



STATEMENT OF QUALIFICATIONS

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INTRODUCTION

Alta Analytical Laboratory (ALTA) was formed in 1990 and is a privately held California corporation employing a staff of over 20 scientists. ALTA's primary mission is to provide state-of-the-art mass spectrometry services to various industrial, consulting and governmental clients. ALTA operates with the intent of providing data of highest quality, responsive service and short turnaround time.

Within 12 years, ALTA has grown to be a company with an expanding national and international client base of over 500. This tremendous growth is attributable to the reputation ALTA has gained in performing difficult trace level analyses reliably for the pulp and paper, air toxics consulting and the agrichemical industries. ALTA's expertise lies in the analysis of semivolatile organic compounds such as Dioxin/Furans (PCDD/Fs), Polynuclear Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs), Chlorobenzenes, Chlorophenols, Polybrominated Diphenyl Ethers, and select pesticides and herbicides.

ALTA's founders and technical staff represent a unique and highly experienced group of mass spectrometry specialists. This strength in experience has enabled ALTA to provide project/client specific method development and technical consulting unsurpassed in the industry. ALTA staff have provided guidance to the government agencies responsible in the development of USEPA Methods 8290, 1613 and California Air Resources Board (CARB) Methods 428 and 429.

ALTA has actively participated in interlaboratory round robin studies and certification programs such as the USEPA (ITD) study of PCDD/PCDFs in effluents; Radian Corporation study of PCDD/PCDFs in soils; Environment Canada studies on Dioxin precursors DBD & DBF, PCDD/PCDFs in air, PCDD/PCDFs in pulp and paper; Cambridge Isotopes Lab (CIL) study on Coplanar PCBs and PCDD/PCDFs in fish; the National Council for Air and Stream Improvement (NCASI) lab certification program study and the NCASI/USEPA variability study on PCDD/PCDFs in pulp and paper.

ALTA is also committed to internally funded research and new method development. ALTA has recently developed and presented papers on Solid Phase Extraction and Supercritical Fluid Extraction of Dioxins in effluents.

Quality is of paramount concern in the analytical industry today. In light of this, ALTA has implemented three company standards:

- 1 — ALTA will maintain a laboratory Quality Assurance Program compliant with National Environmental Laboratory Accreditation Program (NELAP)
- 2 — Laboratory Quality Control samples will be analyzed at a frequency in excess of 15%. Internal standard and laboratory control spike recoveries will meet or exceed method recovery criteria or sample batches will be rerun at no additional charge to our clients.
- 3 — All data undergoes three levels of technical review prior to being reported to the client.

In order to give an overview of Alta Analytical Laboratory, this Statement of Qualifications is organized into sections on Analytical Services, Facility, Equipment, Quality Assurance and Project Experience. Resumes for key technical staff can be found in the Appendix.

ANALYTICAL SERVICES

HRMS SERVICES □

The trend in environmental legislation and regulation over the last decade has been increasingly driven by attempts to measure the impact of any exposure to the population via risk assessments. For these studies to have meaning, it has been necessary to detect hazardous compounds at significantly lower levels. In the area of Dioxins/Furans, Polychlorinated Biphenyls and Polynuclear Aromatics, the necessary detection levels have resulted in the need for superior instrumentation. High Resolution Mass Spectrometry has become the most suitable analytical technique to fill this need.

ALTA's HRGC/HRMS group uses 4 magnetic sector double focusing MicroMass High Resolution Mass Spectrometers. These 4 Mass Spectrometers enable ALTA to provide the lowest detection limits in the industry. ALTA has experience in analyzing a wide of variety sample types and matrices for Dioxins/Furans, PAHs, PCBs, Coplanar PCBs, and other semivolatile organic compounds. Some typical sample sources and types analyzed at ALTA are listed below:

- Biological samples (fish, tissue, birds, clams, mussels, crayfish)
- Environmental samples such as waters, soils
- Foodstuffs and food packaging
- Fuel oils
- Human blood and tissue
- Industrial waste samples (sludges, effluents, fly ash, still bottom)
- Pulp and paper industry products, byproducts and wastes

- Stack source emissions (MM5 train) from the following sources:
 - cement kilns
 - diesel fired boilers
 - hazardous waste incinerators
 - medical waste incinerators
 - municipal waste incinerators
 - oil fired boilers
 - waste to energy plants
 - wood fired boilers

- Ambient air studies (PUF, PUF/XAD₂ sandwich)
 - investigations
 - remediation sites

TABLE 2. Typical Dioxin/Furan Detection Limits using HRGC/HRMS

Method	PCDD/F				
	Technique	Sample Type	Cl ₄	Cl ₅ -Cl ₇	Cl ₈
EPA Method 23	HRMS	MM5	1-5 pg/smpl	2-20 pg/smpl	50 pg/smpl
CARB Method 428	HRMS	MM5	1-5 pg/smpl	2-20 pg/smpl	50 pg/smpl
EPA Method TO-9A	HRMS	PUF	1-5 pg/smpl	2-20 pg/smpl	50 pg/smpl
EPA Method 8290/1613	HRMS	SOLIDS	0.2-0.5 PPT	2.5 PPT	5 PPT
EPA Method 1613	HRMS	AQUEOUS	1-5 PPQ	25 PPQ	50 PPQ

TABLE 3. Typical Reporting Limits for PAHs

Method	Technique	Sample Type	Reporting Limits (ng/sample)
EPA Method TO-13 (for PAHs)	HRMS	MM5 or PUF	10-25
CARB Method 429 (for PAHs)	HRMS	MM5	10-25

TABLE 4. Typical Detection Limits for PBDEs using HRGC/HRMS

Method	AQUEOUS	SOLID	TISSUE	MILK
EPA Method 1614	50-1250 pg/L	5-125 pg/g	2-50 pg/g	1-25 pg/mL

TABLE 5. Typical Detection Limits for PCBs using HRGC/HRMS

Method	AQUEOUS	SOLID	TISSUE
EPA Method 1668	25-75 pg/L	2.5-7.5 pg/g	1-3 pg/g

TABLE 5. Typical Detection Limits for PCNs using HRGC/HRMS

Method	AQUEOUS	SOLID	TISSUE
Modified EPA Method 1668	50 pg/L	5 pg/g	5 pg/g

ALTA has the capability to perform all existing USEPA, CARB and NCAST methods for the determination of dioxins/furans, PCBs, PAHs, PBDEs, chlorobenzenes and chlorophenols and other selected organic contaminants by High Resolution Mass Spectrometry. ALTA also specializes in the development of new sample preparation techniques that enable ultra-low level detection of semivolatile organics in complex sample matrices. The following tables list methods performed routinely by the ALTA HRMS group.

TABLE 1. Methods Performed by ALTA HRMS Group

Method	Sample Matrix	Dioxins/ Furans	PAHs	PCBs	PBDEs	Specialty Compounds
USEPA 1613	S,E,Sl,T,W	X				
USEPA 1668	T,S,Sl,F,			X		
USEPA 8290	P,Sl,E,S,T,W,Fo,Sb	X				
USEPA 8280	S,W,Fa,Fo,Sb	X				
USEPA 613	W	X				
USEPA 513	W	X				
NCAST 551/PCDD	P,Sl,E,S,W,Fa	X				
USEPA 1614	T,S,Sl,E,A,				X	
WHO	P,Sl,E,S,W,Fa	X				
USEPA 23	MM5	X				
USEPA TO9	PUF	X				
USEPA TO13	PUF or MM5		X			
CARB 428	MM5	X		X		
CARB 429	MM5		X			
ALTA Custom Methods	All	X	X	X		X

Sample Matrix key:

A = Aqueous

E = Effluent

Fa = Fly Ash

Fo = Fuel Oils

P = Pulp/paper

MM5 = MM5 Train air sample

W = Waste

S = Soil

Sb = Still Bottom

Sl = Sludge

T = Tissue

PUF = Polyurethane foam plug air sample

FACILITY

ALTA's two group operations are housed in two different facilities located in El Dorado Hills California. The original building contains 11,800 square feet and is primarily for the LCMS/MS group. The newest addition consists of 9,000 square feet and is for the HRGC/MS group. ALTA's original laboratory was initially completed in December 1990 with a 2,500 sq. ft. expansion completed in April 1993. ALTA's second building was completed in March 2001 and is currently being expanded.

The HRGC/MS facility features:

- Large sample log-in and sample storage areas including a walk-in freezer and walk-in refrigerator. Sample Control freezers and refrigerators are continuously monitored for temperature.
- 2 separate sample preparation laboratories are designed to maximize throughput and minimize sample cross contamination. Each lab is windowed and spacious to provide chemists with a safe and high capacity work environment. Sample preparation capabilities include sample grinding and drying, MMS air train preparation, supercritical fluid extraction, biological tissue processing and soil core subsampling.
- An open floor plan, 840 square foot instrument operations room. Accommodating 4 magnetic sector instruments and 4 triple stage quadrupole instruments, this design facilitates communication between instrument analysts. Instrument coolers are remotely located and pump emissions are evacuated to minimize noise and maintain safe working conditions.
- Separate Quality Assurance data review office and separate Data Archive Room designed to meet USEPA NELAC standards regarding data security.

EQUIPMENT

ALTA utilizes state-of-the-art magnetic sector or triple stage quadrupole mass spectrometers. Each instrument is fully automated for 24-hour operations. Data can be off-loaded to stand-alone computers for data processing and review or directly uploaded into the HRMS automated laboratory system (HALS).

Sample preparation capacity is large with over 60 soxhlet extractor positions and over 14 rotary evaporators. 13 fume hoods each surrounded by open bench space are positioned throughout the preparatory labs.

Below is listed a description of the laboratory equipment:

HRMS Analytical Instrumentation □

- CITC Autosampler Model A200S (5)
- Compaq Alpha Station w/Opus Data System (5)
- MicroMass Autospec Ultima High Resolution Mass Spectrometer (5)
- Neslab HX500 Water Cooler (4)

Sample Preparation Equipment □

- 8 ft. fume hoods (12)
- Berkel Scharfen Food Slicer (1)
- Biohazard Fume Hood (1)
- Buchler Rotary Evaporators (16)
- Denver Instruments Top Loader Balance (2)
- Dionex Accelerated Solvent Extractor (1)
- Electrothermal Electromantle 6 sample capacity (12)
- Electrothermal Electromantle 3000 mL capacity (6)
- Fischer Scientific Isotemp Oven (2)
- Fischer Scientific Marathon 3000 Centrifuge (1)
- Fischer Scientific Model A-160 Analytical Balance (1)
- Fischer Scientific Model XL-3000 Top Loader Balance (1)
- Mettler Toledo MT5 Balance (6 place) (1)
- Neslab Coolflow CFI-33 Cooler (11)
- Organomation 24 Station N-EVAPorators (4)
- Supercritical Fluid Extractor - ISCO-2300 (2)
- Thomas Grinder (1)
- Thermolyne 1400 Furnace Kiln (1)
- VWR 1320 Oven (1)
- Zymark TurboVap LV Evaporator (2)

Data Management and Report Production Equipment □

HALS® (HRMS Automated Laboratory System)
Canon Fax-L770 Facsimile
Canon 6050 Photocopier
Canon High Speed Scanner (2)
Concentrator 10 Base-T (1)
Concentrator 100 Base-Tx (1)
DEC Laser 2100 Plus (2)
HP Laser Jet Printers (13)
Microsoft Office 2000
Network Server (3)

Sample Storage Equipment □

Freezer 2-door 50 cu. ft. capacity (1)
Freezer 3-door 68 cu. ft. capacity (1)
Freezer Walk-in 335 cu. ft. capacity (1)
Omega 5000 Temperature Logger (1)
Refrigerator 1-door 3 cu. ft. capacity (4)
Refrigerator 1-door 20 cu. ft. capacity (3)
Refrigerator 2-door 50 cu. ft. capacity (2)
Refrigerator Walk-in 654 cu. ft. capacity (1)
Refrigerator Walk-in 335 cu. Ft. capacity (1)

QUALITY ASSURANCE

The ALTA Quality Assurance Program has been designed to ensure that our laboratory reports meet or exceed the minimum data quality objectives stipulated in the NELAC standards or the applicable method.

Basic laboratory systems, including personnel training, analytical standards management, and equipment operation are documented by Standard Operating Procedures (SOP's) and Analytical Procedures (AP's) in strict accordance with USEPA requirements. Additional project or study specific QC options are available upon request. Based on the three-tier approach described below, ALTA conducts a comprehensive QA Program that goes well beyond that typically available from commercial laboratories.

TIER 1. USEPA Standards

ALTA's standard operating procedures and analytical procedures cover all operations and were written in accordance to USEPA NELAC Standards. In particular, ALTA has taken the approach to adhere to NELAC standards throughout the laboratory whenever possible. This approach, although more stringent, ensures maximum uniformity in laboratory operations, particularly data collection and record keeping.

TIER 2. Method Performance Evaluation

ALTA routinely analyzes the following QC samples to monitor HRMS/LRMS method performance:

- one method blank per set (batch) of samples extracted,
- one OPR at a frequency of every 20 samples or less of similar matrix and analysis,
- periodically, a pair of matrix spikes (MS/MSD)

TIER 3, Study/Project Specific QC Options

ALTA offers study/project specific quality control options on an as-needed basis including:

- Matrix Spike, Matrix Spike Duplicate samples,
- Duplicate samples,
- Resin, Filter QC's,
- Raw data package (chromatograms, data sum sheets, calibrations),
- USEPA 40 CFR Part 136 Appendix B Method Detection Limit (MDL) Studies,
- Method Development and Validation Studies,
- Multiple column or MS/MS Confirmations.

Project Management

All analytical work is overseen by experienced environmental chemists with "hands-on" involvement in the project. Studies are assigned by matching expertise with analytical program requirements. This ensures that clients receive expert consultation beginning with project definition and ending with the discussion of the final report. The resumes of key technical personnel are provided in the Appendix.

Sample Tracking

Clients conducting long term field studies or other monitoring studies often require that sample batches be analyzed according to a study or project specific analytical program. In order to provide this level of tracking and routine handling, ALTA assigns a Client ID and a Sample Project ID to all sample batches as they are logged into ALTA's IRMS Automated Laboratory System (HALS). This enables Sample Control personnel to use a project template, which reduces errors during log-in, and facilitates the assignment of appropriate analytical tests.

Cost Accounting

ALTA's in-house accounting program routinely tracks invoices by Project ID (as well as Client ID). Upon request, project reports can be generated monthly, quarterly or year-to-date to document laboratory costs associated with a particular project. This service is valuable for project managers working under a fixed budget, or those that have multiple projects running concurrently with ALTA. In addition, it allows ALTA to verify the volume of revenue generated by an account and award volume discounts (if applicable) on a real time basis.

SELECTED PROJECT EXPERIENCE

Air Toxics Monitoring Projects:

1. Performed PCDD/PCDF, PAH and semi-volatile analyses for the WTI Hazardous Waste Incinerator Trial Burn on over 50 samples (1992).
2. PCDD/PCDF using California Air Resources Board (CARB) Methods 428 and 429 (LRMS & HRMS).
3. Stack emission tests of hospital infectious waste incinerators for PCDD/PCDF and PAHs by CARB Methods 428 and 429 (LRMS & HRMS).
4. Sugar plant stack emission test and process water analysis for PCDD/PCDF by CARB Method 428 and EPA Method 1613A (HRMS).
5. Refinery stack emission monitoring of PAHs by CARB Method 429 (HRMS).
6. Diesel/natural gas boiler stack testing for PAHs by CARB Method 429 (LRMS & HRMS).
7. Ambient Air Analysis by Modified EPA Method TO-9 for PCDD/PCDFs (USEPA SAS #5710-D-01).
8. PCDD/PCDF Ambient Air Round Robin Study conducted for Environment Ontario [Contact: R.E. Clement (Environment Ontario), 416 235-5906].
9. Ambient Air Analysis by Modified EPA Method TO-9 for PCDD/PCDF, PAH, and Coplanar PCB's (USEPA SAS #1226).
10. ALTA holds 1-year contracts for California Air Resources Board for CARB 428 and 429 for 1993, 1994, 1995 and 1996.

Pulp and Paper Industrial Monitoring Projects:

1. USEPA Industrial Technology Division Method 1613A inter-laboratory method performance evaluation study involving pulp mill effluent analysis for PCDD/PCDF [Contact: William Telliard (USEPA-ITD), 202 383-7120].

Pulp and Paper Industrial Monitoring Projects (continued):

2. NCASI Certification performance check sample analysis of standard reference pulps, sludges and effluents for TCDD/TCDF using NCASI Method 551 [Contact: Larry LaFleur (NCASI), 503 752-8801].
3. NPDES compliance permit monitoring of PCDD/PCDF in fish by the Stalling's Method.
4. Determination of TCDD/TCDF in finished paper products by NCASI Method 551.
5. Interlaboratory study (DF-1) for the determination of dibenzo-p-dioxin and dibenzofuran in defoamers for Environment Canada.
6. NPDES compliance permit monitoring of PCDD/PCDF in pulp and paper industry effluents using EPA Method 1613A and NCASI Method 551.
7. NCASI/USEPA joint variability study involving analysis of pulp, sludge & pulp mill effluent for PCDD/PCDF. [Contact: Larry LaFleur]

Municipal and Industrial Monitoring Projects:

1. Determination of PCDD/PCDF in soil samples by EPA Method 8290 (SAS #5674-S-01).
2. Measurement of PCDD/PCDF in power plant ash samples by EPA Method 8290.
3. Analysis of still bottom waste for PCDD/PCDF by EPA Method 8280.
4. NPDES compliance monitoring of POTW effluent by EPA Method 1613A.
5. Determination of PCDD/PCDF in refinery waste effluent by EPA Methods 8280 and 1613A.
6. Analysis of Drinking Water for 2,3,7,8-TCDD using EPA Method 1613A.
7. Fish Round Robin Study. [CIL Contact: Joel Bradley]
8. Soil Round Robin Study. [Radian Contact: Larry Keith]
9. U. S. Fish & Wildlife Service Bird Egg Study for PCDD/F, PCBs and pesticides. [Northern Pacific Coast Region Contact: Jeff Krausman]

PCB Projects:

1. Housatonic River Project 1997-2001 [Roy F. Weston]
2. Pittsfield Project 1997-2001 [Roy F. Weston]
3. Calcasieu Estuary Study 2000-2001 [CH2MHill]
4. Louisiana Department of Environmental Quality 2001
5. Exponent 2001
6. Passaic River Study 1994-1995 [Chemical Landholdings, Inc.]
7. Passaic River Ecological Study [Chemical Landholdings, Inc.]

APPENDIX

ALTA Organizational Flowchart

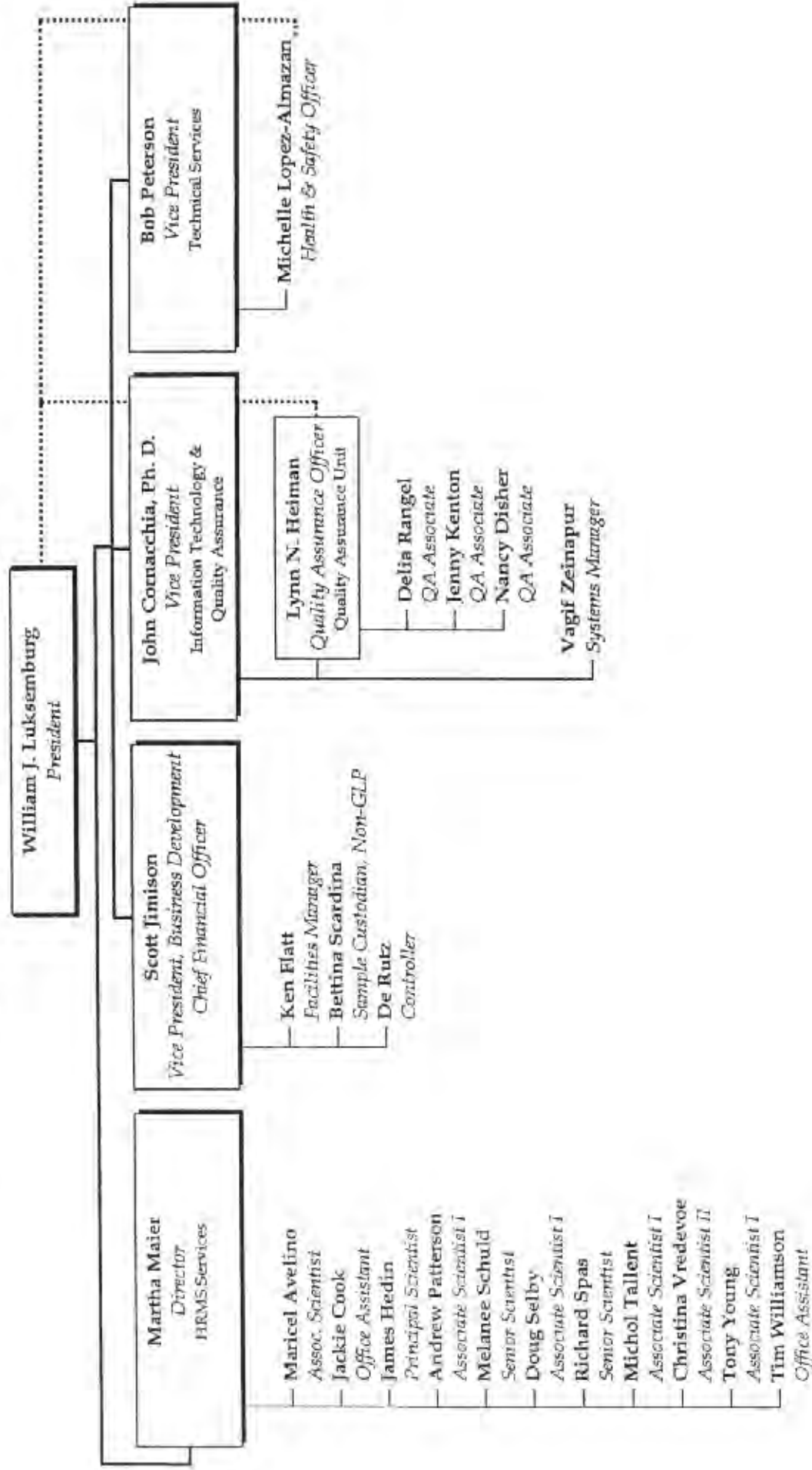
Key Technical Staff Resumes

Certifications

ALTA Organizational Flowchart

ALTA ANALYTICAL LABORATORY, INC.

HRMS SERVICES GROUP



Key Technical Staff Resumes

William J. Luksemburg

President

EDUCATION

B.S. Chemistry, California State University, Fresno, CA (1974)

EXPERIENCE

- Present **President, ALTA Analytical Laboratory**
Responsible for the management of business planning including venture funding, sales and marketing and the review of laboratory operations.
- 1990 - 2000 **Director of HRMS Services, ALTA Analytical Laboratory**
Mr. Luksemburg, a co-founder, directed the routine analysis and method development work in the High Resolution Mass Spectrometry department. He was responsible for marketing HRMS dioxin services to environmental engineering firms, the pulp and paper industry, government agencies and other industrial clients. Mr. Luksemburg was also responsible for the development of new markets using HRMS instrumentation. In addition Mr. Luksemburg directed routine and special projects, reviewed and interpreted data, and interfaced with clients.
- 1986 - 1990 **Principal Scientist/HRMS Manager, Enseco-Cal Lab**
As Principal Scientist in the Special Services department at Enseco-Cal Lab Mr. Luksemburg coordinated the operation and maintenance of five high resolution magnetic sector instruments. He was responsible for developing a business that now is one of the major suppliers of HRMS PCDD/PCDF analysis to the pulp and paper industry in the U.S. Mr. Luksemburg also coordinated the training and development of the staff in the operation and maintenance of HRMS instruments.
- 1979 - 1986 **Senior Chemist, Radian Corporation**
In Radian's Sacramento laboratory, Mr. Luksemburg was GC/MS supervisor for ABN and VOA analysis. He coordinated the activities of five chemists in the operation and maintenance of four quadrupole mass spectrometers.
- 1974 - 1979 **Chemist, Carnation Company**
As a staff chemist, Mr. Luksemburg was involved in the analysis of products and ingredients used in Carnation's animal feed division.

QUALIFICATIONS

Mr. Luksemburg has over 20 years experience in production analytical laboratories including 15 years experience in the field of environmental mass spectrometry. Much of this experience has involved PCDD/PCDF analysis of environmental samples and for the last seven years has concentrated on High Resolution Mass Spectrometry analysis of PCDDs/PCDFs in a variety of matrices. Mr. Luksemburg is recognized throughout the pulp and paper industry for his research and production work on dioxins and furans. He recently was recognized on the international level when his chapter on dioxin analysis of pulp and paper (Rappe, 1991), was published by the World Health Organization. He is one of the few individuals in the world to successfully adapt the high-resolution magnetic sector instruments to "production" analysis of environmental samples at the picogram and femtogram levels.

RECENT PRESENTATIONS

"Determination of Method Detection Limits in Pulp and Paper Mill Effluents," in Rotorua, New Zealand, at the *ISWPC Post Symposium Workshop*, May 1991.

"Comparison of NCASI Method 551, EPA Method 1613A, and the Proposed FDA Method for the Analysis of 2,3,7,8-TCDD and 2,3,7,8-TCDF in Food Packaging Material," in Boston, MA, at the *1993 TAPPI Environmental Conference*, March 1993.

"Extraction of Large Volumes of Aqueous Samples Using Solid Phase Extraction Disks," in Portland, OR at the *1994 TAPPI Environmental Conference*, April 1994.

"PCDDs and PCDFs in Urban Stormwater Discharged to San Francisco Bay, California," in Amsterdam at the *1996 Dioxin 16th Symposium on Chlorinated Dioxins and Related Compounds*, August 1996.

PUBLICATIONS

NCASI Technical Bulletin No. 551, "NCASI Procedures for the Preparation and Isomer Specific Analysis of Pulp and Paper Industry Samples for 2,3,7,8-TCDD and 2,3,7,8-TCDF," LaFleur, L., Ramage, K., Bousquet, T., Brunck, R., Luksemburg, W., Miille, M., Peterson, R., and Valmores, S., (1989).

"Optimization of Extraction Procedures for the Analysis of TCDD/TCDF in Pulp, Paper Base Stocks, and Pulp Industry Solid Wastes," LaFleur, L., Ramage, K., Gillespie, W., Luksemburg, L., Miille, M., and Valmores, S., *Chemosphere*, Vol. 19, pp 643-648, 1989.

"Analytical Procedures for the Analysis of TCDD and TCDF in Food Sources," LaFleur, L., Bousquet, T., Ramage, K., Davis, T., Luksemburg, W., and Peterson, R., Presented by L. LaFleur at Dioxin '89, Toronto, Canada. Waiting publication in *Chemosphere*.

"Determination of Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans in Pulp and Paper Industry Wastewaters, Solid Wastes, Ashes and Bleached Pulps," Luksemburg,

PUBLICATIONS (Continued)

W., Environmental Carcinogens-Methods of Analysis and Exposure Measurement-Volume 11, World Health Organization, Christopher Rappe, Editor, 1991.

"Potential Sources of Polychlorinated Dibenzothiophenes in the Passaic River, New Jersey," Huntley, S., Wenning, R., Paustenbach, D., Wong, A., and Luksemburg, W., Chemosphere, Vol. 29, No.2, pp 257-273, 1994.

"Polychlorinated Dioxins and Dibenzofurans in Environmental Samples From China," Luksemburg, W., Mitzel, R., Huaidong, Z., Hedin, J., Silverbush, B. and Wong, A., Dioxin '96, Vol. 28, pp 262-263, 1996.

"Transport of Chlorinated Dioxin and Furan Contaminants in Pentachlorophenol-treated Wood to Milk and Adipose Tissue of Dairy Cattle," Fries, G., Wenning, R., Paustenbach, D., Mathur, D., and Luksemburg, W., Dioxin '96, Vol. 29, pp 447-449, 1996.

"Polychlorinated Dioxins and Dibenzofurans in Environmental Samples from China," Luksemburg, W., Mitzel, R. S., Hedin, J. M., Silverbush, B. B., Wong, A. S., Zhou, H. D., Dioxin '96, Vol. 28, pp. 262, 1996.

"Polychlorinated Dioxins and Dibenzofurans (PCDDs/PCDFs) in Environmental and Human Hair Samples Around a Pentachlorophenol Plant in China," Luksemburg, W., Mitzel, R.S., Hedin, J. M., Silverbush, B. B., Wong, A. S. and Zhou, H. D., Dioxin '97, Vol. 32, p. 38, 1997.

PROFESSIONAL AFFILIATIONS

American Society for Mass Spectrometry

American Chemical Society

Technical Association of the Pulp and Paper Industry

James M. Hedin

Principal Scientist

EDUCATION

B.S. Chemistry, University of Minnesota, Duluth, MN (1986)

EXPERIENCE

Present Principal Scientist, ALTA Analytical Laboratory

Mr. Hedin performs routine analysis and method development work in the High Resolution Mass Spectrometry department. He is responsible for routine maintenance of HR/MS instruments. Mr. Hedin also aids in the training of new staff, reviews and interprets data, and interfaces with clients.

1988 - 1990 GC/MS Chemist, Enseco-Cal Lab

As GC/MS Chemist at Enseco-Cal Lab Mr. Hedin was responsible for the operation and maintenance of quadrupole GC/MS instruments. His duties entailed sample analysis by EPA methods for volatiles and semi-volatiles. Mr. Hedin also aided in the training of the staff in the department.

1987 - 1988 Extraction Chemist, Enseco-Cal Lab

Mr. Hedin's duties entailed sample extraction for Dioxin/Furan Analysis by High Resolution Mass Spectrometry. He assisted in the training of new staff, and the development of new extraction techniques.

QUALIFICATIONS

Mr. Hedin has over 13 years experience in production analytical laboratories including 9 years experience in the field of environmental mass spectrometry. Much of this experience has involved PCDD/PCDF analysis of environmental samples and for the last three years has concentrated on High Resolution Mass Spectrometry analysis of PCDDs/PCDFs in a variety of matrices.

PROFESSIONAL AFFILIATIONS

American Society for Mass Spectrometry

Delia P. Rangel

Quality Assurance Associate

EDUCATION

B.S. Environmental Toxicology, University of California, Davis, CA (1997)

EXPERIENCE

- Present Quality Assurance Associate, ALTA Analytical Laboratory**
Ensure compliance to National Environmental Laboratory Accreditation Program (NELAP) and Alta's Quality Manual (QM) and Standard Operating Procedures (SOP) as well as other regulatory agencies; review and manage MDLs, IPRs, PE samples; review data packages for compliance and completeness, aid in ISO 17025 accreditation; maintain state certifications; maintain and update SOPs and APs, maintain archives; maintain and update control charts; initiate and maintain employee initiation and training; maintain and update QM and SOQ.
- 1999 - 2000 QC Analytical Inspector, Battelle**
Provided quality control oversight of laboratory monitoring operations including agent monitoring, and hazardous waste sample collection. Performed a wide variety of surveillances and oversight activities designed to ensure compliance with all applicable Army, Federal, State, and internal requirements. Identified non-conforming conditions within the laboratory Dept. and notify project management of the non-conforming conditions. Approved and verified corrective actions taken that would eliminate non-conforming conditions. Performed internal and external audits. Maintain database that tracks weekly/monthly quotas, DRs, PE samples and provided reports on data accumulated.
- 1997 - 1998 Quality Assurance, Quanterra**
Coordinated quality assurance activities including maintaining and implementing QuantIMS, and interactive database, within the entire laboratory; reviewed and approved MDLs; reviewed, organized, and distributed SOPs; reviewed and updated control limits; maintained Facility Specific QAMP; logged in and monitored refrigerator blanks projects bimonthly; provided QA orientation for new employees; internal and external audits; state certifications; and client concerns. Served as backup for Chief of Police secretary.

QUALIFICATIONS

Mrs. Rangel has over 5 years experience in environmental services. Her background in quality assurance gives her a solid working knowledge of analyzing laboratory procedures and data review. Her experience has stressed the importance of thorough documentation and effective communication between the laboratory and the client.

PROFESSIONAL AFFILIATIONS, TRAINING AND CERTIFICATIONS

Society of Quality Assurance (SQA), Active Member since 2000

A2LA ISO/IEC 17025 and Accreditation, 2002

SQA QA Techniques in Auditing Data and Records, 2001

SQA Part 11 Meets CROMERRR, 2001

International Quality Training Overview of the FDA GLP Regulations, 2000

Martha M. Maier

Director of HRMS Services

EDUCATION

B.S. Chemistry, University of Wisconsin, Madison, WI (1983)
B.S. Philosophy, University of Wisconsin, Madison, WI (1983)

EXPERIENCE

Present **Director of HRMS Services, Alta Analytical Laboratory, Inc.**
As Director of HRMS Services oversees the routine operations of the High Resolution Mass Spectrometry Group. Performs the interpretation and final review of analytical data, and issues final reports. Acts as a liaison between the laboratory and the Quality Assurance department. Project manager for routine and special projects.

1999-2001 **Director, Ultra-Trace Analyses Group, Paradigm Analytical Laboratories, Inc**
Responsible for extractions, analyses, final review and processing of all data generated by the group. Served as project manager. Oversaw the development of analytical procedures for the analysis for PCBs by HRMS (Method 1668A), as well as the implementation of NELAP certification.

1998-1999 **Bioanalytical Project Manager, Alta Analytical Laboratory**
Liaison between pharmaceutical clients and the Liquid Chromatography Mass Spectrometry (LCMS) Services group, ensuring efficient study management and timely reporting of laboratory results. Directed all phases of study conduct, including: review of study protocols and sponsor Standard Operating Procedures; initiation, maintenance and review of study and raw data files; scheduling of sample analyses; and preparation of final reports.

1992-1998 **Associate Scientist, Alta Analytical Laboratory**
Involved in sales and project management. Directed sample analysis, reviewed data and prepared reports. Presented papers and gave educational seminars and presentations on dioxin/furan analysis. Arranged exhibit schedule and represented the laboratory at technical meetings and industry conferences. From 1992-1997, acted as laboratory representative for the Eastern U.S., both in sales and project management capacities.

1990-1992	Technical Sales, Enseco-Cal Lab Coordinated the dioxin/furan marketing program. Prepared bids, organized exhibits, and oversaw the production of marketing materials. Acted as a liaison between the salespeople and the dioxin/furan laboratory.
1988-1990	HR GC/MS Operator, Enseco-Cal Lab Dioxin/furan analysis of pulp, food, and low-level environmental samples using high resolution GC/MS. Promoted to scientist position in December 1989. Involved in data review and project management.
1987-1988	GC/MS Operator, Enseco-Cal Lab Dioxin/furan analysis using low-resolution GC/MS systems. Promoted to lead person in May 1988.
1986-1987	GC/MS BNA Operations Supervisor, Radian Corporation Responsible for the scheduling and completion of all semi volatile analyses. Trained other operators in BNA analysis and routine instrument maintenance.
1984-1986	GC/MS Operator, Radian Corporation Analyzed environmental samples for volatile and semi volatile organic pollutants using EPA Methods 624, 625, SW-8240, SW-8270, and by EPA Contract Lab Protocol. Performed routine maintenance on all systems. Responsible for interfacing the GC/MS lab with the laboratory database management system.
1984-1984	Analytical Chemist, Wisconsin Department of Agriculture Assayed pesticide formulations using HPLC, GC, and TLC. Researched, developed and modified methods.

QUALIFICATIONS

Ms. Maier has over 17 years of experience in the environmental laboratory, including 11 years of specialization in dioxin/furan analysis.

AFFILIATIONS

Air & Waste Management Association
 American Chemical Society
 Technical Association of the Pulp & Paper Industry

Certifications

CURRENT CERTIFICATIONS

State of Alaska (Certificate No.: CA-413)

State of Arizona (Certificate No.: AZ0639)

State of Arkansas (Certificate No.: 03-037-0)

State of California (Certificate No.: ELAP 1640, NELAP 02102CA)

State of Colorado

State of Connecticut (Certificate No. PH-0182)

State of Florida (Certificate No.: E87777)

Commonwealth of Kentucky (Certificate No.: 90063)

State of Louisiana DHH (Certificate No.: LA000014)

State of Louisiana DEQ

State of Mississippi (Approval granted through CA certification)

State of Nevada (Certificate No.: CA413)

State of New Mexico

State of New Jersey (Certificate No.: CA003)

State of New York (Certificate No.: 11411)

State of North Carolina (Certification No. 06700)

State of North Dakota (Certificate No.: R-078)

State of Oregon (ORELAP ID # CA200001)

State of Pennsylvania (Certificate No.: 68-490)

State of South Carolina (Certificate No.: 87002001)

CURRENT CERTIFICATIONS

State of Tennessee (Certificate No.: 02996)

State of Texas (Certificate No. TX247-2000A)

State of Utah (Certificate No.: E-201)

Commonwealth of Virginia (Certificate No.: 00013)

State of Washington (Certification No.: C091)

State of Wisconsin (Certificate No.: 998036160)

State of Wyoming (USEPA Region 8 Ref: 8TMS-Q)

Department of the Navy

U.S. Army Corps of Engineers

U.S. EPA Region 5

Bureau of Reclamation - Mid-Pacific Region (MP-470, Res-1.10)



March 30, 2004

Ms. Dina Brennan
Environmental Data Services
2690 Oak Hill Drive
Allison Park, PA 15101

Dear Ms. Brennan,

Enclosed are the current Statement of Qualifications and NELAP Certifications. The copy of the recent New York Certificate is still in mail; as soon as we received the copy we will send it to you.

Please give me a call at (916) 933-1640 or by email at mpa@altalab.com if you require more information. Thank you.

Sincerely,

Maricel P. Avelino
Associate Scientist

Alta Analytical Laboratory Inc.

1105 Windfield Way
El Dorado Hills, CA 95762
FAX (916) 873-0106
(916) 933-1640



STATE OF CALIFORNIA
DEPARTMENT OF HEALTH SERVICES

NATIONAL ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

ACCREDITATION

Is hereby granted to

ALTA ANALYTICAL LABORATORY, INC.

1104 WINDFIELD WAY

EL DORADO HILLS, CA 95762-5702

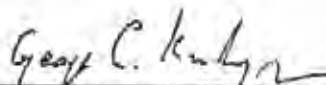
Scope of accreditation is limited to the
"NELAP Fields of Accreditation"
which accompanies this Certificate.

Continued accredited status depends on successful
ongoing participation in the program.

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

Certificate No: 02102CA
Expiration Date: 01/31/2005
Effective Date: 01/31/2004

Berkeley, California
subject to forfeiture or revocation.


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



CALIFORNIA DEPARTMENT OF HEALTH SERVICES
ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM
NELAP Fields of Accreditation



ALTA ANALYTICAL LABORATORY, INC.

Lab Phone (916) 933-1840

1104 WINDFIELD WAY
EL DORADO HILLS, CA 95762-5702

Certificate No: 02102CA Renew Date: 01/31/2005

INTERIM

105 - Semi-volatile Organic Chemistry of Drinking Water

105.230	001	EPA 1613	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)
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111 - Semi-volatile Organic Chemistry of Wastewater

111.090	001	EPA 613	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)
111.110	001	EPA 1613	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)
111.110	002	EPA 1613	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)
111.110	003	EPA 1613	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)
111.110	004	EPA 1613	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)
111.110	005	EPA 1613	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)
111.110	006	EPA 1613	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)
111.110	007	EPA 1613	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)
111.110	008	EPA 1613	2,3,7,8-Tetrachlorodibenzofuran (TCDF)
111.110	009	EPA 1613	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)
111.110	010	EPA 1613	2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)
111.110	011	EPA 1613	1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)
111.110	012	EPA 1613	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)
111.110	013	EPA 1613	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)
111.110	014	EPA 1613	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)
111.110	015	EPA 1613	1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)
111.110	016	EPA 1613	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)
111.110	017	EPA 1613	1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)

117 - Semi-volatile Organic Chemistry of Hazardous Waste

117.120	001	EPA 8280A	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)
117.120	002	EPA 8280A	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)
117.120	003	EPA 8280A	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)
117.120	004	EPA 8280A	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)
117.120	005	EPA 8280A	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)
117.120	006	EPA 8280A	2,3,7,8-Tetrachlorodibenzofuran (TCDF)
117.120	007	EPA 8280A	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)
117.120	008	EPA 8280A	2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)
117.120	009	EPA 8280A	1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)
117.120	010	EPA 8280A	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)
117.120	011	EPA 8280A	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)
117.120	012	EPA 8280A	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)
117.120	013	EPA 8280A	Total TCDD
117.120	014	EPA 8280A	Total PeCDD
117.120	015	EPA 8280A	Total HxCDD
117.120	016	EPA 8280A	Total TCDF
117.120	017	EPA 8280A	Total PeCDF
117.120	018	EPA 8280A	Total HxCDF

As of 12/15/2003, this list supersedes all previous lists for this certificate number.
Customers: Please verify the current accreditation standing with the State.

ALTA ANALYTICAL LABORATORY, INC.

Certificate No: 02102CA
 Renew Date: 01/31/2005

117.120	019	EPA 8280A	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)
117.120	020	EPA 8280A	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)
117.120	021	EPA 8280A	1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)
117.120	022	EPA 8280A	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)
117.120	023	EPA 8280A	1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)
117.130	001	EPA 8290	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)
117.130	002	EPA 8290	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)
117.130	003	EPA 8290	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)
117.130	004	EPA 8290	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)
117.130	005	EPA 8290	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)
117.130	006	EPA 8290	2,3,7,8-Tetrachlorodibenzofuran (TCDF)
117.130	007	EPA 8290	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)
117.130	008	EPA 8290	2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)
117.130	009	EPA 8290	1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)
117.130	010	EPA 8290	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)
117.130	011	EPA 8290	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)
117.130	012	EPA 8290	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)
117.130	013	EPA 8290	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)
117.130	014	EPA 8290	1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)
117.130	015	EPA 8290	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)
117.130	016	EPA 8290	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)
117.130	017	EPA 8290	1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)



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



DIANA M. BONTA, R.N., Dr. P.H.
Director

GRAY DAVIS
Governor

October 1, 2003

Certificate No.: 1640

MARTHA MAIER
ALTA ANALYTICAL LABORATORY, INC.
1104 WINDFIELD WAY
EL DORADO HILLS, CA 95762-5702

Dear MARTHA MAIER:

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 California Environmental Laboratory Improvement Act (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 **10/31/2005** unless revoked.

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

- * successful completion of the site visit;
- * acceptable performance in the required performance evaluation (PE) studies;
- * timely payment of all fees, including an annual fee due before October 31, 2004;
- * compliance with Environmental Laboratory Accreditation Program (ELAP) statutes (HSC, Section 100825, et seq.) and Regulations (California Code of Regulations (CCR), Title 22, Division 4, Chapter 19).

An updated "Approved Fields of Testing" will be issued to the laboratory upon completion of the renewal process. The application for the next renewal must be received 90 days before the expiration of this certificate to remain in force according to the CCR, Section 64801 through 64827.

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 to ELAP.

If you have any questions, please contact ELAP at (510) 540-2800.

Sincerely,

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



STATE OF CALIFORNIA
DEPARTMENT OF HEALTH SERVICES
ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

ENVIRONMENTAL LABORATORY CERTIFICATION

Is hereby granted to

ALTA ANALYTICAL LABORATORY, INC.

1104 WINDFIELD WAY

EL DORADO HILLS, CA 95762-5702

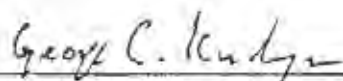
Scope of certification is limited to the
"List of Approved Fields of Testing and Analytes"
which accompanies this Certificate.

Continued certification status depends on successful completion of site visit,
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: 1640
Expiration Date: 10/31/2005
Effective Date: 10/01/2003

Berkeley, California
subject to forfeiture or revocation.


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



STATE OF NEW YORK DEPARTMENT OF HEALTH

Wadsworth Center The Governor Nelson A. Rockefeller Empire State Plaza P.O. BOX 509 Albany, New York 12201-0509

Antonia C. Novello, M.D., M.P.H., Dr.P.H.
Commissioner

Dennis P. Whalen
Executive Deputy Commissioner

LAB ID: 11411

June 02, 2003

MR. ROBERT S. MITZEL
ALTA ANALYTICAL LAB INC
5070 ROBERT J MATHEWS PKY
EL DORADO HILLS CA 95762

Certificate Expiration Date: April 01, 2004

Dear Mr. Mitzel,

Enclosed are the ELAP and/or NELAP Certificate(s) of Approval issued to your environmental laboratory for the current permit year. The Certificate(s) supersede any previously issued and are in effect through the expiration date listed above. Please carefully examine the Certificate(s) to insure that the category(ies), subcategory(ies), analyte(s) and method(s) for which your laboratory is approved are listed correctly, as well as verifying your laboratory's name, address, lead technical director and identification number.

Pursuant to regulation (Part 55.2 NYCRR), certificates must be posted conspicuously in the laboratory and shall, upon request, be made available to any client of the laboratory. Certificates remain the property of the New York State Department of Health and must be surrendered promptly on demand.

Please note that pursuant to Section 55-2.5(a) NYCRR, any misrepresentation of the analytes or subcategories for which your laboratory is approved may result in suspension, limitation or termination of said certification.

