditation Program Branch (ELAP) statutes (HSC, Section 100825, et seq.) and Regulations (California Code of Regulations (CCR),Title 22, Division 4, Chapter 19).**

An updated certificate of the "Fields of Testing" will be issued to the laboratory upon successful completion of the on-site process.

The application for the renewal of this certificate must be received before the expiration date to remain in force according to the HSC100845(a).

Please note that the laboratory is required to notify ELAP of any major changes in the laboratory such as the transfer of ownership, change of laboratory director, change in location, or structural alterations which may affect adversely the quality of analyses (HSC, Section 100845(b)(d)). Please include the above certificate number in all your correspondence with ELAP.

If you have any questions, please contact Wanda Porter at (510) 620-3155.

Sincerely,

George C. Kulasingam ORIGINAL

George C. Kulasingam, Ph.D., Chief
Environmental Laboratory Accreditation Program Branch

NOTICE

The "List of Approved Fields of Testing and Analytes", as stated on this certificate will be sent to your laboratory upon completion of the entire certification process, which includes an on-site inspection and participation in the appropriate PT studies.

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM - NELAP RECOGNIZED

NELAP Fields of Accreditation

ASSOCIATED LABORATORIES

Lab Phone (714) 771-6900

806 N BATAVIA
ORANGE, CA 92868

Certificate No: 04232CA **Renew Date: 1/31/2009**

114 - Inorganic Chemistry of Hazardous Waste

114.010	001	EPA 6010B	Antimony
114.010	002	EPA 6010B	Arsenic
114.010	003	EPA 6010B	Barium
114.010	004	EPA 6010B	Beryllium
114.010	005	EPA 6010B	Cadmium
114.010	006	EPA 6010B	Chromium
114.010	007	EPA 6010B	Cobalt
114.010	008	EPA 6010B	Copper
114.010	009	EPA 6010B	Lead
114.010	010	EPA 6010B	Molybdenum
114.010	011	EPA 6010B	Nickel
114.010	012	EPA 6010B	Selenium
114.010	013	EPA 6010B	Silver
114.010	014	EPA 6010B	Thallium
114.010	015	EPA 6010B	Vanadium
114.010	016	EPA 6010B	Zinc
114.020	001	EPA 6020	Antimony
114.020	002	EPA 6020	Arsenic
114.020	003	EPA 6020	Barium
114.020	004	EPA 6020	Beryllium
114.020	005	EPA 6020	Cadmium
114.020	006	EPA 6020	Chromium
114.020	007	EPA 6020	Cobalt
114.020	008	EPA 6020	Copper
114.020	009	EPA 6020	Lead
114.020	010	EPA 6020	Molybdenum
114.020	011	EPA 6020	Nickel
114.020	012	EPA 6020	Selenium
114.020	013	EPA 6020	Silver
114.020	014	EPA 6020	Thallium
114.020	015	EPA 6020	Vanadium
114.020	016	EPA 6020	Zinc
114.103	001	EPA 7196A	Chromium (VI)
114.106	001	EPA 7199	Chromium (VI)

As of 1/8/2008 , this list supersedes all previous lists for this certificate number.
Customers: Please verify the current accreditation standing with the State.

114.140	001	EPA 7470A	Mercury
114.141	001	EPA 7471A	Mercury
114.222	001	EPA 9014	Cyanide
114.230	001	EPA 9034	Sulfides, Total
114.241	001	EPA 9045C	Corrosivity - pH Determination
114.270	001	EPA 9214	Fluoride
115 - Extraction Test of Hazardous Waste			
115.020	001	EPA 1311	Toxicity Characteristic Leaching Procedure (TCLP)
115.030	001	CCR Chapter11, Article 5, Appendix II	Waste Extraction Test (WET)
116 - Volatile Organic Chemistry of Hazardous Waste			
116.040	002	EPA 8021B	Benzene
116.040	039	EPA 8021B	Ethylbenzene
116.040	041	EPA 8021B	Methyl tert-butyl Ether (MTBE)
116.040	047	EPA 8021B	Toluene
116.040	056	EPA 8021B	Xylenes, Total
116.040	062	EPA 8021B	BTEX
116.080	000	EPA 8260B	Volatile Organic Compounds
116.080	001	EPA 8260B	Acetone
116.080	002	EPA 8260B	Acetonitrile
116.080	003	EPA 8260B	Acrolein
116.080	004	EPA 8260B	Acrylonitrile
116.080	007	EPA 8260B	Benzene
116.080	010	EPA 8260B	Bromochloromethane
116.080	011	EPA 8260B	Bromodichloromethane
116.080	012	EPA 8260B	Bromoform
116.080	013	EPA 8260B	Bromomethane
116.080	015	EPA 8260B	Carbon Disulfide
116.080	016	EPA 8260B	Carbon Tetrachloride
116.080	018	EPA 8260B	Chlorobenzene
116.080	019	EPA 8260B	Chloroethane
116.080	020	EPA 8260B	2-Chloroethyl Vinyl Ether
116.080	021	EPA 8260B	Chloroform
116.080	022	EPA 8260B	Chloromethane
116.080	026	EPA 8260B	Dibromochloromethane
116.080	027	EPA 8260B	Dibromochloropropane
116.080	028	EPA 8260B	1,2-Dibromoethane
116.080	030	EPA 8260B	Dibromomethane
116.080	031	EPA 8260B	1,2-Dichlorobenzene
116.080	032	EPA 8260B	1,3-Dichlorobenzene
116.080	033	EPA 8260B	1,4-Dichlorobenzene
116.080	034	EPA 8260B	cis-1,4-Dichloro-2-butene