The National Environmental Laboratory Accreditation Conference (NELAC) further defines and limits the use of NELAP accreditation and the NELAP logo.

Please notify the ELAP office of any changes you feel need to be made to your certificate(s). We may be reached via email to elap@health.state.ny.us or by calling (518) 485-5570.

Sincerely,

Joyce Reilly

Administrative Assistant
Environmental Laboratory
Approval Program

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Antonia C. Novello, M.D., M.P.H., Dr.P.H.



Expires 12:01 AM April 01, 2004
Issued June 02, 2003

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. ROBERT S. MITZEL
ALTA ANALYTICAL LAB INC
5070 ROBERT J MATHEWS PKY
EL DORADO HILLS CA 95762 United States

NY Lab Id No: 11411
EPA Lab Code: CA00413

*Is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards for the category*

ENVIRONMENTAL ANALYSES POTABLE WATER

All approved analytes are listed below:

Drinking Water Miscellaneous

2,3,7,8-Tetrachlorodibenzo-p-dioxin EPA 1613

Serial No.: 18753

Property of the New York State Department of Health, valid only at the address shown.
Must be conspicuously posted. Valid certificates have a raised seal and may be
verified by calling (516) 485-6570.

DOH-3317 (3/97)

Page 1 of 1



NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Antonia C. Navello, M.D., M.P.H., Dr.P.H.



Expires 12:01 AM April 01, 2004
Issued June 02, 2003

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. ROBERT S. MITZEL
ALTA ANALYTICAL LAB INC
5070 ROBERT J MATHEWS PKY
EL DORADO HILLS CA 95762 United States

NY Lab Id No: 11411
EPA Lab Code: CA00413

*is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards for the category:*

ENVIRONMENTAL ANALYSES NON POTABLE WATER

All approved analytes are listed below:

Dioxins

2,3,7,8-Tetrachlorodibenzo-p-dioxin EPA 813

Serial No.: 18754

Property of the New York State Department of Health. Valid only at the address shown.
Must be conspicuously posted. Valid certificates have a raised seal and may be
verified by calling (516) 485-5570.

DOH-2317 (3/97)

Page 1 of 1

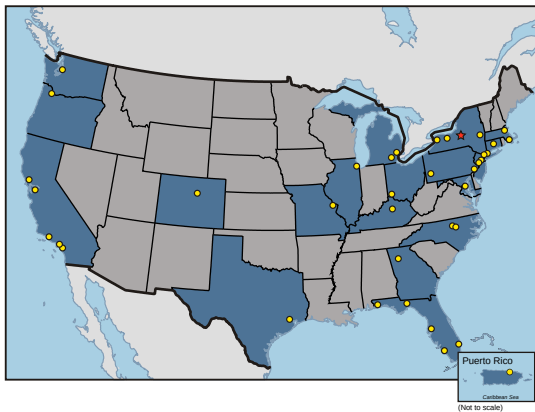


Introduction to BBL

BBL was incorporated in 1984 in Syracuse, New York, by 12 professionals whose goal was to establish a nationally recognized source of creative solutions to a broad range of environmental engineering and scientific problems.

Since that time, our firm has grown to include more than 650 engineers, scientists, economists, and technical support personnel in offices throughout the United States. BBL is headquartered in Syracuse, New York, with offices across the country to assist clients with regional and national environmental programs. These offices provide efficient response to our clients' needs. An industry leader, BBL is ranked 40th on *Engineering News-Record's* (ENR's) list of Top 200 Design Firms, 11th on ENR's List of Top 20 Environmental Science Firms, and 13th on ENR's List of All-Environmental Firms.

While we are not the biggest consulting firm, we have built a company that, from its beginnings, has been able to provide the highest levels of support to the nation's leading industrial companies. Much of the firm's success and growth is due to our ability to conduct large, multifaceted projects. This success is primarily the result of a corporate management philosophy that facilitates effective coordination among specialized services and groups critical to addressing our clients' issues.



Office Locations

BBL is headquartered in Syracuse, New York, and has more than 35 offices across the country to assist clients with regional and national environmental programs. These offices include full-service locations, as

well as project offices, to provide efficient response to our clients' needs.

Operating Model

BBL organizes our core consulting, engineering, sciences, and economic groups according to our clients' environmental needs. From these core groups, BBL assembles a project team composed of professionals



Based on experience gained from 20 of the Fortune 100 companies, we bring a practical application of “best-in-class” tools from all industry segments to the complex issues involved in addressing environmental assessment and management issues.

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

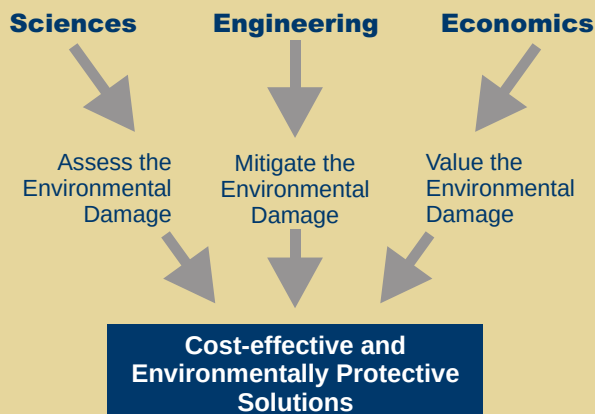
engineers

scientists

economists

Integration of Disciplines

BBL offers a unique integration of disciplines that provides a level of service and value not found in other firms. Some may offer two of the areas below, but only BBL offers all three integrated into one company.



knowledgeable in regional, environmental, and regulatory issues. BBL's staff offers clients a comprehensive source of environmental engineering, scientific, and economic expertise.

Engineering: Our engineering staff includes civil/environmental, sanitary, chemical, electrical, mechanical, structural, and geotechnical engineers.

Sciences: BBL's scientific staff includes hydrogeologists, geochemists, soil scientists, biologists, environmental toxicologists, atmospheric scientists, industrial hygienists, chemists, and statisticians.

Economics: Our staff includes economists with advanced

degrees in various specialties, such as environmental economics, energy economics, microeconomics, and quantitative analysis.

Operations Consulting: Other BBL staff members include surveyors, field technicians, drafters, and construction managers. State-of-the-art technical field and office equipment, computer modeling capabilities, and access to on-line databases enable our staff to serve our clients coast-to-coast both cost-effectively and efficiently.

Comprehensive Environmental Services

BBL offers a comprehensive source for site assessment, investigation, and remediation of hazardous waste sites and a broad spectrum of services to address client environmental engineering, scientific, and economic needs:

Engineering Services

- Feasibility Studies
- Engineering Evaluation/Cost Analysis
- Remedial Design
- Solid Waste Management/Landfill Siting, Design, and Closure
- Landfill Permitting
- Geotechnical Engineering



A Commitment to Safety...

BBL is in a select group in terms of safety performance, with one of the lowest OSHA Recordable Injury and Lost Workday Case rates for our industry. Internal quality assurance and safety programs are implemented for all projects. Our employee training and medical surveillance programs meet or exceed OSHA standards, and field activities are routinely reviewed by management to verify safe operations.

- Facilities Engineering
- Facility Decontamination and Decommissioning
- Property Redevelopment
- Water/Wastewater Engineering
- Stormwater Management
- Mapping and Surveying

Scientific Services

- Remedial Investigations/RCRA Facility Investigations
- Hydrogeologic Studies
- Sediment Management/Contaminant Transport Analyses
- Groundwater Modeling
- Risk Assessment



- Wetlands Delineation/Mitigation
- Air Quality Monitoring and Modeling
- Health, Safety, and Industrial Hygiene Services
- Environmental Training
- Information Management
- Data Validation
- Watershed/TMDL Services



Economic Services

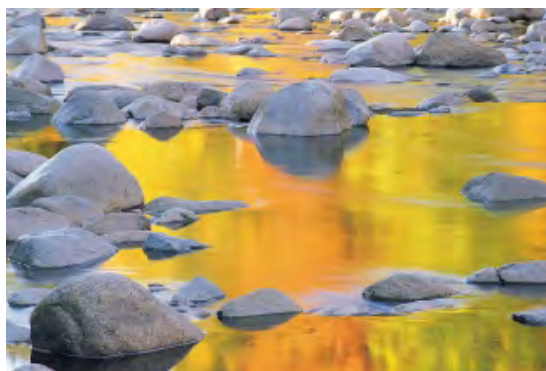
- Natural Resource Damage Assessment
- Solutions for Meeting 316 (b) Regulations
- Evaluation of Property Value and Business Income Damage Claims
- Quantification of Recreation Use Losses
- Valuation of Recreation Activities
- Evaluation of Compensatory Restoration Alternatives
- Sophisticated Statistical Analyses
- Economic Analysis & Modeling
- Primary Data Collection and Management
- Economic Literature Reviews
- Critique of Opposing Expert Reports
- Expert Witness Testimony

Operations Consulting

- Environmental Assessment and Auditing
- Regulatory Compliance
- Pollution Prevention/Waste Minimization
- Operation and Maintenance Process Evaluation and Optimization
- International Standards Organization 14000 Support Capabilities

Operations Consulting (continued)

- Contracting Services
- Construction Management
- Litigation Support
- Regulatory Assistance and Negotiation
- Expert Witness Testimony
- Community Relations Planning



BBL provides strategic consulting services for diverse environmental needs at sites across the country. We have an in-depth understanding of relevant issues and the technical expertise to recommend practical, technically feasible solutions. Furthermore, we are able to respond to client needs within tight deadlines while maintaining the high quality of our work.



focus on sediment services

BBL[®]
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists
www.bbl-inc.com



BBL[®]
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists



Focused on Sediments

A cornerstone of BBL’s environmental practice is the broad range of our sediment management capabilities at aquatic sites. We are a leader in the field of sediment quality assessment and management, having directed environmental programs at more than 80 aquatic sites in the United States and abroad. Whether addressing concerns involving a small creek or an entire river and harbor system, BBL’s staff of engineers, scientists, and field specialists conduct field investigations, evaluate potential risks, assess potential

remedial options, and devise effective response programs. We have established a national reputation for developing and implementing reasonable assessment and mitigation strategies at sediment sites.

Our unparalleled experience designing and investigating sediment remedies gives us exceptional authority to address the effectiveness, implementability, and costs of sediment remedies. In fact, major multinational firms rely on BBL for our nationally recognized sediment expertise and commitment to achieving cost-effective, common-sense solutions to their sediment concerns. We provide characterization and design services for projects at assessment and remediation sites with sediments ranging from a few hundred to several million cubic yards. Current federal guidance reflects much of BBL’s work product in this area.

Providing a Talented Team of Sediment Experts

Our long-standing and growing work in the field of sediment management has resulted in an unsurpassed team of scientists, engineers, and technicians who are focused on sediment site work. Their areas of specialization include ecology; ecotoxicology; toxicology; hydrology; hydrogeology; geology; environmental systems analysis; environmental chemistry; analytical chemistry; and civil, chemical, and environmental engineering. This core group is complemented on a regular basis by staff with other technical specializations, including geotechnical and structural engineering, drafting, and data management.



BBL designs cost-effective, reliable aquatic studies and develops reasonable and technically sound remedial strategies based on technical, public, and financial considerations. All the while, our team provides highly credible and compelling support to public information and community relations programs at these sites.

Planning and Performing Sediment Assessments

Staffed by some of the nation’s foremost professionals in managing aquatic sites impacted by PCBs, PAHs, metals, dioxins, and other constituents, our team has the expertise to develop and execute comprehensive sediment, biota, and water-column investigations. These



investigations can involve collecting and interpreting physical, chemical, and biological parameters to support a range of client goals, including regulatory needs and litigation support. To promote authoritative investigations, BBL’s in-house field services staff and aquatic specialists draw on their experience performing investigative programs at a variety of aquatic sites. Similarly, our risk assessment specialists and toxicologists combine their in-depth understanding of environmental issues with practical experience conducting risk assessments to provide complete risk characterization and analysis services.

Providing Negotiation and Litigation Assistance

Many legal cases involving sediment-related issues rely on the quality and completeness of the technical investigation, the strategy developed to support that investigation, and the presentation of the evidence. Clients depend on BBL’s detailed analysis of their needs, assessment of their circumstances, and development of environmentally sound solutions. To successfully navigate the regulatory and technical pitfalls in federal, state, and local statutes, BBL continually stays abreast of ever-changing regulations and technical innovations.

BBL offers our capability, experience, and resolve to successfully investigate and defend the technical and non-technical issues surrounding impacted aquatic sites, potential and actual natural resource damage (NRD) claims, and tort claims. Our technical professionals have a keen awareness of the interrelationships between remedial and natural resource damage assessment (NRDA) liability, and we are experienced in designing programs to cost-effectively resolve those liabilities jointly. We stand ready to supply

our clients with the vital regulatory information, data interpretation, and engineering and scientific expertise to evaluate each client’s present and future position and define and attain strategic objectives.

Designing and Implementing Traditional and Innovative Sediment Remediation Programs

BBL’s sediment management capabilities extend to evaluating and implementing traditional and innovative remedial technologies. We conduct feasibility studies (FSs) and corrective measures studies (CMSs), perform bench- and pilot-scale treatability studies, and design and implement full-scale remedial programs involving techniques such as institutional controls, natural recovery, capping/armoring, and dredging/hot-spot removal. We are a leader in designing in-place capping remedies for impacted sediments, with more than 10 years of experience working on major rivers, harbors, and waterways. BBL’s sediment team has experience with sediment evaluations and cap design at major aquatic sites around the nation, and we take pride in the fact that we are able to develop innovative and cost-effective capping solutions that generate win-win situations for stakeholders.



BBL’s unparalleled ability to complete top-quality engineering design and construction documents and our staff’s hands-on remedial dredging and project management experience are the true differentiators that put us a step ahead of our competition. BBL has designed all aspects of numerous sediment dredging projects and has undertaken all the necessary ancillary design-related activities, including permitting issues, environmental impact statements, monitoring programs, and identification and evaluation of traditional and innovative disposal options. BBL’s staff has been directly involved with approximately one-third of all completed environmental dredging projects in the United States.

Our sediment management expertise allows us to manage the entire process: from strategic planning, agency negotiation, and community relations to design, construction, and long-term operation, maintenance, and monitoring (OMM), if needed. In conjunction with our remedial management and construction firm, BBL Environmental Services, Inc. (BBLES), we can provide turnkey services for any remedial program.

A National Reputation in Sediment Management

BBL has established a national reputation for developing and implementing technically sound and cost-efficient assessment and mitigation



approaches at sediment sites while protecting human health and the environment.

We have experience in the following areas:

Assessments

- site investigation design
- sediment contaminant distribution investigation
- contaminant transport to floodplain assessment
- surface-water contaminant transport investigation
- sampling, analysis, and interpretation of contaminant levels in biota
- human health and ecological risk assessment
- quantitative system analysis
- feasibility assessment
- sediment stability assessment
- recoverability assessment

Remediation/Restoration

- institutional controls
- monitored natural attenuation
- capping and armoring
- dredging and hot-spot removal
- habitat restoration

Negotiation/Litigation Assistance

- natural resource damage assessment
- technical impracticability waivers
- expert witness testimony
- consent order and work plan negotiation
- formal opinions and comments on proposed remedial action plans and records of decision (RODs)
- defense of government litigation
- litigation between PRPs
- insurance cost recovery
- tort cases
- proactive management to help avoid claims before they occur

Robert Romagnoli, P.E.

Senior Engineer I/Vice President

Project Experience

River and Sediment Experience

Currently serves as program manager of a Remedial Investigation/Feasibility Study (RI/FS) for a 6-mile stretch of the Passaic River in Newark, New Jersey. Some of the more significant responsibilities include:

- interacting with USEPA and other agencies;
- developing a comprehensive RI Report;
- assessing various dioxin treatment technologies and overseeing the development of potential treatability studies for the site;
- overseeing a significant CSO investigation to understand mass loadings into the river system;
- developing dredge monitoring programs; and
- developing a highly automated and user-friendly GIS work platform for use by the entire project team.

Served as project manager for the completion of an RI/FS at a large PCB-impacted river site in northern New York State. Specifically responsible for managing the following aspects of the project:

- Working on the development and in-field testing of a cutting-edge remedial technology (particle broadcasting) that could set a significant and resounding precedent for other sediment sites throughout the country.
- Developing a performance specification used to implement dredging, dewatering, and disposal of approximately 3,500 cubic yards of PCB-containing river sediment. This performance specification, which included an intensive in-river monitoring program, detailed the standards that were to be met in completing the project and served as the project's bidding document. This monitoring plan was recognized with the Bronze Award from the CEC/NYS 1996 Engineering Excellence Awards Program.
- Developing a construction documentation report that presented and analyzed data collected during dredging operations. Evaluated the technical effectiveness of hydraulic dredging in the river relative to its ability to remove sediment and minimize the resuspension of solids. The report also presented an evaluation of how the production and escape of contaminants (including TSS) affected river biota.

Mr. Romagnoli has more than 15 years of experience in the environmental consulting industry. He has developed an expertise in the following areas: providing technical support related to aquatic system restoration; conducting multi-phase Environmental Process Management evaluations; designing wastewater/ground-water treatment and recovery systems; preparing construction specifications; and preparing various RI/FS-related reports. Mr. Romagnoli also has provided construction oversight and project management services for several major construction projects.

Education

- M.B.A./General Management, 1990, Cornell University
- B.S./Civil Engineering, 1986, Bucknell University

Registrations

- Professional Engineer, New York, 1995, #072164-1

- Preparing an RI report that presented and interpreted all water column, sediment, and biota data. The report consisted of in-depth analyses of these data - statistical and otherwise - allowing the client to better understand the true nature and extent of PCB-containing media.
- Implementing a sediment transport model to understand the deposition/scour areas within the river. This information was useful in generating and evaluating potential remedial alternatives.
- Developing an FS report used to evaluate various remedial options for the site. This report provided a comprehensive evaluation of the site as a whole and focused on the need to control continuing sources to the river prior to undertaking any large-scale remediation. Detailed consideration was also given to dredging, capping, and natural recovery technologies.

Managed the RI/FS program associated with a 1,000-foot-long feeding tributary to the Ottawa River in Ohio. Tributary sediments had been shown to contain high levels of PCBs. Developed plans and specifications to remediate the site via mechanical dredging. Efforts also addressed remediation and restoration of the low-lying wetlands that bordered the site. The resulting sediment remediation project was labeled by the USEPA Region 5 Administrator as one of the “best” completed in the region.

Provided engineering services for development of a feasibility study for the Lower Fox River in Wisconsin. Managed the development of multiple alternatives for this 40-mile stretch of river, focusing primarily on sediments. In addition, managed the review/critique of Wisconsin Department of Natural Resource’s voluminous and highly technical RI/FS report.

Provided engineering services for a site located along the Genesee River that had been impacted by coal tar wastes presumed to be associated with nearby manufactured gas plant (MGP) sites. The RI/FS considered site soils (surface and subsurface), groundwater, coal tar residuals, marsh sediment, and river sediment. The site is located adjacent to a power dam with complex hydrogeological characteristics. A comprehensive RI/FS document was completed and submitted to the New York State Department of Environmental Conservation (NYSDEC).

Developed strategic remedial approaches and associated cost estimates for mitigating coal tar-impacted sediments at an MGP facility in Binghamton, New York. Constituents were of particular concern as there was a drinking water intake located nearby.

Additional Hazardous Waste/Engineering Design Experience

Provided engineering services for the Tennessee Gas Pipeline Company at two compressor stations in New York. Responsible for remedial design/remedial action (RD/RA) and project oversight, including preparing contract documents, plans, and specifications for remediation of impacted soil and drainlines; negotiating the RD with the NYSDEC; managing construction oversight during the RA; and completing the documentation report.

Maintained the Resource Conservation and Recovery Act (RCRA)/Toxic Substances Control Act (TSCA) compliance program at a large manufacturing complex. Instituted a plant-wide reconnaissance program to inventory all hazardous substances/chemicals and identify all liquid waste streams that were entering the complex's storm sewer system. Also gathered information used to create a preparedness and prevention plan for the site.

Responsible for the design and start-up of a stormwater treatment system for the remediation of trichloroethane (TCE). The process consisted of two 1-million-gpd pumping stations and two air stripping towers. To provide more efficient treatment, the facility's stormwater outfalls were consolidated. Supplied technical support for State Pollution Discharge Elimination System (SPDES) permit evaluation and assisted in the hydrogeologic evaluation of the site.

Designed a long-term treatment system for TCE-containing groundwater. Responsible for designing the system's submersible pumps, air stripper towers, piping, and valves. Provided daily engineering support during the construction phase of the project.

Evaluated the effectiveness of an existing wastewater treatment system located within a large manufacturing complex. Reviewed and evaluated the system's components and operations/maintenance procedures. Recommended system improvements to avoid SPDES permit violations, specifically related to pH.

Designed a 20-gpm treatment system to remediate volatile organics (i.e., benzene and toluene) contained in groundwater. Prepared the engineering drawings and equipment specifications and provided engineering support to field personnel during construction.

Designed the upgrade of a groundwater treatment facility to improve the system's economics and efficiency. The upgraded process consisted of three recovery wells that captured groundwater contaminated with benzene, toluene, ethylbenzene, and xylene (BTEX) and transferred it to liquid phase granular activated carbon units.

Managed the development and implementation of preferential pathway analyses for many large industrial clientele. The analyses identify potential pipelines that may serve as conduits for off-site constituent migration.

Designed a 4,500 cubic-foot-per-minute off-gas treatment system engineered to remove hazardous airborne substances emitting from sludge storage tanks.

Designed a separate-phase hydrocarbon recovery system for a utility company. The system was designed to recover free oils floating on top of the groundwater table.

Assisted in the preparation of several feasibility study reports. PCBs, VOCs, and metals (including lead) in soil and groundwater were the primary focus of such reports.

Worked closely with the U.S. Army in Aberdeen, Maryland to secure an updated RCRA Part B Permit for the purpose of storing hazardous wastes, including explosives.

Environmental Process Management Experience

Provided Environmental Process Management investigation and review for Mercury Marine in Wisconsin. The focus of the project was to assist Mercury Marine in

evaluating its current environmental situation, and shape the program's organization and efficiency with bottom-line financial accountability. The project generally consisted of the following tasks:

- collecting and analyzing total environmental costs and recommending ways in which these costs could be reduced, either through process and/or accounting modifications;
- evaluating the client's overall environmental compliance and developing environmental performance metrics;
- developing an environmental cost monitoring tool (i.e., computer software designed to track environmental monitoring costs);
- evaluating how environmental issues are integrated into product development and process implementation functions; and
- evaluating environmental data management requirements.

Construction Experience

Supervised field operations on a bridge overpass project in northern New Jersey. Coordinated the activities of six subcontractors and maintained the overall project, budget, and schedule. Assisted with the layout of the bridge beams/decking.

Prepared bid estimates for several construction projects ranging in size from \$100,000 to \$2.5 million. Responsible for conceptualizing equipment and labor crews necessary to complete construction. Prepared and maintained job schedules once projects were initiated. Also responsible for tracking job expenses and overhead.

Assisted in the overall supervision of a storm sewer/water line replacement project in central New York. The job included replacing 1.5 miles of pipeline.

Performed land surveying for several projects including road, bridge, building, and swale construction.

Professional Affiliations

- American Society of Civil Engineers
- Bronze Award, CEC/NYS 1996 Engineering Excellence Awards Program for dredging project entitled Grasse River Non Time Critical Removal Action
- Blasland, Bouck & Lee, Inc. Project Management Committee

Training

- 40-Hour OSHA Training
- OSHA Supervisory Course
- CPR/First Aid
- Soil Remediation Technologies

Publications

Briot, J.E., P.E., J.P. Doody, P.E., M.M. Miller, and R. Romagnoli, P.E. May 15-18, 1999. "Environmental Dredging Case Studies: A Look Behind the Numbers." Presented at the 31st Annual Texas A&M Dredging Seminar/WEDA XIX Meeting, Louisville, Kentucky.

Foster, D.S., P.E., R. Romagnoli, P.E., J. Smith, Ph.D., P.E., and Louis J. Thibodeaux, Ph.D. 1999. Addressing Sediments: Defining Effective Remediation. *Engineering News Record*, March 22/March 29, 1999, pp. E-13.

Doody, J.P., P.E., R. Romagnoli, P.E., H.M. VanDewalker, and W.A. Ackner. July 1, 1998. "The Future Challenges of Environmental Dredging." Presented at the 15th World Dredging Conference by Robert Romagnoli, P.E., Las Vegas, NV.

Doody, J.P., P.E., D.S. Foster, P.E., and R. Romagnoli, P.E. November 6-8, 1995. "Sediment Remediation: How Much Does It Really Cost?" Presented at Superfund XVI Conference & Exhibition, by R. Romagnoli, P.E., Washington, DC.

ENVIRONMENTAL DATA SERVICES

STATEMENT OF QUALIFICATIONS

INTRODUCTION

ENVIRONMENTAL DATA SERVICES, LTD.

Data Validation • Technical
Writing • Consulting • Data
Interpretation

2690 Oak Hill Drive
Allison Park, PA 15101

Phone (412) 486-6989

Fax (412)- 486-6989

E-Mail edatas@aol.com



Analytical Data Consulting

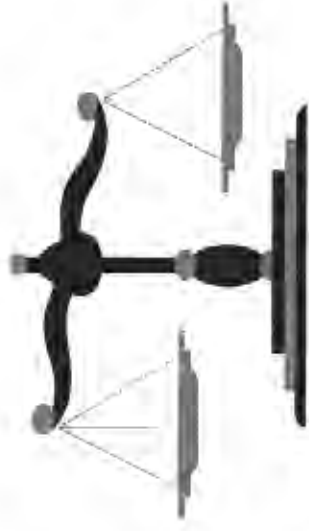
Environmental Data Services, Ltd. will provide expert analytical data consulting services in support of your environmental projects.

Our clients realize the benefits of having a resident analytical data expert on staff without adding to the groups overhead costs because our services are contracted on a project by project basis.

Since analytical costs are typically 25% of the overall project expense, making Environmental Data Services part of your project team will enable you to maximize the effective use of those significant analytical dollars.

Putting together a technically stronger team that is at the same time cost effective will put you ahead of your competition.

The following text outlines some of the specialized services Environmental Data Services, Ltd. has to offer.



Assessment of Project Criteria and Guidelines

The primary objective of any data validation project we undertake is to provide assurance that the environmental data generated in support of your project are acceptable for their intended use. We accomplish this task by systematically reviewing the analytical data provided and comparing it with criteria established in the USEPA Functional Guidelines for Evaluating Inorganic/Organic Analyses, as well as placing specific emphasis on project defined data quality objectives.

Highlights of the EDS validation process:

- Document control system used to log and store laboratory data
- Data completeness is evaluated
- Necessary data supplements or corrections are acquired
- Appropriate criteria and guidelines are applied to data
- Overall data assessment is summarized

The detail and relative complexity of our data validation reports are defined based on your project needs. Validation deliverable options include data in electronic data base formats.

When a critical set of data requires evaluation it is imperative that the data is interpreted and that usability is determined by a highly qualified individual who is free of bias.

EDS is a completely independent organization, thereby eliminating the potential for conflicting interests. The Director and Senior Environmental Scientist for EDS, Ms. Diane Waldschmidt, is a professional with over twelve years experience in the environmental laboratory and consulting industries. Her analytical experience and project management skills are applied to each project insuring successful completion on time, under budget, and to your complete satisfaction.

Laboratory Auditing

Laboratory Performance Monitoring



Laboratory Auditing

Environmental Data Services, Ltd. will perform comprehensive laboratory audits. Audits can be used to pre-qualify contract laboratories or to evaluate capabilities of existing contractors.

An experienced laboratory professional will perform the on-site evaluations. The following list outlines just some of the criteria evaluated:

- Laboratory facilities and equipment
- Systems and procedures of operation
- Qualifications and experience of laboratory personnel
- Laboratory capacity
- Types of analyses performed
- Relative cost of services

Laboratory audits are customized to focus on your specific project needs. A detailed report outlining

facility capabilities as well as the auditors' observations will be furnished defining each category including topics of special interest.

By utilizing EDS experts to pre-screen laboratory contractors you can become an educated consumer of laboratory services. Thereby increasing the effectiveness of each analytical dollar spent.

Laboratory Performance Monitoring

Some clients have a need to evaluate laboratory performance on an ongoing basis. Environmental Data Services, Ltd. staff will submit performance evaluation samples to contract laboratories and request specific analyses and reporting to be provided. These samples will be of known value only to EDS. Once the results are received from the laboratory EDS will provide a thorough report detailing the findings of the study. Careful evaluation of the laboratories success in determining both qualitative and quantitative analyte concentrations will be discussed.

Knowing the accuracy with which your samples are defined on an ongoing basis can help you feel confident when relying on data points generated to make crucial decisions or prove regulatory compliance.



Technical Proposals

Quality Assurance Project Plans

Analytical Data Interpretation

Environmental data services is prepared to provide expert oversight of your analytical data collection process from project conception and design, through final data interpretation and usability assessment.

Technical Proposals

Technical proposals written by an experienced environmental laboratory professional will not only relieve your hectic schedule, but will access the most cost effective, technologically advanced, quality analytical product currently available. You specify project quality and data usability goals, and we will provide a technical proposal outlining the best way to achieve those goals. Best of all, because we are an independent organization you can be certain that proposals are designed with your needs as our only objective.

Quality Assurance Project Plans

Quality Assurance Project Plans are extremely important. The QAPP documents in detail how a project will be carried out and how the resulting analytical data will be judged. Often this document is reviewed by one or more regulating agencies prior to final approval. This all important process is extremely time consuming. Why not let an experienced individual with a proven track record in this area design, write and amend as appropriate all or portions of your QAPP's. Time is money and EDS can save you both. A well-written QAPP that is considered with your project needs in mind can make a significant difference in how regulators view your management of the project, how smoothly project directives are carried out, and in many cases to what extent those extremely expensive analytical data points may be used.

Analytical Data Interpretation

Once the investment is made and the analytical data is in, the question remains is the data useable for the purpose originally intended? Environmental data services will perform a thorough data review and provide a comprehensive assessment of data completeness, usability and quality. This service provides expert interpretation of the environmental data received. The same data you rely on to make crucial decisions concerning if, where, and how your firm will spend additional dollars due to potential environmental liabilities. Why not have an experienced analytical chemist on your team?

EXPERIENCE

PROJECT SUMMARIES

Environmental Data Services was formed in 1994 to serve industrial, engineering and government enterprises in the capacity of expert environmental analytical chemist consultants.

EDS performs strictly as an independent third party. Some of the services EDS have provided are data validation, laboratory qualification, development of project quality assurance plans, on-site laboratory inspection, organizational training (data validation and data review).

Table 1 summarizes some of the larger data validation projects successfully completed by EDS over the past several years.

Texarkana Site - EDS has successfully completed data validation of 450 soil and 50 water samples obtained under consent decree at the Texarkana Site in USEPA Region VI. Data validation was carried out based on Data Quality Assurance Plan as well as the USEPA's Functional Guidelines for the Evaluation of Organic and Inorganic Analyses.

Sellersville Landfill - EDS staff have completed the validation of well over one hundred samples of various matrices (soil, water and TCLP extracts) in support of the remedial investigation performed at the Sellersville Landfill. Region III modifications to the USEPA Functional Guideline for Evaluation of Inorganic/Organic Analyses were applied to a full range of analytical data generated via both USEPA CLP protocols and non CLP protocols.

Moorestown, Pulverizing Site - EDS staff have worked as part of the site investigation project team since 1984, serving in a quality assurance oversight capacity. Data validation of well over 75 soils and 25 water samples obtained under a USEPA Region II consent decree at the superfund site have been validated by EDS staff members. Analyses evaluated consisted of complete TCL organics, TAL inorganics, herbicides and PCDD/PCDF's. Data validation was carried out based on the project specific Quality Assurance Plan as well as USEPA Region II data validation SOP's.

Passaic River Study Area - EDS has provided data validation, data base management and technical consulting services as part of the RI/FS project team since 1995. Data validation has been completed on over 700 river sediment borings. The extensive analytical testing program consists of the following:

- TCL organics (plus individual PCB congeners), TAL inorganics (plus titanium), herbicides, PCDD/PCDF's, coplanar PCB's, radionuclides, TEPH and TOC.
- The validation procedures in use include a compliance review with the project QAP and stipulated analytical procedures, as well as a data usability assessment following USEPA Region II validation SOP's.

Aberdeen Proving Ground - Data validation services were provided by EDS as a sub to a prime contractor. Validation of analytical results was performed based on USEPA Region III's modifications to National Functional Guidelines for Evaluation of Inorganic/Organic Analyses. Analyses for approximately 100 samples (water and soil) were validated by EDS. Both TCL organic and TAL inorganic results were examined.

Bolling Air Force Base - EDS staff completed the validation of approximately 25 samples collected as part of the Navy Clean (NEESA) program at Bolling Air Force Base. Analyses examined included TCL volatiles, BTEX (8021), gasoline range organics, and diesel range organics. Validation protocols were used based on USEPA Region III's modifications to National Functional Guidelines for Evaluation of Inorganic/Organic Analyses.

Diamond Alkali Superfund Site - EDS provided data validation services over a one-year period of remedial construction activities. During this time span, over 150 samples were validated by EDS staff. USEPA Region II validation SOP's, as well as project specific validation procedures were used to assess the quality and usability of analytical data generated in support of the project. The following types of analytical data were evaluated (when requested) in as little as 24 hours:

Dioxin, TCL organics, herbicides, TAL inorganics, TSS, TDS, Alkalinity, Sulfate, TOC, Nitrate, Chloride, oil and grease, TEPH, and ammonia.

Westinghouse, Bloomington Ind. - EDS staff has validated approximately 100 samples analyzed for PCB's via method 8080. USEPA Region V validation modifications were utilized during the process of data evaluation. The data completeness, accuracy and usability were assessed.

Leighton Industries - EDS staff completed the validation of over one hundred samples in support of a site investigation at Leighton Industries property. Validation was performed based on USEPA Region III's modifications to National Functional Guidelines for Evaluation of Inorganic/Organic Analyses. Analytical data for water and soil were examined. Concentrations of TCL organics and TAL inorganic analytes were determined via USEPA SW-846 methodologies. Data usability was assessed as well as method and contract compliance.

General Rivet - Over 150 samples collected at the General Rivet Property during a site investigation were validated by EDS staff. The samples collected were analyzed via SW-846 methodologies to determine the concentrations of TCL VOA, TCL BNA and TAL inorganics. Validation was performed based on USEPA Region III's modifications to National Functional Guidelines for Evaluation of Inorganic/Organic Analyses.

Little Rio Grande Creek - EDS staff completed the validation of approximately 50 samples in support of a field investigation at the Little Rio Grande Creek site. Analytical data for soil, water and TCLP leachates were examined. The samples collected were analyzed via SW-846 methodologies to determine the concentrations of TCL organics, TAL inorganics, toxicity characteristics and classical chemistry parameters. Validation was performed based on USEPA Region III's modifications to National Functional Guidelines for Evaluation of Inorganic/Organic Analyses as well as EDS validation SOP's.

Chas Farm - Approximately 60 samples analyzed for TAL inorganics and classical chemistry parameters were validated by EDS staff in support of the remedial field investigation. Sample results were determined based on the USEPA CLP inorganic SOW ILM03. Validation was performed in accordance with the USEPA's National Functional Guidelines for the Evaluation of Inorganic Analyses.

[illegible]

EDS PERSONNEL

Diane Waldschmidt

Director/Senior Environmental Scientist
B.S. Chemistry

Diane has over fourteen years experience in the environmental laboratory services industry and eight years of validation experience beginning in 1983. She has directed overall laboratory operations including responsibilities for quality control and the technical direction of laboratory testing. The following is a partial list of relevant experience:

Areas of laboratory expertise are: Volatile and semivolatile organic compounds by gas chromatography (GC) and gas chromatography mass spectrometry (GCMS), pesticides and PCB's, trace metals, classical wet chemistry parameters and CLP inorganic and organic data package review and assembly.

Areas of validation expertise are: Validation of volatile and semivolatile organic compounds by gas chromatography (GC) and gas chromatography mass spectrometry (GCMS), pesticides and PCB's, dibenzo-p-dioxins and dibenzofurans, herbicides, coplanar PCB's, radiological analyses, trace metals, and classical wet chemistry parameters.

Diane has provided services conforming to USEPA Contract Laboratory Program, USEPA Special Analytical Services, PADER NYSDEC, ACOE, AFCEE and NEESA requirements to name a few. Further she has participated in many CERCLA and RCRA projects in coordination with EPA regional staff.

1994 - Present Director, Environmental Data Services, Ltd.

The position currently held by Diane is that of director at EDS. Diane is responsible for complete day-to-day operations of the group. Some areas of responsibility include the following:

- Data review and validation
- Development of quality assurance project plans
- Direction and supervision of data validation activities
- Direction and supervision of administrative activities
- Project management of all contracted tasks
- Technical Training of internal staff as well as EDS clients as requested
- Development of policies and procedures both technical and administrative

1992 - 1994 Laboratory Director, Pace Inc.

Diane directed overall laboratory operations including responsibilities for quality control and the technical direction of laboratory testing. The following is a partial list of her responsibilities:

- Day to day laboratory operations (Organic, Inorganic & Administrative)
- Director of QC chemists and laboratory QA program
- Direction and supervision of project management staff
- Direction and supervision of marketing staff

1990 - 1992 Laboratory Operations Manager, International Technology Inc.

Diane was responsible for overall laboratory operations including all laboratory-testing areas (Inorganic and organic)

- Day to day laboratory operations (Organic and Inorganic)
- Laboratory certifications including PE samples and on-site audits
- Methods development and verification
- Technical training and certification of analysts
- Scheduling to meet sample throughput requirements
- Direction of the CLP data processing/and review groups
- Performance of both inorganic and organic CLP contracts

1987 - 1990 Inorganic Laboratory Manager/Project Manager, International Technology

Diane was responsible for overall Inorganic laboratory operations including classical chemistry, sample preparation, TCLP, EP toxicity, ICP, CVAA, Flame AA, GFAA laboratory testing areas

- Day to day inorganic laboratory operations
- Laboratory certifications including PE samples and on site audits
- Methods development and verification
- Technical training and certification of analysts
- Scheduling to meet sample throughput requirements
- Direction of the CLP data processing/and review group
- Performance under an inorganic CLP contract

1983 - 1987 Environmental Chemist, NUS Corporation

Diane was responsible for the analysis of environmental samples using USEPA methodologies. Metals determinations were performed primarily based on USEPA CLP protocols. Analyses performed by Diane include, but are not limited to the following:

- Alkalinity/Acidity, Hardness, Phenolics, Ammonia, TKN, Cyanide, Fluoride, Chloride, Sulfate, TEPH, Oil and Grease, Hexavalent Chromium, TDS, TSS, TOC, TOX

- Acid digestion of samples prior to trace metals determinations, Flame AA operation, GFAA operation, ICP operation

EXAMPLE OF REPORTS/TABLES

DATA ASSESSMENT NARRATIVE FOR VOLATILES

SITE: ACME

LABORATORY: ABC Labs

SAMPLE DELIVERY GROUP: 9610173

This sample delivery group consists of the following soil and water samples:

Field Identification	Laboratory Identification	Field Identification	Laboratory Identification
F-4 Unfiltered	9610173-01	FB-1	9610173-11
D-20 Unfiltered	9610173-04	F-8	9610173-12
D-9	9610173-05	F-10	9610173-13
W-5	9610173-06	F-9 Unfiltered	9610173-15
F-1 Unfiltered	9610173-07	D-21	9610173-16
D-8	9610173-09	D-1	9610173-17
F-6	9610173-10	F-3	9610173-18
Trip Blank	9610173-21	S-1	9610173-19

Samples described above were analyzed via USEPA CLP 3/90 Protocol to determine the concentrations of VOA compounds in soil and water.

Project specific QA objectives as well as the USEPA Region III Modifications to the National Functional Guidelines for Organics Data Review 6/92, and the current Functional Guidelines for the Evaluation of Organic Analyses have been considered during validation of this data and its usability.

All data are valid and acceptable except those analytes, which have been qualified as described in the attached glossary. Any data qualification related to this group of samples is detailed on the attached sheets.

Major Data Quality Issues

None.

Minor Data Quality Issues

Surrogate Recoveries - Several samples had associated surrogate recoveries that fell outside allowable limits. Positive and not detected sample results were qualified as estimated.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable due to significant QC problems, the data is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on any data tables even as a last resort.

Lastly, strict QC serves to increase confidence in data but any value potentially contains error.

Diane Waldschmidt
Environmental Scientist/Director

Date: _____

HOLDING TIME

The amount of an analyte can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded the data may not be valid.

The analyses performed on samples in this sample delivery group were all done within established holding times.

BLANK CONTAMINATION

Quality assurance blanks, method, trip, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during preparation or field activity. Method blanks measure lab contamination. Trip blanks measure cross contamination during shipment. Field and rinse blanks measure cross contamination during field operations.

Method Blank/Field Blank Contamination

All method blanks were analyzed at the proper frequency. Upon examination neither method blank contained benzene at or above reportable levels.

A field blank was collected and analyzed in association with the samples in this delivery group. No benzene was found to be present in the field blank at or above reportable levels.

Trip Blank Contamination

A trip blank was provided in association with this sample delivery group. No benzene was found to be present above the reporting limit in the associated trip blank.

MASS SPECTROMETER TUNING

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds, and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances.

The tuning standard for volatiles is bromofluorobenzene (BFB).

All tunes associated with this SDG were fully compliant.

CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative results. The initial calibration curve demonstrates that the instrument is capable of giving acceptable performance at the beginning of an analytical sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

Response Factor

The response factor measures the instruments responses to specific chemical compounds. The response factors for the VOA Target Compound List must be greater than or equal to 0.05 in both the initial and continuing calibrations. A value less than 0.05 indicates serious detection and quantitation problems.

RRF values in all initial and continuing calibrations were greater than 0.05.

Percent Relative Standard Deviation (RSD) and Percent Deviation (%D)

Percent RSD is calculated from the initial calibration and is used to indicate stability of a specific compound over the calibration range. %D compares the response factor of the continuing calibration with the mean response factor of the initial calibration. Therefore %D is a measure of the instruments daily performance.

The following QC criteria has been applied for this project:

% RSD of initial calibration must be <30.0 %

% D for continuing calibrations must be <25.0%

A value outside these limits indicates potential detection and quantitation errors. According to Region III modifications (Sept., 1994) all positive results are flagged as estimated, and non-detects are flagged with "UJ" except in situations where there is a gross difference i.e. 50% or greater and then professional judgment takes precedence.

Initial and continuing calibrations associated with sample results examined here, all exhibited acceptable percent relative standard deviation and percent difference values.

INTERNAL STANDARDS PERFORMANCE

Internal standard performance criteria are meant to ensure that the GC/MS sensitivity and response are stable during every experimental run.

The internal standard area count must not vary by more than a factor of two from the associated continuing calibration standard. The retention time of the internal standard must not vary by more than ± 30 seconds from the associated continuing calibration standard. If the area count is outside the ($\sim 50\%$ - 100%) range of the associated standard, all positive results for compounds quantitated using that standard are qualified as estimated, and non detects as U/I, but only if area is $< 50\%$.

Internal standard recoveries observed in all samples and method blanks were within acceptable limits. No data qualification was performed based on internal standard recoveries.

SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation and analyses to evaluate overall laboratory performance and efficiency of the analytical technique.

All samples and method blanks evaluated in this report had observed surrogate recoveries within the established limits with the exception of samples GP-33 (0-2) and GP-36 (2-4) RE. All three surrogate standard recoveries fell outside acceptable limits during the analysis of sample GP-33 (0-2). No bias could be determined and therefore all sample results were qualified as estimated except where previously qualified as unusable.

Samples F-9, F-3 and the trip blank had standard surrogate (1,2-dichloroethane) recoveries above the upper allowable limit. No additional analyses were provided to confirm these observations.

According to the Region III modifications (9/94) all positive sample results were qualified as "J" and non-detects as "UJ" for the samples listed above.

All remaining samples and method blanks evaluated in this report has observed surrogate recoveries within the established limits.

COMPOUND IDENTIFICATION

Volatile

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and ion spectra. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound, and have an ion spectra which has a ratio of the primary and secondary ion intensities within 20% of that in the standard compound. No analytes were qualified for compound identification.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The matrix spike and matrix spike duplicate are generated to determine the precision and accuracy of the analytical procedure in a given matrix. This information may be used to qualify data.

Sample D-1 was evaluated as a matrix spike/matrix spike duplicate pair. Precision and accuracy indicators were favorable. No significant matrix interference was apparent.

REPORTING

Upon reviewing the QA results, the Form 1(s) are clearly marked as to which to use.

OTHER QC DATA OUT OF SPECIFICATION

None.

FIELD DUPLICATE

Two field duplicate pairs were submitted for validation.

Analyte	F-9 ug/l	F-9 Duplicate ug/l	%D
benzene	22.4	21.7	3.2

Analyte	F-4 ug/l	F-4 Duplicate ug/l	%D
benzene	ND	ND	NC

SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Data quality issues were related to surrogate standard recovery criteria. All remaining QC criteria appear to be acceptable.

Note: The laboratory documentation indicated that discrepancies between dates sampled listed on the field chain of custody versus dates listed on the actual sample containers were found. The validator used the date collected from the COC to evaluate holding time compliance.

M. M. Skaggs, Jr., P.E.

Mel Skaggs founded InDepth Environmental Associates, Inc. in 1999. He has more than 25 years of experience at all levels of responsibility in the environmental, health, and safety industry. This experience includes extensive experience both performing and managing compliance and “best practices” audits in widely varying settings.

He has served as project manager at some of the most important hazardous waste sites in the United States, including numerous CERCLA, RCRA, and significant State priority list sites.

Mr. Skaggs possesses a comprehensive knowledge of the fundamentals of the ISO 14000 series program and a proven record of developing, implementing, and auditing the performance of environmental management systems in both the U.S. and the international operating environments. His training includes successful completion of the 40 hour ISO 14000 Lead Auditor training program.

He has served as the principal manager of these programs for a Fortune 500 U.S. based international energy corporation, where he directed the development and implementation of environmental management systems in such sensitive environs as tropical forests, arid deserts, and off-shore oil platforms.

Mr. Skaggs is a registered Professional Engineer and served from 2002-2004 as an Administrator appointee on USEPA’s National Advisory Council on Environmental Policy and Technology’s (NACEPT) Superfund Subcommittee. He is very active in the technical programs area of the Sediment Management Work Group, the Society of Petroleum Engineers, and the Air & Waste Management Association.

Representative Project Experience

❖ Significant Auditing Experience

- Performed Phase I, II, and III reviews of properties being acquired by international exploration and production operator.
- Audited environmental programs being implemented under ISO 14000 by multinational energy operations and trained company managers on related environmental management system implementation.
- Conducted a comprehensive multi-company survey and analysis of current corporate environmental organizations and cleanup strategies to assist a merging major oil company client in the merger of two very dissimilar cultures into a single site remediation program.
- Performed environmental audits and related training programs in such varied ecological settings as the arid desert of Patagonia, tropical Amazonian Ecuador, and multiple locations within the United States.
- Directed the first major company-wide audit settlement negotiated by the USEPA under TSCA, which involved over 10,000 man-hours of field work within a six month period.
- Performed numerous audits of chemical manufacturing and waste disposal facilities nationally.

❖ Significant Sediment Management Experience

- Serves as senior technical advisor at a major state-lead contaminated sediment site in the Lower Hudson River. Roles include technical oversight of data collection, quality assurance, and remedial alternatives development.
- Currently is performing a major forensic (source identification) study at combined upland/sediment site on the Trinity River in Texas. The first two elements of this study have been completed, and the current work element involves examination of urban releases that occurred over a period of approximately 50 years.
- Responsible for ongoing technical assessments of remedial alternatives and technologies at sediment site in the Northeastern US, as well as detailed technical reviews of feasibility study and various other site evaluation reports.
- Advisory role in a contested responsibility sediment site near the Houston Ship Channel.
- Over six years experience service on the Sediment Management Work Group's Steering Committee.

❖ Other Related Experience

- Served as key manager in strategic development and implementation at five major CERCLA sites, two RCRA sites, and six significant State NPL sites. He was the managing negotiator for six major consent settlements/agreements with U.S. regulatory authorities.
- Responsible for managing client's interests at over fifty multi-party sites, including numerous forensic evaluations of recalcitrant PRPs' historic environmental operations.
- Considerable remedial experience with the chemicals chromium and 2,3,7,8-TCDD ("dioxin").

Education

B.S., Chemical Engineering, Texas A&M University	1976
M.S., Biological Sciences, University of Houston, Clear Lake City	1979

Professional Activities

❖ National Advisory Council on Environmental Policy and Technology (NACEPT) Superfund Subcommittee

Appointed in May, 2002 by EPA Administrator Whitman to serve on this advisory panel (see <http://www.epa.gov/oswer/SFsub.htm>), which was convened to make recommendations to the Administrator on the future of the Superfund program in addressing the nation's hazardous waste sites. Specifically, this group is commissioned to make policy recommendations on 1) the future role of the National Priorities List; 2) the role of Superfund at so-called "mega sites" (primarily sediment and mining sites); and 3) how to best measure the Superfund's program performance.

❖ Society of Petroleum Engineers

Program Committee and Session Chair for SPE/EPA/DOE Upstream Environmental Conferences in 1995/1997/1999/2001/2003/2005. Invited participant speaker at 1999 SPE Forum "Environmental Challenges for the New Millennium". Numerous past officer positions.

❖ Registered Professional Engineer, Texas (51979)

- ❖ **Active Memberships:**
- Sediment Management Work Group
 - International Society of Environmental Forensics
 - Air & Waste Management Association
 - Water Environment Federation

Papers/Presentations

Skaggs, M.M., **Contaminated Sediment Cleanup Liabilities in the US**, Network for Industrially Contaminated Land in Europe (NICOLE) Workshop: "Sediments and Sludges: An Issue for Industry", Frankfurt, Germany, May 13, 2004.

Skaggs, Jr., M.M. and J.E. Johnstone, **Advancing Environmental Responsibility in Times of Global Consolidation**, Journal of Petroleum Technology, December, 2001.

Finley, Brent F. and M.M. Skaggs, Jr., **Estimating Worker Accidental Risks for Sediment Remedial Activities: A Comparative Study**, USACE Workshop: Advancing the State of the Art of Analyzing Risks and Benefits of Dredging Materials Management, Tilghman, MD, September, 2001.

Skaggs, Jr., M.M. and M.A. Harris, **A Management Trend: Special Remedial Organizations**, 2001 SPE/EPA/DOE Exploration and Production Conference (SPE 66580), San Antonio, Texas, February, 2001.

Skaggs, Jr., M.M., **JPT Forum - What can our industry do to become more environmentally and socially responsible?**, Journal of Petroleum Technology, July, 2000.

Skaggs, Jr., M.M., **Operating in Remote Environments - Overcoming Obstacles to Change**, 1999 SPE Environmental Forum, Breckenridge, Colorado, July, 1999.

Skaggs, M., **Pre-Purchase Phase I Environmental Due Diligence Using ASTM 1527-97**, YPF Environmental Congress, Buenos Aires, Argentina, September, 1998.

Harris, M. and M.M. Skaggs, Jr., **A Review of Chromium Treatment Technologies**, YPF Environmental Congress, Buenos Aires, Argentina, September, 1998.

Skaggs, Jr. M.M. and M.A. Harris, **Risk Management Strategies for Site Closure Actions**, National Association for Environmental Management, Dallas, Texas, October, 1997.

Skaggs, Jr., M.M. and J.M. Pachulski, **Operating Experience With SUPERCLAUS® 99 Tail Gas Cleanup Unit**, Society of Petroleum Engineers (SPE 37916), SPE/EPA 1997 Exploration and Production Environmental Conference, Dallas, Texas, March, 1997.

Hutton, W.C. and M.M. Skaggs, Jr., **Renewable Resource Development in the Ecuadorian Rainforest**, Society of Petroleum Engineers (SPE 30684), Dallas, Texas, October, 1995.

Skaggs, Jr., M.M., **Remedial Construction Manager's Role - An Owner's Perspective**, Construction Management Association of America, Denver, Colorado, October, 1993.

Skaggs, Jr., M.M., **A Method for Evaluating Groundwater Contamination From a Hazardous Material Disposal Site**, Texas Water Pollution Control Association, Austin, Texas, May, 1980.



Statement of Qualifications





Company Profile

About Lancaster Labs

Lancaster Laboratories is the largest single-site environmental lab facility in the United States. We offer chemical analyses, microbiological testing, contract research and development, and consulting services. With 700 highly qualified professionals and 175,000 square feet of space, we can handle projects of virtually any size and scope. By combining technical expertise with personal attention to service, our vision can be stated simply, "We make our clients heroes."

In 1961, Dr. Earl H. Hess founded Lancaster Laboratories to serve the analytical testing needs of the agricultural and industrial communities in Southeastern Pennsylvania. Since that time we have grown and diversified now supporting the analytical requirements of the environmental and pharmaceutical industries. In May 1995, Thermo Electron Corporation acquired the company and provided the financial resources for the construction of a new building, purchases of new equipment valued at \$3 million, and a 30 percent increase in staff.

Goldner Hawn Johnson and Morrison (GHJ&M), a Minneapolis-based private equity firm, completed the purchase of our company from Thermo Electron in September 2000. With this change of ownership, Lancaster Laboratories, Inc. again operates as an independent privately held laboratory. Our senior management and staff remain in place, and our overall strategies, business philosophy, and vision stay the same. Our focus, as always, is to provide you with exceptional quality and service.

During the summer of 2001, we opened our Bay Area Office in Richmond, California. This office provides project management, sample containers, sample cooler packing and shipping, and sample pickup for our West Coast clients.

The Spirit of Lancaster Laboratories

Since our beginning, we have been a "people" company. While we make sure we have state-of-the-art instrumentation and facilities, our greatest strength is our people. We make every effort to find and keep excellent employees, provide education and training, and give them opportunities to grow. Our strong people orientation has resulted in low staff turnover and, therefore, a knowledgeable, stable, and dependable workforce.

Mission Statement

At Lancaster Laboratories, we are people working together to serve the health and environmental needs of society through science and technology. We strive to be the recognized leader in all that we do.

Our mission is to provide independent laboratory services in chemical and biological sciences with excellent quality and service. As a corporate community, we:

- Deliver quality by fully understanding and always meeting the requirements of those we serve.
- Live our values by relating to our clients, coworkers, shareholders, suppliers, and community in a fair and ethical manner.
- Manage our growth and financial resources so we can serve our clients well, provide a satisfactory return to shareholders, and maintain our meaningful and enriching workplace.

Statement of Values

Lancaster Laboratories' heritage has at its core the ethical treatment of everyone involved with our business. As a corporate community, we embrace our heritage of integrity and strive to live by the following principles:

Fairness and honesty in all our relationships

Mutual trust

A respect for ourselves and others

A sense of caring that leads us to act responsibly toward each other and society now and in the future

Loyalty to our clients and one another

A spirit of open-mindedness as we deal with all

Dedication to service

Good stewardship of our resources

A commitment to flexibility and continuous improvement

We each take personal responsibility to live these values in all our dealings, knowing full well our pledge may involve difficult choices, hard work, and courage.

Awards

Lancaster Laboratories has established a national reputation based on over 40 years of delivering high quality analytical information with integrity and attention to superlative service.

In 1996, we received the American Business Ethics Award, which recognizes businesses that exemplify a strong commitment to ethical business practices in their everyday operations and philosophies. We are proud to be the first analytical laboratory to be so honored and to stand among other public company recipients like Starbucks Coffee, Merck & Company, Texas Instruments, and Levi Strauss & Co.

We also received Special Mention in the 1997 Ron Brown Award for Corporate Leadership, the first Presidential award to honor companies for outstanding achievements in employee and community relations. Cited for our Family Center, an intergenerational dependent care program, we were one of three Special Mention companies recognized in a White House ceremony, along with award winners IBM and Levi Strauss & Co.

As part of the celebration of our tenth building expansion in 1998, the American Council of Independent Laboratories (ACIL) saluted Lancaster Laboratories for our success in pursuit of excellence as a preeminent independent testing laboratory.

Many national organizations and clients have recognized the unique character of Lancaster Laboratories and honored us with awards for workplace excellence and family friendly business practices. Among them are the following:

- ACIL 2001 Seal of Excellence Award for demonstrated ethics, customer services, and quality in participating environmental laboratories.
- For the second year in a row, the PA Dept. of Community and Economic Development honored us as one of the "Top 50 Best Places to Work in PA" (In the Large Companies category). The rankings are determined by a scientific survey of employees by the Great Place to Work Institute, Inc. and by an employer survey of workplace philosophy and practices. (2000 and 2001)
- The Pennsylvania Psychological Association (PPA) selected us as the winner of the Healthy Workplace Award for 2001 in the mid-size company category. (June 21, 2001)
- The PA Dept. of Environmental Protection presented us with the 2000 Governor's Award for Environmental Excellence (Industrial Recycling category) for development of a bulk solvent delivery program, which eliminated disposal of 12,000 glass bottles and packaging materials and saves \$10,000 a year in labor and waste disposal costs. (December 19, 2000)
- *Working Mother* magazine honored us with a spot on their list of Top 100 Companies for working moms for the 11th time in September 2000.
- A confidential client in the gas transmission industry honored us as "Lab of the Year," an award given annually to the top performer meeting specific quality and service metrics in February 1999.
- *Business Week* magazine (September 15, 1997) listed Lancaster Laboratories as one of the 30 "Best Companies for Work and Family" in the nation.



THE SEAL OF EXCELLENCE LABORATORY PROGRAM OF THE
ACIL ENVIRONMENTAL SCIENCES SECTION

2001

SEAL OF EXCELLENCE

AWARDED TO

**Lancaster Laboratories
Lancaster, PA**

For Demonstrated Ethics,
Customer Service
and Quality

Ann M. Lacey
ACIL Environmental Sciences Section





Key Personnel

Corporate Services

J. Wilson Hershey, Ph.D., President
Wesley C. Neumann, M.S., Vice President,
Business Development and Pharmaceuticals
Timothy S. Oostdyk, Ph.D., Vice President,
Technical Operations
Thomas E. Wolgermuth, M.B.A., Vice President,
Finance and Administration
Sandra L. Weekes, B.S., Senior Legal Specialist

Quality Assurance

Kathleen M. Loewen, B.S., Quality Assurance Officer
Dorothy M. Love, B.S., Senior Specialist/Coordinator

Environmental Sciences

Jon S. Kauffman, Ph.D., Manager

Metals Robert Strocko, Jr., B.S.
Group Leader

Pesticides & EPH/Misc. GC..... Jennifer F. Hess, B.S.
Group Leader

Robert M. Large, B.S., Manager

Project Management Rachel L. Kreamer, B.S.
Group Leader

Sample Administration Anneliese Hutchison, M.B.A.
Group Leader

Duane Luckenbill, B.S., Manager

GC/MS Volatiles Trent S. Sprengle, B.S.
Group Leader

GC/MS Semivolatiles Charles J. Neslund, B.S.
Group Leader

Organic Extraction/Leachates ... Samuel A. Huber, B.S.
Group Leader

Michele M. Turner, B.A., Manager

Volatiles by GC Dana Kauffman
Group Leader

Water Quality Erik Frederiksen, B.A.
Group Leader

Support Services

Steve Davies, B.S.
Group Leader, Transportation

Business Development Group



Marianne Bragg



Lynn Dodd



Kay Hower



Mike Kramer



Kevin Moran



Donald Wyand

Client Services Group



Nancy Bomholm



Teresa Cunningham



Dirk Entz



Carrie Fleming



Lynn Frodenikson



Jennifer Good



Kathy Klinefelter



Rachel Kremer



Bob Large



Megan Moeller



Jeff Moyer



Heidi Orterzi



Wendy Park



Sandy Patton



Megan Porta



Barb Weyandt



Jill Wolgemuth



J. Wilson Hershey, Ph.D.
President
Lancaster Laboratories

Dr. Hershey is responsible for all facets of the company, including strategic planning, operations, quality assurance, and human resources.

Achievements/Accomplishments

- Served as chair of the USEPA's Federal Advisory Committee on National Lab Accreditation

Experience

Lancaster Laboratories—Water Quality Chemist (1972-1973); Metals Manager (1973-1977); Metals and Organics Manager (1978-1984); Metals, Organics, and Water Quality Mgr. (1985-1986); Director of Environmental Sciences (1986-1991); Executive Vice President (1991-1995); President (1995-Present)

Education

B.A., Chemistry, Millersville State College (1972)
M.S., Chemistry, Villanova University (1983)
Ph.D., Analytical Chemistry, Villanova University (1985)
M.B.A., Villanova University (1991)

Continuing Education

Attended numerous technical meetings and seminars including short courses in gas chromatography and atomic spectroscopy.
Quality Management College, Philip Crosby Associates (1989)

Publications

12 publications on analytical chemistry and laboratory management

Memberships

American Chemical Society
American Water Works Association
Chromatography Forum of the Delaware Valley
USEPA NELAC Quality Systems Committee



Timothy S. Oostdyk, Ph.D.
Vice President
Technical Operations

Dr. Oostdyk is responsible for all laboratory operations including financial management, personnel management, operations management, and technical development.

He also oversees operations of Computer Applications Development and Computer Systems. He works with the management staff of this department on development of new capabilities, system upgrades, LIMS expansion, and long-term planning.

Achievements/Accomplishments

- Managed a project that involved \$1.4 million of analytical work over 4 months.
- Has published numerous articles and conducted many presentations on analytical method development and laboratory operations.
- Oversight and management of a major acquisition of an industry in-house environmental lab that provided an additional \$3 million of analytical work per year. Responsibilities included the transfer of the analytical program and major laboratory equipment.

Experience

Lancaster Laboratories—Associate Chemist (1985-1986); Chemist/Coordinator (1986-1987); Group Leader (1988-1990); Manager, Environmental Sciences (1990-1995); Director, Environmental Sciences (1995-1999); Director, Computer Services (July-December 1999); Vice President, Technical Operations (January 2000-Present)

Education

B.A., Chemistry (cum laude), Franklin and Marshall College (1985)

Ph.D., Analytical Chemistry, Villanova University (1993)

Continuing Education

ICP Seminar (1985)

ASMS Interpretation of Mass Spectra (1989)

Service Operations Process Optimization, Penn State University (1992)

Awards and Citations

Phi Beta Kappa, Franklin and Marshall College

Sigma Xi

Spirit of Lancaster Laboratories Award (1989)

Publications

10 scientific publications in analytical chemistry

Memberships

ACIL Environmental Sciences Section, Board of Directors



Wesley C. Neumann, M.S.
Vice President

Mr. Neumann is responsible for the Business Development, Project Management, Client Service, Sample Administration, Technical Data Review, Data Deliverables, Metrology, and Data Validation aspects of our business. His primary focus is leading our sales and customer service staff in developing new business relationships and providing superlative service to our existing clients. Mr. Neumann works closely with our Vice President of Operations to plan our future growth and development areas.

Achievements/Accomplishments

- Developed all facets of the Pharmaceutical Division at Lancaster Laboratories, Inc.
- Developed the preferred provider concept and worked with key clients to enhance our relationship between Lancaster Labs and the client organization.
- Created a GMP compliant lab operation at Bristol-Myers Squibb Co. in response to newly introduced FDA requirements. Reduced average sample analysis time from greater than 6 weeks to 2 weeks through operation efficiency gains.

Experience

Warner Lambert Research Institute—Assistant/Associate Scientist (1973-1977)

Pharmacia—Scientist (1977-1979)

Bristol-Myers Squibb—Senior Scientist/Group Leader/Manager (1979-1990)

Lancaster Laboratories—Manager, Pharmaceutical Sciences (1990-1995); Director, Pharmaceutical Sciences (1995-2000); Vice President, Pharmaceutical Sciences (2000-2002); Vice President, Pharmaceuticals and Business Development (2002-Present)

Education

B.S., Chemistry, Syracuse University (1968)

M.S., Chemistry, Northeastern University (1971)

Continuing Education

Pharmaceutical Quality Assurance Certification, New Jersey Quality Control Association (1985)

Innovative Teamwork Program, Synetics, Inc. (1986)

Dr. W. Edwards Deming's Methods for Management Productivity and Quality, George Washington University (1987)

Statistical Process Control, Phillips Quality Consultants (1988)

Problem Solving and Decision Making, Kepner-Tregor (1988)

**Wesley C. Neumann, M.S.
(Continued)**

Quality Assurance for the Analytical Laboratory, Center
for Professional Advancement (1989)
Numerous technical seminars and meetings on
Pharmaceutical Analysis and cGMP regulations

Publications

Numerous technical publications and articles in industry
newsletters. Frequently quoted in outsourcing
publications.
Presentations about outsourcing analytical services at
AAPS (American Association of Pharmaceutical
Scientists), Interphex, EAS (Eastern Analytical
Symposium) and CHPA (Consumer Healthcare
Products Association) meetings.

Memberships

American Association of Pharmaceutical Scientists
American Chemical Society



Kathleen M. Loewen, B.S.
Quality Assurance Officer

Ms. Loewen is responsible for all aspects of Quality Assurance for both the environmental and pharmaceutical units, including developing and maintaining QA policies, reviewing regulatory and client QA/QC requirements, enforcing regulatory compliance requirements throughout the laboratory, and maintaining all required laboratory certifications.

She assists in audits for various agencies and clients concerned with CLP, GLP, GMP, and GALP requirements and follows up on any corrective action issues. If necessary, she will coordinate follow-up and response to third-party validation of data deliverables.

Achievements/Accomplishments

- Thorough review of the CLP Statement of Work (SOW) followed by compliance auditing of all data package deliverables enabled the lab to accomplish outstanding performance on our initial CLP contract.
- Collaborated in the development of the lab's SW-846 and CLP generic lab QAPPs used extensively for client projects.
- Developed Laboratory Manual Integration Policy Document establishing acceptable practices relative to generation of chromatographic data.
- Collaborated in the development of the Pharmaceutical and Environmental Divisions' Quality Policy Manuals.

Experience

Microbiological Associates—Biological Laboratory Technician (1969-1970)
Schuyler Laboratories—Laboratory Technician (1970-1971)
Victor F. Weaver, Inc.—Labeling-Specifications Supervisor (1985-1988)
Lancaster Laboratories—Data Package/QA Specialist (1988-1991), QA Specialist/Coordinator (1991-1996), Quality Assurance Officer (1996-Present)

Education

B.S., Biology, West Virginia Wesleyan College (1969)

Continuing Education

Environmental Analytical Quality, Hewlett-Packard (1988)
Environmental Analytical Laboratory Services, NUS (1989)

Kathleen M. Loewen, B.S.
(Continued)

Symposium of Waste Testing and Quality Assurance,
U.S. EPA (1990-1994 annual attendance)
RCRA Quality Assurance Workshop, U.S. EPA (1990)
Quality Assurance Workshop, U.S. EPA (1991)
Environmental Seminar Series on SPE, GPA, and HPLC,
Millipore (1992)
Conference on Quality Assurance in Environmental
Monitoring (1993)
Solid Phase Micro Extraction, Supelco (1994)
Analytical Strategy for the RCRA Program, U.S. EPA
(1995)
Guidance Course on SW-846 Chapter One, IALTL (1995)
Environmental Regulations, Executive Enterprises (1996)
GMP Course, University of Rhode Island (1997)
Complying with Laboratory cGMP Requirements, ASQ
(1997)
Management of Change, SQA (1997)
Leadership Conference, James Madison University (1998)
Training the Trainer, SQA (1998)
Advanced QA Techniques for Facility Inspections, SQA
(1998)
Auditing Computer Validation, SQA (1999)
Advanced Concepts in Computer Validation, SQA CVIC
(2000)
ISO 17025-The New Standard for Laboratory Quality,
A2LA (2000)
Measurement Uncertainty, A2LA (2000)
Assuring Ethical Practices in the Laboratory, ACIL
(2001)
GAMP Computer Validation Initiative, SQA (2001)
FDA/PQI Laboratory cGMP Conference (2001)
Good Clinical Practices, SQA (2002)
Digging Deeper into Validation, SQA (2002)
Managing Process Deviations & Failure Investigations,
CPT (2002)

Memberships

American Society of Quality (ASQ)
Institute of Validation Technology (IVT)
Mid-Atlantic Region Society of Quality Assurance
(MARSQA), Computer Validation Committee (CVC)
Parenteral Drug Association (PDA)
Society of Quality Assurance (SQA)



Jon S. Kauffman, Ph.D.
Manager
Environmental Sciences

Dr. Kauffman manages the Metals, Pesticide Residue/PCB Analysis, EPH/Miscellaneous GC, Tobacco, and Method Development & Validation Groups. His responsibilities include discussing technical aspects of projects with clients, providing technical and pricing information to the Business Development and Client Services Groups, determining efficiency in staff utilization, and overseeing development of new methodology.

Achievements/Accomplishments

- Advanced knowledge of solid-state NMR and polymer characterization.
- Involved in implementation of procedures such as solvent stabilizers, solvent recycling, GPC cleanup of semivolatile extracts, accelerated solvent extraction (ASE), Methods 25D and 25E, PCB congener analysis, and hydrocarbon speciation.
- Assisted in the design and implementation of the combined organic extraction labs.
- Managed the GC/MS Semivolatiles Group for 10 years.

Experience

University of Delaware—Graduate Assistant, Chemistry Department, Nuclear Magnetic Resonance (1987-1989); Research Assistant, Center for Catalytic Science & Technology (1988-1989)
Millersville University—Adjunct Professor, Chemistry Department (1992-Present)
Lancaster Laboratories—Chemist (1989-1990), Chemist/Coordinator (1990-1991), Group Leader (1991-1995), Manager (1995-Present)

Education

B.S., Chemistry, Millersville University (1985)
Ph.D., Chemistry, University of Delaware (1989)

Continuing Education

Basic Mass Spectral Interpretation, Finnigan MAT Institute (1990)
Service Operations Process Optimization, Penn State University (1992)
GMP training, LLIU
HPLC Principles and Practices (2000)
Method Validation (2001)
LC/MS 101 (2001)

Publications

6 publications on solid-state NMR spectroscopy, organic extraction, and Performance-Based Measurement Systems (PBMS)



Duane A. Luckenbill, B.S.
Manager
Environmental Sciences

Mr. Luckenbill manages the GC/MS Volatiles, GC/MS Semivolatiles, Leachate Preparation, Volatiles in Air, and Organic Extraction Groups. He is responsible for the overall operations, quality, financial, and personnel management within the groups. He is a technical resource for clients and communicates technical and pricing information to the Business Development and Client Services Groups.

Achievements/Accomplishments

- Won the Senior Leadership Award in GC/MS Volatiles for process improvements which reduced turnaround time for samples and data packages.
- Spent over 6 years operating purge-and-trap GC/MS on waters and soils by EPA, CLP, SW-846, and custom methods.
- Helped to develop a method to determine low levels of acrylonitrile by SIM.

Experience

ATEC Associates, Inc.—GC/MS Analyst (1989)
Lancaster Laboratories—Associate Chemist, GC/MS Volatiles (1989-1991); Chemist, GC/MS Volatiles (1991-1993); Chemist/Coordinator, GC/MS Volatiles (1993-1996); Group Leader, GC/MS Volatiles (1997-2001); Manager (2001-Present)

Education

B.S., Chemistry, Clarion University of PA (1989)

Continuing Education

Introduction to Mass Spectral Interpretation, Hewlett-Packard (1995)
Technical Training, OI Analytical (1995)

Awards

Undergraduate Award in Analytical Chemistry, American Chemical Society (1988)
Department of Chemistry Competitive Award, Clarion University (1988-1989)
Outstanding Senior Chemistry Award, American Institute of Chemists Foundation (1989)
Senior College Award for Chemistry, Society for Analytical Chemists of Pittsburgh (1989)

Publications

One publication on mass spectrometry



Michele M. Turner, B.A.
Manager
Environmental Sciences

Ms. Turner manages the GC Volatiles, Instrumental Water Quality, Water Quality, Data Deliverables, and Sample Support Groups. Her responsibilities include personnel, operations, and financial management within the groups. This includes resource allocation, intradepartmental collaboration, and interaction with clients and auditors to ensure that requirements are understood and met.

Achievements/Accomplishments

- Assisted with implementation of methanol preservative procedures for soil samples in New Jersey and Delaware.
- Involved with implementation of EPA Method 5035 (volatile soil preparation method).
- Managed the GC/MS Volatiles Group for 10 years.

Experience

Lancaster Laboratories – Associate Chemist (1987-1988), Chemist (1988-1989), Chemist/Coordinator (1989-1991), Group Leader (1991-1996), Manager (1996-Present)

Education

B.A., Chemistry, East Stroudsburg University (1987)

Continuing Education

Interpretation of Mass Spectra, ASMS (1989)
Service Operations Process Optimization, Penn State University (1992)
Survey of Management, Penn State University (1992)
Organization, Design, and Development, Penn State University (1993)
Group Facilitation and Leadership Skills, Penn State University (1994)
Instructional Methods in Training & Development, Penn State University (1994)
Organizational Behavior, Penn State University (1995)
Presentation Skills, Penn State University (1995)
Foundations of Training & Development, Penn State University (1995)
GLP Training, LLU

Awards

American Institute of Chemists Award (1987)
Senior Leadership Team Achievement Award for process improvements of reducing lab turnaround times (1996, 1999)
Thelma Farley Memorial Award, Wheatland Conestoga ABWA (2001)

Memberships

American Business Women's Association (ABWA)
Analytical Laboratory Managers Association



Robert M. Large, B.S.
Manager
Environmental Client Services
and Sample Administration

Mr. Large supervises all aspects of project management, including tracking large, complex projects with QA, technical groups, and Business Development; resolving problems and advising clients regarding laboratory capabilities; and managing house accounts. He is also responsible for the overall operation of the Environmental Sample Administration Group.

Mr. Large continues to oversee the operations of our Bay Area Office in Richmond, California. This office provides project management, sample containers, sample cooler packing and shipping, and sample pickup for our West Coast clients.

He is also a member of the Total Quality Management team for the laboratory.

Achievements/Accomplishments

- Developed systems to track customer satisfaction, turnaround time performance, and major project forum communications.
- Facilitated successful start-up of our California office, which included hiring and training personnel, setting up office and computer systems, establishing operating procedures, and coordinating project management activities with Lancaster facility.

Experience

Gilbert Associates, Inc.—Program Manager (1977-1984)
Spotts, Stevens, & McCoy—Director of Client Services (1984-1990)

Lancaster Laboratories—Marketing Specialist (1990-1994), Environmental Client Services Group Leader (1994-1995), Manager of Environmental Client Services/Project Management (1995-April 2002), Manager of Environmental Client Services/Project Management and Environmental Sample Administration (May 2002-Present)

Education

B.S., Zoology, Pennsylvania State University (1973)

Continuing Education

Chromatography/Mass Spectral Interpretation, Finnigan MAT Institute (1981)

Foundations of Management, Gilbert Associates (1982)

M.B.A. Program, St. Joseph's University (1984-1987)

How to Market Professional Services, ACIL (1990)

Quality Education System (1990)

Developing and Implementing a Professional Marketing Plan, ACIL (1991)

**Robert M. Large, B.S.
(Continued)**

Introduction to QUATTRO Course (1991)
Client Services Training Course (1991)
Stormwater/Wetlands, PA Chamber of Business and
Industry (1991)
The Versatile Salesperson (1993)
Conference on Quality Assurance in Environmental
Monitoring (1993)
Targeted Selection Training Course (1994)
Senior Leadership Social Styles (1996)
Leading from Within (1999)
Transforming Managers into Leaders (1999)
Customer Satisfaction Measurement (2000)

Awards

President's Award for Superlative Service (2002)



Nelson H. Risser, M.B.A.
Manager
Computer Services

Mr. Risser has a broad understanding of laboratory operations which allows for development of systems to match each group's requirements and to plan for future computer systems based on our company's growing needs. He administratively integrates the services of Computer Applications Development and Computer Systems with technical and support groups.

Achievements/Accomplishments

- Assisted in developing functional requirements for the next generation of the laboratory information management system (LIMS) and will help implement the new system.
- Was instrumental in switching the accounting and human resource information management systems from legacy to a client/server computing environment.

Experience

Frederick Cancer Center, Frederick MD—Analytical Chemist (1977-1979)
Lancaster Laboratories—Senior Chemist (1979-1987), GC/MS Manager (1987-1990), R&D Manager (1990-1995), Manager of Computer Applications Development and Computer Systems (1995-Present)

Education

B.A., Chemistry, Shippensburg University (1977)
M.B.A., Pennsylvania State University (1995)

Continuing Education

Capillary GC, Chromatography Forum of the Delaware Valley (1981)
Dionex Ion Chromatography (1983)
Finnigan MAT 1020/OWA Operation (1983)
Finnigan MAT Mass Spectra Interpretation and GC/MS (1984)
Finnigan MAT OWA/1050 Software (1986)
Hewlett Packard 5988/5966/5970 RTE Operator's Training Course (1987)
Quality Management College, Philip Crosby Associates (1989)
Validation of Computerized Systems for the Pharmaceutical Industry, PDA (1995)
Lab Equipment Qualification and Validation, Barnett International Conference Group (1999)
Precore Disaster Recovery Software, SunGard (1999)
GMP Training, LLU

**Nelson H. Risser, M.B.A.
(Continued)**

Biographical Listings

Who's Who in Environmental Science

Publications

7 scientific papers on chemical analysis of carcinogens,
solvent recovery, workforce scheduling

Memberships

American Chemical Society

Analytical Laboratory Managers Association

Chromatography Forum of the Delaware Valley



Richard Entz, B.A.
Principal Specialist
Environmental Sciences

Mr. Entz provides technical guidance to clients prior to and during projects. He has extensive expertise in the areas of air quality, petroleum contamination, hydrocarbon speciation, and Pennsylvania environmental regulatory issues.

He reviews federal and state regulations, provides interpretation and advises laboratory senior leaders on implementation. He has developed and facilitated seminars on new procedures and regulations in the environmental industry to internal lab staff and external clients.

He is also responsible for managing large and complex air quality and petroleum-related projects and preparing Quality Assurance Project Plans for air quality projects.

Experience

- Kansas State University—Teaching Assistant (1972-1974)
- U.S. Department of Agriculture—Research Assistant (1974-1977)
- U.S. Food and Drug Administration—Chemist, Division of Chemical Technology (1977-1984)
- Lancaster Laboratories—Senior Chemist, Pesticides and Volatile Organics (1984-1985); Pesticides Group Leader (1985-1990); Volatile Organics by GC Group Leader (1985-1990); Organic Analysis by GC Group Leader (1987-1991), Air Quality Group Leader (1990-1991); Principal Specialist, Environmental Client Services (1991-Present)

Education

- B.A., Chemistry, Wabash College (1972)

Continuing Education

- Graduate Work in Analytical Chemistry, Kansas State University (1972-1977)
- Basic Gas Chromatography, American Chemical Society (1978)
- Advanced Gas Chromatography, American Chemical Society (1979)
- Basic Liquid Chromatography, American Chemical Society (1980)
- Toxicology for Chemists, American Chemical Society (1983)
- Rational Decision Making, Kepner-Tregoe (1984)
- Managing Multiple Priorities, Dun & Bradstreet (1987)
- Procedures for Sampling and Analysis of Air Toxics, American Chemical Society (1990)
- Environmental Regulations, Executive Enterprises (1991)
- Advanced Methods for Monitoring Air Toxics, EPA/Air and Waste Management Association (1992)

Richard C. Entz, B.A.
(Continued)

Awards

Undergraduate Chemistry Award, Wabash College (1972)
Phillips Petroleum Research Award (1976)
Phi Lambda Upsilon
Dawson/Grundmann Innovation Award (1997)

Publications

4 publications in areas of environmental analytical
chemistry and volatile organic compounds

Memberships

American Chemical Society



Michael J. Kramer
Account Manager
Business Development

Mr. Kramer helps to develop long-term, mutually beneficial relationships with new and existing clients. He monitors clients' project status and level of satisfaction. He also presents Lancaster Labs' capabilities through formal presentations and personal account visits to current and prospective clients within his assigned geographic territory.

He maintains and communicates knowledge of regulatory issues, analytical methodology, and industry requirements to new and existing clients. This information aids preparation of proposals and quotations for these clients and assists project planning for target accounts.

Experience

Union Deposit Corporation (1995-1996)
Groundwater Services International—Project Manager
(1996-1999)
Earth Tech—Project Manager (1999-July 2002)
Lancaster Laboratories—Account Manager, Business
Development (July 2002-Present)

Education

B.A., Geoenvironmental Studies, Shippensburg
University (1994)

Continuing Education

40-hour OSHA HAZWOPER (1996)
8-hour OSHA HAZWOPER Annual Refresher
(1997-Present)
ASTM Phase I Training (1997)
Separate Phase Liquid Recovery Seminar (2000)
Interstate Technology Regulatory Cooperation
Internet Seminars (2002)

- Enhanced In Situ Bioremediation of Chlorinated Solvents in Groundwater
- Natural Attenuation of Chlorinated Solvents in Groundwater: Principles and Practices
- In Situ Chemical Oxidation of Contaminated Soil and Groundwater

Memberships

National Groundwater Association



Kevin T. Moran
Account Manager
Business Development

Mr. Moran helps to develop long-term, mutually beneficial relationships with new and existing clients. He monitors clients' project status and level of satisfaction. He also presents Lancaster Labs' capabilities through formal presentations and personal account visits to current and prospective clients within his assigned geographic territory.

He maintains and communicates knowledge of regulatory issues, analytical methodology, and industry requirements to new and existing clients. This information aids preparation of proposals and quotations for these clients and assists project planning for target accounts.

Achievements/Accomplishments

- Managed groundwater remediation system technicians at DOD and industrial sites for 3 years.

Experience

U.S. Merchant Marine—Engineering Officer (1973-1986)
Finlay Commercial Real Estate—Senior Broker (1987-1990)
Betz Labs—District Representative (1991-1992)
G.S. Electric—Regional Sales Manager (1992-1994)
SAIC (formerly ERS) Regional Sales Manager (1994-1999)
Mantech Environmental—Marketing Manager (1999-2000)
Hazleton Environmental—Sales Manager (2000-2003)
Lancaster Laboratories—Account Manager, Business Development (June 2003-Present)

Education

B.S., Marine Engineering, U.S. Merchant Marine Academy (1972)
M.B.A., Marketing, Babson College (1981)

Continuing Education

Professional Selling Skills, Learning International (1991)
Sandler Institute Training (1991)
Sales Development Institute, St. Joseph's University (1993)
Maintenance Management Course, Clemson University (1998)



Donald Wyand, B.S.
National Account Manager
Business Development

Mr. Wyand works with new and existing clients to develop long-term, mutually beneficial relationships by providing technical and regulatory program oversight for clients throughout the U.S. and abroad.

He provides direction to senior management and technical support staff in developing new analyses and services as well as presents Lancaster Labs' capabilities through personal visits, formal presentations, and marketing activities.

He maintains and communicates knowledge of regulatory issues, analytical methodology, and industry requirements to new and existing clients. This information aids preparation of proposals and quotations for these clients and assists project planning for target accounts.

Experience

Lancaster Laboratories—Chemist (1989), Project Manager (1990-1993), Business Development Specialist (1993-1995), Business Development Account Manager (1995-1998), National Account Manager (1998-Present)

Education

B.S., Chemistry, Lebanon Valley College (1989)
Graduate Chemistry courses, Villanova University

Continuing Education

Symposium of Waste Testing and Quality Assurance,
U.S. EPA (1998-2000 annual attendance)
Analytical Strategy for the RCRA Program: A
Performance-Based Approach, U.S. EPA (1999)
Large Account Management Program, Miller & Heiman
(1999)
GMP Training, LLU
NGWA Focus Conference on MTBE Assessment,
Remediation, and Public Policy (2003)
Texas Commission on Environmental Quality
Environmental Conference (2003)

Awards

Spirit of Lancaster Laboratories Award (2001)

Publications

Application of Performance-Based Measurement Systems,
Environmental Testing & Analysis (May/June 2000)

Memberships

Air & Waste Management Association
American Chemical Society
National Groundwater Association

Company Memberships

- American Association for Laboratory Accreditation
- American Council of Independent Laboratories
- Chambers of Commerce:
 - United States
 - Lancaster, Pennsylvania
 - Richmond, Virginia
- Maryland Environmental Laboratory Association
- Pennsylvania Association of Approved Environmental Laboratories

Staff Memberships

- Air and Waste Management Association
- American Chemical Society
- American Industrial Hygiene Association
- American Society for Quality
- American Water Works Association
- Analytical Laboratory Manager's Association
- Association of Official Analytical Chemists
- Institute for National Environmental Laboratory Accreditation
- Institute of Validation Technology
- National Environmental Health Association
- Society for Human Resource Management
- Society of Quality Assurance

Major Instrumentation

Gas Chromatograph/Mass Spectrometer (GC/MS):

Volatiles
Semivolatiles
Air Analysis

Total of 32

17
13
2

Gas Chromatograph (GC)

Pesticides
GC Volatiles
EPH/Miscellaneous GC
Nitrosamines

Total of 60

17
26
14
3

Inorganics

ICP
ICP/MS
Graphite Furnace

5
1
6

High Performance Liquid Chromatograph (HPLC)

PAHS
Carbamates
Explosives
Aldehydes

Total of 6

2
1
2
1

Organic Sample Preparation

Gel Permeation Chromatograph (GPC)
Automated Solvent Extractor (ASE)

3
2

Method Development

LC/MS/MS, LC/MS, GC/MS, GC, HPLC,
Ion Chromatography, etc.

Instrument Repair

Preventative Maintenance
Full-time technician
Extensive Parts Inventory

Facility and Equipment

Facility Design

Our single-location laboratory facility, located on 18 acres on Pennsylvania Route 23 (2425 New Holland Pike), is about 5 miles northeast of the City of Lancaster. On the north campus sits a major building complex and four auxiliary buildings housing a general maintenance shop, auto maintenance, solvent storage sheds (located at some distance from the other building), and waste storage facilities.

The original 120,000-square-foot building complex houses the majority of the current laboratory space, refrigerated and room temperature sample storage areas, and the computer resource center. Our 55,000-square-foot building on the south campus is linked to the original facility by a 150-foot long covered bridge spanning Route 23 and includes a library, cafeteria, six conference rooms, corporate and other support offices, and additional laboratory space. With an eye toward future growth, the site was prepared to accommodate two additional buildings of the same size.

To improve the reliability and quality of the data generated, Lancaster Labs has invested heavily in custom-designed facilities. Centralized sample receipt locations facilitate processing so laboratory groups have access to samples soon after their arrival. Operational isolation areas and dedicated heating, ventilating, and air conditioning (HVAC) systems reduce the presence of interfering laboratory contaminants. In addition, engineering controls such as laboratory fume hoods protect the staff and equipment from potentially harmful conditions. The design features:

- Isolated refrigerated and dry sample storage areas
- Isolated chemical and standard storage areas
- Dedicated organics and metals sample preparation areas
- Voltage control devices dedicated to major instruments
- Eye wash fountains, overhead showers, fire extinguishers, and fire blankets located throughout the laboratories

The air-handling systems and layouts in the laboratories minimize the chance for cross-contamination of samples and provide the highest level of safety. In addition, sample preparations and instrumental analyses are performed in separate rooms not in proximity with each other.

We also employ engineering controls that dilute, capture, or contain hazardous chemicals. Specifically, ventilation systems and American National Standards Institute (ANSI)

approved storage containers and storage cabinets for flammable materials reduce the risk of exposure to hazardous chemicals by personnel.

A sophisticated security and fire alarm system protects the buildings. All outside doors, except the main entrance, remain locked at all times to prevent unauthorized entry. Employees carry electronic passes which allow them to enter the building, and an attendant who registers visitors during normal business hours monitors the main entrance. During weekends and second- and third-shift operations, personnel assigned to security prevent unauthorized entry into the laboratory and accept packages.

Instrumentation

Our laboratory maintains state-of-the-art instrumentation to perform complex analyses. All Lancaster Labs' equipment has been selected from reputable manufacturers based upon reliability, ease of operation and maintenance, and accuracy.

The instruments are maintained and calibrated in accordance with the Lancaster Labs' Quality Assurance Program. Our instrument-maintenance program ensures reliable service for a high volume of analyses. Each piece of equipment receives preventative and scheduled maintenance as recommended by the methodology or manufacturer's instructions. Logbooks document the maintenance activities for each instrument.

Instrument calibrations conform to the specifications of the method or protocol being performed and are documented as required. The program for calibration and maintenance complies with applicable U.S. EPA and client-specific guidelines.

The list at the beginning of this section shows our major instrumentation or instruments that demonstrate specific capabilities. In addition, we have numerous other instruments (e.g., pH meters and analytical balances) and support equipment (e.g., ovens, centrifuges, incubators, autoclaves, muffle furnaces). We also have walk-in refrigerators for sample storage and a reverse osmosis, deionized water system, which is UV sterilized and continuously circulating to all laboratories. A 75 KVA electric generator is available on a standby basis to supply electrical power to selected areas of the laboratory in case of a power outage. To reduce spikes and spurious line voltage changes to instruments that can affect results or damage electronic equipment, "conditioned power" is fed to all sensitive instruments (e.g., GCs, HPLCs, GC/MSs). All essential computer hardware is on "uninterruptable power," a battery system that provides continuous conditioned power in the event of a short power outage and is backed up by an emergency generator.

Automated Sample Storage

Lancaster Labs has the only automated sample storage system in an environmental laboratory. The automated sample retrieval system (ASRS) is housed in the largest walk-in refrigerator. The system combines robotic cranes, carousels, computers, and bar codes to allow efficient sample tracking, storage, and retrieval. Employees no longer enter the refrigerated area to access samples. Monitoring systems that continuously record temperature and other environmental parameters protect the ASRS. An alarm sounds whenever conditions are outside acceptable ranges.

A schematic of our ASRS may be found at the end of this section.