116.080	035	EPA 8260B	trans-1,4-Dichloro-2-butene
116.080	036	EPA 8260B	Dichlorodifluoromethane
116.080	037	EPA 8260B	1,1-Dichloroethane
116.080	038	EPA 8260B	1,2-Dichloroethane
116.080	039	EPA 8260B	1,1-Dichloroethene
116.080	040	EPA 8260B	trans-1,2-Dichloroethene
116.080	041	EPA 8260B	cis-1,2-Dichloroethene
116.080	042	EPA 8260B	1,2-Dichloropropane
116.080	043	EPA 8260B	1,3-Dichloropropane
116.080	044	EPA 8260B	2,2-Dichloropropane
116.080	045	EPA 8260B	1,1-Dichloropropene
116.080	046	EPA 8260B	cis-1,3-Dichloropropene
116.080	047	EPA 8260B	trans-1,3-Dichloropropene
116.080	050	EPA 8260B	1,4-Dioxane
116.080	052	EPA 8260B	Ethyl Acetate
116.080	053	EPA 8260B	Ethylbenzene
116.080	055	EPA 8260B	Ethyl Methacrylate
116.080	056	EPA 8260B	Hexachlorobutadiene
116.080	058	EPA 8260B	2-Hexanone (MBK)
116.080	059	EPA 8260B	Iodomethane
116.080	062	EPA 8260B	Methacrylonitrile
116.080	064	EPA 8260B	Methyl tert-butyl Ether (MTBE)
116.080	065	EPA 8260B	Methylene Chloride
116.080	066	EPA 8260B	Methyl Ethyl Ketone
116.080	067	EPA 8260B	Methyl Methacrylate
116.080	068	EPA 8260B	4-Methyl-2-pentanone (MIBK)
116.080	069	EPA 8260B	Naphthalene
116.080	074	EPA 8260B	Pentachloroethane
116.080	078	EPA 8260B	Propionitrile
116.080	081	EPA 8260B	1,1,1,2-Tetrachloroethane
116.080	082	EPA 8260B	1,1,2,2-Tetrachloroethane
116.080	083	EPA 8260B	Tetrachloroethene
116.080	084	EPA 8260B	Toluene
116.080	086	EPA 8260B	1,2,3-Trichlorobenzene
116.080	087	EPA 8260B	1,2,4-Trichlorobenzene
116.080	088	EPA 8260B	1,1,1-Trichloroethane
116.080	089	EPA 8260B	1,1,2-Trichloroethane
116.080	090	EPA 8260B	Trichloroethene
116.080	091	EPA 8260B	Trichlorofluoromethane
116.080	092	EPA 8260B	1,2,3-Trichloropropane
116.080	093	EPA 8260B	Vinyl Acetate

116.080	094	EPA 8260B	Vinyl Chloride
116.080	095	EPA 8260B	Xylenes, Total
116.080	096	EPA 8260B	tert-Amyl Methyl Ether (TAME)
116.080	097	EPA 8260B	tert-Butyl Alcohol (TBA)
116.080	098	EPA 8260B	Ethyl tert-butyl Ether (ETBE)
116.080	099	EPA 8260B	Bromobenzene
116.080	100	EPA 8260B	n-Butylbenzene
116.080	101	EPA 8260B	sec-Butylbenzene
116.080	102	EPA 8260B	tert-Butylbenzene
116.080	103	EPA 8260B	2-Chlorotoluene
116.080	104	EPA 8260B	4-Chlorotoluene
116.080	105	EPA 8260B	Isopropylbenzene
116.080	106	EPA 8260B	N-propylbenzene
116.080	107	EPA 8260B	Styrene
116.080	108	EPA 8260B	1,2,4-Trimethylbenzene
116.080	109	EPA 8260B	1,3,5-Trimethylbenzene
116.100	001	LUFT GC/MS	Total Petroleum Hydrocarbons - Gasoline
116.100	002	LUFT GC/MS	Benzene
116.100	003	LUFT GC/MS	Toluene
116.100	004	LUFT GC/MS	Xylenes
116.100	005	LUFT GC/MS	Methyl tert-butyl Ether (MTBE)
116.100	010	LUFT GC/MS	BTEX and MTBE
116.110	001	LUFT	Total Petroleum Hydrocarbons - Gasoline