Capacity

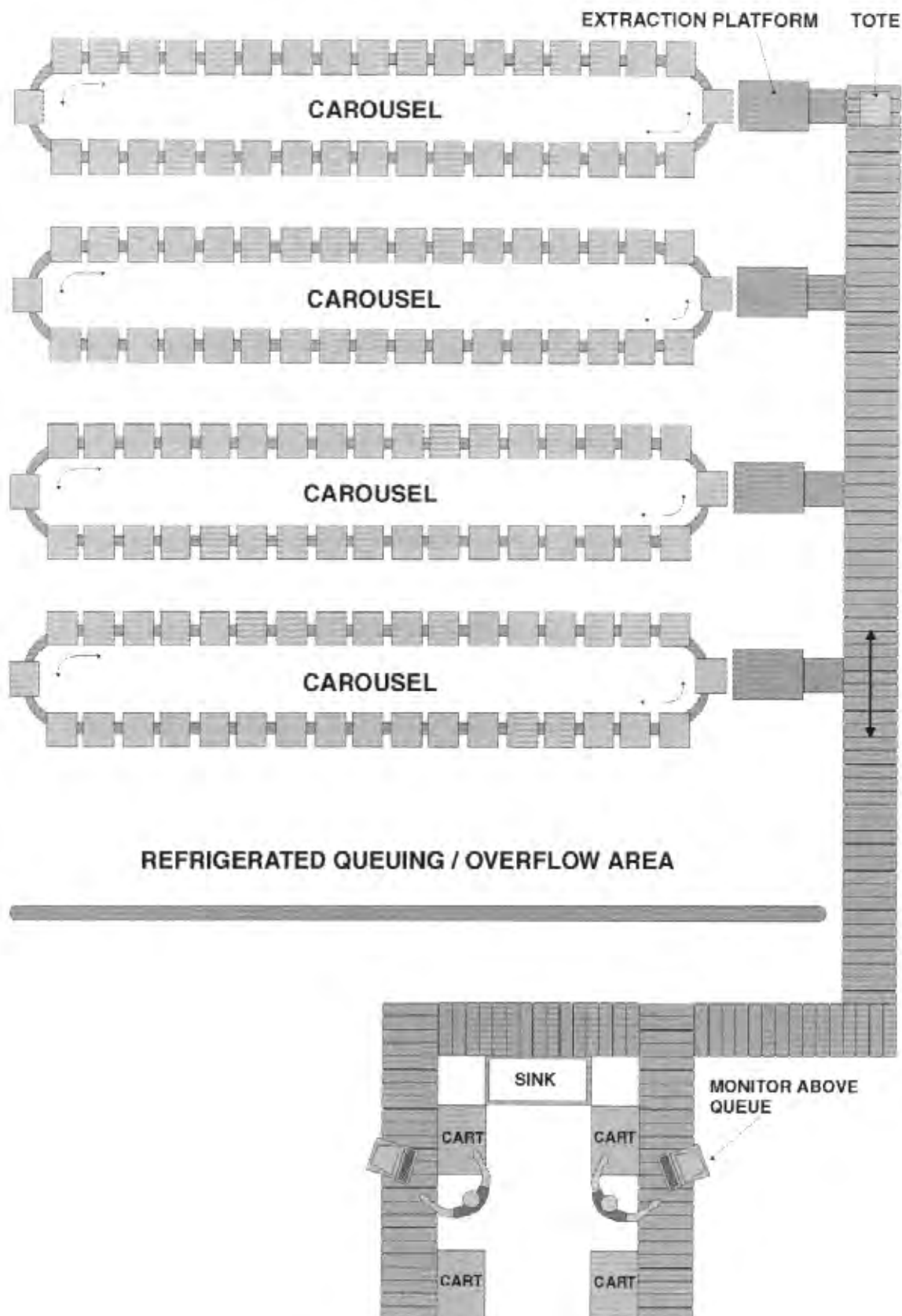
To provide you with an idea of the capacity of Lancaster Labs, we've included this chart showing the monthly capacity of our most frequently requested analyses. Additional capacity can be gained through the modification of our second, third, and weekend shifts. We have the ability to bring additional instruments on-line quickly to meet project demands.

Analysis Parameter	Method	Capacity per Month
Petroleum Fuels Analysis		
BTEX	SW-846 8020/8021	6,000
TPH GRO, GRO + BTEX	API/CA LUFT/8015M	3,200
TPH DRO	API/CA LUFT/8015M	2,800
TPH by GC/FID (fingerprint)	SW-846 8015M	1,200
PAHs	SW-846 8310	600
PAHs	SW-846 8270C, SIM	2,000
Organics		
Volatiles by GC/MS*	SW-846/CLP/EPA	8,000
Volatiles by GC/MS	TO-14	350
Semivolatiles by GC/MS*	SW-846/CLP/EPA	2,500
Pesticides/PCBs*, Herbicides	SW-846/CLP/EPA	1,200 each
Volatiles by GC, Halocarbons	SW-846/EPA	1,000
Inorganics		
Metals by ICP/Trace ICP*	SW-846/CLP/EPA	10,000
Metals by Graphite Furnace*	SW-846/CLP/EPA	2,500
Metals by Cold Vapor AA (Hg)	SW-846/CLP/EPA	1,800
ICP/MS	SW-846	1,000
Cyanide	SW-846/CLP/EPA	1,400
Waste Characteristics		
TCLP Nonvolatile/Zero Headspace Extraction	SW-846 1311	1,200
TCLP Volatiles	SW-846 8260B	1,800
TCLP Semivolatiles	SW-846 8270C	1,600
TCLP Pesticides/Herbicides	SW-846 8081/8151	900 each
TCLP Metals	SW-846	2,000
Reactivity/Corrosivity	SW-846 Ch. 7	800 each
Ignitability	40 CFR 261.21	800
Water Quality		
TOC	SW-846/EPA	1,600
TOX	SW-846	500
TKN	EPA 351.2	1,300
Sulfide/Cyanide/Phenol	SW-846/EPA	1,400 each

*Compound lists include Appendix IX, Target Compound (TCL), Priority Pollutant (PPL), etc.
The estimates given above are for combined water and soil matrices.

Lancaster Laboratories' Automated Sample Retrieval System

(Approximately 55,000 storage spaces)



Volatiles

GC/MS

- 8260B
- 25-mL purge
- SIM (Selective Ion Monitoring)
- CLP SOW
- 624
- 524.2

GC

- 8015B
- 8021
- 601/602

GC/MS & HPLC

- 8270C
- CLP SOW
- SIM (Selective Ion Monitoring)
- 625
- 525
- 8310 (PAHs)

Semivolatiles

GC

- 8081A
- 8082
- CLP SOW
- 608
- 8141A
- 8151A
- Carbamates

Pesticide/PCB/ Herbicide

- 200.7/6010B Trace ICP
- 200.8/6020 ICP/MS
- CLP SOW
- Organic Lead

Metals

Environmental Services

Appendix IX

Priority Pollutant List (PPL)

Target Compound/Target Analyte Lists (TCL/TAL)



**Lancaster
Laboratories**

Waste Characterization

- TCLP/SPLP
- Corrosivity
- Ignitability
- Flashpoint
- Reactivity

Air Analyses

- TO-14A/TO-15
- Tedlar/SUMMA/
Flow Controllers
- TO-13
- EPA 18/25
- BTEX, MTBE,
Methane
- GRO

Water Quality

- Anions/Cations
- Hexavalent Chromium
- Ferrous Iron
- Ion Chromatography
- BOD, COD, TOC, TOX
- Cyanide, Phenols
- Ammonia, TKN,
Nitrate, Nitrite
- Solids

Petroleum- Related Analyses

- BTEX, Oxygenates,
EDB, EDC
- GRO/DRO 8015
- State-Specific
GRO/DRO/ORO
- Hydrocarbon Speciation
(MA, TX, NC, LA, etc.)
- SGT-HEM (Silica Gel
Treated-Hexane
Extractable Materials)
1664A

Specialty Services

- Method Development & Validation
- Methane, Ethane, Ethene, Propane
- Perchlorate (314.0)
- 1,4-Dioxane (8270C, 8260B SIM)
- EPA 1666 and 1671
- HVI GC/MS (High-Volume Injection)
- ASE (Accelerated Solvent Extraction)
- Sample Cleanup Techniques
- Explosives (8330, 8332)
- Aldehydes/Glycols
- AVS SEM
- Natural Attenuation Parameters
- Tissue/Elutriate Testing
- Method 25D

Capabilities and Services

Analytical Capabilities

(Data reporting capabilities are described in the Data Deliverables Options section.)

Lancaster Labs' Environmental Sciences Division provides comprehensive environmental testing services in support of efforts to monitor potential contaminants in **air, water, soil, sediment, and biota**.

We provide analytical services in support of most state and federal programs and have extensive experience with Superfund, Resource Conservation and Recovery Act, Clean Water Act, Clean Air Act, and Safe Drinking Water Act projects. Some of the environmental monitoring programs that we support include:

- Underground storage tank (UST) programs
- Petroleum releases
- NPDES monitoring
- Groundwater monitoring for RCRA
- Preliminary assessment (PA) and site inspections (SI)
- Remedial investigation/feasibility studies (RI/FS)
- Remedial design (RD) and remedial action (RA)
- Ecological risk assessments
- Postremedial action monitoring
- Waste characterizations
- Due diligence
- Brownfields programs
- Risk-based corrective action programs

Our clientele ranges over the entire United States and beyond into South and Central America and Europe. Our **USDA Quarantine Soil Permit** authorizes us to accept soil samples from quarantined areas of the United States and foreign countries. Lancaster Labs has a proven record of successfully completing the most demanding projects for leading private-sector industrial clients and engineering and consulting companies.

Our strict standards and quality systems ensure that we generate data and provide services that meet the requirements of our clients and sustain the rigors of regulatory review and legal scrutiny. We also offer Quality Assurance Project Plans to identify analytical objectives and define specific requirements and procedures.

Special Capabilities

Method and Technology Development

At Lancaster Labs, we are capable of providing contract method and technology development in our areas of specialization—environmental and air quality.

We have more than 40 years of practical experience analyzing situations, developing strategies, and creating new methods and procedures. As an extension of your business, we can successfully complete research-oriented projects that you might not have the time, expertise, or available staff to undertake. Some general examples of our method and technology development include:

- Analytical method development and validation
- Collaborative and comparative studies
- Risk-based corrective action approaches
- Site-specific studies
- Waste treatment studies
- Consulting in QA/QC methods and procedures

We begin a project by clearly defining objectives and potential technical approaches with you. Upon agreement of project direction, we outline tasks and timetables, including anticipated costs, in a project proposal. Efforts proceed only upon your authorization. We maintain a close working relationship and respect the confidential nature of the work being performed.

State-Specific Methods for the Determination of Petroleum Hydrocarbons

State regulators may take several approaches to measuring petroleum hydrocarbons including:

- Indicator Chemicals
 - BTEX and other aromatics, MTBE and other oxygenates, EDB/EDC, PAHs
- Whole Product
 - Gasoline, Diesel/#2 fuel, heavy fuel oils, crude oil, jet fuels, kerosene
- Fractionation
 - Aliphatic/aromatic fractions
 - Discrete hydrocarbon ranges

Combining comprehensive certifications with expertise in hydrocarbon analyses, including experience with the TPH Criteria Working Group, Lancaster Laboratories offers complete coverage of state-specific methods for determination of petroleum hydrocarbons.

Alaska (AK)	GRO, DRO, RRO
California (CA)	GRO, DRO
Connecticut (CT)	ETPH
Florida (FL)	FL-PRO
Iowa (IA)	OA-1 (GRO/BTEX/MTBE), OA-2 (DRO)
Louisiana (LA)	TPH-G (C ₈ -C ₁₂), TPH-D and TPH-O (C ₁₀ -C ₂₀ /C ₂₀ -C ₂₈)
Massachusetts (MA)	VPH, EPH
Michigan (MI)	UST - BTEX/MTBE/TMBs/Naphthalene/ 2-Methylnaphthalene
Missouri (MO)	OA-1 (GRO/BTEX/MTBE), OA-2 (DRO)
Montana (MT)	VPH, EPH
North Carolina (NC)	VPH, EPH
New Jersey (NJ)	DRO - QAM 025-10/91
Oklahoma (OK)	GRO, DRO
Oregon (OR)	Gx, Dx, HClD
Tennessee (TN)	DRO, GRO
Texas (TX)	Tx-1005 (TPH), Tx-1006
Washington (WA)	VPH, Gx, Dx, HClD
Wisconsin (WI)	GRO + PVOCs, DRO

Ecological Risk Assessment Support

Ecological studies often require testing for particular contaminants in various matrices from sediments to worms, fish, frogs, and plants to determine how different physiologies deal with the chemicals. Often these analyses require special preparations, extractions, or cleanups to account for the matrix interferences. Tissue studies have also included lipid testing to assess the correlation between fat percentage and the concentration of the contaminants in that tissue. Please ask us about our capabilities for supporting these specialized program needs.

Pharmaceutical Manufacturing Industry Discharge Monitoring

We perform the analytical methods required for monitoring of Pharmaceutical Manufacturing Industry wastewater discharge using Methods 1666, 1671, and 524.2.

Services

Field Sampling

Our field sampling team provides services to our clients when they call upon us for additional field support. All members of the team have completed 40-hour Hazardous Waste Operations and Emergency Response (29CFR1910.120) training. The field personnel maintain the necessary equipment to properly collect samples from routine groundwater monitoring, manufacturing facilities, and surface soil sampling projects.

Project Management

A project manager (PM) is assigned to each client and serves as your primary point of contact. The PM is selected by matching your project scope and requirements to their areas of expertise and experience. They are responsible for communicating your project requirements to the technical and support staff at a formal project kick-off meeting held prior to the first sample shipment. After that, weekly project forum meetings are held to relay any new information about upcoming samples and allow technical staff to ask questions and seek clarification. However, on a daily basis, if questions or issues arise about your samples, the PM will contact you for clarification. Our technical staff is always available to speak directly with the site project manager(s), offering technical advice and consultation. The PM will also:

- Receive bottle order information and schedule delivery upon request.
- Instruct sample entry group on sample handling and specific log-in procedures.
- Review sample entry in the LIMS and compare to your chain-of-custody or request form for accuracy.
- Inform you of any sample receipt problems.
- Disseminate changes to analysis protocol, upon your written request.
- Inform you of sample reporting status, offering interim and final fax results.

Sample Containers

The following materials are provided at no additional cost.

- Preserved sample containers (according to the method specifications)
- Labels preprinted with your company name, project name, individual sample location identification, and analyses
- Chain-of-custody forms
- Prepared field and trip blanks
- Deionized water for field, rinsate, or equipment blanks (if required)
- Coolers
- Custody seals (if required)
- Packing slip indicating all bottles/preservatives provided
- Sampling instructions (where applicable)

EnCore samplers or Methanol vials can be provided; however, there is a fee associated with these supplies. Fees will be provided in your project-specific quotation.

Same-Day Courier Service

Lancaster Laboratories provides sample pick-up service and bottle delivery to clients within our Same-Day Courier service area. We can pick up your samples, pack them if you choose, and transport them back to our laboratory to be logged in for analysis. This can all be done in a matter of hours. Because many samples have a brief holding time, getting them quickly, easily, and safely to the lab is of utmost importance. Our couriers have been trained in sample handling, sample transport and chain-of-custody procedures.

We can even be faster than commercial carriers. While they can guarantee next-day delivery, sometimes next day is too late. We guarantee same-day delivery if it is within our service area. Our couriers can help save you time by packing your samples for transport. Having our couriers be the only ones handling your samples also simplifies chain-of-custody procedures. Our couriers will do whatever it takes to satisfy the demands of your project, whether that means picking up your samples at a site, including late in the evening or on a weekend. If needed, we can ship coolers and bottles prepared with the proper preservatives to you in advance, or we can have our courier leave them for you.

Commercial carriers charge by weight or volume. With Lancaster Labs you will pay the same low rate whether we pick up one sample or one hundred. This could be a significant savings if there is substantial sample volume. We have a number of different sized cars and vans to accommodate your needs.

To arrange for a sample pickup, **call us 24 hours in advance whenever possible**, or you can establish a convenient, regularly scheduled courier stop. We will pick up your samples and transport them back to the lab that day. They will be logged into our Laboratory Information Management System (LIMS) that day so the analysis can be started in order to meet your schedule. So while the commercial carriers are still delivering, we can already be analyzing. Should you forget to call in advance and need your samples picked up in a hurry, don't worry. Our company vehicles are all equipped with digital phones so we can always communicate with the couriers. If you are on an established schedule, there is no need to remind us, our courier will be there.

A Regular Pickup is one that is made anywhere in the counties listed below and will have a flat fee of \$15 as long as the samples are ready by 3:00 pm. **Special Pickups** are those made after 3:00 pm or on weekends and will be charged an adjusted rate based on time and mileage. Special Pickups also include any location outside of the service area listed in the map below.

Please note that sample pickup will not be available on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

To arrange for a sample pickup, please call Steve Davies in our Transportation Department at 717-656-2308, extension 1260.

A list of counties served and a map of the sample pickup area is shown on the back.



2425 New Holland Pike, PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681
www.lancasterlabs.com

List of Counties Served by Daily Pickups

Pennsylvania

Berks
Bucks
Chester
Eastern Cumberland
Dauphin
Delaware
Lancaster
Lebanon
Lehigh
Montgomery
Northampton
Philadelphia
York

Delaware

New Castle

Maryland

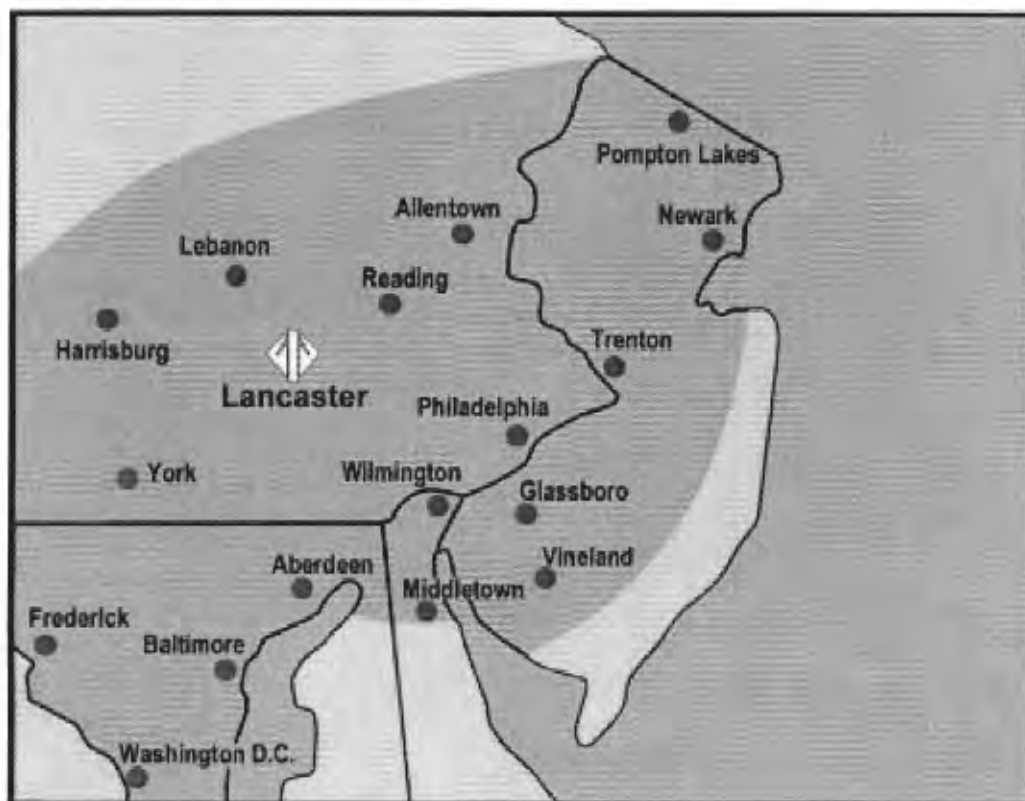
Anne Arundel
Baltimore
Cecil
Frederick
Harford
Howard
Montgomery
Prince Georges

Washington D.C.

New Jersey

Bergen
Burlington
Camden
Essex
Gloucester
Hunterdon
Mercer
Middlesex
Monmouth
Morris
Ocean
Passaic
Salem
Somerset
Union

 Represents the approximate area covered by Lancaster Labs' daily pick-up service.



Accreditations and Certifications

Accreditations

Our goal is accreditation in the programs that meet our clients' needs. The organizations offering accreditations generally evaluate laboratories in four basic areas: personnel (education, training, and experience), physical facilities, instrumentation and equipment, and quality assurance programs. Evaluations may include on-site inspections and periodic testing of proficiency evaluation samples. The following is a summary of the national accreditations, registrations, and contracts held by Lancaster Laboratories:

- American Association for Laboratory Accreditation (A2LA)

A2LA is a private-sector, nonprofit organization whose sole mission is accrediting laboratories in 12 fields of testing. Lancaster Laboratories holds accreditation in the environmental field of testing. Certificate #0001-01.

- Department of Defense (DOD)

We have project-based approval experience in compliance with the requirements of the Naval Facilities Engineering Service Center (NFESC), the Air Force Center for Environmental Excellence (AFCEE), and the Missouri River Division of the Army Corps of Engineers (USACE).

- National Environmental Laboratory Accreditation Program (NELAP)

NELAP is the EPA program that administers and oversees the National Environmental Laboratory Accreditation Conference (NELAC) process. The goal of NELAC is to assure that decisions being made from analytical data have a sound technical, scientific, and statistical basis. Standards have been designed to help assure that NELAC-accredited laboratories deliver data of the required quality level. NELAC's standards provide a flexible system, designed to accommodate the various operational procedures and processes of the states under the regulatory programs delegated to the states by EPA. Lancaster Labs has applied for and received NELAP accreditation for CAA, CWA, RCRA, and SDWA programs.

- USDA Quarantine Soil Permit

This permit allows us to receive quarantined soil of domestic and foreign origin. Permit #S-50452.

Certifications

Refer to our color-coded chart and summary table for details on Lancaster Labs' current state and government approvals and accreditations. Please call us if you do not see an agency listed as we are continually increasing our state approvals.

Lancaster Laboratories is the largest single-location environmental laboratory in the nation. Our 650 scientists, technicians, and support personnel provide you with the highest level of data quality, capacity for large projects, and a comprehensive scope of services.

To learn how we can help you, please call our Environmental Business Development Group at 717-656-2300.

Your Guide To State Certifications

- Potable Water (PW) 
- Waste Water (WW) 
- Solid Waste (SW) 
- Air & Emissions (A&E) 
- Underground Storage Tank (UST) 
- Lancaster Laboratories holds certification 
- In Process 
- NELAP 



2425 New Holland Pike
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	Potable Water (SDWA)	Waste Water (CWA)	Solid Waste (RCRA)	Air & Emissions (CAA)	Underground Storage Tank (UST)
Alabama					
Alaska					
Arizona					
Arkansas					
* California					
Colorado					
Connecticut					
Delaware		(Certification for in-state labs only)			
* Florida					
Georgia					
Hawaii					
Idaho					
* Illinois					
Indiana					
Iowa					
* Kansas					
Kentucky					
* Louisiana					
Maine					
Maryland					
Massachusetts					
Michigan					
Minnesota					
Mississippi					
Missouri					
Montana					
Nebraska					
Nevada					
* New Hampshire					
* New Jersey					
New Mexico					
* New York					
North Carolina					
North Dakota					
Ohio					
Oklahoma					
* Oregon					
* Pennsylvania					
Rhode Island					
South Carolina					
South Dakota					
Tennessee					
Texas					
* Utah					
Vermont					
Virginia					
Washington					
West Virginia					
Wisconsin					
Wyoming					

Note: Certifications are subject to change.

W0117005

Certifications, Accreditations, Registrations, and Contracts

Agency	Parameter	Applicable Matrices	Lab ID No. Certificate No.
Federal Programs:			
American Association for Laboratory Accreditation (A2LA)	Various testing technologies in the environmental field using EPA methods, ISO 17025	Non-specific	0001-01
Environmental Protection Agency Contract Laboratory Program	Our contract for full organics with the EPA CLP has expired.	When our contract expired, we were in good standing with the EPA.	
National Environmental Laboratory Accreditation Program (NELAP)	CAA, CWA, RCRA, SDWA	Air, wastewater, solid and hazardous waste, potable water	None
U.S. Air Force (AFCEE)	Organics, inorganics	Project specific	None
U.S. Army Corps of Engineers, Missouri River Division	Organics, inorganics	Project specific	None
U.S. Navy (NFESC)	Organics, inorganics	Project specific	None
USDA Quarantine Soil Permit	All	All	S-50452
State Programs:			
State of Alabama, Department of Environmental Management	Organics, inorganics	Potable water	41080
State of Alaska, Department of Environmental Conservation	Organics, inorganics, UST analysis	Nonpotable water and solids	UST-061
State of Arkansas, Department of Environmental Quality	Organics, inorganics	Wastewater, solid waste	None
State of California ELAP	Organics, inorganics	Potable water, wastewater, solid and hazardous waste	2501
State of Colorado	Organics, inorganics	Potable water	None
State of Connecticut	Organics, inorganics	Potable water, nonpotable water, trade waste and soils	PH-0746
¹ State of Delaware, Health and Social Services	Organics, inorganics, micro	Potable water	PA009
State of Florida, Department of Health	Organics, inorganics	Potable water, wastewater, hazardous waste, air	E87661
State of Georgia, Department of Natural Resources	Organics, inorganics	Potable water	930
State of Illinois, Environmental Protection Agency	Organics, inorganics	Nonpotable water/solid/hazardous waste	200027
State of Indiana	Organics, inorganics	Potable water	None
State of Iowa, Department of Natural Resources	Underground storage tank analysis	Wastewater, soil	361
State of Kansas, Department of Health and Environment	Metals, limited chemistry, VOCs, pesticides, herbicides, THMs	Potable water, wastewater	E-10151
State of Kansas, Department of Health and Environment	VOCs, SVOCs	Hazardous waste	E-10151
State of Kentucky, Division of Environmental Services	Organics, inorganics, UST	Potable water, wastewater, solid	90088
State of Louisiana, Department of Environmental Quality	Organics, inorganics	Nonpotable water	02055
State of Maryland, Department of Health and Mental Hygiene	Organics, inorganics, micro	Potable water	100
Commonwealth of Massachusetts, Dept. of Environmental Protection	Metals, wet chemistry, pesticides, herbicides, THMs, VOCs	Potable/nonpotable water	M-PA009

¹ Effective January 22, 2002: The State of Delaware does not maintain a registry of laboratory certification for out of state laboratories. Proof of home state certification is required for laboratories analyzing samples

Certifications, Accreditations, Registrations, and Contracts

Agency	Parameter	Applicable Matrices	Lab ID No. Certificate No.
State of Michigan	Organics, inorganics,	Potable water	None
State of Mississippi, Department of Health	Organics, inorganics	Potable water	None
State of Missouri, Department of Natural Resources	Organics, inorganics	Potable water	450
State of Montana, DEQ	UST - GRO and DRO	Waste water, solid waste	None
State of Nevada, Health Division	Metals, minerals, nutrients, misc., wet chemistry, volatiles, pesticides, PCBs, semivolatiles	Waste water	PA-00009-2002-31
State of New Hampshire	Insecticides, metals, limited chemistry, VOCs, SOCs, THMs, carbamates, pesticides, PCBs	Potable/nonpotable water	2730
State of New Jersey, Department of Environmental Protection (NJDEP)	Microbiology, metals, limited chemistry, VOCs, pesticides, herbicides, THMs	Potable water, wastewater, includes soil	FA011
State of New York, Department of Health	Wet chemistry, metals, THMs, pesticides, herbicides, VOCs, BTEX, priority pollutants	Wastewater, potable water, hazardous waste, air and emissions	10570
State of North Carolina	Organics, inorganics	Wastewater	521
State of North Dakota, Department of Health	Organics, inorganics	Potable water	R-061
State of Ohio, Environmental Protection Agency (Voluntary Action Program)	Metals, cyanide, GC/MS volatiles, pesticides, PCBs, semivolatiles, GC volatiles, GRO, DRO	Waste water, solid, and hazardous waste	CL0070
State of Oklahoma, Department of Environmental Quality	Organics, inorganics	General water quality, sludge testing	9804
State of Oregon, Public Health Laboratory	Organics, inorganics	Wastewater, solid waste	PA-200-001
Commonwealth of Pennsylvania, Department of Environmental Protection (Bureau of Laboratories)	Microbiology, THMs, VOCs, metals, NO _x , fluoride, pesticides, herbicides, sodium/corrosivity, giardia cyst	Potable water	36-C37
State of Rhode Island	Chemistry	Surface water, wastewater, potable water	159
State of South Carolina, Department of Health and Environmental Control	Inorganics, organics	Potable water, wastewater, solid and hazardous waste	89002
State of Tennessee, Department of Health	Inorganics, organics	Potable water	TN02835
State of Texas, Natural Resource Conservation Commission	Organics, inorganics	Potable water	TX263-2002A
State of Utah, Department of Health	Metals, VOCs, THMs, wet chemistry, pesticides, herbicides, priority pollutants, hazardous waste characteristics, wet chemistry	Solid waste	E-85 Class 1
State of Vermont	IOCs, VOCs, THMs, SOCs, some metals	Potable water	None
Commonwealth of Virginia, Department of General Services	Organics, inorganics	Potable water	00187
State of Washington	Wet chem, metals, organics	Wastewater, solid waste	C259
State of West Virginia, Department of Health	Organics, inorganics	Potable water	R-16
State of West Virginia, Division of Environmental Protection	Organics, inorganics	Wastewater	D55
State of Wisconsin, Department of Natural Resources	Organics, inorganics	Wastewater, solid waste	EN748
State of Wyoming, Division of Environmental Quality	UST - GRO and DRO	Wastewater, solid waste	None

NOTE: This list accurately reflects the certifications, accreditations, registrations, and contracts held at the time of publication and is subject to change. Check with your account manager on the status of any certification needed for a specific project.

Quality Assurance and Data Integrity

Data Integrity

Our clients depend on us to deliver accurate and regulatory-compliant data. The data we generate is used for a variety of purposes. It may be used to demonstrate compliance with governmental regulations, prove due diligence in real estate transactions, or settle legal disputes. Since the data is important and has high intrinsic value, it comes with the assurance that it has been produced with the necessary "quality," meaning that it has a degree of accuracy that is commensurate with its intended use.

To assure this level of quality, 100 percent of the data is approved by a multilevel review process. First, the chemist performing the analysis reviews the data for accuracy, precision, quality control, and method compliance factors. Subsequently, a higher level chemist, trained and dedicated to data overchecking, performs an identical comprehensive review of the data. After the hard copy report is generated, a final review for completeness is performed by department coordinator or group leader personnel.

We are proud of the national reputation we've earned for producing scientifically valid, accurate, precise, and regulatory-compliant data. Along with our corporate ethics and internal training programs, our quality policy statement gives employees clear requirements for the production of analytical data.

Our Quality Policy Statement states:

We strive to provide the highest quality data achievable by:

- Describing clearly and accurately all activities performed.
- Providing accountability and traceability for each sample analyzed through the use of our LIMS.
- Emphasizing a total quality management process.
- Providing thorough documentation and explanation to qualify reported data that may not meet all requirements and specifications but is still of use to the client.
- Responding immediately to indications of questionable data, out-of-specification occurrences, equipment malfunctions, and other types of laboratory problems.
- Providing a work environment that ensures accessibility to all levels of management and encourages questions and expression of concerns on quality issues to management.

Employees are evaluated by and held to high standards of integrity and ethics set forth in our Personnel Manual.

Quality Assurance (QA) Program

Performance Management system, and Statement of Values. These concepts are taught in our Quality and Ethics training. Understanding that improprieties, such as failure to conduct the required test, manipulation of test procedures or data, or inaccurate documentation will not be tolerated. Intentional misrepresentation of the activities performed is considered fraud and is never condoned.

The administration of our QA Program is the responsibility of the Quality Assurance Officer, in cooperation with all levels of management. To ensure that corrective actions are taken immediately, the QA Officer reports directly to the President. The Quality Assurance Officer does not have any direct supervisory responsibility for the generation of technical data thus avoiding any "conflict of interest" which could interfere with the QA Program.

The objectives of our Quality Assurance program, as directed by corporate management are:

- To ensure quality control procedures are established so data generated in the laboratory are within acceptable limits of precision and accuracy.
- To ensure procedures are established to document that these quality control measures are, in fact, being carried out.
- To ensure procedures are established that minimize the possibility of loss, damage, or tampering with the data.
- To ensure that all significant laboratory problems are investigated and corrective action is documented.
- To ensure that all procedures are controlled and current.
- To ensure that training records are maintained to document that staff has the necessary education, training, and experience.
- To ensure that all analytical data are traceable to:
 1. The analytical method employed in the data generation process.
 2. The date the analysis was performed, as well as the analyst who performed the test and specific instrument used.
 3. The raw data generated during the performance of the test.
 4. The condition of any instrument or equipment, and the status of the quality control system at the time it was used in the test.
 5. All reagents and standards used during the procedure.

The formal structure of our QA Program is described in a set of standard operating procedures (SOPs). Copies are distributed to each technical group leader and available to all laboratory personnel as hard copies and on the Intranet. The

Responsibilities of the Quality Assurance Unit

QA Department is responsible for ensuring that all methods and procedures performed by our technical groups are documented in SOPs and updated on an annual basis.

- To perform comprehensive audits of laboratory and support areas.
- To review and approve standard operating procedures.
- To monitor cGMP and GLP activities.
- To work closely with clients and regulatory agencies in auditing our facilities.
- To correspond with clients and regulatory agencies.
- To train laboratory and support personnel in EPA, cGMP, and GLP regulations.
- To perform quality assurance functions directed by the GLP regulations.
- To generate and distribute monthly and quarterly quality status reports to management.

The QA Department is responsible for preparing quality assurance project plans (QAPPs) for submittal to the EPA or regulatory agency and for compliance with plans submitted to us by clients. QA personnel audit a representative sampling of data package deliverables before their release to clients.

Proficiency Testing

Proficiency samples and check samples are routinely submitted to the laboratory by outside organizations. The concentrations of certain analytes are known to the submitters, but not to our laboratory. Proficiency testing programs are part of an accreditation process, and results of the samples must be within limits defined as acceptable by the submitting organization to receive or maintain accreditation.

Participation in check sample programs is voluntary and results are used to compare our laboratory's competence to other participating laboratories.

The following is a list of proficiency testing and check sample programs in which Lancaster Laboratories participates.

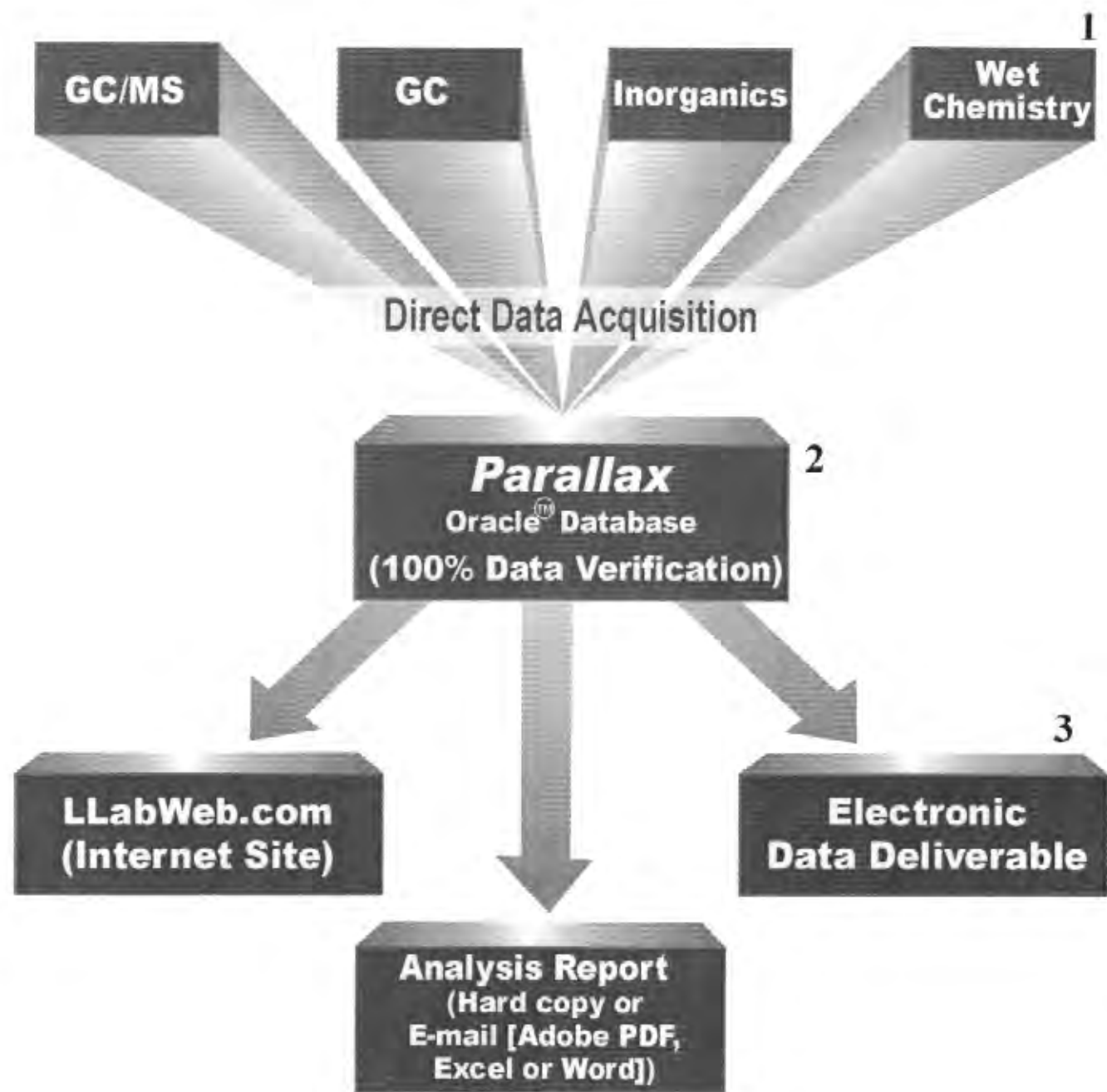
Organization	Sample Type	Analytes
NIST-approved vendor	Potable water	Organic and inorganic parameters required for Safe Drinking Water Act (SDWA) and microbiological contamination
NIST-approved vendor	Wastewater and solid & hazardous waste	Various pollutants
New York Department of Health	Potable/nonpotable water and solid & hazardous waste	Various organic and inorganic pollutants
North Carolina Dept. of Environmental Health and Natural Resources	Wastewater	GRO, DRO, Color, MBAS, various organic and inorganic pollutants
Analytical Products Group	Wastewater	Various organic & inorganic pollutants
Analytical Standards, Inc.	Blind whole water	Various organic & inorganic pollutants
U.S. Army Corps of Engineers	Water and Solids	Various organic & inorganic pollutants

Analysis of Quality Control Samples

Each specific analytical method includes the particular quality control requirements that must be performed to ensure that the data produced are of known quality. In addition to the necessary calibration standards, quality control checks may consist of one or several of the following different types: blanks, spikes, duplicates, reference materials, and control samples, as appropriate for the designated analysis. Many of our chromatographic analyses require surrogate and internal standards to evaluate analytical efficiency.

The results of all quality control samples are entered into databases in the LIMS in the same way as the results of client samples. Reports are generated to compare the individual values with the acceptance limits and inform the analyst if the results of the quality control tests meet the specifications. If the results are not within the acceptance criteria, corrective action suitable to the situation must be taken. This may include, but is not limited to, checking calculations, examining other quality control analyzed within the same batch, qualifying results with a comment stating the observed deviation, and reanalysis of the samples in the batch.

Monthly reports are generated through our LIMS and display the results for all quality control analyses, including mean and standard deviation. These reports are examined by the Quality Assurance Department to check for trends that may indicate method bias. Management and analysts may access quality control charts at any time to view real-time data. These programs have been found invaluable in monitoring our analytical procedures. They help detect situations where a system was trending toward loss of control and correct the circumstances before the problem becomes serious enough to affect the integrity of the sample results.



1. Analytical data is evaluated against method, client, and program requirements. Once approved by the analyst, the data is electronically transferred into our Oracle-based LIMS and reviewed again by the analyst.

2. Data verification is performed by experienced, dedicated staff on 100% of Lancaster Labs' data to ensure correction completion and accuracy of data. This includes review of calibration, batch quality control, method, state, and client requirements.

3. Multiple reporting formats are available including Internet access, e-mailed reports, and electronic data deliverables. All data formats are generated from a single master data file to ensure consistent results.

Data Deliverable Options

Analytical Reports

Our standard analytical report includes:

Cover page listing the client description of all samples submitted in the group, the date submitted, the corresponding LLI sample number, and the purchase order number.

Results page provides the analytical result for each test performed, reporting limits, and may also include narrative results and technical comments.

Laboratory Chronicle immediately follows the analytical results and includes the method, date and time extracted and analyzed, and the name of the analyst who performed the test.

Available upon request:

Quality Control Summaries include method blank results; laboratory control, matrix spike, and surrogate recoveries; acceptance criteria; and relative percent difference values.

An example analytical report in Microsoft Word format can be found at the end of this section. Reports can be provided in Excel (spreadsheet) and Adobe PDF files upon request.

Electronic Data Deliverables

Our highly experienced staff of computer programmers and electronic data technicians support more than 7 standard and 100 custom formats and produce more than 5000 data files a year. The flexibility of our Oracle-based data system allows us to create new formats with very short lead time and to make quick changes to existing custom formats.

Available formats include the following:

- ASCII Comma Delimited, Tab Delimited, and Fixed Length
- Client- or Project-Specific Formats
- Microsoft Access (.mdb) and Excel (.xls)
- NJDEP SRP HazSite (HZRESULT data)
- Enviro Data
 - 3DM (Delaware)
- EQulS
 - CA EDF (COELT)
- ERPIMS
 - EDMAN (EPA Region 5)
- GIS/Key
 - MEDD (EPA Region 2)
- ITEMS
 - Terrabase (Integrate-Level 2)
- Locus

We stand behind the quality of our electronic data by providing a 100 percent manual quality assurance review of all data fields for new formats and a 10 percent review thereafter. We also provide extensive automated EDD review and use several commercial products, such as EQulS ELDC, EDF EDCC, and NJDEP SRP.

LLabWeb.com

Lancaster Labs Internet site LLabWeb.com allows 24/7 access to verified data that's updated every 10 to 15 minutes. Our site offers two levels of security including SSL encryption and user-specific authorizations.

Access is easy. Just select a user ID of 10 characters, pass it on to your project manager and a password will be mailed to you within a few days.

We provide:

- 100% verified analysis data.
- Access to results, sample receipt, sample description, and financial information.
- Data filters to display positive hits above the MDL or LOQ.
- Technical comments on your samples available on-line.
- Historical data back to June 2000.

Data Packages

We offer data packages consistent with EPA CLP, NJDEP, and other state or agency formats. Custom formats are also accommodated. Data packages include extensive supporting data most often used for validation purposes. These packages include but are not limited to:

- Case narratives.
- Method summaries and references.
- Analytical reports and quality control summaries.
- Raw sample and quality control data (instrument printouts, chromatograms).
- Standards data.
- Calibration information.

We perform a two-tiered review of every data package to ensure the highest level of data quality. Our initial review for technical and project compliance is performed by trained staff in each technical department. Members of the Data Deliverables Department, who are trained as data reviewers, perform content and quality control (QC) compliance reviews. Quality Assurance (QA) staff will review a representative sampling of the packages for project and QC compliance.

Data Packages on CD-ROM

You may also request to have data packages scanned onto a CD-ROM. Upon completion, data packages are scanned as an Adobe PDF file. This file remains active on our network (with daily backup) for at least six weeks. Each CD holds up to 14,000 pages. Bookmarking the document to match the table of contents makes it quick and easy to locate each section. Please contact your business development representative to discuss this option.

Analysis Report



ANALYTICAL RESULTS

Prepared for:

XYZ Corporation
c/o Mr. Project Manager
PO Box 13
Leola, PA 00000

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 753934. Samples arrived at the laboratory on Saturday, March 10, 2001. The PO# for this group is 4500063061-0508 and the release number is 00170.

Client Description

MW-18/S-3 Grab Soil Sample
MW-15/S-2 Grab Soil Sample

Lancaster Labs Number
3567820
3567821

METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the laboratory chronicles.

1 COPY TO

Attn

Questions? Contact your Client Services Representative
NAME at (717) 656-2300.