117 - Semi-volatile Organic Chemistry of Hazardous Waste

117.010	001	EPA 8015B	Diesel-range Total Petroleum Hydrocarbons
117.016	001	LUFT	Diesel-range Total Petroleum Hydrocarbons
117.017	001	EPA 418.1	TRPH Screening
117.110	000	EPA 8270C	Extractable Organics
117.110	001	EPA 8270C	Acenaphthene
117.110	002	EPA 8270C	Acenaphthylene
117.110	007	EPA 8270C	Aniline
117.110	008	EPA 8270C	Anthracene
117.110	010	EPA 8270C	Benzidine
117.110	011	EPA 8270C	Benz(a)anthracene
117.110	012	EPA 8270C	Benzo(b)fluoranthene
117.110	013	EPA 8270C	Benzo(k)fluoranthene
117.110	014	EPA 8270C	Benzo(g,h,i)perylene
117.110	015	EPA 8270C	Benzo(a)pyrene
117.110	016	EPA 8270C	Benzoic Acid
117.110	018	EPA 8270C	Benzyl Alcohol
117.110	019	EPA 8270C	Benzyl Butyl Phthalate

117.110	020	EPA 8270C	Bis(2-chloroethoxy)methane
117.110	021	EPA 8270C	Bis(2-chloroethyl) Ether
117.110	022	EPA 8270C	Bis(2-chloroisopropyl) Ether
117.110	024	EPA 8270C	4-Bromophenyl Phenyl Ether
117.110	026	EPA 8270C	4-Chloroaniline
117.110	027	EPA 8270C	4-Chloro-3-methylphenol
117.110	029	EPA 8270C	2-Chloronaphthalene
117.110	030	EPA 8270C	2-Chlorophenol
117.110	032	EPA 8270C	Chrysene
117.110	036	EPA 8270C	Dibenz(a,h)anthracene
117.110	037	EPA 8270C	Dibenzofuran
117.110	039	EPA 8270C	1,2-Dichlorobenzene
117.110	040	EPA 8270C	1,3-Dichlorobenzene
117.110	041	EPA 8270C	1,4-Dichlorobenzene
117.110	042	EPA 8270C	3,3'-Dichlorobenzidine
117.110	043	EPA 8270C	2,4-Dichlorophenol
117.110	045	EPA 8270C	Diethyl Phthalate
117.110	053	EPA 8270C	2,4-Dimethylphenol
117.110	054	EPA 8270C	Dimethyl Phthalate
117.110	055	EPA 8270C	Di-n-butyl phthalate
117.110	056	EPA 8270C	Di-n-octyl phthalate
117.110	060	EPA 8270C	2,4-Dinitrophenol
117.110	061	EPA 8270C	2,4-Dinitrotoluene
117.110	062	EPA 8270C	2,6-Dinitrotoluene
117.110	067	EPA 8270C	Fluoranthene
117.110	068	EPA 8270C	Fluorene
117.110	069	EPA 8270C	Hexachlorobenzene
117.110	070	EPA 8270C	Hexachlorobutadiene
117.110	071	EPA 8270C	Hexachlorocyclopentadiene
117.110	072	EPA 8270C	Hexachloroethane
117.110	075	EPA 8270C	Indeno(1,2,3-c,d)pyrene
117.110	076	EPA 8270C	Isophorone
117.110	080	EPA 8270C	2-Methyl-4,6-dinitrophenol
117.110	083	EPA 8270C	2-Methylnaphthalene
117.110	084	EPA 8270C	2-Methylphenol
117.110	085	EPA 8270C	3-Methylphenol
117.110	086	EPA 8270C	4-Methylphenol
117.110	087	EPA 8270C	Naphthalene
117.110	092	EPA 8270C	2-Nitroaniline
117.110	093	EPA 8270C	3-Nitroaniline
117.110	094	EPA 8270C	4-Nitroaniline

117.110	095	EPA 8270C	Nitrobenzene
117.110	096	EPA 8270C	2-Nitrophenol
117.110	097	EPA 8270C	4-Nitrophenol
117.110	100	EPA 8270C	N-nitrosodimethylamine
117.110	101	EPA 8270C	N-nitrosodi-n-propylamine
117.110	102	EPA 8270C	N-nitrosodiphenylamine
117.110	110	EPA 8270C	Pentachlorophenol
117.110	112	EPA 8270C	Phenanthrene
117.110	113	EPA 8270C	Phenol
117.110	119	EPA 8270C	Pyrene
117.110	120	EPA 8270C	Pyridine
117.110	129	EPA 8270C	1,2,4-Trichlorobenzene
117.110	130	EPA 8270C	2,4,5-Trichlorophenol
117.110	131	EPA 8270C	2,4,6-Trichlorophenol
117.140	000	EPA 8310	Polynuclear Aromatic Hydrocarbons
117.140	001	EPA 8310	Acenaphthene
117.140	002	EPA 8310	Acenaphthylene
117.140	003	EPA 8310	Anthracene
117.140	004	EPA 8310	Benz(a)anthracene
117.140	005	EPA 8310	Benzo(a)pyrene
117.140	006	EPA 8310	Benzo(b)fluoranthene
117.140	007	EPA 8310	Benzo(k)fluoranthene
117.140	008	EPA 8310	Benzo(g,h,i)perylene
117.140	009	EPA 8310	Chrysene
117.140	010	EPA 8310	Dibenz(a,h)anthracene
117.140	011	EPA 8310	Fluoranthene
117.140	012	EPA 8310	Fluorene
117.140	013	EPA 8310	Indeno(1,2,3-c,d)pyrene
117.140	014	EPA 8310	Naphthalene
117.140	015	EPA 8310	Phenanthrene
117.140	016	EPA 8310	Pyrene
117.210	000	EPA 8081A	Organochlorine Pesticides
117.210	001	EPA 8081A	Aldrin
117.210	002	EPA 8081A	a-BHC
117.210	003	EPA 8081A	b-BHC
117.210	004	EPA 8081A	d-BHC
117.210	005	EPA 8081A	g-BHC (Lindane)
117.210	009	EPA 8081A	Chlordane (tech.)
117.210	013	EPA 8081A	4,4'-DDD
117.210	014	EPA 8081A	4,4'-DDE
117.210	015	EPA 8081A	4,4'-DDT

117.210	020	EPA 8081A	Dieldrin
117.210	021	EPA 8081A	Endosulfan I
117.210	022	EPA 8081A	Endosulfan II
117.210	023	EPA 8081A	Endosulfan Sulfate
117.210	024	EPA 8081A	Endrin
117.210	025	EPA 8081A	Endrin Aldehyde
117.210	026	EPA 8081A	Endrin Ketone
117.210	027	EPA 8081A	Heptachlor
117.210	028	EPA 8081A	Heptachlor Epoxide
117.210	033	EPA 8081A	Methoxychlor
117.210	039	EPA 8081A	Toxaphene
117.220	000	EPA 8082	PCBs
117.220	001	EPA 8082	PCB-1016
117.220	002	EPA 8082	PCB-1221
117.220	003	EPA 8082	PCB-1232
117.220	004	EPA 8082	PCB-1242
117.220	005	EPA 8082	PCB-1248
117.220	006	EPA 8082	PCB-1254
117.220	007	EPA 8082	PCB-1260
117.240	000	EPA 8141A	Organophosphorus Pesticides
117.240	002	EPA 8141A	Azinphos Methyl
117.240	005	EPA 8141A	Chlorpyrifos
117.240	007	EPA 8141A	Demeton-O
117.240	008	EPA 8141A	Demeton-S
117.240	009	EPA 8141A	Diazinon
117.240	011	EPA 8141A	Disulfoton
117.240	013	EPA 8141A	Ethion
117.240	015	EPA 8141A	Malathion
117.240	016	EPA 8141A	Mevinphos
117.240	018	EPA 8141A	Parathion Ethyl
117.240	019	EPA 8141A	Parathion Methyl
117.240	020	EPA 8141A	Phorate
117.240	022	EPA 8141A	Ronnel
117.250	001	EPA 8151A	2,4-D
117.250	002	EPA 8151A	2,4-DB
117.250	003	EPA 8151A	2,4,5-T
117.250	004	EPA 8151A	2,4,5-TP
117.250	006	EPA 8151A	Dalapon
117.250	007	EPA 8151A	Dichlorprop
117.250	008	EPA 8151A	Dinoseb
117.250	009	EPA 8151A	MCPA

117.250	010	EPA 8151A	MCPP
117.250	014	EPA 8151A	Dicamba
120 - Physical Properties of Hazardous Waste			
120.010	001	EPA 1010	Ignitability
120.030	001	EPA 1110	Corrosivity
120.040	001	Section 7.3 SW-846	Reactive Cyanide
120.050	001	Section 7.3 SW-846	Reactive Sulfide
120.070	001	EPA 9040B	Corrosivity - pH Determination
120.080	001	EPA 9045C	Corrosivity - pH Determination

CALIFORNIA DEPARTMENT OF HEALTH SERVICES
ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM
Accredited Fields of Testing

ASSOCIATED LABORATORIES

Lab Phone (714) 771-6900

806 N BATAVIA
ORANGE, CA 92868

Certificate No: 1338 **Renew Date: 10/31/2006**

Field of Testing: 101 - Microbiology of Drinking Water

101.010	001	Heterotrophic Bacteria	SM9215B
101.020	001	Total Coliform	SM9221A,B
101.021	001	Fecal Coliform	SM9221E (MTF/EC)
101.022	001	E. coli	CFR 141.21(f)(6)(i) (MTF/EC+MUG)
101.050	001	Total Coliform	SM9222A,B,C
101.051	001	Fecal Coliform	SM9221E (MF/EC)
101.070	002	Total Coliform	Colisure
101.070	003	E. coli	Colisure
101.120	001	Total Coliform (Enumeration)	SM9221A,B,C
101.130	001	Fecal Coliform (Enumeration)	SM9221E (MTF/EC)
101.140	001	Total Coliform (Enumeration)	SM9222A,B,C
101.150	001	Fecal Coliform (Enumeration)	SM9222D