Respectfully Submitted,



Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 13023
Lancaster, PA 17605-2425
TEL: 656-2300 FAX: 656-2691

Analysis Report



Page 1 of 1

Lancaster Laboratories Sample No. SW 3587821

Collected: 03/09/2001 14:10 by SR

Account Number: 09614

Submitted: 03/10/2001 10:15

XVA Corporation

Reported: 03/16/01 at 08:37 AM

c/o Mr. Project Manager

Discard: 4/16/01

PO Box 13

MW-15/S-2 Grab Soil Sample

Leola, PA 00000

Sample Location Identification

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Units	Dilution Factor
05321	TPH-GRO API (Soils)	N/A	7.2	1.3	mg/kg	24.3
According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 1-methylpentane and 1,2,4-trimethylbenzene. The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.						
00111	Moisture	N/A	12.0	0.55	% Dry wt	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as received basis.						
00182	BTEX/MTBE					
08183	Benzene	71-43-2	140.	6.5	ug/kg	24.3
08184	Toluene	108-88-3	380.	6.5	ug/kg	24.3
08185	Ethylbenzene	100-41-4	26.	6.5	ug/kg	24.3
08186	Total Xylenes	1330-20-7	160.	17.	ug/kg	24.3
08187	MTBE	1634-04-4	33,000.	880.	ug/kg	970
The analysis for volatiles was performed on a sample which was preserved in methanol. The reporting limits were adjusted appropriately.						

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
05321	TPH-GRO API (Soils)	API, Rev 5/5035	1	03/12/2001 06:24	Stephanie A. Selie	24.3
00111	Moisture	EPA 160.3 modified	1	03/12/2001 19:50	Justin M. Bowers	1
08182	BTEX/MTBE	SW-846 9020A/5035	1	03/12/2001 06:24	Stephanie A. Selie	24.3
08182	BTEX/MTBE	SW-846 9020A/5035	1	03/12/2001 10:57	Stephanie A. Selie	970
08390	High Level Volatile Soil Prep	EPA SW846 Method 5035	1	03/10/2001 14:17	Medina A. Long	1



Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
Tel: 650-2300 Fax: 717-650-7887

L255 Rev: 9/99/00

Analysis Report



Lancaster Laboratories

Where quality is a science.

Quality Control Summary

Page 1 of 1

Client Name: XYZ Corporation
Reported: 03/16/01 at 06:33 AM

Group Number: 753034

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS REAC	LCSD REAC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 01067A36	Sample number(s): 3567820-3567821							
TPH-GRO API (Soils)	< 1.	1.	mg/kg	65		66-79		
Benzene	< 5.	5.	mg/kg	100		83-120		
Toluene	< 3.	3.	mg/kg	100		83-127		
Ethylbenzene	< 5.	5.	mg/kg	101		87-137		
Total Xylenes	< 15.	15.	mg/kg	104		88-120		
MTBE	< 20.	20.	mg/kg	88		63-154		
Batch number: 010718200048	Sample number(s): 3567820-3567821							
Moisture				100	100	89-101	0	4

Sample Matrix Quality Control

Analysis Name	MS	MSD	MS/MSD	RPD	RPD	DUP	DUP	Dup RPD Max
Batch number: 01067A36	Sample number(s): 3567820-3567821							
TPH-GRO API (Soils)	59	58	72-73	1	10			
Benzene	113	110	84-113	9	10			
Toluene	88	109	66-120	9	10			
Ethylbenzene	107	118	66-131	10	10			
Total Xylenes	100	110	67-122	9	10			
MTBE	144	154	51-155	7	10			
Batch number: 010718200048	Sample number(s): 3567820-3567821							
Moisture				10.6	21.6	8		18

Surrogate Quality Control

Analysis Name: TPH-GRO API (Soils)
Batch number: 01067A36

	Trifluorotoluene-P	Trifluorotoluene-P
3567820	121*	120
3567821	116	113
Blank	104	104
LCS	110	106
MS	105	103
MSD	104	109
Limits:	53-116	71-128

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The background result was more than four times the spike added.



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References/Project Experience

References

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Project Experience

Petroleum

Exhibit 1

Description

Analysis of petroleum constituents in water, soil, and air samples for four of the largest oil companies and several other oil companies. These programs require coordination with consultants in all geographic regions of the U.S. Programs require 95% compliance with TAT, holding time, and QC requirements.

Regulatory Program

RCRA, Due Diligence

Sample Matrix

Air, Soil, and Water

Class of Analytes

BTEX, MTBE, PAHs, GRO/DRO API, CA LUFT, and other state-specific methods

Approximate Dollar Value

Contracts totaling approximately \$6 million/year

Deliverables

Various

Exhibit 2

Description

Lancaster Laboratories provides analytical support for a major oil company's waste management, site assessment, and remediation programs. We opened a satellite office in Richmond, California, that provides project management, bottles and sampling kits, and pack-and-ship services.

Regulatory Program

RCRA Hazardous Waste Classification & Groundwater Monitoring

Sample Matrix

Groundwater, Soil, Hazardous Waste, Air

Class of Analytes

Volatiles, Semivolatiles, Pesticides, Herbicides, Metals, and Miscellaneous Inorganics

Client-specific Pesticide and Herbicide HPLC analyses

STLC Pesticides and Metals

Approximate Dollar Value

\$1.7 million (ongoing)

Deliverables

CA COELT EDD

Exhibit 3

Description

Lancaster Laboratories provides analytical support for a major oil company's UST program. These programs require coordination with project managers and sampling teams from consulting firms on the West Coast.

Regulatory Program

RCRA UST (SAR)

Sample Matrix

Groundwater, Soil, Air

Class of Analytes

BTEX, MTBE, oxygenates, TPH-GRO, TPH-DRO, PAHs, TPH GCFID, and PPL Metals (these are the ten most common analyses)

Approximate Dollar Value

\$3.9 million (ongoing)

Deliverables

CA COELT EDD

Large Projects/Superfund

Exhibit 1

Description

Lancaster Laboratories provides analytical support for a remedial design project on the Hudson River. Up to 500 sediment samples are analyzed weekly for PCBs. Electronic deliverables are provided in 10 business days with an on-time rating of 100%.

Regulatory Program

USEPA Region II, Superfund Site

Sample Matrix

Sediment

Class of Analytes

PCBs

Approximate Dollar Value

\$316K (ongoing)

Deliverables

Full Deliverables Data Package

Client-Specific EQUS Electronic Deliverables

Exhibit 2

Description

Lancaster Laboratories provided analytical testing for a Pennsylvania Act 2 characterization site from Fall 2002 to 2003.

Regulatory Program

Pennsylvania Act 2

Sample Matrix

Soil/Water

Class of Analytes

TCL Volatiles + TICs by SW-846 8260B
PCBs by SW-846 8082
Low-Level and High-Level 5035 Prep
Hexavalent Chromium by SW-846 7196A
TCL Semivolatiles by SW-846 8270C
TCLP/SPLP by SW-846 1311/1312
TAL Metals by SW-846 6010B/7471A/7470A

Approximate Dollar Value

\$600K

Deliverables

Full Deliverables Data Package
EQuIS Electronic Deliverables

Exhibit 3

Description

Analysis of soil and groundwater from site in Cape Fear, North Carolina.

Regulatory Program

RCRA Facility Investigation

Sample Matrix

Soil and Groundwater

Class of Analytes

Appendix IX Volatiles (5035/8260B), Acrolein and Acrylonitrile, PAHs, Formaldehyde, Ethylene Glycol, Methane, Ethane, Ethene and Propene by 8015B Modified, RCRA Metals, TOC, Ferrous and Ferric Iron, Wet Chemistry

Approximate Dollar Value

\$113K (ongoing)

Deliverables

Full CLP-like Data Package
Custom EDD

Exhibit 4

Description

Lancaster Laboratories provides analytical services for a RCRA Facility Investigation for a major manufacturer of aircraft engines.

Regulatory Program

RCRA

Sample Matrix

Groundwater and surface soil

Class of Analytes

TCL Volatiles by SW-846 8260B

TCL Semivolatiles by SW-846 8270C

PCBs by SW-846 8082

CLP forms

TPH by GC/FID

TAL Metals by SW-846 6010B

ICLP and SPLP Leachates

Hexavalent Chromium

Anions by IC

Approximate Dollar Value

\$3.1 million (ongoing)

Deliverables

Full CLP-like Data Package and Electronic Diskette
Deliverables

Exhibit 5

Description

Publicly Owned Treatment Works (POTW) discharge monitoring analyses for plant in Oneida, Tennessee. Client is a major railroad corporation.

Regulatory Program

Clean Water Act

Sample Matrix

Wastewater

Class of Analytes

PAHs, BTEX, TN Extractable Petroleum Hydrocarbons, Methane, Carbon Dioxide, Sulfate, Nitrate

Approximate Dollar Value

\$52K (ongoing)

Deliverables

Analytical results with QC Summary, Case Narrative, and Excel disk

Exhibit 6

Description

Environmental Laboratory Services in accordance with a corporate master agreement.

Regulatory Program

Due Diligence or Remedial Sites

Sample Matrix

Water, Soil, Air

Class of Analytes

Various, predominately SW-846 protocols for Volatiles, Semivolatiles, and Metals; Waste Classification; state-specific TPH methods. Contract required 10-calendar-day turnaround.

Client requires electronic invoicing submitted over the Internet using proprietary software and database.

Approximate Dollar Value

\$3.2 million (ongoing)

Deliverables

Results with QC Summaries

Exhibit 7

Description

Analysis of soils and waters at select gas transmission stations along a pipeline in several mid-Atlantic states. Each site consists of 30 to 100 soils and some waters. Technical project requirements include customized quality control and spiking criteria. The lab successfully analyzed from 200 to 325 soils and waters each month with 100% compliance of TAT requirements.

Regulatory Program

Administrative Consent Order

Sample Matrix

Soil and water

Class of Analytes

Custom list of volatiles by SW-846 8260

Custom list of semivolatiles by SW-846 8270

PCBs by SW-846 8081, Trace Metals, GRO/DRO

Approximate Dollar Value

\$4.7 million (ongoing)

Deliverables

EPA Level III hard copy data packages and custom electronic deliverables in 21 days

Exhibit 8

Description

Lancaster Labs provided analytical support for a highly contaminated Superfund site located in Pennsylvania.

Regulatory Program

CERCLA; EPA Region III

Sample Matrix

Soil, carbon, tar, sand, wipes, groundwater, building materials

Class of Analytes

TCLP Arsenic	PAH by GC/MS
TCL Volatiles	TCL Semivolatiles
O-Nitrophenol and O-Nitroaniline by GC/MS SIM	
Aniline by GC/FID and GC/MS	

Approximate Dollar Value

\$1.6 million over 7 years

Deliverables

Full deliverables data packages and electronic data deliverables

Exhibit 9

Description

Lancaster Laboratories provided analytical support for a Remedial Investigation at a major manufacturer's alumina plant in Texas. The plant and surrounding areas were designated a Superfund site because of historical discharges of mercury into the local bay by a chlor-alkali processing plant. A preliminary site-characterization study identified other hazardous organic and inorganic constituents in soil and groundwater samples. We analyzed approximately 5800 soil, sediment, and water samples and over 1200 finfish- and shellfish-tissue samples during a 23-month period.

Regulatory Program

CERCLA; EPA Region VI

Sample Matrix

Soil, sediment, water, finfish, shellfish

Class of Analytes

Appendix IX Volatiles	Trace Metals
Appendix IX Semivolatiles	Mercury
Appendix IX PCBs	Misc. Wet Chemistry

Approximate Dollar Value

\$740K

Deliverables

Fully validatable data packages; custom electronic deliverables

Exhibit 10

Description

Lancaster Labs provided analytical services for a Superfund site at a rail yard in Paoli, Pennsylvania.

Regulatory Program

CERCLA

Sample Matrix

Soil, groundwater, effluent, influent and oil

Class of Analytes

Full TCLP, Ignitability, Corrosivity, Reactivity, PCBs, Custom TPH by 8015B, TAL Metals and BTEX

Approximate Dollar Value

\$150K

Deliverables

Reduced Data Package

Exhibit 11

Description

Lancaster Laboratories provided professional consultation and analytical services to support the Bridgeport Rental and Oil Services (BROS) Superfund Site Investigation. We completed a site feasibility study, summarized our findings and presented the results to the PRP Technical Committee as well as USEPA Region II and NJDEP. Our same-day courier provided daily pickup and delivery of sample supplies to the site. We provided support to the BROS field team during quarterly groundwater sampling events. Data packages were validated by a third-party validation firm.

Regulatory Program

USEPA Region II CERCLA
NJDEP

Sample Matrix

Soil (NJDEP Methanol VOCs)
Sediment (EnCore™ Low-Level VOCs) Groundwater
Surface Water

Class of Analytes

TCL Volatiles SW-846 8260B
TCL Semivolatiles SW-846 8270C
TCL Pesticides/PCBs SW-846 8081/8082
TAL Metals SW-846 6010/7000
Organic Acids by HPLC
Diesel Range Organics (DRO)
Gasoline Range Organics (GRO)
Total Organic Carbon (TOC)
Methane, Ethane, Ethene

Wet Chemistry parameters including: Alkalinity, Carbonate, Ammonia, Hardness, Sulfide, Sulfate, Nitrite, Nitrate, Chloride, COD, TSS, TDS, TKN, orthoPhosphate
Hazardous Waste Characterization including: Ignitability, Corrosivity, Reactivity, TCLP and SPLP Volatiles, Semivolatiles, Pesticides/Herbicides, and Metals

Approximate Dollar Value

\$1.5 million (ongoing)

Deliverables

EPA Level IV Data Package
EQulS Electronic Data Deliverables

Government

Exhibit 1

Description

Pennsylvania HSCA Contract ME96521 - Laboratory analytical services for organic and inorganic chemical analyses for hazardous substances. 2-, 7-, 14-, or 28-day turnaround times required.

Regulatory Program

Pennsylvania Hazardous Sites Cleanup Act (HSCA)

Sample Matrix

Soil, Water, Waste

Class of Analytes

Target Compound List and Target Analyte List by CLP and SW-846 Methodologies

SW-846 5035 Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples (Low Level)

Wet Chemistry by EPA 600-4/79 and Standard Methods
Volatile Organics in Water by EPA 524.2

Approximate Dollar Value

\$2.5 million (ongoing)

Deliverables

Full CLP Level IV Deliverables
Customized multisample results summaries
Customized Electronic Deliverables

Exhibit 2

Description

Analytical support for the U.S. Army Center for Health Promotion and Preventative Medicine (CHPPM) Contracts DAAD05-88-D-0081, DAAD05-90-D-7033, DAAD05-96-D-7027, and DAAD05-02-D-0037. Project-specific methods and detection limits are required.

Regulatory Program

U.S. Army CHPPM

Sample Matrix

Ground & Waste Waters, Soil, Sludge, Sediments, Air, Wipes

Class of Analytes

CLP SOW; SW-846 Volatiles, Semivolatiles, Pesticides, PCBs, and Explosives; EPA 600 Series; EPA 500 Series Drinking Water; and NIOSH and OSHA methods

Approximate Dollar Value

\$6.3 million (ongoing)

Deliverables

Custom data package and EDD in 15 business days

Exhibit 3

Description

USACE Base Realignment and Closure project at Fort Monmouth Camp Evans Army Base in New Jersey (NJ). Approximately 50 percent of samples required RUSH turnaround time. All soil analyses had to meet NJ Cleanup Criteria. U.S. Army Corps Contract Number DACA31-96-D-0026. Occurred in the Spring and Fall of 1999.

Regulatory Program

USACE; NJDEP

Sample Matrix

Soil and Water

Class of Analytes

SW-846 and EPA methods for PCBs, TCL Volatiles, TCL Semivolatiles, TAL Metals, TOX, TOC, Grain Size, and TP11.

Approximate Dollar Value

\$180K over 6 months

Deliverables

NJ Reduced Deliverables

Exhibit 4

Description

Lancaster Labs performed analysis of water, sediment, and biota samples as a follow-up to a remediation project in Michigan.

Regulatory Program

EPA, USACE

Sample Matrix

Soil and tissue

Class of Analytes

PCBs, PCB Congeners, AVS SEM Metals, fish tissue

Approximate Dollar Value

\$45K

Deliverables

Type I Deliverables; EDD

Exhibit 5

Description

Lancaster Laboratories provides environmental analysis as a subcontractor to the Prime Contractor (Parsons Engineering Science, Inc.) for Air National Guard Readiness Center Contract Number DAHA90-D-0010. The programs have included activities at Martin State Airport, MD; State College, PA; Ft. Indiantown Gap, PA; Harrisburg ANG; and Vermont ANG. Contract requires 28 – 35 day turnaround for data deliverables.

Regulatory Program

USACE, State Agencies

Sample Matrix

Groundwater, Soil

Class of Analytes

GC Volatiles by SW-846 8021B

TCL Volatiles by SW-846 8260B

TCL Semivolatiles by SW-846 8270C

TAL Metals by SW-846 6010B (total and dissolved)

TPH-GRO by SW-846 8015B

TPH-DRO by SW-846 8015B

TCLP Semivolatiles, Volatiles, and Metals

Approximate Dollar Value

\$305K (ongoing)

Deliverables

EPA Level III and custom EDD

Tissue

Exhibit 1

Description

Analytical services support for the U.S. Army Corps of Engineers, Detroit District's evaluation of effects of District projects on environmental characteristics of U.S. waters in the Trenton Channel.

Prime Contract

DACW35-95-R-0007

Sample Matrix

Sediment, Fish, Worms

Class of Analytes

Fish & Worms—Mercury, Fats (lipids), Canadian list of PCB Aroclors and Congeners. Soxhlet extraction was used for PCBs.

Sediments—Oil & Grease, PCB Aroclors, Total Phosphates, Semivolatiles (8270B) & TICs, Total Organic Carbon.

Approximate Dollar Value

\$80K

Deliverables

Full & Reduced Data Packages (Level III & Level IV)
Custom Spreadsheet Electronic Deliverables

Exhibit 2

Description

Analytical support for a river study area ecological sampling plan. The project required preparation of tissue-specific SOPs and MDL studies for all analytical procedures. Sediment samples were analyzed for corresponding analytes as well as AVS/SEM, TOC, and grain size.

Regulatory Program

USEPA Region II Administrative Order on Consent;
CERCLA

Sample Matrix

Caged bivalves, crab, mummichog, american eel, striped bass, white perch, edible fillet

Class of Analytes

Semivolatile Organics (SW-846 8270B)/Soxhlet extractions
Organochlorine Pesticides/PCBs (SW-846 8081A/8082)/
Soxhlet extractions

Chlorinated Herbicides (SW-846 8151A)/Soxhlet extractions
TAL Inorganics including Cyanide (SW-846 6010B/7471A/
9012A)/Microwave digestion

Moisture (ASTM)

Total Lipids (NOAA)

Approximate Dollar Value

\$750K (ongoing)

Deliverables

Full deliverables data packages and electronic deliverables

Research & Development*Exhibit 1***Description**

Lancaster Labs provided method development and MDL and IPR method validation for site-specific contamination. The newly developed SOP for extraction and analysis was approved by EPA Region III within 2 weeks of completion.

Regulatory Program

CERCLA; USEPA Region III

Sample Matrix

Soil and Water

Class of Analytes

TCL Semivolatiles (OLM03.2)

→ 2,4-diaminotoluene, 2,6-diaminotoluene, 4,4'-methylenedianiline

Approximate Dollar Value

\$30K for Development Phases I and II, \$325K for project

Deliverables

Level IV data packages were provided and underwent 100% data validation. EQUS disk deliverables were also provided.

Geophysical Surveys

Geophysical surveys efficiently map seabed morphology and sub-bottom stratigraphy, often resulting in substantial project cost savings. Remote sensing systems utilized by our geologists and geophysicists include: seismic reflection and refraction sub-bottom profilers - ground penetrating radar - side scan sonar - marine magnetometer - video supported ROV. Representative applications of geophysical surveys include:



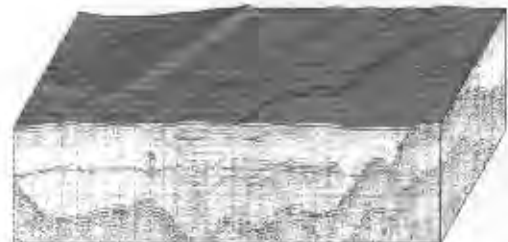
Remediation studies

High-resolution side scan sonar surveys were conducted to monitor for bentonite releases during directional drilling operations. Repetitive side scan sonar and hydrographic cross-sectional surveys are performed over the location of the drill bit during drilling operations. The sonar image to the left shows a release of bentonite, which resulted in an immediate cessation of drilling.



Borrow site investigations

Geophysical surveys supporting borrow site investigations often include subbottom profiling. At the Timbalier Island sites, magnetometer data were collected to identify pipelines and other ferrous objects that are present in the candidate borrow sites.



Pipeline and cable route investigations

Sub-bottom profiling supporting dredging and linear siting projects provide regional subsurface information that is used to strategically identify core and boring locations. The use of the geophysical data affords a more comprehensive understanding of the local geological environment than geotechnical samples alone can provide.

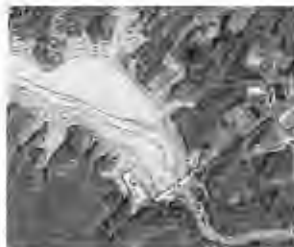


Marine terminal design

Comprehensive marine geophysical surveys for marine terminal design include magnetic surveys to identify pipelines, cables and remnant structures from older facilities. (The lower left anomaly is from an existing operational structure while the anomaly in the upper right is related to the remains of an older removed structure).

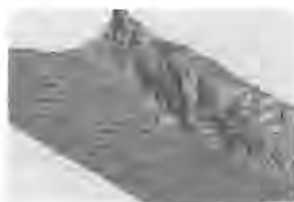
Hydrographic Surveys

Automated hydrographic surveys precisely chart underwater topography. OSI employs the following technologies for this purpose: GPS vessel positioning • computerized navigation and data logging • single and dual frequency depth sounding • multibeam sonar • towed sea sled profiling. Representative hydrographic surveys include:



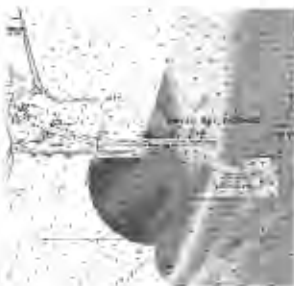
Lake Chesdin, Petersburg, Virginia

Ocean Surveys performed an extensive hydrographic survey of Lake Chesdin, located on the Appomattox River near the City of Petersburg, VA. OSI utilized a DGPS controlled hydrographic survey vessel, equipped with a single-beam digital depth sounder, and computer navigation and data logging system. A total of 500 survey transects were run to generate capacity computations accurate to within 3-4%.



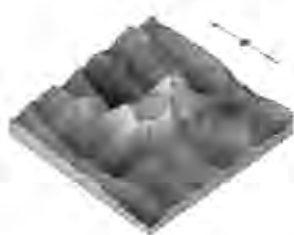
Detroit River Rock Cut Inspection – Detroit, MI

For the Detroit District of the US Army Corps of Engineers, Ocean Surveys performed a multibeam hydrographic survey in the Detroit River. The objective of the survey was to inspect the side walls of the rock cut channel and identify pieces of rock which had fallen from the walls and became obstructions to navigation.



Winyah Bay Entrance – Georgetown, SC

During the period October 1999 – October 2001, Ocean Surveys provided the National Oceanic & Atmospheric Administration (NOAA) with multibeam hydrographic and side scan sonar surveying services to support NOAA coastal charting responsibilities throughout the southeast United States. Under this contract, OSI surveyed a 5 x 5 mile area adjacent to Winyah Bay Entrance, South Carolina. Following completion of this delivery order, Ocean Surveys was awarded an overall rating of "Excellent."



Mackinac Bridge – Straits of Mackinac, MI

The Mackinac Bridge, constructed during 1954-57, is the ninth largest suspension bridge in the world. It has a total length of five miles and a main span of 3800 feet. In September 2000, Ocean Surveys, Inc. (OSI) conducted a multibeam hydrographic survey around thirty (30) Mackinac Bridge piers to determine water depth and scour activity.



Lake Michigan – WI & MI

As part of a Detroit District program to periodically evaluate the condition of shoreline protection structures, OSI was contracted to conduct multibeam surveys of a total of eleven breakwaters along the shores of Lake Michigan in both Wisconsin and Michigan. The specific objectives were to identify structural failures in the breakwaters and erosional features, which might indicate a risk to their stability. Ocean Surveys' performance on this contract resulted in an ACASS rating of "excellent."

Oceanographic Monitoring

Ocean Surveys' diversified inventory of oceanographic and environmental instrumentation enables us to respond rapidly to client requirements. We routinely monitor: current velocity - wave height and direction - water level and tide - dissolved oxygen - conductivity and salinity - temperature - pH - turbidity - surface and bottom drift - wind velocity - barometric pressure. Representative oceanographic monitoring projects include:



Dye Dilution Study – Alexandria, Egypt

As part of a year-long multidisciplinary program, Ocean Surveys conducted a dye dilution study in the Mediterranean Sea off Alexandria, Egypt. The survey consisted of a 12-hour batch release of fluorescent dye into the 1 billion gallon per day discharge, followed by five daily plume mappings to document the temporal and spatial movements of the dye plume. The data were used by Metcalf & Eddy International, Inc. as input for their numerical modeling program to assess the suitability of the local Mediterranean Sea as receiving water for a proposed wastewater outfall.



Thermal Plume Mapping – Bridgeport, CT

Ocean Surveys performed a detailed field investigation to determine the location and extent of the discharge plume emanating from The Bridgeport Energy Power Generating Station. OSI installed in situ instruments to document the varying currents, water elevation, and water temperatures and conducted six synoptic thermal mappings timed to coincide with the occurrence of significant tidal flow conditions at the project site. Bridgeport Energy, LLC used the resulting data set to create a dynamic model of the plume for use in their discharge permit renewal application.



Current & Wave Monitoring – South Riding Point, Bahamas

Ocean Surveys conducted an oceanographic and atmospheric data collection program in support of El Paso Energy's engineering analysis of a proposed LNG terminal. Using state-of-the-art Doppler technology, Ocean Surveys collected a wide variety of data for the project including: 90 days of Acoustic Doppler Current Profiler (ADCP) current velocity and directional wave data, 90 days of meteorological data, two 13-hour tidal cycle CTD density structure mappings, and one 13-hour vessel-mounted ADCP current velocity mapping.



Ocean Outfall Monitoring – Ponce, PR

As part of an ongoing study, Ocean Surveys provides water quality monitoring services to Malcolm Pirnie, Inc. in support of their 301(h) Waiver and Mixing Zone Validation Study offshore of Ponce, PR. Services routinely provided include: "clean techniques" water sampling using hyper-accurate underwater navigation systems, ADCP current velocity monitoring, CTD vertical profiling, benthic sediment grab sampling, and ROV pipeline inspection. The Malcolm Pirnie/Ocean Surveys effort is aimed at securing a permanent 301(h) waiver for the Ponce outfall.



Benthic Habitat Delineation – Dorado PR

Ocean Surveys mapped the various benthic habitats in the vicinity of a proposed ocean outfall off Dorado, PR in support of Black and Veatch, Inc.'s 301 (h) waiver program. Using a variety of remote sensing and real-time data collection techniques including side scan sonar mapping, underwater videography, diver reconnaissance, diver quadrat surveys, as well as sampling of plankton, demersal finfish, and benthic organisms, OSI documented both the benthic habitats present in the area and the biological community assemblages present in each habitat unit. Additionally, the ambient current regime was documented with several ADCPs and drogues.



Benthic Habitat Delineation – Norwalk, CT

Ocean Surveys mapped the various benthic habitats along the Connecticut Light and Power Company's sub-sea cable corridor off Norwalk, CT. Using a variety of remote sensing and real-time data collection techniques including side scan sonar mapping, underwater videography, benthic sediment grabs, diver reconnaissance, diver quadrat surveys, and visual intertidal inspection, OSI documented the benthic habitats present in the area as well as the biological community assemblages present in each habitat unit. Additionally OSI identified and enumerated commercially important shellfish populations present in order to further document potential impacts of the proposed cable replacement.



Directional Drill Monitoring – Pismo Beach, CA

Tyco Submarine Systems landed three trans-Pacific fiber optic cables using horizontal directional drilling at Pismo Beach, CA with the benefit of OSI's bentonite release monitoring system. Using customized remote sensing techniques, Ocean Surveys helped Tyco satisfy California State permit requirements for undersea directional drilling. The Ocean Surveys field team detected bentonite drilling fluid releases in real time, which allowed Tyco to immediately take corrective action resulting in greatly reducing impact to the benthic ecosystem and minimizing project costs.



Riverbed Monitoring – Green Bay, WI

Working in Operating Unit 3 (OU-3) on the Fox River, Ocean Surveys completed a 3-month precision current velocity and sediment bed load monitoring program. OSI deployed two diver-installed monitoring stations on the riverbed each consisting of SonTek Acoustic Doppler Velocimeters (ADV), OBS turbidity sensors, and sediment bed load traps. Data from the project were used to calibrate models of contaminated sediment movement through OU-3.

Remotely Operated Vehicle

Augmenting our core group of services, Ocean Surveys also performs underwater inspections using a Remotely Operated Vehicle (ROV). Applications of Remotely Operated Vehicles include: inspection of underwater structures • marine archaeological investigations • benthic habitat documentation.



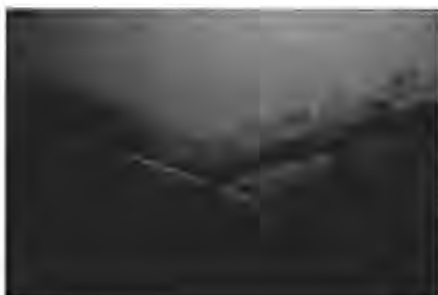
Deep Ocean Engineering Phantom HD2

The Deep Ocean Engineering Phantom HD2 is a lightweight, yet extremely capable ROV system featuring laser rulers, sediment blasters and color video. It also accommodates various manipulators and sonars allowing collection of precise data to a depth of 1,000 feet (300 meters). Underwater videography is collected using the Phantom's built-in wide-angle color camera. All video data is recorded and displayed in real time on a color monitor onboard the survey vessel.



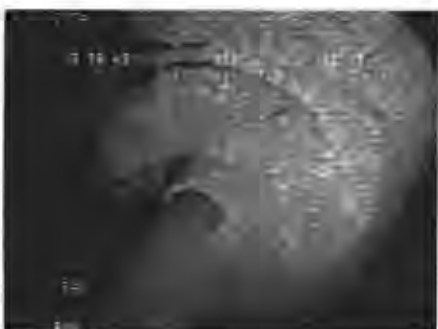
Benthic Habitat Documentation

OSI often utilizes ROV underwater videography in concert with a variety of remote sensing and real-time data collection techniques including side scan sonar mapping, benthic sediment grabs, and diver quadrat surveys to document benthic habitat. Benthic studies typically document the habitats as well as the biological community assemblages present within each habitat unit.



Target Identification (Marine Archaeology)

During side scan sonar and marine magnetometer surveys it is sometimes necessary to perform video inspection of recorded unidentified targets. Often times, constraints such as water depths, strong currents, and limited time prohibit the use of divers to perform the inspection. The Remotely Operated Vehicle provides an ideal resource for vessel controlled video documentation during these circumstances.



Underwater Structure Inspection

As part of an ongoing study, Ocean Surveys provided water quality monitoring services to support a 301(h) Waiver and Mixing Zone Validation Study offshore Ponce, PR. OSI employed the ROV to collect video data along the entire length of the outfall structure, paying particular attention to the six diffuser risers and the manways along the length of the pipe. OSI's underwater navigation system merged with the vehicle's internal fluid gimbed fluxgate compass provided extremely accurate sub-meter positioning during all phases of ROV operations.

Sediment Sampling and Imagery

Ocean Surveys provides vibratory, gravity and piston coring services to obtain continuous samples of unconsolidated sediment. All field personnel have 40-hour OSHA Health and Safety certification for sampling operations involving hazardous materials.



Shallow Water Coring Platforms

The image at left depicts Ocean Surveys' 36' x 16' piston boat alongside a 20' support vessel. "Candu" features sections which fold up for trailering, a 4' x 5' moon pool through which sampling or measurement equipment are lowered, and a tower assembly for handling vibratory corers and other devices. "Candu" is capable of 15 knot speed and has a 75-mile operating range. OSI also owns two smaller shallow water pontoon boats for sediment core sampling. These platforms measure 28' x 8' and 24' x 8', respectively.



OSHA 40-hour Health & Safety Certification

This photograph was taken during a project requiring OSHA, Modified Level D Health & Safety protocol. All OSI field personnel have 40-hour Health & Safety certification. The operators are in the process of removing a sediment core sample contained within a Lexan tube from the core barrel housing. The image at left shows the working platform aboard "Candu." The hinged side sections are clearly visible.



Correlating Physical and Remote Sensing Data

The image at left is from the Boston Harbor Navigation Improvement Project – a US Army Corps of Engineers funded program involving monitoring and improving the use of Contained Aquatic Disposal (CAD) cells as an alternative for contaminated sediment management. Following survey and coring operations, photographs of the split core samples were superimposed on the seismic reflection record to further identify the thickness of the placed sand cap overlying the contaminated dredged material.



Sediment Profile Imaging

Ocean Surveys employs a Sediment Profile Imaging (SPI) Camera during projects requiring the documentation of benthic habitat within the upper 20cm of sediment. In operation, the camera is lowered to the bottom and is externally triggered upon contact, releasing the prism housing and camera, which penetrate into the sediment. The knife-like edge on the bottom of the prism combined with the weight of the camera allows the prism to cut a vertical slice into the upper sediments.

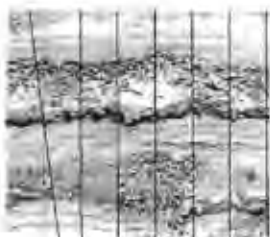
Marine and Freshwater Site Surveys

Ocean Surveys, Inc. (OSI) was founded in 1965 to provide industry and government with the technical expertise to acquire and interpret scientific data from both marine and freshwater environments. Company headquarters and OSI's Eastern Regional headquarters are located in Old Saybrook, Connecticut. A Midwest office is located in Northbrook, IL, and a Southeast office is located in the Research and Technology Park on the campus of the University of New Orleans.



Hydrography

Automated hydrographic surveys precisely chart underwater topography. OSI employs the following technologies for this purpose: GPS vessel positioning • computerized navigation and data logging • single and dual frequency depth sounding • multibeam sonar • towed sea sled profiling.



Geophysics

Geophysical surveys efficiently map seabed morphology and sub-bottom stratigraphy, often resulting in substantial project cost savings. Remote sensing systems utilized by our geologists and geophysicists include: seismic reflection and refraction sub-bottom profilers • ground penetrating radar • side scan sonar • marine magnetometer.



Coring & Sediment Sampling

Ocean Surveys provides vibratory, gravity and piston coring services to obtain continuous samples of unconsolidated sediment. All field personnel have 40-hour OSHA Health and Safety certification for sampling operations involving hazardous materials.



Oceanography & Limnology

Ocean Surveys' diversified inventory of oceanographic and environmental instrumentation enables us to respond rapidly to client requirements. We routinely monitor: current velocity • wave height and direction • water level and tide • dissolved oxygen • conductivity and salinity • temperature • pH • turbidity • surface and bottom drift • wind velocity • barometric pressure.



Remotely Operated Vehicle Inspection

Augmenting our core group of services, OSI also performs underwater inspections using a Remotely Operated Vehicle (ROV), the Deep Ocean Engineering Phantom HD2. The HD2 is a lightweight, yet extremely capable ROV system featuring laser rulers, sediment blasters and color video.

7. Brief resume of key persons, specialists, and individual consultants anticipated for this project:

a. Name & Title: George G. Reynolds Vice President, Hydrographic Section Manager	REPRESENTATIVE PROJECTS: Cape May & Ocean City, NJ and Indian River Inlet, DE – Program Manager for beach profiling surveys using towed sea sled; contract to Philadelphia District, US Army Corps of Engineers (USACE). Indian River Inlet, DE – Program Manager for multibeam hydrographic surveys performed for the Philadelphia District, USACE to support beach replenishment and surficial and subsurface investigations of the inlet, jetties, and riprap, respectively. Wilmington, NC – Program Manager in charge of coordinating all planning, field and data analysis for the Wilmington District, USACE. This project involved extremely challenging hydrographic surveys of both inland reservoirs and coastal project sites and resulted in an "Excellent" ACASS performance evaluation and a Certificate of Appreciation from the District Engineer. New York, NY – Program Manager in charge of coordinating all planning, field and data analysis for the New York District, USACE. The work involved multiple multibeam hydrographic surveys of inlet jetty structures along the southern shore of Long Island, NY. Chicago District – Program Manager in charge of coordinating all planning, field and data analysis for the Chicago District, USACE Indefinite Delivery Type Contract for single- and multibeam hydrographic, and side scan sonar surveying services. Southeast US – Program Manager in charge of coordinating all planning, field surveys and hydrographic data analysis for NOAA. Contract is a two year assignment to conduct multibeam hydrographic surveys in the southeast US to support NOAA's nautical charting efforts. Detroit, MI – Program Manager in charge of coordinating all planning, field and data analysis for the Detroit District, USACE Indefinite Delivery Type Contract for single- and multibeam hydrographic surveying services.
b. Project Assignment: Program Manager	
c. Name of Firm with which associated: Ocean Surveys, Inc.	
d. Years experience: With This Firm 27.0 With Other Firms 4.0	
e. Education: Degree(s) / Year / Specialization E.E. / 1973 / Electronics, Goodwin Tech., New Britain, CT A.S. / 1966 / Electronics, Hartford State Tech. College	
f. Active Registration: Year First Registered / Discipline ACSM Certified Inshore Hydrographer (#183), 1995 Health and Safety Certified (29 CFR 1910.120 & 1926.65)	
g. Other Experience and Qualifications relevant to the proposed project: Mr. Reynolds, OSI Vice President and Hydrographic Section Manager, oversees all hydrographic survey activities and provides logistical support for field activities, schedules survey personnel and equipment, and supervises project mobilization/demobilization. Since joining OSI in 1975, he has participated in or managed more than 1,000 hydrographic and marine geophysical survey projects. Mr. Reynolds also reviews all hydrographic survey products as part of OSI's QA/QC program. Mr. Reynolds has over twenty years experience in the design, calibration, operation and maintenance of hydrographic survey and navigation electronics. He has either participated in or has managed all multibeam hydrographic surveys performed by OSI to date. In addition to this project experience, he coordinated multibeam demonstrations for New York, Philadelphia, Detroit and Vicksburg (CERC) US Army Corps of Engineers.	

**R.J. Diaz & Daughters
6198 Driftwood Lane
Ware Neck, VA 23178
804 815-2252**

August 15, 2005

To: Tim Iannuzzi
From: Robert J. Diaz, President

I am providing this information in response to your quire to sediment profile imaging in Newark Bay.

R.J. Diaz & Daughters is a small minority owned business that specializes in environmental assessment in estuarine and marine systems, from intertidal to deep channel to coastal habitats (<http://www.courses.vcu.edu/ENG-esh/>). We have extensive experience monitoring environmental effects and changes in benthic habitats, especially disturbance related to channel dredging activities, and in assessing and mapping relative resource value of benthic habitats. We have developed specialized techniques for rapid turn-around of benthic impact assessments, including the collection and interpretation of data using sediment profile and surface cameras. Additionally, R.J. Diaz & Daughters has been instrumental in the development of color image analysis techniques for sediment profile images and small lightweight camera systems. We have developed methods for evaluating benthic habitat quality and changes to the resource value of benthic habitats and for mapping biological and geological gradients.

(1) Experience in conducting SPI surveys at dredged material disposal sites:

Listed are major projects involving dredged material and SPI. Points of contact are given at the end of each study:

Benthic habitat classification of potential open water disposal areas in Narragansett Bay, Rhode Island. P.I. and principle author of interpretive report for a sediment profile image (SPI) survey to characterize benthic habitats in 21 areas of Narragansett Bay and the Providence River selected by the New England Corps of Engineers as possible or existing disposal areas. The classification of stations into habitats was done "blind" without regard for area or station location prior to analysis. Initially, all images were evaluated and a basic habitat classification set-up. Four basic habitats with a total of nine subhabitat types were defined. A total of 211 stations were classified into the nine-habitat/subhabitat categories.

For New England District via Normandeau Assoc, Ann Pembroke (603) 472-5191 x169

Sediment profile camera reconnaissance of benthic habitats at a Cape Cod Bay disposal site. P.I. responsible for a SPI camera survey of an open water disposal site in Cape Cod Bay to document existing conditions and authored an interpretive report on existing conditions and long-term changes. Benthic habitats within the disposal area were compared to previous surveys and found to be similar in physical and biological properties between 1985 and 1994, based on sediment profile camera surveys. The benthic habitat quality present at the disposal site appeared to be very high. The general benthic habitat conditions may have actually improved

from 1985 to 1994. Average Organism Sediment Index and successional stage were higher in 1994 than 1985. The depth of the Macrofaunal Activity Zone, an indication of the layer of sediment that is actively mixed by the infauna, was about 10 cm. This would indicate that disposal of any contaminated material at the site would have to be thickly capped to prevent mobilization of contaminants.

**For New England COE, DAMOS via ENSR, James Blake, (508) 457-7900 x222,
JBlake@ensr.com**

Benthic Habitat Mapping of NJ/NY estuarine and coastal areas using sediment profile cameras for formulation of long-term dredged material disposal plans. P.I. for SPI camera surveys that included over 700 stations in the estuarine and coastal areas around Raritan, Upper, Lower, Newark, and many other small bays in the region. In charge of image analysis and interpretation. The goal of these surveys was to document existing benthic habitat conditions and provide detailed maps delineating benthic habitats. Based on analysis of the sediment profile camera data the benthic habitats in the region were diverse and range from low dissolved oxygen stressed to well-developed successional stage III communities. Based on the SPI and benthic data habitat maps were generated using GIS and criteria developed for assessing suitability of an area as a potential disposal site.

NOAA, Coastal Services Center, Charleston, SC, Pace Wilber, (843) 740-1234

Sediment profile camera surveys of the Gulf of Mexico open water underwater berm disposal area. P.I. for the sediment profile camera surveys at an underwater berm that was constructed from dredged material from the deepening of the Mobile ship channel. The berm was designed to provide subtidal habitat for the area's fisheries resources. Over a period of time that ranged from during construction to one-year post construction Dr. Diaz, with scientists from the Waterways Experiment Station, surveyed a series of stations on and around the berm with a sediment profile camera. A complete analysis of the sediment profile images was done to follow the recovery of the fauna. Reworking of the dredged material was also followed with the profile camera. The client then took the data generated and incorporated them into reports on the impacts of berm construction and on the evaluation of the resource value of the berm. The data from the sediment profile camera was also used to locate stations for collection of quantitative macrofaunal samples. Knowing the areas that had different sediment types saved considerable effort. The spread of dredged material away from the berm was also followed with the sediment profile camera. Impacts on the surrounding communities were estimated from the profile images.

**Waterways Experiment Station, Douglas Clarke, 800 522 6937 13770,
Douglas.G.Clarke@erdc.usace.army.mil**

Sediment profile camera surveys of the Galveston Bay open water disposal areas. P.I. for the sediment profile camera surveys at the open water disposal areas used for the deepening of the Galveston ship channel. Dr. Diaz, with scientists from the Waterways Experiment Station, surveyed the sites with a sediment profile camera. A complete analysis of the sediment profile images was done to follow the recovery of the fauna and reworking of the dredged material. The data from the sediment profile camera was also used to locate stations for collection of quantitative macrofaunal samples.

**Waterways Experiment Station, Douglas Clarke, 800 522 6937 13770,
Douglas.G.Clarke@erdc.usace.army.mil**

Sediment profile camera surveys of the Corpus Christi Bay open water disposal areas. P.I. for the sediment profile camera surveys at the open water disposal areas used for the deepening of the Corpus Christi ship channel. Dr. Diaz, with scientists from the Waterways Experiment Station, surveyed the sites with a sediment profile camera. A complete analysis of the sediment profile images was done to follow the recovery of the fauna and reworking of the dredged material. The data from the sediment profile camera was also used to locate stations for collection of quantitative macrofaunal samples.

**Waterways Experiment Station, Douglas Clarke, 800 522 6937 13770,
Douglas.G.Clarke@erdc.usace.army.mil**

Settlement of hopper overflow from test channel dredging operations in Delaware Bay. P.I. and principal author of interpretive report on thin-layers of sediment resulting from hopper dredge overflow. Dr. Diaz used SPI to detect the deposition of thin layers of dredged material from barge overflow operations at two area in Delaware Bay. Results indicated the lower bay site (LB) was more physically accommodated than the upper bay site (UB), which was more biologically accommodated. There was evidence that recent physical disturbance had occurred at several of the LS stations possibly from the dredging operations. Gray colored suspended material, indicative of hopper overflow material, was also observed at two stations. In the US area no evidence of recent physical disturbance was detected at any of the stations, but material that could have come from the hopper overflow was observed at one station. Evidence of hydrocarbon contamination was seen at one UB station in the form of "Oil Spots". Diaz et al. (1993, citation in SPI related section) found that sediments containing high concentrations of hydrocarbons had a unique signature in the SPI images and that this signature was significantly related to the occurrence of hydrocarbons.

**For Philadelphia District COE via Versar, William Burton, (410) 740-6086,
burtonwil@versar.com**

Chesapeake Bay/Baltimore channel deepening impacts. P.I. and principal author of interpretive report of this field project, which was a multi-disciplinary program designed to collect data for: 1. Determining the most environmentally suitable locations for placement of dredged material from the deepening of the main ship channel to Baltimore. 2. Evaluation of acute impacts from disposal. 3. Follow long-term recovery of benthic resources. An extensive database on benthic habitat characteristics, benthic community structure, and fish habitat utilization was collected from the main stem of the Bay. This project was funded at a level of about one million dollars and spanned a period of 10 years with close to a thousand box-core samples and over 5,000 SPI images collected.

**Baltimore District, COE, Robert Blama, 410 962-6068,
robert.n.blama@nab02.usace.army.mil**

Anacostia River active capping technology monitoring. P.I. and principal author of interpretive report of this field project to monitor the performance of new innovative capping and in-situ treatment technologies. The Hazardous Substance Research Center/South and Southwest (HSRC) at Louisiana State University, is conducting comparative validation of innovative

“active capping” technologies in the Anacostia River, Washington D.C. The goal of the cap is to ensure contaminants that migrate through the cap are absorbed, chemically bound, or degraded and not released into the water column. Three areas in the Anacostia River have been selected for the field demonstration with SPI used to assess cap thickness and integrity.

For Navy/EPA via Battelle, Andrew Bullard, bullarda@battelle.org

Benthic sampling of the nearshore area off Brunswick Harbor, Georgia. P.I. of SPI component and principal author of interpretive report. This study documented and mapped broad-scale benthic habitat conditions in and around potential open-water disposal sites.

For Savannah District COE via Barry A. Vittor and Associates, Mobile AL, Barry Vittor, (251) 633-6100

SPI Survey of Boston Harbor Navigational Improvement Project Confined Aquatic Disposal (CAD) Cells. P.I. responsible for a SPI camera survey of eight CAD cells in the Boston Harbor area and principal author of the interpretive report. Four years after the CAD cells were capped physical properties of the surface sediments may have reverted to background conditions with the apparent disappearance of the sand cap material. Geochemical properties appear to have remained the same with sediment color and apparent color RPD layer depth relatively similar between years. Benthos appear to still be in a recolonizing phase, which is likely related to the physically stressful nature of area within which the CAD cells are located.

For New England COE, DAMOS, via ENSR, James Blake, (508) 457-7900 x222, JBlake@ensr.com

Dredged material disposal site evaluation, SPI survey of Areas E and W, Rhode Island Sound. P.I. responsible for fieldwork to collect sediment profile camera images, analysis and interpretation of data, and writing the interpretive report. Data from multi-beam acoustics were incorporated in the interpretation of habitat conditions. The general sedimentary characteristics of Area E and W were similar with large patches of coarse sediments surrounded by finer sediments. Sediment types ranged from cobble to fine-sand with some silt at both Areas. Sediments at both Areas also had a similar sediment fabric with most finer sediment stations dominated by biological processes. Area E showed no signs of sediment layering. But in Area W two stations (W15 and W17) had thin layers of finer sediments that could have been related to recent sediment disturbance. In August 2003, Area E and to a lesser degree Area W appeared to be dominated by biological processes with biogenic features such as feeding pit and defecation mounds common. Biogenic activity of advance successional Stage III communities was a predominant factor in structuring both surface and subsurface sediments in Area E. Area W fauna appear to be advancing successional relative to previous years. It did not appear that sediments at any station in Area E or W were impacted by organic enrichment. Sediments underlying the apparent color RPD layer were light gray in color. Overall, benthic habitat conditions at both Area E and W, as measured by the OSI and other SPI parameters, appeared to be good with the only signs of stress to the benthos being physical forces such as sediment instability. The apparent high quality of the benthic habitats was primarily a function of the deep dwelling infauna and their associated biogenic activities. Benthic habitats in Area E appeared to have higher quality compared to those in Area W.

Corps of Engineers, New England Division, Concord, MA, Michael Keegan, (978) 318-8220

(2) Published studies of marine benthic community dynamics and the response of benthic communities to the habitat change resulting from dredged material disposal and other forms of disturbance:

Dredging Related:

- Diaz, R. J., G. R. Cutter, Jr. and C. H. Hobbs. 2004. Potential impacts of sand mining offshore of Maryland and Delaware: Part 2 –biological considerations. *Journal of Coastal Research*. 20:61-69.
- Clarke, D., R.J. Diaz and R. Blama. 2003. Monitoring dispersion of dredged material following riverine deep trough disposal. *Proceedings Dredging '02*. Am. Soc. Civil Engin.
- Nichols, M.M., R.J. Diaz and L.C. Schaffner. 1990. Effects of hopper dredging and sediment dispersion, Chesapeake Bay. *Environ. Geol. Water Sci.* 15:31-43.

SPI Related:

- Diaz, R.J., L.J. Hannsson, R. Rosenberg, P. Gapcynski and M. Unger. 1993. Rapid assessment of sedimentological and biological characteristics of a hydrocarbon pollution gradient. *Water, Air and Soil Pollution* 66:251-266.
- Diaz, R. J., G. R. Cutter, Jr. and D. M. Dauer. 2003. A comparison of two methods for estimating the status of benthic habitat quality in the Virginia Chesapeake Bay. *J. Exp. Mar. Biol. Ecol.* 371-381.
- Rosenberg, R., H.C. Nilsson and R.J. Diaz. 2001. Response of Benthic Fauna and Changing Sediment Redox Profiles over a Hypoxic Gradient. *Estuarine and Coastal Shelf Sci.* 53:343-350.
- Cutter, R.G. and Diaz, R.J., 2000. Biological alteration of physically structured flood deposits on the Eel margin, northern California. *Continental Shelf Research*. 20:235-253.
- Diaz, R.J. and G.R. Cutter. 2001. In situ measurement of organism-sediment interaction: rates of burrow formation/abandonment and sediment oxidation/reduction. p. 19-32. In: Aller, Aller, and Woodin (eds.), *Animal-sediment interactions*, University of South Carolina Press.
- Cutter, G.R. and R.J. Diaz. 1998. Novel optical remote sensing and ground-truthing of benthic habitat using the Burrow-Cutter-Diaz plowing sediment profile camera system (BCD sled). *J. Shellfish Res.* 17:1443-1444.
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- Rosenberg, R. and R.J. Diaz. 1993. Sulphur bacteria (*Beggiatoa* spp.) mats indicate hypoxic conditions in the Inner Stockholm Archipelago. *Ambio* 22:32-36.
- Diaz, R.J. and L.C. Schaffner. 1988. Comparison of sediment landscapes in the Chesapeake Bay as seen by surface and profile imaging. In: M. P. Lynch and E. C. Krome, eds. *Understanding the Estuary; Advances in Chesapeake Bay Research*. Chesapeake Research Consortium Pub. 129, CBP/TRS, pp. 24-88.
- Boyer, L.F., R.J. Diaz, and J.D. Hedrick. 1988. Computer image-analysis techniques and video-sediment-profile camera enhancements provide a unique and quantitative view of life at or beneath the sediment-water interface. *Oceans'88*. 2:448-453.

Benthic Related from 1990 to present:

- Diaz, R. J., M. Solan, and R. M. Valente. 2004. A review of approaches for classifying benthic habitats and evaluating habitat quality. *Journal of Environmental Management*. 73:165–181.
- Diaz, R. J., J. Nestlerode, and M. L. Diaz. 2004. A global perspective on the effects of eutrophication and hypoxia on aquatic biota. In: *Proceedings of the 7th International Symposium on Fish Physiology, Toxicology, and Water Quality*, Tallinn, Estonia, May 12-15, 2003, G. L. Rupp and M. D. White (eds). U.S. Environmental Protection Agency, Ecosystems Research Division, Athens, Georgia, USA. EPA 600/R-04/049, pp 1-33.
- Diaz, R. J. 2004. Biological and physical processes structuring deep-sea surface sediments in the Scotian and Weddell Seas, Antarctica. *Deep-Sea Research II* 51:1515-1532.
- Diaz, R. J., G. R. Cutter, Jr. and K. W. Able. 2003. The importance of physical and biogenic structure to juvenile fishes on the shallow inner continental shelf. *Estuaries* 26:12-20.
- Diaz, R.J. and R. Rosenberg. 2001. Overview of anthropogenically induced hypoxic effects on marine benthic fauna. P. 129-145. In: N. Rabalias and G. Turner (eds.) *Hypoxia and the Gulf of Mexico*, AGU Press.
- Diaz, R.J. 2001. Overview of Hypoxia Around the World. *J. Environ. Qual.* 30:275-281.
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- Downing, J.A. N.N. Rabalais, R.J. Diaz, R.J. Zimmerman, J.L. Baker and T. Prato. 1999. Gulf of Mexico hypoxia: Land-sea interactions. Council for Agricultural Science and Technology, Report No. 134, 44 pp.
- Yozzo, D.J. and R.J. Diaz. 1999. Tidal freshwater wetlands: invertebrate diversity, ecology, and functional significance. p. 889-918. In: D.P. Batzer, R.B. Rader and S.A. Wissinger (eds.), *Invertebrates in Freshwater Wetlands of North America: Ecology and management*. John Wiley & Sons, New York.
- Nestlerode, J.A. and R.J. Diaz. 1998. Effects of periodic environmental hypoxia on predation of a tethered polychaete, *Glycera americana*: implication for trophic dynamics. *Mar. Ecol. Prog. Ser.* 172:185-195.
- Weisberg, S.B., J.A. Ranasinghe, D.M. Dauer, L.C. Schaffner, R.J. Diaz and J.B. Frithsen. 1997. An estuarine benthic index of biotic integrity (B-IBI) for Chesapeake Bay. *Estuaries* 20:149-158.
- Diaz, R.J. and R. Rosenberg. 1996. The Influence of Sediment Quality on Functional Aspects of Marine Benthic Communities. p. 57-68. In: M. Munawar and G. Dave (eds.). *Development and progress in sediment quality assessment: rationale, challenges, techniques and strategies*. Ecovision World Monograph Series, Academic Publishing, Amsterdam.
- Diaz, R.J. and R. Rosenberg. 1995. Marine benthic hypoxia: a review of its ecological effects and the behavioural responses of benthic macrofauna. *Oceanogr. Mar. Biol. Ann. Rev.* 33:245-303.

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ROBERT J DIAZ

EDUCATION

Ph.D. Marine Science, University of Virginia, 1977
M.S. Marine Science, University of Virginia, 1971
B.A. Biology and Chemistry, La Salle College, 1968

ACADEMIC POSITIONS

1996- Professor, College of William and Mary, Virginia
1984-96 Associate Professor, College of William and Mary, Virginia
1978-84 Assistant Professor, College of William and Mary, Virginia
2001- Adjunct Professor, Old Dominion University, Virginia

HONORS, PRIZES AND AWARDS

Doctor Honoris Causa from Gothenburg University, Sweden, 1996
President of the Atlantic Estuarine Research Society, 1994-1995
Executive Board Member, Estuarine Research Federation, 1994-1995
Listed in Who's Who Among Hispanic Americans

Project Experience

Dr. Diaz has over 35 years of experience working with marine, estuarine, and tidal freshwater benthic communities. He has specialized in the assessment of change, both natural and anthropogenic, to systems and has developed several nationally used methods for evaluating benthic habitats and identifying benthic resource value. He is also internationally recognized as an expert in benthic habitat assessment and interpretation of sediment profile camera images. He has extensive field experience, along the Atlantic and Gulf of Mexico coasts monitoring and documenting environmental effects and impacts from; dredging and dredged material disposal, contaminated sediments, both hydrocarbons and heavy metals, and eutrophication and low dissolved oxygen. His experience spans all habitat types from the intertidal to the deep-sea. He worked closely with Corps personnel, both from the New York District and Waterways Experiment Stations, to collect and interpret much of the preliminary data for dredging activities around New York City.

Dr. Diaz has worked with ENSR scientists on many projects in the northeast region, including Corps of Engineers DAMOS Projects, the MWRA long-term monitoring of Boston Harbor and Mass. Bay, and pipeline projects in New York and Connecticut. He was also the principal scientist responsible for interpretation of effects on the benthos of the Cross Sound Cable, Long Island Sound, and the HubLine pipeline and Northeast Gateway Project in the Boston area.

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PARAGON ANALYTICS

STATEMENT OF QUALIFICATIONS

A Division of DataChem Laboratories, Inc.
Full Service Environmental and Radiochemistry Testing Laboratory

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1.0 INTRODUCTION

Paragon Analytics is a full service, client-oriented environmental and radiochemistry testing laboratory. We are a division of DataChem Laboratories, Inc. of Salt Lake City, Utah. Our capabilities include: radiochemistry, mixed waste, explosives, organics, metals, and general chemistry analyses. Paragon holds extensive state and federal certifications for these capabilities, and our radioactive materials license levels are among the highest of all laboratories in the State of Colorado.

Paragon is committed to customer service in all aspects of our client relationships, including: data quality objectives, methodologies, on-time delivery, health and safety, and waste management. We perform analyses according to various federal and state QA/QC protocols and analyze samples in strict accordance with promulgated methodologies (e.g., USEPA SW-846, USEPA CLP, USEPA MCAWW, 40CFR and DOE/HASL-300). Paragon routinely produces a variety of hard-copy and electronic deliverables for various clients, including the Department of Energy, the Department of Defense, and engineering/consulting companies. We strive to provide deliverables on-time and to have them meet expectations the first time. Paragon seeks to earn business for life by exceeding expectations and providing excellent quality data and the most responsive service available.

Paragon's facilities, equipment, and sample handling procedures are designed to accommodate large sample capacity in a safe, efficient, and controlled environment. The facility was designed to maximize efficient, trace-level operations. The facility maintains a reference library of environmental regulations, analytical methods, and SOPs for each method performed.

Paragon's Laboratory Quality Assurance Plan (LQAP) requires strict adherence to promulgated procedures and confers stop-work authority to the Quality Assurance Manager. Sample handling SOPs and policies including: sample receipt, chain-of-custody, and storage have been adopted from USEPA and NQA-1 guidance documents. Paragon's analytical SOPs specify strict calibration criteria and detailed corrective action procedures. Analysts maintain records consistent with **Good Laboratory Practices** that meet the rigorous standards of various governmental agencies.

2.0 QUALITY ASSURANCE PROGRAM SUMMARY

The Quality Assurance Program at Paragon Analytics is an integral part of daily laboratory functions. The Quality Assurance Program establishes policies and procedures for all functions within the analytical laboratory. These functions are divided into two categories. The first category consists of all laboratory functions that either directly or indirectly result in the production of analytical data, including the daily analysis of samples. The second category includes those functions that are independent of specific sample analysis. These are considered to be support or auxiliary functions. Both types of functions represent the daily implementation of the Quality Assurance Program by the laboratory staff.

Each function is affected by those that precede it. Therefore, all functions must be controlled and documented through the use of quality assurance policies and Standard Operating Procedures (SOPs) that are established in accordance with prescribed protocols. It is the

purpose of the Quality Assurance Program to establish these protocols and ensure that all activities conform to the appropriate controls.

The Quality Assurance Program and Manual (LQAP) have been established to comply with the standards set forth by the American Society of Mechanical Engineers in the NQA-1 document (1989 edition) entitled **Quality Assurance Program Requirements for Nuclear Facilities** and the guidelines outlined in **QAMS-005/80** by the USEPA Office of Monitoring Systems and Quality Assurance.

The LQAP describes those actions necessary to provide adequate confidence that all activities within the laboratory will be performed to meet or exceed the quality standards set forth in the Quality Assurance Program.

The following synopsis is an overview of the primary functions / areas defined in the LQAP.

2.1 TRAINING

A formalized training program is an essential part of the Quality Assurance Program. Training objectives are accomplished through the use of training checklists that schedule and document coverage of the information required for qualification of an employee for a specific process. All employees are required to participate in orientation sessions that cover the quality assurance, health and safety, building security and radiation protection sections. The formalized training program is supplemented with in-house training and participation in outside seminars or course work.

2.2 MATERIAL PROCUREMENT AND CONTROL

Procurement of materials and services for use in analytical processes must be controlled to achieve the quality objectives of the laboratory. Control over materials and services used in the laboratory is maintained by adhering to the following guidelines:

- All servicing and maintenance of instruments and equipment shall be performed in accordance with the manufacturer's instructions.
- Persons contracted to service instruments and equipment shall be manufacturer certified service technicians.
- Acceptable grades of reagents and standards materials shall be specified. Adequacy of materials shall be verified prior to use.
- Storage of reagents and standards shall be controlled and appropriate to the material type and use.

2.3 RECEIPT OF SAMPLES AND INITIATION OF ANALYSIS PROGRAM

Upon receipt, samples are processed and analyses are initiated in the following manner:

- Prior to opening, shipping containers are examined for custody seals and damage.
- The temperature of the shipping container is monitored upon opening, as required.
- Samples are examined for custody seals, damage, and number of samples as compared to the chain-of-custody.
- Sample bottle identification labels are compared for consistency with other paperwork.
- The chain-of-custody is reviewed and completed.

- Each sample is assigned a unique laboratory ID. These IDs are logged into the sample management system and a work alert is generated which defines the analysis program and holding times for the sample set.
- The samples are placed in the proper storage environment within the appropriate department.

2.4 ANALYTICAL PROCEDURES

The analytical functions begin with the preparation or actual analysis of samples. This function is completed through the following activities:

- Instruments shall be properly calibrated. Calibration shall meet the criteria specified in the methodology or as outlined in the appropriate Standard Operating Procedure (SOP).
- Procedures (both preparation and analytical) shall be verified by the analysis of performance testing standards and laboratory control samples.
- Instruments and equipment used for the production of analytical data shall be maintained in accordance with the manufacturer's instructions.
- Analysis procedures shall follow approved SOPs. Any deviation from the SOPs shall be addressed in a narrative.
- The analyst shall review work for the following:
 - sample holding times have not been exceeded.
 - appropriate QC accompanies the analytical batch.
 - calibration criteria have been met and maintained throughout the analytical sequence.
- All data generated shall be reviewed a minimum of two times prior to the report being submitted for final review.

2.5 QUALITY CONTROL DATA

The data produced by the analytical function is verified with the following procedures:

- Results of QC data are computed and compared with acceptance limits.
- Calibration curves are verified prior to analysis of samples.
- Analytical systems are verified by independent performance testing samples.

2.6 QUALITY ASSURANCE OF DATA

Data quality is ensured by the following procedures:

- Prior to the analysis of samples, all equipment used for analytical operations must meet appropriate control criteria.
- All mechanical means of calculating results (e.g., spreadsheets) are verified manually.
- Reports generated in the analytical function are subjected to a clearly defined review process. This process includes both internal and external validation.

2.7 CORRECTIVE ACTION

Corrective action must be taken for any incident or event that could adversely affect the quality of data produced in the laboratory. This function provides a process by which conditions producing unreliable results are removed. Non-Conformance Reports (NCRs) serve as corrective action reports to document the event or incident and its disposition. The Quality

Assurance Manager assures that responsibility is assigned for corrective action, the action is taken, there is an independent evaluation of the adequacy of the corrective action, and the results are reported to management.

2.8 DATA REPORTING AND VALIDATION

The function of reporting and validating data is a four phase process, with each phase serving a specific purpose. The objective of this multi-phase process is to assure the quality of data being reported and to identify any sources of errors. The four phases are as follows:

- Analytical and QC data are generated and summarized in report format within each analytical department. The report is reviewed for completeness and correctness from an analytical standpoint by an independent analyst and/or the technical lead person.
- The report is then compiled into a complete report packet by the Reports Management Department. The report is reissued for review by Department supervisors in the completed format. This review serves to verify that the objectives of the analysis have been met.
- A final review (pre-invoice) is performed by the Project Manager. This review assures that the objectives of the contract or project have been met.
- A random sampling of reports are reviewed (post-invoice) by the Quality Assurance Department, with a percentage resulting in raw data audits. This review is to assure compliance with methodologies, Standard Operating Procedures, and quality objectives.

2.9 RECORDS MANAGEMENT

The maintenance of records is an important function within the laboratory. There are several types of records maintained in the laboratory. These include the following:

Quality Assurance Records - The Quality Assurance Department maintains documentation the control of analytical equipment, non-conforming items, training, audits and certification requirements.

Analytical Records - Analytical departments maintain records of daily activities, including standards preparation, calibration, analyses, maintenance and training.

Workorder Files - The Reports Management Department creates scanned images of all completed workorders and data reports. These images are backed-up redundantly and all copies of the electronic files are managed as part of the data archive system.

Client Files - Project Management maintains files on each client. These records document all project activities and specific needs of the client, including contract terms and conditions. Paragon's data archive system provides for the retention, management and retrieval of both hardcopy and electronic records. The data archive system is maintained by the Quality Assurance Department in conjunction with the Information Systems (IS) Department. Secure on-site and off-site facilities are utilized. Records are retained for a minimum of five years.

3.0 FACILITIES AND EQUIPMENT

Paragon Analytics houses a 26,500 square foot laboratory with 14,000 square feet dedicated to radiochemistry analyses and 11,000 square feet dedicated to organic, inorganic, and mixed waste analyses. The entire facility has been licensed by the State of Colorado to receive and handle radioactively contaminated samples. The facility was designed to maximize efficient, trace-level operations. Each laboratory is equipped with dedicated conditioned air intake and exhaust systems in order to minimize cross contamination. The facility maintains a reference library of environmental regulations, analytical methods, and SOPs for each method performed.

All major instruments are computer linked to facilitate data reduction and reporting. Paragon's Laboratory Information Management System (LIMS) is used for sample tracking, work scheduling, status reporting, data reporting, and electronic data deliverable (EDD) reporting.

Following is an overview of the LIM System, our major analytical equipment list, and a floor plan of the facility.

3.1 LABORATORY INFORMATION MANAGEMENT SYSTEM

OVERALL SYSTEM DESCRIPTION

The Laboratory Information Management System (LIMS) was developed for Paragon Analytics internally and it is currently based on a platform of Microsoft SQL Server—a relational database. The application portion of the LIMS utilizes an in-house custom Microsoft Access 2000 application. LIMS is a full-featured data management system, which provides Paragon Analytics the tools to track samples, and the corresponding data which is generated from those samples, throughout the entire laboratory. Various reports are generated to help the laboratory track the status and workload for a department—down to a particular instrument. Once the analyses are completed, the data are either hand entered (non-instrumental methods only) or uploaded directly into the LIMS. The data is then reduced to a final result by factoring in several variables such as project specific reporting limits, sample aliquots, dilution factors, and percent moisture as applicable. This 'reduced' data is then reviewed and reported via the LIMS reporting module. The Electronic Data Deliverable EDD (if applicable), without any additional calculations performed, is also produced from the same data shown on the hardcopy reports (this ensures that the EDD will identically match the hardcopy report).

Other features include:

- LIMS utilizes a two level review and validation process for all data processed through the system. The validation procedure is employed throughout LIMS, including sample login, prep and QC batches, analytical run batches, and final results.
- An auditing trail is maintained to show edits made by any user as well as the date and time the edit took place.
- Since LIMS is a custom application which was developed for Paragon Analytics, it is fully configurable by designated Information Systems (IS) personnel. This allows Paragon to change the capabilities of the LIMS as the needs of the laboratory change over time.
- Flexibility--LIMS was designed to accommodate client specific needs, such as reporting limits, QC criteria, evaluation criteria, flagging conventions, report formats and custom EDD formats.
- The LIMS database is backed up every hour—this enables Paragon to minimize data loss in the event of a system wide failure to either the network or the LIMS database.

A brief summary of the primary modules and some of their functions are listed below.

SAMPLE LOGIN

When samples are received at Paragon Analytics, the samples are logged into the LIMS for their various analytical requests. At this time, a Laboratory Work Order Number for a group of samples (as defined by the client) and a Laboratory Sample ID for each sample are assigned. Upon review by a Project Manager, the login information is dispatched or released to the laboratory so that they may perform the requested analytical tests. A copy of the Work Order, or Receipt Confirmation, may also be sent to the client.

CLIENT SERVICES

The Client Services module is used to provide information to both the client and the laboratory

in the form of pre-sample receipt login information, and order tracking (status). Project Managers and the Marketing staff also use this module to define some other client/project specific information for the laboratory, such as:

- Special sample handling procedures.
- Client or Client-project specific detection limits and/or control limits.
- Client specific target lists.
- Instructions to the laboratory regarding analytical methods and/or procedures for a specific client.

LABORATORY

A list of some of the features in the laboratory module includes the following.

- Status reports for tracking and performing the analytical work as required.
- Intermediate reports, such as sample moisture reports or a Client Sample ID/Laboratory Sample ID cross-reference, which may be provided to the client.
- Prep and Analytical batching. Laboratory Sample ID's can be created for laboratory generated quality control samples in this module.
- Data upload interface for retrieving data from various analytical instrumentation.
- Raw data evaluation to various industry standard and client specific protocols and criteria.
- Data review and validation.
- Report generation from a variety of report formats.

EDD GENERATION

The LIMS provides Paragon Analytics with the capability to produce custom reports and custom EDD's in almost any format required by our clients. Some of the electronic formats which are exported by LIMS include the following:

- ASCII text, delimited or fixed width
- Microsoft Word
- FoxPro
- Lotus
- Paradox
- Dbase
- Btrieve
- SQL databases
- Microsoft Access
- Microsoft Excel
- HTML
- Custom text formats as specified by our clients (some examples include ERPIMS, GEMS, IRDMS, etc).



Paragon Analytics, Inc.

Information
Systems



Quotes

Facility Data Flow

Unsolicited work

Projects

Orders

Work orders are created, validated,
and dispatched to the laboratory
departments.

Metals

Rad Chem

GCMS SVOA

GCMS VOA

GC

Extractions

HPLC

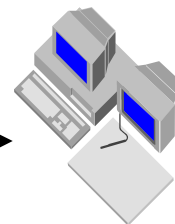
Fuels/Hydrocarbons

Wet Chem

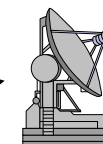
Data is uploaded or
hand entered into LIMS
(see legend)



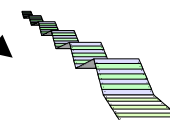
LIMS



All imported data is processed for
final results, hard copy reports, and
electronic data deliverables.



EDD



**Laboratory
Report**



instrumental techniques



non-instrumental techniques

— LIMS accommodates upload

- - - Mixed. Some hand-entry
and some upload

..... Hand data entry

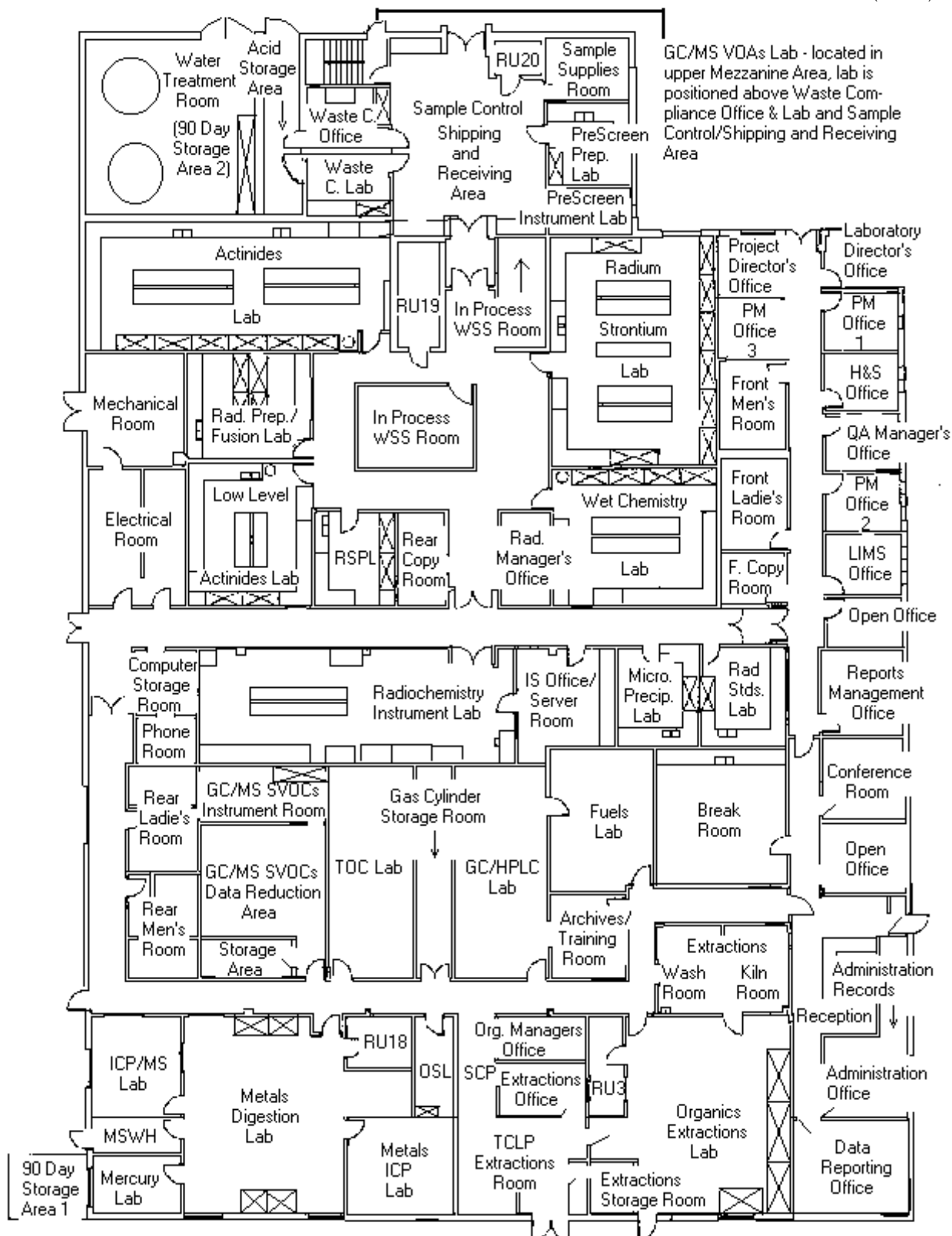
- . - . - Alternate work-flow

3.2 EQUIPMENT LIST

Units Equipment Item

64	Alpha Spectrometer Detectors
11	Gamma Spectrophotometer Detectors
34	Gas Flow Proportional Counters
4	Liquid Scintillation Counters (LSC)
4	Alpha Scintillators, Scalers w/ Lucas Cell Counters
1	Mill, Ball
1	Riffle Splitter
2	Hand and Foot Monitors
5	Electra Alpha/Beta Meters
4	Gamma Dose Rate Meters
4	Gamma Dose Rate Meters, with Pancake Detectors
2	Inductively Coupled Plasma (ICP) Atomic Emission Spectrophotometers (AES), with Autosamplers
1	Inductively Coupled Plasma (ICP) Mass Spectrophotometer (MS), with Autosampler
1	Cold Vapor Mercury Analyzer (CVAA)
1	Flow Injection Analyzer (FIA)
2	Ion Chromatographs (IC)
1	Total Organic Carbon (TOC) Analyzer
1	UV Spectrophotometer
1	Conductivity Meter
3	pH Meters
3	Gas Chromatograph (GC), with Purge and Trap Concentrators, 1 w/ FID, 2 w/ PID/FID Detectors
1	Gas Chromatograph/Mass Spectrometer (GC/MS), with Purge and Trap Concentrator
2	Gas Chromatograph/Mass Spectrometer (GC/MS), with Archon Purge and Trap Concentrators
3	Gas Chromatograph/Mass Spectrometer (GC/MS), with Autosamplers
5	Gas Chromatograph (GC), with Autosamplers, 1 w/ FPD, 4 w/ dual ECD Detectors
3	High Performance Liquid Chromatographs (HPLC), with Autosamplers 1 w/ Photodiode Array, 1 w/ UV, 1 w/ Fluorescence, UV and Refractive Detectors
16	Balances, Analytical
10	Balances, Top Loading
8	Centrifuges
3	Concentrators, RapidVap
2	Evaporators
1	Gel Permeation Cleanup (GPC) Apparatus
1	Homogenizer
3	Infrared (IR) Temperature Thermometers
2	Kilns
2	Lunar Lander Pressure Filters
2	Midi-Dist Cyanide Distillation Apparatus
1	MilliQ Water System
1	Pensky-Martens Ignitability Apparatus
48	Rotary Tumblers, number of total positions
1	Sonic Bath
4	Sonicators
1	Steam Generator
7	Vortex Mixers
10	Zero Headspace Extractors

3.3 FACILITY FLOORPLAN



SCP = Stable Chem. Printing Area

OSL = Organics Standards Laboratory

RSPL = Rad. Sample Prep. Lab

WSS = Warm Sample Storage

MSWH = Metals Satellite Waste Hall

4.0 CERTIFICATIONS

Paragon Analytics holds the following certifications and/or validations:

- U.S. Army Corps of Engineers (USACE)
- U.S. Navy (NFESC)
- U.S. Air Force Center for Environmental Excellence (AFCEE)
- NELAC – Utah Certifying State
- State Certifications – summary below

STATE CERTIFICATIONS SUMMARY

	<i>SDWA</i>	<i>CWA</i>	<i>RCRA</i>	<i>Radiochemistry</i>
Utah - NELAP	X	X	X	X
California		X	X	X
Colorado	X			X
Connecticut	X	X	X	X
Florida			X	X
Idaho	X			X
Indiana	X			
Kansas	X	X	X	X
Kentucky	X			X
Louisiana		X	X	X
Maine	X	X		
Maryland	X			X
Mississippi	X			
Missouri	X			
Nevada	X	X	X	X
New Jersey	X	X	X	X
New York			X	
North Dakota		X	X	X
Oklahoma			General Water quality/sludge	X
Tennessee	X			X
Washington		X		X

5.0 EXPERIENCE AND REFERENCES

Paragon Analytics has supported more than 500 clients by analyzing potentially hazardous and/or radioactive samples from groundwater monitoring, landfill evaluation, and RCRA closures. Samples have been compromised of various matrices including: air, water, soil, industrial wastes, oils, solvents, sludges, sediments, biological tissue, and plant tissue. Laboratory personnel have the expertise to analyze these matrices.

5.1 CLIENT REFERENCES

Ms. Beth McIlwain

Bechtel BWXT

Idaho National Engineering & Environmental
Laboratory (INEEL)
P.O. Box 1625, MS 3960
Idaho Falls, ID 83415-2083
(208) 526-2537

Ms. Karen Schultz-Paige

Los Alamos National Laboratory (LANL)

MS769, Box 1663
Los Alamos, NM 87545
(505) 665-3527

Mr. Scott Fleming

Oak Ridge National Laboratory- UT Battelle

1 Bethel Valley Road
Oak Ridge, TN 87381
(865) 241 9673

Dr. Lisa McKinzie

Earth Tech

5575 DTC Parkway, Suite 200
Englewood, CO 80111-3016
(303) 804-2380

Mr. Geoffrey Nason

MolyCorp, Inc.

67750 Bailey Road
Mountain Pass, CA 92366
(760) 856-7664

Mr. Lorenzo Cabrera

Cabrera Services, Inc.

473 Silver Lane
East Hartford, CT 06118
(865) 569-0095
Mr. Eric Barbour (781) 455 8787
Ms. Kim Nelson (401) 332 8177

Mr. Steve Yanicak

State of New Mexico Environment

Department -- DOE Oversight Bureau

P.O. Box 1663, MS J993
Los Alamos, NM 87545
(505) 672-0448

Mr. Jerry Yokel

State of Washington

Department of Ecology

1315 W. 4th Avenue
Kennewick, WA 99336-6018
(509) 736-3009

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Stoller Navarro Joint Venture

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Las Vegas, NV 89129
(702) 295-2594

Mr. Michael Forlenza

Malcolm Pirnie, Inc.

1700 West Loop, South
Houston, TX 77027
(713) 840-1511

Mr. Don Ellis

CBYCO

225 Colorado Avenue
Pueblo, CO 81004
(719) 543 1941

Mr. Nile Luedtke

CAST/SAIC

151 Lafayette Street
Oak Ridge, TN 37831
(865) 481 8751

STANDARD FORM (SF) 254 Architect-Engineer and Related Services Questionnaire.	1. Firm Name/Business Address: Paragon Analytics Fort Collins, CO 80524			2. Year Present Firm Established: 1996	3. Date Prepared: January 14, 2005																																								
	4. Type of ownership; check below, if applicable Corporation																																												
	☐ A. Small Business <i>Veteran Owned</i>																																												
	☐ B. Small Disadvantaged Business																																												
1.a. ☐ Submittal is for Parent Company ☒ Submittal for Division				☐ C. Woman-owned Business																																									
5. Name of Parent Company, if any: DataChem Laboratories Inc.		5a. Former Parent Company Name(s), if any, and Year(s) Established: established 1986																																											
6. Names of not more than Two Principals to Contact: Title / Telephone 1) Ms. Claudia Clark – Business Development 270 422 1506 2) Mr. Ken Campbell – Laboratory Director 970 490 1511																																													
7. Present Offices: City / State / Telephone / No. Personnel This Office Fort Collins, Colorado (970) 490-1511 58				7a. Total Personnel 154																																									
8. Personnel by Discipline: <i>(List each person only once, by primary function.)</i> <table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">1 Administrative</td> <td style="width: 25%;">Draftsmen/Designers/CADD Specialists</td> <td style="width: 25%;">Hydrologists</td> <td style="width: 25%;">Soils Engineers/Geotech. Engrs.</td> </tr> <tr> <td>Air Quality Specialists/Engineers</td> <td>Economists</td> <td>Instrumentation and Control Engineers</td> <td>Solid Waste Spclsts, (Non-Engrs.)</td> </tr> <tr> <td>Archaeologists</td> <td>Environmental/Sanitary Engineers</td> <td>Lawyers</td> <td>Specifications Writers</td> </tr> <tr> <td>Architects</td> <td>Environmental Scientists</td> <td>Mechanical Engineers</td> <td>Structural Engineers</td> </tr> <tr> <td>Biologists/Ecologists</td> <td>Electrical Engineers</td> <td>Planners: Urban/Regional</td> <td>Technical Editors</td> </tr> <tr> <td>33 Chemists</td> <td>Estimators</td> <td>Plant Operations Specialists</td> <td>7 Technicians</td> </tr> <tr> <td>Chemical Engineers</td> <td>Geologists/Hydrogeologists</td> <td>Production Personnel</td> <td>Toxicologists/Industrial Hygienists</td> </tr> <tr> <td>Civil Engineers</td> <td>Graphic Artists</td> <td>Public Relations Specialists</td> <td>Trainers</td> </tr> <tr> <td>3 Computer Specialists/Sys. Analysts</td> <td>2 Health and Safety Specialists</td> <td>2 QA/QC Specialists</td> <td>Water Resource Engineers</td> </tr> <tr> <td>Construction Inspectors/Res. Engrs.</td> <td></td> <td>9 Senior Managers, Scientists</td> <td>1 Marketing Manager</td> </tr> </table>						1 Administrative	Draftsmen/Designers/CADD Specialists	Hydrologists	Soils Engineers/Geotech. Engrs.	Air Quality Specialists/Engineers	Economists	Instrumentation and Control Engineers	Solid Waste Spclsts, (Non-Engrs.)	Archaeologists	Environmental/Sanitary Engineers	Lawyers	Specifications Writers	Architects	Environmental Scientists	Mechanical Engineers	Structural Engineers	Biologists/Ecologists	Electrical Engineers	Planners: Urban/Regional	Technical Editors	33 Chemists	Estimators	Plant Operations Specialists	7 Technicians	Chemical Engineers	Geologists/Hydrogeologists	Production Personnel	Toxicologists/Industrial Hygienists	Civil Engineers	Graphic Artists	Public Relations Specialists	Trainers	3 Computer Specialists/Sys. Analysts	2 Health and Safety Specialists	2 QA/QC Specialists	Water Resource Engineers	Construction Inspectors/Res. Engrs.		9 Senior Managers, Scientists	1 Marketing Manager
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All other foreign work*	1	1	1	1	1																																								
* Firms interested in foreign work, but without such experience, check here: ☐																																													

10. Profile of Firm's Project Experience, Last 5 Years					
Profile Codes	Number of Projects	Total Gross Fees (in Thousands)			
1) 106	976	\$30,494			
2)					
3)					
4)					
5)					
6)					
7)					
8)					
9)					
10)					

11. Project Examples, Last 5 Years					
Profile Code	"P", "C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in thousands)	Completion Date (Actual or Estimated)
106	C	1 Los Alamos National Laboratory (LANL) Testing: Env. Restoration & Monitoring, Waste Characterization and Disposal, D&D Testing Los Alamos, NM	US Department of Energy University of California Los Alamos National Laboratory Los Alamos, New Mexico	9000	Ongoing
106	C	2 Idaho National Energy & Env. Laboratory (INEEL) Testing for Env. Monitoring , Waste Characterization & Disposal, and D&D Idaho Falls, ID	US DOE - Bechtel Babcock & Wilcox Inc. Idaho Falls, ID	3419	Ongoing
106	C	3 Pueblo Chemical Depot Testing for Env. Monitoring and Restoration, Waste Characterization and D&D, USACE Omaha District Pueblo, Colorado	Earth Tech Inc. Englewood, CO	3856	Ongoing
106	C	4 Argonne National Laboratory Testing for DOE - Area 800 RFI, Env. Restoration & Monitoring Argonne, Illinois	US DOE - University of Chicago Argonne, Illinois	1350	03/04
106	C	5 NMED LANL, Sandia and WIPP Oversight Water, Soil, and Air Characterization Los Alamos, NM	State of New Mexico Environment Department DOE Oversight Bureau Santa Fe, NM	4500	Ongoing

Profile Code	"P", "C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in thousands)	Completion Date (Actual or Estimated)
106	C	6 Molybdenum Mining Site Investigation Sitewide Investigation and Remediation Testing California and New Mexico	Confidential Client CA and NM	1404	Ongoing
106	C	7 Vandenberg, Carswell, Williams and Andrews Air Force Bases AFCEE - Site Characterization Testing California and Texas	Shaw E & I Knoxville, TN	1075	6-00
106	C	8 Nevada Test Site Testing for Sitewide IDIQ North Las Vegas, NV	US DOE - Stoller Navarro JV Las Vegas, NV	6700	12/04
106	C	9 Rocky Flats Env. Technology Site Testing for Env. Monitoring & Restoration, Waste Characterization and D&D Golden, CO	US DOE - Kaiser Hill RFETS Golden, CO	1400	Ongoing
106	C	10 Hanford Site Environmental Restoration Oversight Testing Richland, Washington	Department of Ecology State of Washington Kennewick, WA	300	Ongoing
106	C	11 Iowa Army Ammunitions Plant Remedial Investigation USACE Omaha	TN & Associates Oak Ridge TN	167	4/02
106	C	12 Tonawanda Landfill, Linde OU and Seaway Sites US Army National Guard Bureau, USACE New England TERC Tonawanda New York	Science Applications Reston, Virginia	324	7/03
106	C	13 Multiple Sites USACE Rapid Response USEPA Regions 3, 5, 8	Shaw E & I Monroeville, PA	158	Ongoing
106	C	14 Lone Star RCRA Facility Investigation USACE Fort Worth Texas	Tetra Tech NUS, Inc. Houston TX	63	1/04

Profile Code	"P", "C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in thousands)	Completion Date (Actual or Estimated)
106	C	15 Shattuck Chemical Superfund Site (OU VII) USACE Omaha Denver, Colorado	Shaw E & I Centennial, CO	240	Ongoing
106	C	16 Lake City AAP, Ft. Belvoir, USDA Ames, Tobico Marsh, Edgewood and Aberdeen Investigation and Remediation US Army, USDA, State of Michigan	Cabrera Services East Hartford, CT	346	Ongoing
106	C	17 Multiple Sites Investigation and Disposal Pittsburgh, PA	Enercon Murrysville PA	129	7/04
106	C	18 Multi-Site Program EFA West US Navy CLEAN California, Utah, Nevada	Tetra Tech EMI, Inc. San Francisco, CA	957	5/04
106	C	19 Lone Star Army Ammunition Plant, Five Points OLF USACE Fort Worth	Malcolm Pirnie, Inc. Houston, TX	192	Ongoing
106	C	20 Oak Ridge Reservation, Paducah Gaseous Diffusion Plant. Portsmouth Plant - Analysis of Environmental, Air and Tissue Samples	CAST and Bechtel Jacobs LLC Oak Ridge, TN	962	9/06
106	C	21 Newton County Wells/FAG Bearing Site Remedial Investigation Saginaw MO	Environ St. Peters, MO	119	Ongoing
106	C	22 Rickenbacker ANG and Newark AFB AFCEE Investigation and Monitoring Columbus and Newark, Ohio	Shaw E & I Cincinnati, OH	303	Ongoing
106	C	23 Palo Verde Nuclear Power Plant Routine Monitoring Palo Verde, Arizona	Arizona Public Service 5801 South Wintersburg Road Tonopah, AZ	100	Ongoing

Profile Code	"P", "C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in thousands)	Completion Date (Actual or Estimated)
106	C	24 Combustion Engineering USACE New England TERC FUSRAP Windsor, CT	ENSR Westford, MA	165	6/01
106	C	25 Multi-Year Contract Navy CLEAN NorthDIV and SouthDIV	Tetra Tech NUS Pittsburgh, PA	73	Ongoing
106	C	26 Nuclear Fuel Services Multi-Year Contract Radiochemical and Chemical Analyses Erwin TN	Nuclear Fuel Services Erwin, TN	1134	Ongoing
106	C	27 ORO-Paducah Onsite Lab for Radiological Testing Onsite Testing for Radiological Contamination Gaseous Diffusion Plant Paducah, KY	US DOE Gaseous Diffusion Plant Paducah, KY	505	11/99
106	C	28 LANL - Onsite Lab for Radiological Screening Test Water, Soil, Air, Waste, and Bioassay Samples for Radioactivity and DOT Compliance Los Alamos National Laboratory	Los Alamos National Laboratory Field Sampling Facility - ER-SMO Los Alamos, NM	86	8/97
106	C	29 Uranium Mine Investigation Kenai, Alaska	Kent and Sullivan Kenai, AK	40	9/04
106	C	30 Multi-Site Investigation Multi-Year MSA Radiochemical and Chemical Analyses Pennsylvania	Earth Sciences Consultants Export, PA	244	1/04
106	C	31 Rattlesnake Creek Radiochemistry and Stable Chemistry RI USACE, Buffalo	Cabrera Services Wappinger Falls, NY	240	Ongoing
106	C	32 Pueblo Chemical Agent - Destruction Pilot Plant Project Pueblo, CO USACE, Nashville	Clyde B. Young & Co. Pueblo, CO	275	12/04

Profile Code	"P", "C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in thousands)	Completion Date (Actual or Estimated)
106	C	33 Milan Army Ammunition Plant Facility Investigation USACE, Mobile	SAIC Oak Ridge, TN	33	Ongoing
106	C	34 KI Sawyer Groundwater Monitoring USACE, Omaha TERC	Earth Tech Oak Brook, IL	68	11/04
106	C	35 Camp Pendleton Marine Corp Base Disposal Navy EMAC	Innovative Technical Solutions, Inc Walnut Creek, CA	42	5/04
106	C	36 Hematite Site Investigation and Remediation USACE, State of Missouri	SAIC St. Louis, MO	329	Ongoing
106	C	37 Shpack Characterization USACE, Buffalo FUSRAP	Cabrera Services East Hartford, CT	92	6/04
106	C	38 Ardmore Site, Atlas Missile Silo Sites Investigation USACE Tulsa	Malcolm Pirnie Houston, TX	116	Ongoing
106	C	39 Nevada Test Site DOE	Bechtel Nevada Las Vegas, NV	352	9/05
106	C	40 Oak Ridge Operations Waste Analysis, Ambient Air Surveillance, and Food Crop. Milk and Fish Analysis	Oak Ridge National Laboratory UT Battelle Oak Ridge, TN	270	Ongoing
106	C	41 DOE Grand Junction Analytical Support under DOE ICPT	SM Stoller Grand Junction, CO	242	Ongoing
Signature: 					Date: 1/14/05
Typed Name & Title: <u>Claudia Clark Regional Manager</u>					

6.0 PERFORMANCE TESTING PROGRAMS

Agency / Program	Analyte Types								
	Metals	Minerals/ Nutrients	1. p es ti- ci d es	PCBs	Herbicides	VOCs	Semi- volatiles	Misc.	Radio- nuclides
WS Study - NIST/NVLAP-approved vendor	X	X	X	--	X	X	X	X	--
WP Study NIST/NVLAP-approved vendor	X	X	X	X	--	X	--	X	--
Solid Matrix / UST Study - NIST/NVLAP-approved vendor	X	X	X	X	X	X	X	X	--
USDOE Mixed Analyte Performance Evaluation Program (MAPEP)*	X	--	X	--	--	X	X	--	X
Radiochemical Proficiency Testing Studies - NIST/NVLAP-approved vendor	--	--	--	--	--	--	--	--	X

KEY: (--) = Analyte type not included in program proficiency testing (PT) sample(s).