Field of Testing: 102 - Inorganic Chemistry of Drinking Water

102.030	001	Bromide	EPA 300.0
102.030	002	Chlorate	EPA 300.0
102.030	003	Chloride	EPA 300.0
102.030	004	Chlorite	EPA 300.0
102.030	005	Fluoride	EPA 300.0
102.030	006	Nitrate	EPA 300.0
102.030	007	Nitrite	EPA 300.0
102.030	010	Sulfate	EPA 300.0
102.040	004	Bromate	EPA 300.1
102.045	001	Perchlorate	EPA 314.0
102.050	001	Cyanide	EPA 335.4
102.060	001	Nitrate calc.	EPA 353.2
102.061	001	Nitrite	EPA 353.2
102.070	001	Phosphate, Ortho	EPA 365.1
102.100	001	Alkalinity	SM2320B
102.120	001	Hardness	SM2340B
102.130	001	Conductivity	SM2510B
102.140	001	Total Dissolved Solids	SM2540C
102.145	001	Total Dissolved Solids	EPA 160.1
102.150	001	Chloride	SM4110B
102.150	002	Fluoride	SM4110B
102.150	003	Nitrate	SM4110B

As of 10/25/2006 , this list supersedes all previous lists for this certificate number.
Customers: Please verify the current accreditation standing with the State.

102.150	004	Nitrite	SM4110B
102.150	006	Sulfate	SM4110B
102.163	001	Chlorine, Free and Total	SM4500-Cl G
102.190	001	Cyanide, Total	SM4500-CN E
102.192	001	Cyanide, amenable	SM4500-CN G
102.200	001	Fluoride	SM4500-F C
102.233	001	Nitrate calc.	SM4500-NO3 F
102.234	001	Nitrite	SM4500-NO3 F
102.240	001	Phosphate, Ortho	SM4500-P E
102.260	001	Total Organic Carbon	SM5310B
102.261	001	DOC	SM5310B
102.270	001	Surfactants	SM5540C
102.280	001	UV254	SM5910B
102.500	001	Calcium	SM3111B
102.500	002	Magnesium	SM3111B
102.500	003	Potassium	SM3111B
102.500	004	Sodium	SM3111B
102.500	005	Hardness (calc.)	SM3111B
102.510	001	Calcium	SM3120B
102.510	002	Magnesium	SM3120B
102.510	003	Potassium	SM3120B
102.510	004	Silica	SM3120B
102.510	005	Sodium	SM3120B
102.510	006	Hardness (calc.)	SM3120B
102.520	001	Calcium	EPA 200.7
102.520	002	Magnesium	EPA 200.7
102.520	003	Potassium	EPA 200.7
102.520	004	Silica	EPA 200.7
102.520	005	Sodium	EPA 200.7
102.520	006	Hardness (calc.)	EPA 200.7
102.530	001	Calcium	SM3500-Ca D
102.534	001	Silica	SM4500-Si E

Field of Testing: 103 - Toxic Chemical Elements of Drinking Water

103.130	001	Aluminum	EPA 200.7
103.130	002	Arsenic	EPA 200.7
103.130	003	Barium	EPA 200.7
103.130	004	Beryllium	EPA 200.7
103.130	005	Cadmium	EPA 200.7
103.130	007	Chromium	EPA 200.7
103.130	008	Copper	EPA 200.7
103.130	009	Iron	EPA 200.7
103.130	011	Manganese	EPA 200.7
103.130	012	Nickel	EPA 200.7

103.130	015	Silver	EPA 200.7
103.130	017	Zinc	EPA 200.7
103.130	018	Boron	EPA 200.7
103.140	001	Aluminum	EPA 200.8
103.140	002	Antimony	EPA 200.8
103.140	003	Arsenic	EPA 200.8
103.140	004	Barium	EPA 200.8
103.140	005	Beryllium	EPA 200.8
103.140	006	Cadmium	EPA 200.8
103.140	007	Chromium	EPA 200.8
103.140	008	Copper	EPA 200.8
103.140	009	Lead	EPA 200.8
103.140	010	Manganese	EPA 200.8
103.140	011	Mercury	EPA 200.8
103.140	012	Nickel	EPA 200.8
103.140	013	Selenium	EPA 200.8
103.140	014	Silver	EPA 200.8
103.140	015	Thallium	EPA 200.8
103.140	016	Zinc	EPA 200.8
103.140	017	Boron	EPA 200.8
103.140	018	Vanadium	EPA 200.8
103.160	001	Mercury	EPA 245.1
103.310	001	Chromium (VI)	EPA 218.6
Field of Testing: 104 - Volatile Organic Chemistry of Drinking Water			
104.010	000	Volatile Organic Compounds	EPA 502.2
104.030	001	1,2-Dibromoethane	EPA 504.1
104.030	002	1,2-Dibromo-3-chloropropane	EPA 504.1
104.040	000	Volatile Organic Compounds	EPA 524.2
Field of Testing: 105 - Semi-volatile Organic Chemistry of Drinking Water			
105.200	001	Bromoacetic Acid	EPA 552.2
105.200	003	Chloroacetic Acid	EPA 552.2
105.200	004	Dalapon	EPA 552.2
105.200	005	Dibromoacetic Acid	EPA 552.2
105.200	006	Dichloroacetic Acid	EPA 552.2
105.200	007	Trichloroacetic Acid	EPA 552.2
105.200	008	Haloacetic Acids (HAA5)	EPA 552.2
Field of Testing: 106 - Radiochemistry of Drinking Water			
106.010	001	Gross Alpha	EPA 900.0
106.010	002	Gross Beta	EPA 900.0
106.270	001	Gross Alpha	SM7110C
Field of Testing: 107 - Microbiology of Wastewater			
107.010	001	Heterotrophic Bacteria	SM9215B

107.020	001	Total Coliform	SM9221B
107.040	001	Fecal Coliform	SM9221C,E (MTF/EC)
107.060	001	Total Coliform	SM9222B
107.080	001	Fecal Coliform	SM9222D
107.100	001	Fecal Streptococci	SM9230B
107.100	002	Enterococci	SM9230B
107.110	001	Fecal Streptococci	SM9230C (MF/ME)
107.110	002	Enterococci	SM9230C (MF/ME)
107.111	001	Fecal Streptococci	SM9230C (MF/m-Enterococcus)
107.111	002	Enterococci	SM9230C (MF/m-Enterococcus)

Field of Testing: 108 - Inorganic Chemistry of Wastewater

108.020	001	Conductivity	EPA 120.1
108.040	001	Hardness	EPA 130.2
108.050	001	pH	EPA 150.1
108.060	001	Residue, Filterable	EPA 160.1
108.070	001	Residue, Non-filterable	EPA 160.2
108.080	001	Residue, Total	EPA 160.3
108.090	001	Residue, Volatile	EPA 160.4
108.100	001	Residue, Settleable	EPA 160.5
108.110	001	Turbidity	EPA 180.1
108.112	001	Boron	EPA 200.7
108.112	002	Calcium	EPA 200.7
108.112	003	Hardness (calc.)	EPA 200.7
108.112	004	Magnesium	EPA 200.7
108.112	005	Potassium	EPA 200.7
108.112	006	Silica	EPA 200.7
108.112	007	Sodium	EPA 200.7
108.120	001	Bromide	EPA 300.0
108.120	002	Chloride	EPA 300.0
108.120	003	Fluoride	EPA 300.0
108.120	004	Nitrate	EPA 300.0
108.120	005	Nitrite	EPA 300.0
108.120	006	Nitrate-nitrite, Total	EPA 300.0
108.120	008	Sulfate	EPA 300.0
108.130	001	Acidity	EPA 305.1
108.140	001	Alkalinity	EPA 310.1
108.162	001	Chloride	EPA 325.3
108.174	001	Chlorine Residual, Total	EPA 330.5
108.180	001	Cyanide, amenable	EPA 335.1
108.181	001	Cyanide, Total	EPA 335.2
108.182	001	Cyanide, Total	EPA 335.3
108.191	001	Fluoride	EPA 340.2
108.200	001	Ammonia	EPA 350.1

108.201	001	Ammonia	EPA 350.2
108.211	001	Kjeldahl Nitrogen	EPA 351.2
108.212	001	Kjeldahl Nitrogen	EPA 351.3
108.231	001	Nitrate calc.	EPA 353.2
108.232	001	Nitrate-nitrite, Total	EPA 353.2
108.234	001	Nitrate-nitrite, Total	EPA 353.3
108.240	001	Nitrite	EPA 354.1
108.250	001	Dissolved Oxygen	EPA 360.1
108.251	001	Dissolved Oxygen	EPA 360.2
108.262	001	Phosphate, Ortho	EPA 365.2
108.263	001	Phosphorus, Total	EPA 365.2
108.270	001	Dissolved Silica	EPA 370.1
108.290	001	Sulfide	EPA 376.1
108.291	001	Sulfide	EPA 376.2
108.300	001	Sulfite	EPA 377.1
108.310	001	Biochemical Oxygen Demand	EPA 405.1
108.323	001	Chemical Oxygen Demand	EPA 410.4
108.340	001	Total Organic Carbon	EPA 415.1
108.360	001	Phenols, Total	EPA 420.1
108.370	001	Surfactants	EPA 425.1
108.380	001	Oil and Grease	EPA 1664
108.390	001	Turbidity	SM2130B
108.400	001	Acidity	SM2310B
108.410	001	Alkalinity	SM2320B
108.420	001	Hardness (calc.)	SM2340B
108.430	001	Conductivity	SM2510B
108.440	001	Residue, Total	SM2540B
108.441	001	Residue, Filterable	SM2540C
108.442	001	Residue, Non-filterable	SM2540D
108.443	001	Residue, Settleable	SM2540F
108.445	001	Calcium	SM3111B
108.445	002	Hardness (calc.)	SM3111B
108.445	003	Magnesium	SM3111B
108.445	004	Potassium	SM3111B
108.445	005	Sodium	SM3111B
108.447	001	Boron	SM3120B
108.447	002	Calcium	SM3120B
108.447	003	Hardness (calc.)	SM3120B
108.447	004	Magnesium	SM3120B
108.447	005	Potassium	SM3120B
108.447	006	Silica	SM3120B
108.447	007	Sodium	SM3120B
108.451	001	Chloride	SM4500-Cl- C