* Effective June, 2004 the USDOE EML QAP Proficiency Testing Program was discontinued and the USDOE MAPEP PT Program was expanded to address the matrices formerly offered under the EML QAP PT Program.

7.0 RESUMES AND ORGANIZATION CHART

PERSONNEL

Paragon Analytics is staffed by experienced professionals dedicated to excellence in the field of analytical chemistry. Their knowledge of environmental regulations and EPA protocol results from years of working closely with consulting firms and regulatory agencies, including direct consultation to the USEPA. Specific areas of expertise include the analysis of fuels, air, radionuclides, and un-common pesticides. Special expertise is also available for achieving low level detection limits and developing project specific methodology. Paragon has more than 60 professional full-time employees with a wide range of experience. This experience enables Paragon to provide a complete analytical approach to the most complicated environmental problems in a cost-effective and timely manner. An organizational chart follows the personnel qualifications below:

7.1 RESUMES

KENNETH D. CAMPBELL

LABORATORY DIRECTOR

Mr. Campbell is the Laboratory Director at Paragon Analytics. As such, he guides project managers and interacts with sales and marketing staff to define program requirements and the laboratory's ability to perform, and prioritizes and tracks analytical requests for all functional groups. Mr. Campbell ensures compliance with applicable regulatory and contractual guidelines and facilitates resources needed by the production groups. He interfaces with the information systems group to procure the systems required to service production needs and with the health and safety officer to ensure that work areas are appropriately maintained and that sample archival and disposal are carried out according to all applicable regulations. He also interacts with the quality assurance staff to address training, performance evaluation and quality assurance issues.

He has over 11 years experience in the environmental testing industry and has managed programs for clients servicing both the Department of Energy (DOE) and the Department of Defense (DOD). His knowledge and experience includes programs administered by the USACE, AFCEE, NAVY CLEAN, and client operations conducted under the Integrated Contract Procurement Team (ICPT) agreement. His eight years of operational experience provides him an excellent background from which to provide technical assistance to clients and to evaluate laboratory capabilities in accordance with client needs. This experience is invaluable in his ability to provide accurate operational instructions to all levels of the laboratory, and his organizational skills ensure that client requirements are met in a timely manner.

Mr. Campbell formerly served as Project Manager for Paragon Analytics, Inc. In this capacity he put particular emphasis on communication and fostering strong working relationships with clients. This relationship was defined in the initial phases of project planning and continued through into the development of client and project specific requirements. These requirements were then conveyed to the operational units of the laboratory, and finally organized into a concise set of laboratory information management systems (LIMS) program specifications, which were electronically linked to each client's workorder. Mr. Campbell maintained this attention to detail as he tracked each client's samples through the laboratory to ensure that projects stayed on schedule.

As the Area Supervisor in the volatile organics laboratory for McDermott Technology, Inc., Mr. Campbell was responsible for the operation, maintenance, and troubleshooting of several analytical instruments. His analytical experience includes SW846, CLP, and drinking water methodologies with an emphasis on GC/MS instrumentation. He prepared, reviewed, and approved data reports, and maintained all quality records for the department. He increased productivity and improved data accuracy through customization of the report generation software, and developed a system for standard tracking and traceability. He also trained new personnel. Mr. Campbell also worked closely with customers to develop work plans and testing requirements and was responsible for the coordination and scheduling of field activities and laboratory services for a variety of projects.

Mr. Campbell was also involved in a number of field activities where he became familiar with a variety of sampling techniques. His experience includes the use of Teflon bailers, purge pumps, Van Dorn samplers, hand augers and split spoon samplers. This experience has provided Mr. Campbell with the ability to understand many of the difficulties encountered in the field.

As a Chemist for Central Virginia Laboratories and Consultants, Mr. Campbell performed a wide range of duties from field sampling, wet chemistry analyses, and sample preparation, to the operation and maintenance of HPLC, GC, and GC/MS instrumentation. He trained personnel in extraction techniques and instrument operation, and served as a technical lead on several projects.

Mr. Campbell graduated from the State University of New York, Albany in 1989 with a Bachelors of Science Degree in Biology with a minor in Psychology.

LORRAINE M. PACHECO

PROGRAM DIRECTOR

Ms. Pacheco is the Program Director for Paragon Analytics. She is responsible for primary oversight of business development goals for the laboratory. Her duties include client advocacy, marketing, review of regulatory documents and statements of work for laboratory implementation.

Formerly, as Operations Manager, Ms. Pacheco oversaw all areas of laboratory operations including: sample management, preparation and analysis, reporting, data review, and project management, ensuring compliance with applicable regulatory and contractual guidelines. Her knowledge of analytical and quality assurance protocols, including AFCEE, USACE, DOE, SW-846 and CLP were valuable in the ongoing evaluation of laboratory capabilities and client requests. As the primary party responsible for achieving production goals, she scheduled, tracked and prioritized analytical requests for all functional groups. She guided project managers and interacted with sales and marketing staff to define program requirements and the laboratory's ability to perform. Production concerns also required the ongoing maintenance of instrumentation, including negotiation of service contracts and acquisition of new instruments. Ms. Pacheco was responsible for interacting with the health and safety officer to ensure that work areas were appropriately maintained and that sample archival and disposal were carried out in a manner that supported production efforts. She worked with the information systems group to procure the systems required to service production needs. Ms. Pacheco also interacted with the quality assurance staff to address training, performance evaluation and quality assurance issues.

Ms. Pacheco previously held the position of Project Manager for Paragon Analytics, Inc. (April 1996 to January 1998). Ms. Pacheco has extensive experience managing a variety of federal programs for clients servicing both the Department of Energy (DOE) and the Department of Defense (DOD). Her background in radiochemistry combined with her broad knowledge of all laboratory areas enable her to provide technical assistance as well as excellent service to a wide variety of clients. She is responsible for assisting clients with the initial phases of project planning. She provides the laboratory with detailed program distillations in order to ensure that the laboratory's performance meets all analytical and regulatory requirements. Ms. Pacheco provides input into production planning and work flow coordination in order to ensure the timely completion of all required deliverables. She maintains tracking information for all work orders in progress for her assigned clients in order to provide efficient feedback and facilitate communication between the laboratory and client. Upon completion of reports, she is responsible for reviewing final data packages and electronic deliverables to ensure compliance with the requirements of the project specific statement of work as well as PAI QA specifications.

As Client Services Manager for PACE, Incorporated (July 1994 to February 1996), Ms. Pacheco was responsible for management of the laboratory's large federal programs and oversight of all areas of client contact, including supervision of junior project managers and other client service personnel. She successfully managed programs providing analytical services in support of remedial investigations, on-going monitoring at several sites, including Brookhaven National Laboratory, Oak Ridge National Laboratory, Hanford, and the Pantex Plant. The programs she managed encompassed all areas of analysis, including GC/MS, pesticides, high explosives, metals, wet chemistry and a full range of radiochemical analyses and accounted for \$3 million worth of work annually. She developed a reputation for excellence in her ability to service her client's technical and administrative needs. During this period, Ms. Pacheco also participated in the regional management structure of the laboratory. As an integral part of the management team, she participated in strategic planning and business development, bringing client perspective to the laboratory's management of growth and direction.

Ms. Pacheco was also responsible for the development of streamlined procedures for sample receipt, storage, archival, disposal and maintenance of internal chain-of custody documentation. She formalized these procedures and provided training to individuals responsible for performing the duties daily.

As a Radiochemist for Enseco Mixed Waste Laboratory (May 1992 to July 1994), Ms. Pacheco's duties included constant tracking of samples and production planning. She was responsible for providing completed data packages to program management for ultimate delivery to the client. Ms. Pacheco developed and wrote standard operating procedures for data review and validation and record maintenance for the radiochemistry department. Her duties as an analyst included performance of analyses utilizing Alpha Spectroscopy, Gamma Spectroscopy, Liquid Scintillation, Gas Proportional Counting and Kinetic Phosphorescence methods. She also performed as a lab technician as necessary, providing assistance in preparations for gross alpha and beta, tritium, radium-226, radium-228, total uranium and alpha isotopes. She maintained quality control measures for analytical procedures and counting instrumentation and provided feedback to preparations analysts on data quality. During her tenure as leader of the radiochemistry group, the group consistently met or exceeded its production goals.

Ms. Pacheco also has experience in the area of organic chemistry. As a GC analyst for Enseco Rocky Mountain Analytical Laboratory (November 1991 to May 1992) she performed analyses by gas chromatography according to SW-846 and EPA drinking water methodologies. Her duties also included data review and coordination of production for ten gas chromatographs and a variety of analyses. She cooperated with the technical manager to develop preventive maintenance procedures for her area.

Ms. Pacheco graduated Magna Cum Laude from Villanova University in 1988 with a Bachelors of Science Degree in Physics and a Bachelors of Science Degree in Business. Ms. Pacheco holds additional formal training including: 40-hour Radiation Worker Certification, Total Quality Management (TQM), Hazard Communication.

DEBRA SCHEIB

QUALITY ASSURANCE OPERATIONS MANAGER

Ms. Scheib is the Quality Assurance Operations Manager at Paragon Analytics. She is responsible for the continuing development and monitoring of Paragon's Quality Assurance (QA) program. She manages annual updates/revisions to the Laboratory Quality Assurance Plan (LQAP) and Standard Operating Procedures (SOPs). She oversees Paragon's State certifications and Agency approvals, facilitates on-site audits, is the focal point for quality related correspondence with clients and administers Paragon's internal audit, data review and Proficiency Testing (PT) programs. Ms. Scheib additionally oversees Paragon's training program and daily QA/QC operations. Her duties include reviewing/approving nonconformance reports (NCRs), coordinating/approving laboratory corrective action responses, updating laboratory control chart limits, overseeing the management and verification of laboratory support equipment (i.e., thermometers, weights, balances), maintaining controlled laboratory forms and benchsheets, issuing laboratory logbooks and controlled documents, maintaining employee training records, and managing the laboratory's data archives. Ms. Scheib's unique and in-depth background in analytical techniques, regulatory criteria and quality systems management is vital to ensuring the quality and defensibility of Paragon's work and that client data quality objectives (DQOs) are met.

Ms. Scheib possesses 23 years experience in providing technical and quality assurance support services. She has extensive knowledge and experience regarding environmental testing methodologies, data quality assessment procedures and total quality systems implementation, evaluation and management. Ms. Scheib is well versed in Federal and State environmental regulatory QA/QC criteria and has supported various CERCLA, ARCS, RCRA, UST, CWA and CAA projects in EPA Regions I, II, III, IV, V, VI, VIII, IX and X. Ms. Scheib has also supported operations at numerous DOE and DOD (HAZWRAP, AFCEE, USACE, Navy CLEAN-NorthDiv, SouthDiv, ChesDiv, PacDiv) project sites. She has a strong working knowledge of customized computer data systems, including ERPIMS and IRDMIS.

While Quality Assurance Specialist for Paragon Analytics, Inc., Ms. Scheib assisted the Quality Assurance Manager in maintaining the laboratory quality assurance program. She was principally responsible for managing Paragon's State certifications, analytical support equipment, internal audits, employee training records, controlled benchsheets and archived data. She also updated SOPs and assisted in proposal preparation.

As Client Services Technician for Omnicare Pharmacy Services of Pittsburgh, Ms. Scheib provided customer service support to Personal Care Homes and Skilled

Nursing Facilities, and assisted in the development and maintenance of a quality assurance program that resulted in the receipt of Joint Commission for the Accreditation of Hospital Organizations (JCAHO) pharmacy certification. She also provided in-house operational support and maintained various computer databases.

For TetraTech/NUS (formerly Brown & Root Environmental), Ms. Scheib served as both unit-office Quality Assurance Representative and Navy CLEAN Quality Assurance Program Manager. In this capacity she developed and maintained Quality Control Management Plans (QCMPs) and SOPs. Ms. Scheib participated in project negotiations, reviewed/approved project planning documents and deliverables, and conducted task order compliance reviews and systems, field, file and vendor audits. She also established Master Service Agreements with analytical laboratories, reviewed/approved laboratory work-orders and provided analytical subcontractor oversight.

Previously at TetraTech/NUS, Ms. Scheib functioned as Data Validation Coordinator and Project Manager. As such, she managed data validation efforts performed for various government and industrial clients at all Data Quality Objectives (DQO) levels. She also developed extensive technical training and electronic data management programs. Formerly as Field Chemist/Sampler for TetraTech/NUS, Ms. Scheib supervised two additional chemists operating three mobile laboratories in which gas chromatographic (GC), atomic absorption (AA) and/or x-ray fluorescence (XRF) analyses were performed. Matrices sampled/analyzed included soils, sludges, waters, wipes, soil gas, air and particulates. Various methods of analyses were performed for volatile organic analytes (VOAs), base-neutral/acid extractable compounds (BNAs), pesticides, herbicides and selected metals. Ms. Scheib also conducted process monitoring at a New York State Electric and Gas (NYSEG) power facility and evaluated Material Safety Data Sheets (MSDSs) under contract to Hoechst Celanese. Additionally, Ms. Scheib was deposed as a Michigan Department of Natural Resources (MDNR) State witness in support of litigation against the Village of Schoolcraft.

As an Organics Analyst at Wright Laboratory Services, Inc., Ms. Scheib primarily performed various GC analyses. She also performed cyanide and various metals AA analyses. Ms. Scheib developed and implemented the company's microbiology and quality assurance programs.

As Lab Manager for Swatara Township Municipal Authority, Ms. Scheib performed process and permit analyses, trained operations personnel, and maintained laboratory operations and inventory for a 4MGD aerobic secondary wastewater treatment facility. She wrote and illustrated two comprehensive procedures manuals and successfully established a formal plant-wide quality control program. Concurrently, as an independent operator, Ms. Scheib operated an extended aeration packaged wastewater treatment plant for a privately owned trailer park.

Ms. Scheib graduated from California University of Pennsylvania with a Bachelors of Science Degree in Environmental Sciences. Additionally, she holds an Associates of Science in Quality Technical Management from Community College Allegheny County and certificates in Environmental Management & Regulation, from Robert Morris College in 1997 and Chemical Technology, Dauphin County Technical High School in 1977. Ms. Scheib is also a member of the American Society for Quality (ASQ) and was a Certified Quality Auditor (CQA) 1996-1999.

DAVID C. BURNS

RADIOCHEMISTRY TECHNICAL MANAGER / HEALTH AND SAFETY MANAGER / RADIATION SAFETY MANAGER

Mr. Burns is the Manager of the Radiochemistry Department and the Health and Safety Officer at Paragon Analytics. He has 12 years experience in environmental testing. He is responsible for all aspects of the department, including chemical separations, nuclear measurements instrumentation and analytical data reduction as well as all personnel training and development. He has extensive experience managing the successful and timely completion of large numbers of simultaneous, complex analytical projects. Mr. Burns ensures regulatory/contractual compliance and technical validity/defensibility in all final data packages.

Mr. Burns has ten years experience in the radiochemistry instrument lab. He is fully qualified to operate and maintain all nuclear measurements instrumentation currently in use, including Ortec Alpha Spectroscopy Systems, Ortec HPGe Gamma Spectroscopy Systems, Tennelec/Oxford Gas Flow Proportional Systems, Beckman Liquid Scintillation Counters, Ludlum Alpha Scintillation Counters and a Chemchek Kinetic Phosphorimetry Analyzer. He has significant computer programming experience and has developed and written analytical reporting software used in the lab. Mr. Burns also has significant bench chemistry experience with most standard separation procedures and published methods. He has also developed innovative methods for quantifying low levels of H-3, Tc-99, Pb-210, Ra-226, Pu-241 and other actinides in environmental matrices.

In 2003 Mr. Burns completed his M.S. in Environmental Health, specializing in Industrial Hygiene. Data for his thesis, "Evaluation of Worker Protection in a Mixed-Waste Environmental Laboratory" was collected at Paragon and provided a technique for assessing potential hazards in environmental samples of unknown origin as well as a thorough evaluation of hazards related to overall laboratory practices. In this program of study, in the CSU Department of Environmental and Radiological Health Sciences, Mr. Burns also received graduate course work in radiation dosimetry and nuclear measurement techniques.

In 1993, Mr. Burns was a Ship's Officer/Physical Scientist for the National Oceanic and Atmospheric Administration, United States Department of Commerce. Mr. Burns was responsible for the safe operation and navigation of a NOAA research vessel with a compliment of 11 officers and 40 crew. In this position Mr. Burns performed hydrographic surveys and hazard investigations in the Gulf of Mexico. He managed electronic control of the hydrographic positioning system, ensuring data quality and proper annotation of existing nautical charts. In this position Mr. Burns also received training in hazardous materials handling and emergency response.

Mr. Burns was the Environmental Quality Control Technician for Highway 36 Land Development Company in 1992. He was the primary operator of a Mitsubishi TOX-10Σ organic halogen analyzer and a Shimadzu TOC-500 organic carbon analyzer. He gained experience in collecting and analyzing soil, groundwater, and leachate samples at a hazardous waste landfill operation. Mr. Burns completed training for OSHA certification for hazardous waste site workers (29 CFR 1910.120, Sec. E, P).

Mr. Burns graduated from Colorado State University with a Bachelors of Science Degree in Physical Science in 1992. He also obtained a Masters of Science Degree in Industrial Hygiene from Colorado State University in 2003.

LANCE R. STEERE
PROJECT MANAGER

Mr. Steere is the Senior Project Manager for Paragon Analytics. Mr. Steere's client base consists mainly of those clients requiring radiochemistry analyses. With over 25 years experience in the analytical testing field, Mr. Steere possesses a broad knowledge in all laboratory areas. He is responsible for managing analytical efforts requested by Paragon's largest client, the Los Alamos National Laboratories (LANL). Since 1994, Paragon Analytics, Inc., formerly Analytical Technologies, Inc. (ATI), has performed analyses totaling over \$5 million for LANL. These analyses include high explosives, pesticides, metals, wet chemistry, various GCMS parameters, and a full range of radiochemistry determinations. All deliverables for this client are high level, validatable data packages that also include electronic data deliverables (EDDs).

Mr. Steere assists his clients during the initial set-up phase of project planning, helping to coordinate the analytical tests to meet the regulatory and project requirements. He acts as a facilitator for communication of client requirements to the laboratory production groups, as well as for production's input to the project's development. He provides price quotes and information on laboratory capabilities to his clients, and tracks each client's project throughout the laboratory, providing information on the project's progress as requested. Mr. Steere reviews each data package for compliance with project specific and Paragon quality assurance (QA) requirements, upon completion of the laboratory data package reports. He strives to build long-term relationships with all Paragon's clients through a commitment to high quality service and dependability.

While acting as Senior Project Manager at ATI, Mr. Steere concurrently served as the Radiochemistry Quality Assurance Manager. Many of Mr. Steere's duties focused on maintenance of QA documentation, including: training records, corrective action reports, nonconformance reports, standards verification, traceability records, validations of new procedures, and software verification and validations. He was responsible for revising radiochemistry Standard Operating Procedures (SOPs), while ensuring that the revisions were implemented in practice, laboratory SOP manuals and personnel training records. Mr. Steere conducted internal audits of the radiochemistry and other laboratory departments, and served as point of contact for external laboratory auditors. Additionally, Mr. Steere was responsible for reviewing ongoing work, including: instrument logs, calibration records, laboratory logbooks, external chain of custodies, routine reports and Performance Testing (PT) sample results. He also performed trend analysis of control charts and provided support for marketing, proposal writing, overall laboratory QA development, radioactive waste procedures, and research and development for new radiochemistry procedures.

Mr. Steere served as the Radiochemistry Sample Preparation Supervisor during the start-up phases of ATI's radiochemistry laboratory. He supervised personnel in the following laboratory areas: environmental and low-level actinides, radium/strontium, gross alpha/gross beta, tritium, radioactive standards and quality control (QC) preparation, sample pre-screen, and muffle furnace and grinding room sample preparation. His duties included supervising the activities of the lead chemists and technicians, and maintaining overall laboratory quality, productivity and efficiency. Numerous new preparation procedures were developed and implemented and many radiochemistry department staff were added.

Concurrent with his radiochemistry department responsibilities, Mr. Steere also served as ATI's Sample Control Department Supervisor and Waste Disposal Coordinator. During this time he

formalized sample control operations into SOPs, and coordinated the timely transfer of radiological screening information to the health physics, radiochemistry preparation and instrumentation, and other laboratory production departments. Mr. Steere also wrote and implemented comprehensive SOPs on laboratory-wide waste collection and segregation procedures, waste disposal practices, waste testing and characterization and hazardous sample notification to waste disposal personnel. He continued to be involved in waste collection and handling procedures, which were subsequently developed for the radiochemistry department areas, with a focus on waste minimization and use of non-hazardous reagents in all laboratory procedures.

Mr. Steere was also responsible for the start-up of the radiochemical analysis laboratory while employed at S-Cubed Laboratories. As Senior Chemist, his duties included radioactive sample tracking and inventory, safe handling methods, counting instrument QC, equipment and chemical purchasing, purchasing of calibration sources and radioisotope standards, and training of laboratory personnel. Mr. Steere was responsible for implementing SOPs for a variety of analyses including: quantitative Gross Alpha and Gross Beta, Pb210, Ra228, Isotopic Thorium, Actinides and Ra226 via deemanation. Mr. Steere implemented S-Cubed's participation in the US Environmental Protection Agency (USEPA) sponsored Laboratory Intercomparison Study for radionuclides. Concurrent with his other responsibilities, Mr. Steere also served as S-Cubed Laboratories' Project Manager for Isotope Dilution for four years. In this capacity, he functioned as the client contact person and performed analytical data package reviews. He supervised up to five analysts and interfaced with accounting, providing invoicing and contract status information. He wrote SOPs for sample management and analysis procedures, and computer software programs to enhance productivity and ensure the accuracy of the isotope dilution data packages generated.

Previously at S-Cubed Laboratories, Mr. Steere was a GCMS Operator responsible for the operation and maintenance of two Finnigan GCMS instruments. In this position, he gained extensive experience performing volatile organics analytes (VOA) and Base, Neutral and Acids (BNA) analysis for CLP contract work. Mr. Steere utilized isotope dilution analysis to investigate the partitioning of analytes in the zero head space (ZHE) process. He also developed an analysis for alcohols and water soluble compounds, which utilized a heated purge and trap method. Mr. Steere presented a paper on the utilization of isotope dilution techniques to correct for temperature variance in heated purge and trap methods at the May, 1991, EPA Methods Caucus in Norfolk, Virginia. Mr. Steere's other duties included the review of project QAPJP's for the Superfund SITE program, and the performance of external laboratory audits. He also analyzed herbicides, pesticides and TPH using gas chromatography (GC) methods, and prepared final data packages for the HPLC analysis of explosives.

As a Chemist for Ajax International Corporation, Mr. Steere was involved in the organic synthesis and characterization of experimental reverse osmosis membranes. He also provided technical support in the production of cellulosic membranes and performed QC evaluation of incoming materials used in production.

Mr. Steere graduated from San Diego State University with a Bachelors of Science Degree in 1979. He additionally holds a Master of Science Degree in Chemistry from San Diego State University in 1985. Mr. Steere has also completed coursework in Hazardous Materials Management at the University of California, San Diego. Other formal trainings Mr. Steere has completed include: Seminar in Project Management Skills, Seminar in Hazardous Materials Management, Certification in DOT Shipping Regulations (HM126F & HM181), Supervisory Training, Radiation Safety Training for Laboratory Workers, Project Management & Client Relationship Training, Effective Management of a Chemical Analysis Lab Workshop, Total Quality Management (TQM) Training, and Seminar (4 weeks) in Public Speaking.

DEBORAH J. FAZIO
PROJECT MANAGER

Ms. Fazio is a Project Manager for Paragon Analytics. Ms. Fazio has 16 years of experience in the environmental testing industry. She has extensive knowledge of and experience managing a variety of commercial and federal programs. Ms. Fazio is familiar with various analytical methods and environmental regulations (RCRA, CERCLA, NPDES, UST).

As a Project Manager for Paragon, Ms. Fazio is responsible for assisting clients with the initial phases of project planning. She provides the laboratory with detailed program distillations in order to ensure that the laboratory's performance meets all analytical and regulatory requirements. Ms. Fazio provides input into production planning and work flow coordination in order to ensure the timely completion of all required deliverables. She maintains tracking information for all work orders in progress in order to provide efficient feedback and facilitate communication between the laboratory and the client. Upon completion of reports, she is responsible for reviewing final data packages, electronic deliverables, and invoices to ensure compliance with the requirements of the project specific statement of work as well as PAI QA specifications.

As Customer Service Manager for Quanterra, Inc. Ms. Fazio was the main point of contact for new clients, providing information about the laboratory's capacity, capabilities, and performance. The responsibilities of this job included all aspects of matching client requirements to the laboratory's capabilities prior to award of work. Reviewing QAPjP's, price quotations, contracts, negotiation of terms and conditions, and proposal review and preparation, were the majority of her responsibilities.

As Manager of Project Management for Quanterra Inc. Ms. Fazio managed a staff of 13 Project Managers, who had various levels of experience. She was responsible for their training and the assignment of the appropriate Project Manager based on the needed level of experience. Ms. Fazio was also responsible for tracking revenue generated by clients on a monthly basis and the timely payment by clients for completed work (accounts receivable). She maintained a functional forecast by analytical area which tracked incoming work by client, program, number of samples and required analyses.

As a Project Manager at Quanterra, Inc. Ms. Fazio collaborated with clients, regulators, and sales representatives to determine technical and service requirements for various programs. She monitored the status of projects while active in the laboratory, communicated any service or compliance issues to clients, prepared invoices, and wrote case narratives. As a Project Manager she was responsible for the review, distillation and communication of QAPjP information for programs she managed. She also was responsible for coordination of any validation or invoicing questions after a report had been delivered to a client.

Ms Fazio has an Associates of Science Degree in Medical Technology from the State University of New York at Farmingdale.

JULIE M. ELLINGSON
PROJECT MANAGER

Ms. Ellingson is a Project Manager for Paragon Analytics. Ms. Ellingson has 5 years of experience in the environmental testing industry. As a Project Manager for Paragon, Ms. Ellingson is responsible for assisting clients with the initial phases of project planning. She is also responsible for providing the laboratory with detailed program specifics in order to ensure that the laboratory's performance meets all analytical and regulatory requirements. Ms.

Ellingson maintains tracking information for all work orders in progress in order to provide efficient feedback and facilitate communication between the laboratory and the client. Upon completion of reports, she is responsible for reviewing final data packages, electronic deliverables, and invoices to ensure compliance with the requirements of the project specific statement of work as well as PAI QA specifications.

While a Radiochemistry Analyst, at Paragon Analytics, Ms. Ellingson was the primary analyst for both the gas flow proportional counter and the liquid scintillation counter. Additionally Ms. Ellingson was the secondary analyst for both the gamma and alpha spectroscopy instruments. In the Radiochemistry Instrument Lab Ms. Ellingson was also responsible for data review, calibration of the instrumentation, and review and validation of the data generated in the department.

Ms. Ellingson holds a Bachelors of Science Degree in Horticulture from Montana State University in 1999.

PETER A. GINTAUTAS, Ph.D.
LABORATORY OPERATIONS MANAGER

Dr. Gintautas is currently the lead for Paragon's laboratory operations. Dr. Gintautas was the lead technical authority for Paragon's quality assurance team (2003-2004). His focus includes improving Paragon's technical capabilities and documentation of those techniques throughout the lab. He is responsible for evaluating updates and revisions in promulgated methodologies. He evaluates new technologies for their applicability in a production laboratory setting and oversees in house development, training and validation for new methods. He oversees method detection limit studies for all tests where needed as well as developing better procedures for documenting initial and continuing demonstrations of capability. Dr. Gintautas is responsible for controlled release of approximately half of Paragon Analytics, Inc. standard operating procedures. He is a contributing author to Paragon's laboratory quality assurance plan. His broad knowledge of methods and regulations make him a valuable asset in the evaluation and implementation of client statements of work into the laboratory's capabilities.

Dr. Gintautas was the technical manager of Paragon's organic chemistry department from 1999 through the spring of 2003. His responsibilities included day-to-day supervision of the extractions, HPLC and Fuels analytical groups. He reviewed analytical data from all organics analytical groups. Dr. Gintautas also aided in training analysts within the organics groups in software use, preventive maintenance techniques, and general laboratory practices. He was responsible for implementation of technical improvements throughout the organics department. Dr. Gintautas developed and implemented analytical procedures for nitroguanidine (HPLC), hydroquinone (GC/MS), warfarin (HPLC), and ethylene glycol monobutyl ether (GC/FID) in the last three years. He was also responsible for updating and revising more than 50 of Paragon Analytics, Inc. standard operating procedures.

Dr. Gintautas supervised all areas of organic analysis at the Environmental Laboratory at Harbor Branch Oceanographic Institution (1996-1999). He scheduled work of ten analysts and technicians performing extractions and organic analysis using GC/MS, GC/ECD, GC/NPD, GC/FID, GC/FPD, GC/PID/ELCD, HPLC and IC. He ensured training of analysts as well as proper implementation of EPA and other regulatory protocols. He was instrumental in planning, developing and implementing many research techniques to meet special requests and needs of clients. Analysis of a common fungicide, thiabendazole, in citrus juice and frozen juice

concentrates is one such technique developed in response to the needs of the citrus industry and in particular, citrus exporters. Another research technique developed by Dr. Gintautas was analysis of coprostanol and other fecal sterols in sediments. Coprostanol and other fecal sterols are degradation products of cholesterol and similar compounds found in animal tissues. The fecal sterol compounds are slow to degrade and can be utilized as markers and tracers of transport of sewage effluent into the environment.

At the Hazardous Waste Research and Information Center of the State of Illinois (1992-1995), Dr. Gintautas conducted research on metal speciation in contaminated soils and solid wastes. He utilized ICP/MS extensively in developing analytical methods for validation of speciation techniques as well as utilizing other techniques such as NMR, XPS and SEM to measure cadmium speciation in soils and sediments. Dr. Gintautas also prepared final reports, literature review papers, and funding proposals for research sponsored by the U.S. EPA and the Waterways Experiment Station of the U.S. Army Corps of Engineers.

At Analytica, Inc. (1990-1991), Dr. Gintautas was the senior mass spectroscopy analyst and was responsible for validation of volatile and semivolatile mass spectrometry data. He also performed analysis for volatile and semi-volatile organic compounds using mass spectrometric methods. Dr. Gintautas also trained extractions staff in general lab practices and implemented herbicide extraction and analysis techniques (Methods 515 and 8150) during this period.

Dr. Gintautas' dissertation research involved development of analytical techniques for ionic organic compounds in RCRA Subtitle D landfill leachates as part of a cooperative research agreement with the Athens Environmental Research Laboratory of the U.S. EPA. A variety of techniques were used in this research including HPLC, purge and trap GC/MS, semivolatile GC/MS and ion chromatography. A second phase of this research focused on determining how ionic organic compounds found in municipal landfill leachates interacted with the surfaces of carbonate minerals, which are commonly found in aquifer materials the leachates might reach. His previous research areas included metal transport into and behavior of metals in lakes and their underlying sediments. The use of geochemical information derived from lake sediments in regional mineral exploration programs was another area of research.

Dr. Gintautas earned his Bachelors of Science Degree in Geology at the University of Minnesota in 1979, his Masters of Science in Geology at University of Calgary in 1984, and his Doctorate in Geochemistry from Colorado School of Mines in 1996.

STEPHEN M. WORKMAN

INORGANICS TECHNICAL MANAGER

Mr. Workman is the Manager for the Inorganics section at Paragon Analytics. Currently, he is responsible for overall analysis and method implementation. Mr. Workman works closely with managers of the other major sections (Organics and Radiochemistry) in the development of unusual methods.

His duties have included design of the Inorganics laboratory. He also worked with the team responsible for the design and expansion of the Fort Collins, Colorado facility to include Radiochemistry analyses. Mr. Workman has contributed to methods used for the determination of Sr-90, C-14, Pb-210, Fe-55, Se-79, Pm-147, actinides, and tritium.

At Chemex International, Inc. (1988 to 1990), Mr. Workman supervised analysts in the GC/HPLC and Extractions Departments. These departments performed the analysis of organochlorine and organophosphorus pesticides, PCB's, carbamates, explosives, phenoxy acid herbicides, and other semi-volatile compounds. He also worked on the development of methodologies for determining low-levels of chlorophenolic and explosive compounds. The explosive compounds which were determined include monomethylamine nitrate, nitroglycerin,

PETN and analytes listed in Method 8330. Special extraction methods and HPLC conditions were implemented in order to successfully determine these challenging analytes. An additional responsibility was the management of EPA/ITD Special Analytical Services (SAS) projects. These projects usually required the measurement of a variety of non-routine analytes. Mr. Workman became an employee of ATI when ATI acquired the assets of Chemex International, Inc. in March, 1990.

At Colorado State University (1974 to 1988), Mr. Workman managed the Soil Testing Laboratory (CSU-STL) for thirteen years. This laboratory analyzed more than 10,000 soil, plant and water samples per year for the purpose of evaluating soil fertility, salinity, and trace metal toxicities. He performed research on the solubility and availability of nutrients and heavy metals to plants. Under Mr. Workman's direction the CSU-STL pioneered the use of inductively coupled plasma atomic emission spectrometry for the simultaneous determination of metals in soil extracts. Mr. Workman also taught a graduate level course in soil and plant analysis. Mr. Workman graduated with a Bachelors of Science Degree in Chemistry from Colorado State University in 1972 and a Masters of Science Degree in Soil Chemistry from Colorado State University in 1985.

RENEE GALLEGOS

RADIOCHEMISTRY OPERATIONS MANAGER

Ms. Gallegos has nine years experience in the Radiochemistry Department. As Radiochemistry Operations Manager for Paragon Analytics, Ms. Gallegos is responsible for overseeing all departmental activities, including chemical separations, nuclear measurements, analytical data reduction and personnel training. She is responsible for ensuring the regulatory/contractual compliance and technical validity/defensibility of all final data packages. She provides leadership and technical expertise to ensure completion and follow-through on day-to-day operations.

Previously serving as Paragon's Radiochemistry Instrumentation Laboratory Supervisor, Ms. Gallegos routinely evaluated capacity and adjusted resources to meet production commitments. She ensured that the calibrations of all nuclear instruments were current and that these instruments were functioning at capacity. She was also responsible for reviewing and writing Standard Operating Procedures (SOPs) for the operation and calibration of the instrumentation. She is qualified to operate, calibrate, and maintain the instrumentation currently in use in the areas of alpha spectroscopy, gamma spectroscopy, gas flow proportional counting, and liquid scintillation systems. Ms. Gallegos additionally performed final data review and performance evaluation data review.

Ms. Gallegos has over six years experience in a Synthetic Biological Organic Chemistry Laboratory. She implemented a bioassay to screen synthesized compounds in the lab for anti-microbial activity. DNA agarose gel electrophoresis was performed by Ms Gallegos to test the DNA nicking activity of the anti-tumor drug Quinocarcin. Ms Gallegos performed shake culture fermentation for the production of natural compounds with known activity. Natural products were then isolated and purified using various filtration, extraction, and chromatography procedures. Quinocarcinol and quinocarcinamide were analogs of Quinocarcin that were isolated using HPLC by Ms Gallegos. Additional HPLC experience was obtained by collecting pharmacokinetic data for diltiazem. Ms Gallegos was responsible for over expression and purification of 434 repressor protein from a plasmid vector. Other responsibilities: 1) served as the Group Safety Officer and Radiation Program Manager. 2) Stored and maintained all fungal, yeast, bacterial, and mycobacterium stock cultures. 3) Plasmid prep, restriction mapping and storage of DNA. 4) Teaching, training, and supervising chemistry undergraduates, graduates, and doctorates, in microbiology and molecular biology techniques as related

to their individual projects.

In 1989, Ms Gallegos worked as a Microbiological Analyst in the Wyoming Public Health Laboratory. She was responsible to set up the HIV laboratory for testing samples sent in from across the state. She established written SOPs for the HIV/STD laboratory. The quality control program designed and implemented by Ms Gallegos for this area led directly to lab licensure.

As a graduate student, Ms Gallegos designed and conducted laboratory experiments to investigate the genetics and to further characterize the bacteriophage MAC-1. These experiments utilized the following techniques: transfection assays, southern blots, liquid scintillation counting, plaque assays, electron microscopy, agarose gel electrophoresis, restriction endonuclease digests, growth, isolation, and purification procedures, and DNA isolation procedures.

Ms Gallegos has 4 years experience as a Medical Technologist certified at one time by the Board of Registry, American Society of Clinical Pathology, MT (ASCP) and the National Certifying Agency for laboratory personnel as a Clinical Laboratory Scientist (CLS). Medical technology skills have been utilized in a hospital environment, private clinical laboratory, and a pediatric clinic where routine diagnostic tests were performed accurately recording and reporting results. Experience in automated methodologies including quality control and general instrumentation maintenance and manual methodology.

In 1985, Ms. Gallegos worked as a production technician in human diagnostics. She has experience in reagent production, in-process testing, documentation of production processes, and research and development. She independently set-up the tissue sectioning department implementing standard operation procedures that met FDA regulations and followed good manufacturing practices. Ms Gallegos trained and supervised employees in cryotomy. She helped to organize and participated in quality control circles.

Ms. Gallegos earned her Bachelors of Science Degree in Microbiology and Medical Technology at Colorado State University in 1984 and her Masters of Science in Microbiology at Colorado State University in 1988. She has continued her education through Colorado State University by taking courses in Radiation Detection Electronics in 2002 and Safe Handling of Unsealed Sources of Radioactive Materials in 1987.

GLENN R. BARROWS

INFORMATION SYSTEMS MANAGER

Glenn Barrows currently holds the position of Information Systems Manager. Mr. Barrows is responsible for all computer systems including networks, workstations, and hardware. In addition, he is responsible for formulation of direction of the Information Systems department and for disaster recovery .

As Systems Coordinator for Wallick and Volk, Mr. Barrows was responsible for managing the computer systems of a mortgage banking firm with three local networks and four branch office networks, an imaging system, a COLD storage system and an AS/400 minicomputer. He has vast experience with programming in Visual Basic, Access, Dbase, COBOL and Pascal along with an extensive background in database design and reporting. Mr. Barrows is currently a Beta tester for Microsoft, and has been a tester for Servantis Systems, Inc. and The Sundial Group as well.

Mr. Barrows accomplishments and capabilities include: Designed and maintained a database

for the Downtown Development Authority for the City of Cheyenne, Wyoming, Implemented imaging system from concept to reality to achieve a near paperless office, Implemented COLD storage system for the retention and use of corporate reports, Upgraded Novell RAID 1 servers to Novell RAID 5 systems, Converted existing token-ring networks to fast Ethernet, Currently pursuing Microsoft Certification in Windows 2000 Server, Currently upgrading existing network to a fully switched Cisco environment, Currently implementing imaging and CDROM solution for document storage and report distribution, Currently converting existing Novell network to an all Microsoft 2000 network, Experienced in AS/400, Windows 2000, Windows NT, Windows 95, Windows for Workgroups, Windows 3.1, OS/2 and DOS operating systems, Thorough knowledge of telecommunications and communication protocols, Novell 'Service and Support Course', Novell 'System Administrator Course for Novell 4.11', Novell 'Integrating Novell and Windows NT Course', Microsoft 'SQL Server 7.0 Course', Microsoft 'Intermediate Access Programming Course', Microsoft 'Integrating Windows NT and Novell 4.11', Microsoft 'Administering Windows NT 4.0', Microsoft 'NT Core Technologies', Microsoft 'Supporting NT 4.0 Enterprise'.

Mr. Barrows graduated with a Bachelors of Arts Degree in Philosophy from the University of Denver in 1973 and an Associates of Science Degree in Computer Sciences from Laramie County Community College in 1993.

MARK S. ROCHÉ

LIMS MANAGER

Mr. Roché is the Laboratory Information Systems (LIMS) Manager for Paragon Analytics. Mr. Roche' has used his background as an expert in data automation and his nearly 20 years of combined experience working in the environmental testing industry to design, develop, and implement the Laboratory Information Management System (LIMS) at Paragon Analytics. He is responsible for: training all personnel in the use of LIMS; developing user interfaces, custom reports, and electronic data upload systems, including compilation of electronic data deliverables (EDDs); and integrating instrumentation data transfers within LIMS.

In addition, Mr. Roché supervises a staff of LIMS support personnel and directs all LIMS related development efforts. Mr. Roche' is also responsible for developing automation systems that enhance the level of service provided by Paragon Analytics for it's customers. These systems include: sample tracking, automated work scheduling, management reports, data transfers between analytical instruments and the LIMS, LIMS data processing, report generation, waste characterization of samples via heuristic techniques (developed by Mr. Roche'), statistical evaluation of data for control charting purposes, and the development of future LIMS capabilities.

In addition to his background as an analytical chemist for his previous employers, Mr. Roche' has nearly 10 years of experience in database design and development as well as systems analysis techniques and applications development. Mr. Roche' often works with clients of Paragon Analytics, as a consultant, to help them develop EDD structures and specialized report formats. Consequently, his background, both as a chemist and an application developer for many years, has given Mr. Roche' a unique understanding of the business process, and needs, of an environmental testing laboratory.