108.465	001	Chlorine	SM4500-Cl G
108.470	001	Cyanide, Manual Distillation	SM4500-CN C
108.471	001	Cyanide, Total	SM4500-CN D
108.472	001	Cyanide, Total	SM4500-CN E
108.473	001	Cyanide, amenable	SM4500-CN G
108.480	001	Fluoride	SM4500-F C
108.490	001	pH	SM4500-H+ B
108.500	001	Ammonia	SM4500-NH3 C
108.502	001	Ammonia	SM4500-NH3 E
108.504	001	Ammonia	SM4500-NH3 F
108.505	001	Kjeldahl Nitrogen	SM4500-NH3 F
108.506	001	Ammonia	SM4500-NH3 G
108.507	001	Kjeldahl Nitrogen	SM4500-NH3 G
108.520	001	Nitrate-nitrite, Total	SM4500-NO3 E
108.530	001	Dissolved Oxygen	SM4500-O C
108.531	001	Dissolved Oxygen	SM4500-O G
108.540	001	Phosphate, Ortho	SM4500-P E
108.541	001	Phosphorus, Total	SM4500-P E
108.550	001	Dissolved Silica	SM4500-Si D
108.560	001	Sulfite	SM4500-SO3 B
108.570	001	Sulfate	SM4500-SO4 C
108.571	001	Sulfate	SM4500-SO4 D
108.580	001	Sulfide	SM4500-S= D
108.581	001	Sulfide	SM4500-S= E (18th)
108.590	001	Biochemical Oxygen Demand	SM5210B
108.591	001	Carbonaceous BOD	SM5210B
108.602	001	Chemical Oxygen Demand	SM5220D
108.610	001	Total Organic Carbon	SM5310B
108.620	001	Total Organic Halides	SM5320B
108.630	001	Oil and Grease	SM5520B
108.640	001	Surfactants	SM5540C
108.650	001	Tannin and Lignin	SM5550B
108.903	001	Boron	SM4500-B B

Field of Testing: 109 - Toxic Chemical Elements of Wastewater

109.010	001	Aluminum	EPA 200.7
109.010	002	Antimony	EPA 200.7
109.010	003	Arsenic	EPA 200.7
109.010	004	Barium	EPA 200.7
109.010	005	Beryllium	EPA 200.7
109.010	007	Cadmium	EPA 200.7
109.010	009	Chromium	EPA 200.7
109.010	010	Cobalt	EPA 200.7
109.010	011	Copper	EPA 200.7

109.010	012	Iron	EPA 200.7
109.010	013	Lead	EPA 200.7
109.010	015	Manganese	EPA 200.7
109.010	016	Molybdenum	EPA 200.7
109.010	017	Nickel	EPA 200.7
109.010	019	Selenium	EPA 200.7
109.010	021	Silver	EPA 200.7
109.010	023	Thallium	EPA 200.7
109.010	024	Tin	EPA 200.7
109.010	026	Vanadium	EPA 200.7
109.010	027	Zinc	EPA 200.7
109.104	001	Chromium (VI)	EPA 218.6
109.160	001	Lead	EPA 239.1
109.190	001	Mercury	EPA 245.1
109.370	010	Lead	SM3111B
109.811	001	Chromium (VI)	SM3500-Cr D
Field of Testing: 110 - Volatile Organic Chemistry of Wastewater			
110.010	000	Halogenated Volatiles	EPA 601
110.020	000	Aromatic Volatiles	EPA 602
110.030	000	Acrolein, Acrylonitrile	EPA 603
110.040	040	Halogenated Hydrocarbons	EPA 624
110.040	041	Aromatic Compounds	EPA 624
110.040	042	Oxygenates	EPA 624
110.040	043	Other Volatile Organics	EPA 624
Field of Testing: 111 - Semi-volatile Organic Chemistry of Wastewater			
111.060	000	Polynuclear Aromatics	EPA 610
111.101	032	Polynuclear Aromatic Hydrocarbons	EPA 625
111.101	033	Adipates	EPA 625
111.101	034	Phthalates	EPA 625
111.101	035	Herbicides	EPA 625
111.101	036	Other Extractables	EPA 625
111.170	030	Organochlorine Pesticides	EPA 608
111.170	031	PCBs	EPA 608
Field of Testing: 112 - Radiochemistry of Wastewater			
112.010	001	Gross Alpha	EPA 900.0
112.010	002	Gross Beta	EPA 900.0
112.030	001	Gross Alpha	SM7110B
112.030	002	Gross Beta	SM7110B
Field of Testing: 113 - Whole Effluent Toxicity of Wastewater			
113.010	001A	Fathead Minnow (P. promelas)	EPA 600/4-90/027F, Static
Field of Testing: 114 - Inorganic Chemistry of Hazardous Waste			
114.010	001	Antimony	EPA 6010B

114.010	002	Arsenic	EPA 6010B
114.010	003	Barium	EPA 6010B
114.010	004	Beryllium	EPA 6010B
114.010	005	Cadmium	EPA 6010B
114.010	006	Chromium	EPA 6010B
114.010	007	Cobalt	EPA 6010B
114.010	008	Copper	EPA 6010B
114.010	009	Lead	EPA 6010B
114.010	010	Molybdenum	EPA 6010B
114.010	011	Nickel	EPA 6010B
114.010	012	Selenium	EPA 6010B
114.010	013	Silver	EPA 6010B
114.010	014	Thallium	EPA 6010B
114.010	015	Vanadium	EPA 6010B
114.010	016	Zinc	EPA 6010B
114.020	001	Antimony	EPA 6020
114.020	002	Arsenic	EPA 6020
114.020	003	Barium	EPA 6020
114.020	004	Beryllium	EPA 6020
114.020	005	Cadmium	EPA 6020
114.020	006	Chromium	EPA 6020
114.020	007	Cobalt	EPA 6020
114.020	008	Copper	EPA 6020
114.020	009	Lead	EPA 6020
114.020	010	Molybdenum	EPA 6020
114.020	011	Nickel	EPA 6020
114.020	012	Selenium	EPA 6020
114.020	013	Silver	EPA 6020
114.020	014	Thallium	EPA 6020
114.020	015	Vanadium	EPA 6020
114.020	016	Zinc	EPA 6020
114.103	001	Chromium (VI)	EPA 7196A
114.106	001	Chromium (VI)	EPA 7199
114.130	001	Lead	EPA 7420
114.140	001	Mercury	EPA 7470A
114.141	001	Mercury	EPA 7471A
114.221	001	Cyanide, Total	EPA 9012A
114.222	001	Cyanide	EPA 9014
114.230	001	Sulfides, Total	EPA 9034
114.240	001	pH	EPA 9040
114.241	001	pH	EPA 9045
114.270	001	Fluoride	EPA 9214

Field of Testing: 115 - Extraction Test of Hazardous Waste

115.020	001	Toxicity Characteristic Leaching Procedure (TCLP)	EPA 1311
115.030	001	Waste Extraction Test (WET)	CCR Chapter11, Article 5, Appendix II
115.040	001	Synthetic Precipitation Leaching Procedure (SPLP)	EPA 1312
Field of Testing: 116 - Volatile Organic Chemistry of Hazardous Waste			
116.010	000	EDB and DBCP	EPA 8011
116.020	030	Nonhalogenated Volatiles	EPA 8015B
116.020	031	Ethanol and Methanol	EPA 8015B
116.030	001	Gasoline-range Organics	EPA 8015B
116.040	041	Methyl tert-butyl Ether (MTBE)	EPA 8021B
116.040	060	Halogenated Volatiles	EPA 8021B
116.040	061	Aromatic Volatiles	EPA 8021B
116.040	062	BTEX	EPA 8021B
116.080	000	Volatile Organic Compounds	EPA 8260B
116.080	120	Oxygenates	EPA 8260B
116.100	001	Total Petroleum Hydrocarbons - Gasoline	LUFT GC/MS
116.100	010	BTEX and MTBE	LUFT GC/MS
116.110	001	Total Petroleum Hydrocarbons - Gasoline	LUFT
Field of Testing: 117 - Semi-volatile Organic Chemistry of Hazardous Waste			
117.010	001	Diesel-range Total Petroleum Hydrocarbons	EPA 8015B
117.015	001	Diesel-range Total Petroleum Hydrocarbons	LUFT GC/MS
117.016	001	Diesel-range Total Petroleum Hydrocarbons	LUFT
117.017	001	TRPH Screening	EPA 418.1
117.110	000	Extractable Organics	EPA 8270C
117.140	000	Polynuclear Aromatic Hydrocarbons	EPA 8310
117.210	000	Organochlorine Pesticides	EPA 8081A
117.220	000	PCBs	EPA 8082
117.240	000	Organophosphorus Pesticides	EPA 8141A
117.250	000	Chlorinated Herbicides	EPA 8151A
Field of Testing: 119 - Toxicity Bioassay of Hazardous Waste			
119.010	001	Fathead Minnow (P. promelas)	Polisini & Miller (CDFG 1988)
Field of Testing: 120 - Physical Properties of Hazardous Waste			
120.010	001	Ignitability	EPA 1010
120.030	001	Corrosivity	EPA 1110
120.040	001	Reactive Cyanide	Section 7.3 SW-846
120.050	001	Reactive Sulfide	Section 7.3 SW-846
120.070	001	Corrosivity - pH Determination	EPA 9040B
120.080	001	Corrosivity - pH Determination	EPA 9045C
Field of Testing: 126 - Microbiology of Recreational Water			
126.010	001	Total Coliform (Enumeration)	SM9221A,B,C
126.020	001	Total Coliform (Enumeration)	SM9222A,B
126.030	001	Fecal Coliform (Enumeration)	SM9221E
126.040	001	Fecal Coliform (Enumeration)	SM9222D

126.060	001	Enterococci	SM9230C