Prior to his position as LIMS manager at Paragon Analytics, Mr. Roché was employed at PACE, Incorporated in Golden, Colorado (1989-1996), where he managed and supported hardware and software for a 50+ PC network system, and where he was also the System Administrator for a WANG mainframe network that was comprised of more than 30 workstations. He also developed custom EDD formats for clients such as PANTEX, Los Alamos National Lab (LANL) and Idaho National Engineering Laboratories (DEEMS). During this same period, Mr. Roche' developed software automation tools for both the inorganics and the organics departments at

PACE, Incorporated. These tools were used to collect and process calibration and sample data from various analytical instrumentation including GCs, GCMSs, ICPs, and graphite furnaces. Also while at PACE, Incorporated, Mr. Roché was responsible for developing hazardous waste handling procedures for PACE in Denver while serving as Waste Management/Safety Officer. As Inorganics Department Manager during the same time, Mr. Roché: Managed analyst staff members performing inorganic analyses using SW846, EPA and CLP methodologies, developed graphite furnace atomic absorption (GFAA) methodologies for non-standard client matrices and criteria, developed a metals preparatory database for sample tracking and labeling, developed macro-driven data reduction spreadsheets for graphite furnace analyses, which evaluated and flagged sample data, and generated CLP forms/reports for inorganic analyses.

Prior to his position of Inorganics Department Manager at Pace, Incorporated, Mr. Roche' worked as a graphite furnace operator for nearly two years in the metals department. In this capacity, Mr. Roche' used CLP, SW846, and NIOSH methodologies to perform metals analyses on a wide variety of sample matrices including soils, sludges, oils, liquids, wastewater, drinking water, filters and other industrial hygiene media.

At CTL Engineering, a geochemical consulting and testing firm in Columbus, Ohio (1988-1989), Mr. Roche' was responsible for the prep and analysis of various sample matrices via a variety of SW846, ASTM, and proprietary testing methodologies. Some of the analyses, prep methods, and instrumentation used/performed by Mr. Roche' at CTL Engineering included flame atomic absorption (FAA), GC/FID, sulfur and carbon analyzers, cyanide distillation and analysis, TCLP extractions, oil and grease determinations, and spectrometric techniques.

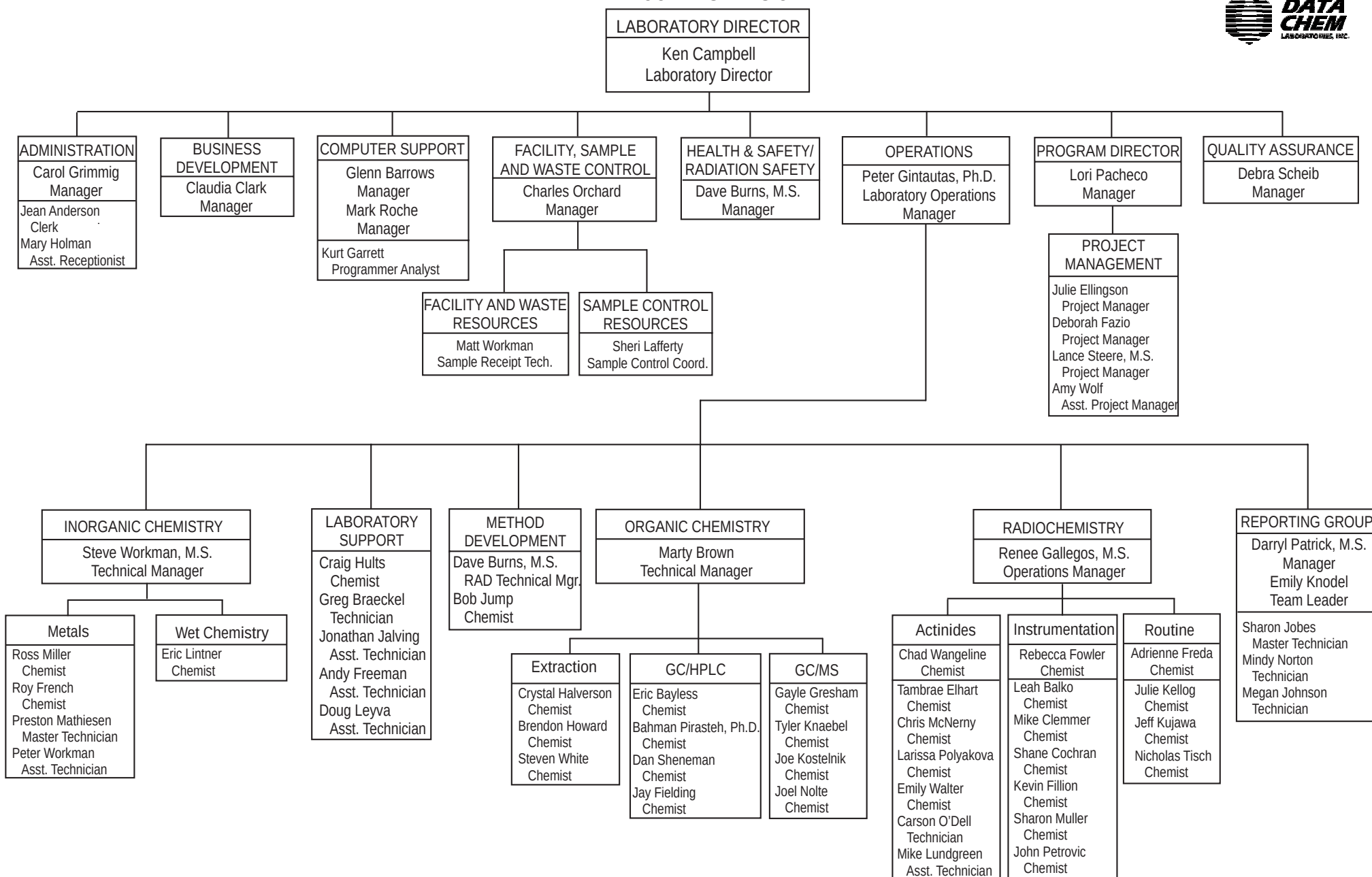
Prior to his work at CTL Engineering, Mr. Roche' managed a small staff of laboratory personnel for Florida Plating (the largest plating company in the southeast U.S. at that time). While at Florida Plating (1986-1988), Mr. Roche developed and established sampling and analyses regimes, which were used to maintain proper levels of various compounds and chemicals in plating and anodizing solutions. Analyses of these solutions were performed using a combination of classical wet chemistry techniques and a flame AA. Mr. Roche' also developed electrochemical fingerprinting techniques and other quality assurance criteria that were used to monitor the quality of the finished product at Florida Plating. His responsibilities also included the analysis and monitoring of daily waste treatment discharges into the local sewer system at Florida Plating.

In his position as a lab technician for Honeywell (1983-1986), Mr. Roche' used a variety of inhouse analytical methodologies for the analysis and maintenance of various plating solutions that were used for the production of printed circuit boards (or, printed wiring boards, PWB). In his position at Honeywell, Mr. Roche' also performed materials testing of all of the products used in the PWB manufacturing process—these tests including subjection of completed PWBs to various climate conditions while testing the integrity of its electrical properties and lamination and void analyses of PWBs. Mr. Roche' also collected cross-section samples of completed PWBs and used microscopy techniques to evaluate the structure of completed circuit boards. Some of the instrumentation used by Mr. Roche' while at Honeywell included, AA, x-ray fluorescence (XRF), and UV/VIS spectroscopy.

Mr. Roche graduated with an Associates of Science Degree in Chemical Engineering at Hillsborough Community College in 1986 and a Bachelors of Science Degree in Computer Information Systems from Regis University in 2002. Additional certifications and training include: Microsoft SQL Server 7.0 Database Administrator (DBA), Microsoft SQL Server 7.0 Database developer, Microsoft Access (advanced), Microsoft Access Developer training (advanced), Structured Query Language (SQL), Relational Database Design, 40 Hour OSHA training (HAZMAT), CPR certified, First Aid certified.

7.2 ORGANIZATION CHART

FT. COLLINS DIVISION



8.0 RADIOCHEMISTRY CAPABILITIES

Paragon offers full service environmental radiochemistry testing in radioactive, hazardous and mixed waste samples. In early 1992, Paragon initiated a major facility expansion at the Fort Collins, Colorado laboratory, resulting in a 26,500 square foot facility: 14,000 square feet dedicated to radiochemical analyses and 11,000 square feet for organic and inorganic analyses. This modern facility exhibits state-of-the-art design and construction for laboratory facilities. The laboratory has a sophisticated waste handling system and both positive and negative pressure air lock systems to eliminate any cross contamination from radioactive or organic volatiles.

Technically sound, defensible data are ensured through a quality assurance program that meets the requirements of NQA-1, USDOE 5700.6C and USDOE-LMD EM Environmental S&A Guidance No. 3, as well as USEPA QAMS 005/80. For radiochemical analyses, Paragon uses standard methods such as the USDOE Method Compendium, HASL, ASTM, and USEPA 900 series. The quality of radiochemical analyses is continually monitored through participation in both USDOE inter-comparison and independent, commercially available, NVLAP-accredited vendor performance testing (PT) studies.

8.1 RADIOACTIVE MATERIALS LICENSE

State of Colorado
Department of Public Health and Environment

RADIOACTIVE MATERIALS LICENSE

Pursuant to the *Colorado Radiation Control Act*, Title 25, Article 11, *Colorado Revised Statutes*, and the State of Colorado *Rules and Regulations Pertaining to Radiation Control*, Part 3, and in reliance on statements and representations heretofore made by the licensee designated below; a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material(s) designated below; and to use such radioactive material(s) for the purpose(s) and at the place(s) designated below. This license is subject to all applicable rules, regulations, and orders now or hereafter in effect of the Colorado Department of Public Health and Environment and to any conditions specified below.

-
1. **Licensee: Paragon Analytics, Inc.**
 2. Address: 225 Commerce Drive, Fort Collins, Colorado 80524
 3. Colorado License Number 847-02, Amendment Number 08
 4. Expiration date: June 30, 2007
 5. Reference Number: _____ Fee Category: 3.M
-

6. Radioactive materials (element and mass no.)	7. Chemical and/or physical form	8. Maximum quantity licensee may possess at any one time
A. Hydrogen-3	A. Any	A. 1.85 GBq (50 mCi)
B. Any radioactive material with atomic numbers 3-83	B. Any	B. 370 MBq (10 mCi)
C. Any radioactive material with atomic number 84-100	C. Any	C. 370 MBq (10 mCi)
D. Source Material	D. Any	D. 37 MBq (1 mCi)
E. Any radioactive material with atomic numbers 3-98	E Sealed Sources	E. 187 MBq (5 mCi) total, no single source to exceed 1.11 MBq (30 µCi)

CONDITIONS

9. Radioactive material authorized in Items 6.A. through 6.D. to be received as environmental samples and hazardous waste samples for analysis only and reference materials used in the analytical procedure, to be processed for analysis in the laboratory and stored until transferred to an authorized recipient.

RADIOACTIVE MATERIALS LICENSE

10. Radioactive materials authorized in Item 6.E. may be received as commercially distributed radioactive standards and/or calibration sources for the calibration of analytical equipment.
11. Radioactive material may be used and stored only at 225 Commerce Drive, Fort Collins, Colorado, 80524.
12. The licensee shall comply with the provisions of the State of Colorado *Rules and Regulations Pertaining to Radiation Control*, Part 4, "Standards for Protection Against Radiation", and Part 10, "Notices, Instructions and Reports to Workers: Inspections".
13. Radioactive material shall be used by, or under the supervision of David C. Burns, Robert Jump, Steven Workman, Lance Steere, Charles Orchard, Rebecca Fowler, or Chad Wangeline.
14. The designated Radiation Safety Officer is David C. Burns.
15. Radioactive material authorized by Item 6 of this license shall be stored and used in a manner that will preclude use by unauthorized personnel.
16. Each sealed source containing radioactive material authorized in Item 6 shall be tested for leakage and/or contamination in accordance with RH 4.16 of the State of Colorado *Rules and Regulations Pertaining to Radiation Control* at intervals not to exceed six months.
17. The licensee shall not transfer possession and/or control of radioactive material or products containing radioactive material as a contaminant except:
 - A. by transfer of waste to an authorized recipient;
 - B. by transfer to a specifically licensed recipient; or,
 - C. as provided otherwise by specific condition of this license pursuant to the requirements of RH 3.22 of the State of Colorado *Rules and Regulations Pertaining to Radiation Control*.
18. Wipe tests for contamination must be completed weekly when radioactive materials are used.
19. The analysis of the wipes must be capable of detecting 20 disintegrations per minute (DPM) of alpha emitting radioactive material and 200 DPM of beta/gamma emitting radioactive material on the test sample.

State of Colorado
Department of Public Health and Environment

RADIOACTIVE MATERIALS LICENSE

20. If an area survey or wipe test detects the presence of radioactive materials in excess of the limits specified below, then the area and/or affected equipment shall be decontaminated until:

- A. the removable contamination is not greater than: 20 DPM (alpha) per 100 cm² and 200 DPM (beta/gamma) per 100 cm².
- B. the average fixed contamination is not greater than: 100 DPM (alpha) per 100 cm² and 1000 DPM (beta/gamma) per 100 cm².
- C. the maximum fixed contamination is not greater than 300 DPM (alpha) per 100 cm² and 3000 DPM (beta/gamma) per 100 cm².

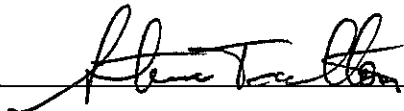
21. The licensee shall maintain records of surveys and wipe tests for contamination, waste disposal, and the analysis of liquid process wastes disposed of via the sewer.

22. In accordance with the requirements of RH 3.9.5 of the Regulations, the licensee shall provide financial assurance in a form acceptable to the Department, in the amount of \$250,000.00. This financial assurance shall be provided to the Department within 90 days of the date of this license.

23. The State of Colorado *Rules and Regulations Pertaining to Radiation Control* shall govern the licensee's statements in applications or letters, unless the licensee's statements are more restrictive than the regulations. Except as specifically provided otherwise by this license, the licensee shall possess and use radioactive material described in Item 6 of this license in accordance with statements, representations, and procedures contained in:

- A. the application and attachments dated May 30, 2002; and
- B. the license correspondence and attachments dated May 15, 2002; September 3, 2002; December 30, 2002; February 10, 2003; January 15, 2004, February 12, 2004, August 13, 2004.
- C. correspondence transmitting the financial surety funds, deposited with the State Treasury effective September 5, 2003, in the amount of \$160,000.00.

FOR THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Date: 9/29/04 By: 



COMPANY DESCRIPTION

Particle Technology Labs, Ltd. is a premier service laboratory, dedicated to providing quality particle size and characterization. It was founded in 1992 by Richard F. Karuhn. Our client list includes many of the top pharmaceutical, environmental, food, health and beauty companies worldwide. Utilizing many different technologies, PTL has the capacity to measure particle size, concentration, and shape, as well as surface area, porosimetry, and other physical measurements.

Our Registrations include:

- FDA Registered
- DEA Licensed
- ATF Permit
- cGMP Compliant



RICHARD F. KARUHN

BIOGRAPHY

Richard F. Karuhn received his Bachelor of Science degree in Chemistry from De Paul University in 1971, at which time he was an Associate Chemist for Illinois Institute of Technology Research Institute (IITRI). During a six-year period at IITRI, he was trained in *fine particle technology* from such notables as Drs. Brian Kaye and Reg Davies.

Prior to joining IITRI, Mr. Karuhn was engaged for many years in synthetic and analytical organic chemistry for the Velsicol Chemical Corporation. Following his tenure with IITRI, he held the position of Laboratory Director for Particle Data Laboratories for a 15 year period. Mr. Karuhn is currently the President and Laboratory Director of Particle Technology Labs, Ltd (PTL). PTL is a contract laboratory, specializing in particle sizing and characterization services, located in Downers Grove, Illinois.

Mr. Karuhn holds 8 patents, has published 35 times, provides expert witness services and presents lectures regarding the subject of *fine particle technology*. He has also co-authored a book on the subject with Dr. Keith Beddow of Iowa State University. His professional affiliations are listed below.

- Past Chairman of the ASTM E29.02 Committee on Subsieve Testing.
- Former member to the ASTM E-29 Executive Subcommittee on Subsieve Testing.
- Former member of ASTM Committee FO4 on Implant and Surgical Materials and Devices.
- American Chemical Society short-course instructor for 19 years on *fine particle technology*.
- Past member of the American Industrial Hygiene Association.
- Past member to the Fine Particle Society Executive Committee.
- Invited member to the Joint Association of Army, Navy, NASA and Air Force (JANNASF) Committee on Propellant Characterization. Official capacity was liaison between JANNAF and ASTM/ISO.

EXPERIENCE

Particle Technology Labs, Ltd.
Laboratory Manager

Downers Grove, IL
June 2002 to Present

Management Responsibilities:

- Supervised analysts, part-time technicians and other staff (8 employees total).
- Responsible for maintaining deadlines for all laboratory staff.
- Conducted performance evaluations and disciplinary actions.
- Performed interviews and made recommendations on hiring new employees.
- Involved in planning and implementing the company's business plan.
- Key holder for DEA (Schedule II-IV) and ATF sample storage.

Laboratory Responsibilities:

- Approved final data from analysts before releasing to clients
- Developed test methods and approved analyst methods.
- Performed sample analysis when needed and support to analysts on difficult projects.
- Assisted the Quality Assurance Unit (QAU) with pharmaceutical audits and FDA audits.
- Applied knowledge of instrument theories to solve client's and analytical problems.
- Discussed projects and developed new projects with clients by direct correspondence.
- Approved/Developed method validation and instrument qualification protocols under a cGMP quality system.
- Performed instrument qualifications (IQ, OQ, and PQ) and performance verifications.
- Wrote/Approved a variety of Standard Operating Procedures (SOPs) for instrumentation.
- Conducted work on litigation cases and provided testimony.
- Maintained all company computer systems, trouble shooting of instrument related issues and repairs.

Particle Technology Labs, Ltd.
Fine Particle Analyst

Downers Grove, IL.
June 2000 to June 2002

- Analyzed samples and developed test methods on all laboratory instrumentation.
- Discussed data with clients.
- Represented company at tradeshow.
- Presented a talk on the topic of Electric Sensing Zone technology. One of five speakers at the Chicago 2001 Bulk and Powder Solids Show short course on Particle Size Characterization.
- Demonstrated extensive knowledge of the theory surrounding nearly all forms of particle size, surface area, and other physical testing techniques including:
 - Laser Diffraction, Electric Sensing Zone, Photon Correlation, Light Obscuration-SPOS, Time of Flight-Aerodynamic Particle Size, Sieving, Zeta Potential, Dynamic Flow and Static Pressure Surface Area Analysis, Image Analysis, Photomicroscopy, True, Bulk and Tap Densities, X-Ray Sedimentation, Refractive Index Determination.
- Used the following instrumentation on a routine basis:
 - Micromeritics Elzone, Malvern Mastersizer S and 2000, Microtrac X-100, Beckman Coulter LS13320, Microtrac UPA-150, PSS 380 ZLS, TSI Aerosizer, PSS

Accusizer 770, HIAC/ROYCO 8000A, Beckman Coulter RapidVue, Image Pro Plus v4.0 software, Polarizing Light Microscope, Quantachrome Helium Pycnometer, Micromeretics Accupyc 1330, ATM Sonic Sieve, Retch Control "g" AS200 Sieve Shaker, Alpine Air Jet Sieve, Micromeretics Tristar 3000, Quantachrom AS-1, Micromeretics Flowsorb II 2300, Malvern ZetaSizer Nano, Freeman Technology FT4 Powder Rheometer.

- Performed various other physical measurements (i.e. Total Suspended & Dissolved Solids, Bulk and Tap Densities, Angle of Repose and Loss on Ignition).
- Proficient in the following software and computer skills:
 - Microsoft Windows '95, '98, XP, 2000
 - Microsoft Office Suite '97 & 2000
 - Computer Hardware Installation
 - Familiarity with small LAN networks

EDUCATION AND TRAINING

Malvern Instruments

- Photon Correlation Spectroscopy and Zeta Potential Training September 2004

McCrone Associates

- USP <788> Particulate Matter in Injectables Training July 2004

Skill Path

- Discovering the Secrets of Microsoft Access June 2004

Malvern Instruments

- Mastersizer Diffraction Training June 2003

Padgett Thompson

- How to Deal with Unacceptable Employee Behavior March 2003
- Assertiveness Skills for Managers and Supervisors September 2002
- Basic Supervision July 2002

McCrone Research Institute

- Pharmaceutical Microscopy September 2002
- Applied Polarized Light Microscopy August 2001

Media Cybernetics

- Image Pro Plus Image Analysis Software v4.0 June 2001

Central Michigan University **Bachelor's of Science**

Mt. Pleasant, MI.
1998

- Major: Biology and Earth Science, Minor: Geography
- Gold Key National Honor Society Member

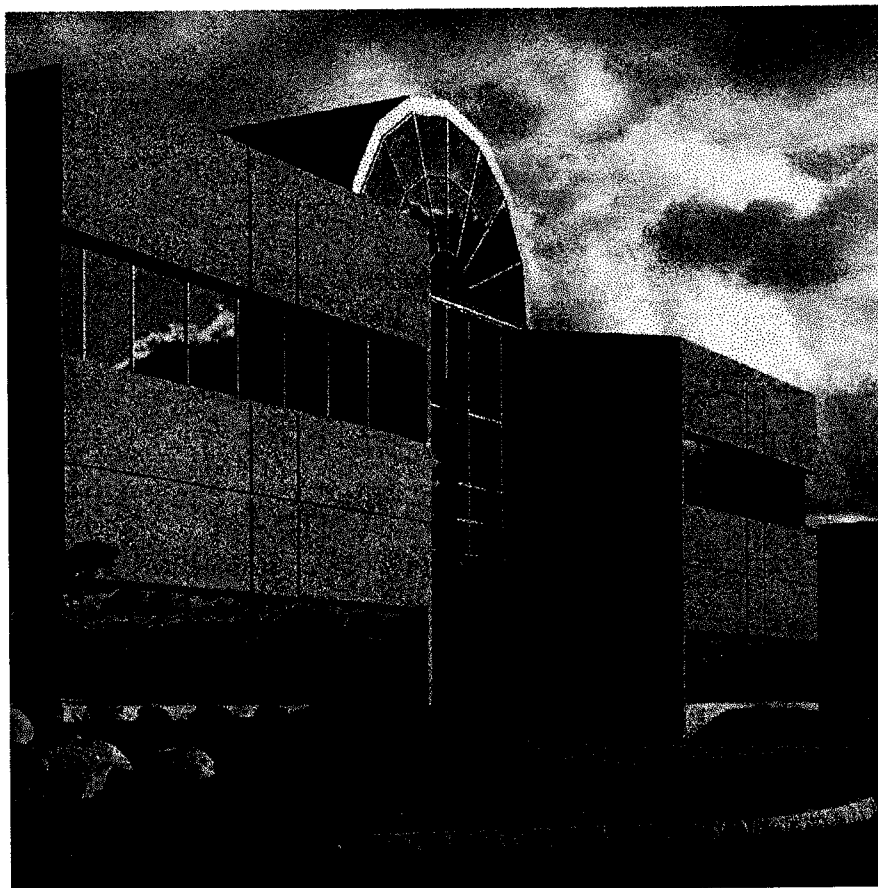
SEVERN

TRENT

SERVICES

SEVERN TRENT LABORATORIES

STATEMENT OF QUALIFICATIONS



STL Burlington

208 South Park Drive, Suite 1
Colchester, Vermont 05446
(802) 655-1203/(802) 655-1248 FAX
<http://www.stl-inc.com>

VERSION VIII – January 22, 2002



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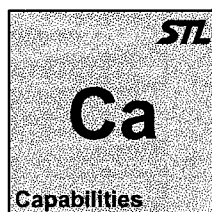
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SECTION 1



COMPANY OVERVIEW



Company Overview

Severn Trent Services, Inc. (STS) is a solutions driven provider of environmental products and services that creates value for their customers through technology and world-class service. It is a commitment to trust, quality, and the highest ethical standards that make STS the global leader in its field.

STL Burlington is a member of the analytical services division, Severn Trent Laboratories, Inc (STL) which is part of STS; a major group of U.S. based companies with 5,000 employees throughout the U.S., Europe and Asia Pacific. STL is a national group of 27 laboratories. STL's group of laboratories offer a broad range of environmental testing services provided by over 1,500 professionals. STL's testing capabilities include chemical, physical, and biological analyses of a variety of matrices, including aqueous, solid, drinking water, waste, tissue, air and saline/estuarine samples. Specialty capabilities throughout include air toxics, radiological testing, geotechnical testing, tissue preparation and analysis, aquatic toxicology, asbestos, microscopy services, and on-site technologies including mobile laboratories STL facility locations and contact information are outlined in Table 1.

Company History

STL Burlington located in Colchester, Vermont was established in 1970 in response to a need for hydrographic studies in support of the nuclear power industry and water quality testing.

STL Burlington developed its organic testing capabilities in 1976 and by 1983 was awarded its first USEPA Contract Laboratory Program (CLP) organic contract. STL became a New York State CLP laboratory in 1985 and soon afterwards, participated in a number of nationally recognized environmental studies. In 1989, STL was one of only three laboratories in the United States to be awarded an EPA High Concentration Organic contract.

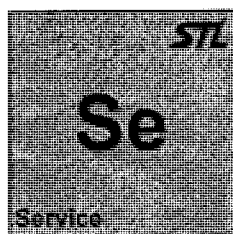
Currently, as a laboratory with over 30 years of experience, STL Burlington is accredited by the United States Army Corps of Engineers (USACE) and several state programs for analytical services under the National Environmental Laboratory Accreditation Program (NELAP). STL is also accepted by the Naval Facilities Engineering Service Center (NFESC) as a subcontractor to provide analytical services in support of Navy projects.



SEVERN TRENT LABORATORIES

Analytical Services SOQ
Version VII
Effective Date: January 22, 2002
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SECTION 2



SERVICES

Standard Services

STL Burlington understands that scientifically sound, legally defensible analytical data is one of the most critical elements for the success of an environmental project. To ensure a project's data quality objectives are met, STL provides a superior standard of service using the latest technological advances and a commitment to customer service.

STL Burlington provides complete cradle-to-grave services, from initial preplanning and consultation, to project management and implementation, to final results and sample disposal.

STL performs analyses under various regulatory programs using both published and laboratory developed and validated test methods. In support of these activities, STL is certified/qualified in 12 states and participates in several federal programs.

Analytical Protocols and Programs

PROTOCOLS	PROGRAMS
• EPA SW846 → Appendix IX → TCLP/SPLP/MEP • Drinking Water → 40 CFR 141, 143 • Wastewater → 40 CFR 136 → 600, Standard Methods → MCAWW	• Department of Defense (DOD) → U. S. Army → Navy → Coast Guard → National Guard and others • Resource Conservation and Recovery Act (RCRA)
• CLP Statement of Work → TCL/TAL	• Safe Drinking Water Act (SDWA) • Clean Water Act (CWA) • National Pollution Discharge Elimination System (NPDES)
• ASTM/NIOSH/EPA → Toxic Organic Compounds in Ambient Air	
• State Specific Protocols → VPH/EPH	• Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)/Superfund
• USACE Dredged Materials	• Clean Air Act (CAA)

Organic Analyses

STL Burlington routinely tests for organic compounds using a variety of GC, GC/MS and HPLC test methods as described in Federal Register, EPA SW846 and the CLP Statement of Work. These analyses include volatiles, semivolatiles, pesticides, herbicides, polychlorinated biphenyls (PCBs by Congener and Aroclors), explosives, total petroleum hydrocarbons (TPH), Appendix IX, TCLP and other regulatory lists.

Inorganic Analyses

For high-speed, accurate metals analyses, STL Burlington uses a full array of instrumentation, including both sequential and simultaneous ICP. Low-level detection limits are achieved utilizing Trace-ICP, ICP/MS and Cold Vapor AA. STL also provides a full range of wet chemistry analyses for nutrients, BOD, COD and virtually all other general chemistry parameters including total organic carbon of sediments utilizing the Lloyd Kahn Method.

SPECIALTY SERVICES

In addition to routine analyses, STL Burlington has the capability to provide custom testing services for special projects requiring more sophisticated analyses (Some specialty services such as dioxins/furans and radiological analysis would be subcontracted to other STL facilities). STL also provides a variety of value-added services that augment the laboratories' analytical capabilities.

Summary of Specialty Services

SPECIALTY SERVICES	
Analytical	Value-Added
- Geotechnical Analyses - Ambient Air Analyses - Source Emissions Air Analysis - Tissue Analyses - Dredged Material Evaluation - Explosives Analyses (Method 8330), expanded target analyte list, low reporting limits - NOAA Status & Trends Methods	- QAPP Development - QAPP Preparation - Method Development - Custom EDD/GIS Capabilities - Field Service (upon request) - National Project Coordination - Hazardous Materials/Health and Safety Training - Expert Witness Testimony - Consultant Training/Education

SPECIALTY SERVICES

- Alkyl Tins
- Natural Attenuation Byproducts
- PCB Congener Analysis
- Selective Ion Monitoring
- Isotopic Analyses (Methods 1624 and 1625)
- AVS/SEM
- Pesticides & Herbicides by GC

Value-Added**➤ Courier Service**

STL Burlington offers sample pick-up for local clients. This service is designed for customer convenience and may have a small fee dependent upon the location of sample pick-up. STL's couriers are trained in sample handling and transportation protocols.

➤ EDD/GIS Capabilities

In addition to producing standard electronic deliverables, STL has formed an alliance with GIS/Key and EQUIS, two companies that have developed GIS software packages for managing environmental data. Using GIS/Key and EQUIS, these STL facilities can produce the necessary files for electronic import of chemistry data and transmit data directly into a client database.

➤ Consultant Training/Education

STL offers training programs on topics such as sample custody, laboratory quality assurance/quality control, method selection, state specific method variations and regulatory overview. STL also provides customized presentations based on client requests.

➤ National Project Coordination

STL provides a national point of contact to oversee the administration of multiple-site projects that utilize several of STL's facilities. This contact works with each laboratory communicating customer expectations, resolving issues and implementing proactive logistical solutions.

➤ Quality Assurance Project Plan (QAPP) Preparation

STL personnel can provide assistance in writing QAPPs for a variety of projects, ranging from one time sampling events to long term remedial investigations.

➤ Method Development

STL can develop new, or modify existing, analytical methodologies for projects where existing methods do not meet project objectives. All method development goes through rigorous method validation to ensure accurate and complete data.



DATA MANAGEMENT

Through advanced information technology and electronic data exchange, STL Burlington is constantly striving to develop faster and more efficient methods of information gathering and distribution. STL knows there are no short cuts to producing consistently reliable results, however investments in information technology enable STL to quickly and efficiently gather, process and deliver sample results, saving valuable time and money for the client.

Data Reporting

STL Burlington can provide various types of data reporting based upon a project's needs. STL facilities can produce data packages as simple as an analytical report with results only, to reports as complex as CLP-like data packages that include a narrative, analytical results, and supportive documentation including all raw data and chain of custody documentation.

STL's facilities also have experience producing reports for the Navy (NFESC), Army Corps of Engineers (USACE), New Jersey Department of Environmental Protection (NJDEP) and New York State Department of Environmental Conservation (NYSDEC).

Electronic Deliverables

In addition to hard copy reports, STL can provide data electronically on diskette, CD-ROM, via e-mail or by modem. STL can produce a wide variety of file formats, compatible with all major software programs such as Lotus, Quattro Pro, Excel, Paradox, dBase, Oracle, Access, Word and Word Perfect. Utilizing the Laboratory Information Management System and subsystems, STL Burlington is able to produce deliverables with a broad range of data elements in many customized formats. STL has successfully delivered EPA CLP Agency Standard formats and also provides data to AFCEE in ERPIMS 4.0 .

CLIENT SERVICES

STL's client services are built on a foundation consistent with the principles of Total Quality Management. Customer focus, support, continuous improvement, and measurement are the defining characteristics of STL's commitment to customer service.

At STL, every customer service representative is committed to understanding and meeting customer expectations. This proactive approach allows STL's personnel to provide solutions to current requirements while anticipating future needs and expectations. From the smallest detail to understanding the 'Big Picture', STL's customer service representatives diligently strive, meet and exceed customer expectations.



Project Management

STL Burlington uses a project management system to plan, coordinate, integrate and monitor project activities. Project management personnel work with the operations staff and clients to schedule projects, track progress, and review and produce final reports.

At STL each client is assigned a project manager to oversee the successful completion of their project from the definition stage to the final submittal of data. STL's project managers have extensive experience in the environmental field and are well equipped to handle both business and technical matters.

Prior to the initiation of all large projects, STL establishes a project team of qualified laboratory professionals. Once the project team has been established, a kick-off meeting is held to ensure that all team members have an understanding of the technical and administrative requirements of the project. Sample schedules, turnaround time and reporting requirements are communicated and delegation of responsibilities is established. If necessary, laboratory resources are shifted to ensure that all project requirements are met.

STL strongly encourages our clients to visit the laboratory and hold formal or informal sessions with employees in order to effectively communicate their needs on an ongoing basis.

STL Facility Locations

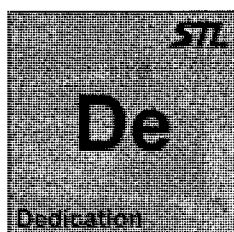
STL Austin 14046 Summit Drive Suite 111 Austin, TX 78728 Phone: 512-244-0855 Fax: 512-244-0160	STL Baltimore 19 Loveton Circle Sparks, MD 21152 Phone: 410-771-4920 Fax: 410-771-4407 <i>Service Center Only</i>	STL Billerica 149 Rangeway Road N. Billerica, MA 01862 Phone: 978-667-1400 Fax: 978-667-7871	STL Buffalo 10 Hazelwood Drive Suite 106 Amherst, NY 14228 Phone: 716-691-2600 Fax: 716-691-7991	STL Burlington 208 South Park Drive Suite 1 Colchester, VT 05446 Phone: 802-655-1203 Fax: 802-655-1248	STL Connecticut 128 Long Hill Cross Road Shelton, CT 06484 Phone: 203-929-8140 Fax: 203-929-8142
STL Chicago 2417 Bond Street University Park, IL 60466 Phone: 708-534-5200 Fax: 708-534-5211	STL ChromaLab 1220 Quarry Lane Pleasanton, CA 94566-4756 Phone: 925-484-1919 Fax: 925-484-1096	STL Corpus Christi 1733 N. Padre Island Drive Corpus Christi, TX 78408 Phone: 361-289-2673 Fax: 361-289-2471	STL Denver 4955 Yarrow Street Arvada, CO 80002 Phone: 303-421-6611 Fax: 303-431-7171	STL Edison 777 New Durham Road Edison, NJ 08817 Phone: 732-549-3900 Fax: 732-549-3679	STL Houston 6310 Rothway Drive Suite 130 Houston, TX 77040 Phone: 713-690-4444 Fax: 713-690-5646
STL Knoxville 5815 Middlebrook Pike Knoxville, TN 37921 Phone: 865-291-3000 Fax: 865-584-4315	STL Los Angeles 1721 South Grand Avenue Santa Ana, CA 92705 Phone: 714-258-8610 Fax: 714-258-0921	STL Miami 10200 USA Today Way Miramar, FL 33025 Phone: 954-431-4550 Fax: 954-431-1959	STL Mobile 900 Lakeside Drive Mobile, AL 36693 Phone: 334-666-6633 Fax: 334-666-6696	STL Newburgh 315 Fullerton Avenue Newburgh, NY 12550 Phone: 845-562-0890 Fax: 845-562-0841	STL North Canton 4101 Shuffel Drive NW North Canton, OH 44720 Phone: 330-497-9396 Fax: 330-497-0772
STL On-Site Technology Westfield Executive Park 53 Southampton Road Westfield, MA 01085 Phone: 413-572-4000 Fax: 413-572-3707	STL Pensacola 3355 McLemore Drive Pensacola, FL 32514 Phone: 850-474-1001 Fax: 850-478-2671	STL Pittsburgh 450 William Pitt Way Building 6 Pittsburgh, PA 15238 Phone: 412-820-8380 Fax: 412-820-2080	STL Richland 2800 George Washington Way Richland, WA 99352 Phone: 509-375-3131 Fax: 509-375-5590	STL Sacramento 880 Riverside Parkway West Sacramento, CA 95605 Phone: 916-373-5600 Fax: 916-372-1059	STL St. Louis 13715 Rider Trail North Earth City, MO 63045 Phone: 314-298-8566 Fax: 314-298-8757
STL Savannah 5102 LaRoche Avenue Savannah, GA 31404 Phone: 912-354-7858 Fax: 912-351-3673	STL Seattle 5755 8 th Street, East Tacoma, WA 98424 Phone: 253-922-2310	STL Tallahassee 2846 Industrial Plaza Dr. Tallahassee, FL 32301 Phone: 850-878-3994 Fax: 850-878-9504	STL Tampa 6712 Benjamin Road Suite 100 Tampa, FL 33634 Phone: 813-885-7427 Fax: 813-885-7049	STL Valparaiso 2400 Cumberland Drive Valparaiso, IN 46383 Phone: 219-464-2389 Fax: 219-462-2953	STL Westfield Westfield Executive Park 53 Southampton Road Westfield, MA 01085 Phone: 413-572-4000 Fax: 413-572-3707



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SECTION 3



RESOURCES

Facilities

STL Burlington's facilities are located at 208 South Park Drive in Colchester, Vermont and consist of approximately 36,000 square feet of floor space.

All laboratories are compliant with Vermont Occupational Safety and Health Administration (VOSHA) regulations and equipped with unique environmental control systems, such as air flow and monitoring, solvent recovery systems, utilization of waste heat, and building security. They are outfitted with instrumentation exhibiting advanced technology and automation and have the resources necessary to support the analytical effort in the form of reverse osmosis systems, deionization systems and computer networking.

Equipment

GC/MS Volatile and Semivolatiles			
Make and Model	Description	Quantity	Date Acquired
Hewlett Packard HP5971A MSD HP5972	GC/MS Systems with HP5890II GC's. Each system has a Tekmar LSC-2000 purge and trap and Tekmar ALS 2050, Aquatek 50, ARCHON or ALS 2016 autosampler.	4	3/92
		1	3/96
Hewlett Packard HP5971A MSD HP5972	GC/MS systems with HP5890II GC's and CTC A200S or HP7673 autosamplers.	1	9/98
		3	3/92
		1	3/96
Hewlett Packard Agilent 5973 MSD	GC/MS systems with HP6890 GC and HP7683 autosampler.	1	1/01

GC Volatiles			
Make and Model	Description	Quantity	Date Acquired
Hewlett Packard 5890	Gas Chromatographs equipped with a photoionization detector (PID) and a FID. For sample introduction, a Tekmar LSC2000 purge and trap Dynatech PTA30 autosampler. Data is collected using a Fisons Multichrom Data station	1	1/96
Hewlett Packard 5890	Gas Chromatographs equipped with a FID. For sample introduction, a Tekmar LSC2000 purge and trap Dynatech PTA30 autosampler. Data is collected using a Fisons Multichrom Data station	1	1/96

GC Volatiles			
Hewlett Packard 5890 and 5890II	Gas Chromatographs equipped with a photoionization detector (PID) and an electroconductivity detector (HALL). For sample introduction, a Tekmar LSC2000 purge and trap and Tekmar LSC2050 or Dynatech PTA30 autosampler. Data is collected using a Fisons Multichrom Data station	2	1/96

Gas Extractables			
Make and Model	Description	Quantity	Date Acquired
Hewlett Packard HP5890II HP5890	Gas Chromatographs equipped with dual ECD detectors and CTC A200 or HP7673 autosamplers. Data is collected on Fisons Multichrom data stations or HP3392A integrator linked to Chromperfect acquisition software.	10	5/84 4/91 3/92 4/97
Fisons Carlo Erba 8000	Gas Chromatographs equipped with dual electron capture (ECD) detectors and CTC A200 autosampler. Data is collected on a Fisons Multichrom data station.	1	4/93
Hewlett Packard 5890II	Gas Chromatographs equipped with dual FPD detectors and HP 7673 autosamplers. Data is handled by Fisons Multichrom data stations.	2	3/85 6/87
Hewlett Packard 5890II	Gas Chromatographs equipped with dual FID detectors and HP 7673 autosamplers. Data is handled by Fisons Multichrom data stations.	2	5/84 7/88
Hewlett Packard 5890	Gas Chromatographs equipped with single FID detector and HP 7673 autosampler. Data is handled by Fisons Multichrom data stations.	1	3/85
Hewlett Packard 5890	Gas Chromatographs equipped with dual NPD detectors and HP 7673 autosampler. Data is handled by Fisons Multichrom data stations.	1	4/85

High Performance Liquid Chromatography (HPLC)			
Make and Model	Description	Quantity	Date Acquired
Waters 600 multisolvent delivery system	100 µL head pumping system with Spectra 100 UV detector and Waters 715/717 autosampler. Data collected on Fisons Multichrom data stations with networked VAX 3100 file serving.	3	1/88 4/91 5/97

Air Toxics			
<i>Make and Model</i>	Description	Quantity	Date Acquired
Hewlett Packard 5890II and 5971 MSD	GC/MS systems with HP5890II GC's with HP 5971 MSD. Data is collected using ChemStation software.	2	9/98
Nutech 3600 Autosampler	Sixteen station autosampler for Summa® canisters with an attachment for analyzing Tedlar air bags.	2	9/98
Nutech 3550A	Cryogenic concentrator, this contains a Nafion® dryer which reduces water vapor in the gas stream.	2	9/98
<i>Make and Model</i>	Description	Quantity	Date Acquired
Tekmar 7050	Headspace autosampler	1	12/98
Varian 3600	Gas Chromatographs equipped with a flame ionization detector (FID) and a thermal conductivity detector (TCD). Data is collected using ChromPerfect software.	1	12/98
Entech 3000	Eight station canister cleaning system, utilizes heat, vacuum and zero air to clean canisters.	1	11/98

Organic Sample Preparation			
Make and Model	Description	Quantity	Date Acquired
Analytical bio-chemistry (ABC) 1000	Gel Permeation Chromatographs (GPC) each with UV detector and 3392 integrator	5	3/92 5/94
Analytical bio-chemistry (ABC) 1002B	Gel Permeation Chromatographs (GPC) each with UV detector and 3392 integrator	2	8/90 5/93
Tekmar 600	Dual horn sonicators	3	11/91 3/94
Ultrasonic Processor	Sonicators	1	3/99
Fisher Scientific FS140	Sonicator bath	1	5/99
Organomation	Soxhlet extraction vessels	72	Various
Millipore	Zero Headspace Extractors (ZHE) for TCLP VOA Extraction	4	8/90
Corning	One step continuous liquid-liquid extractors.	35	1/92
Dayton	Tumblers	2	Various
Lab-line/Labconco	Wrist shakers	2	Various
Glas-Col	Floor Shaker	2	Various
Inter.Equip/Becton	Centrifuge	2	Various

Organic Sample Preparation			
Dionex	Accelerated Solvent extractor	1	4/98
Amsco	Dishwasher	1	5/99
Mielabor/Multitronic	Dishwasher	2	3/96
Various	Miscellaneous equipment: 2 Hot Plates-PC-400, 2 pH meters, 4 Digital Scale and Delta Range Scales, 10 Constant Temperature Circulators, Recovery Control System, 4 Tisumizers/Homogenizers, 2 Furnaces 30400, 1 Warning Blender, 2 Thermolyne Vortex, 3 PMC stirrers, 1 Labconco Glovebox, 3 Refrigerators, 2 Pipette Aids, 1 Precision Hot Water Bath		Various

Metals			
Make and Model	Description	Quantity	Date Acquired
Thermo Jarrell-Ash – ICAP 61E	Trace, Simultaneous Inductively Coupled Plasma (ICP) emission spectrometer. System includes 150 position autosampler and computer control	3	3/94 1/96 12/97
Thermo Elemental VG PQ Ex Cell ICP/MS	Inductively Coupled Plasma Mass Spectrometer. System includes a Cetax ASX-500 autosampler and personal computer	1	12/2001
Perkin-Elmer ZL5100	Graphite Furnace atomic absorption spectrometer. System includes an AS60 autosampler and personal computer	1	2/92
Leeman Labs PS200	Mercury auto-analyzer. System includes an autosampler and a personal computer	1	10/91
Leeman Labs PS200II	Mercury auto-analyzer. System includes an autosampler and a personal computer	1	3/96
Environmental Express Block Digesters	Block digester with 25 sample positions with 120 mL capacity sample vessels	2	3/99 5/99
CPI Block Digester	Block Digester with 48 sample positions with 70 mL capacity sample vessels	1	11/99
Various	Metals prep: Hot plates, 2 Mercury hot water baths, 2 calibrated balances		Various

Wet Chemistry			
Make and Model	Description	Quantity	Date Acquired
Alpkem RFA 300	Auto-analyzer system for chloride, nitrate/nitrite and sulfate	1	4/92
Lachat Quikchem 8000	Automated cyanide analyzer. System includes an autosampler and a personal computer	1	7/2000
Dionex 2000i/SP	Ion Chromatograph	1	10/85
Dionex DX-500	Ion Chromatograph	1	4/95
LACHET Quikchem 8000	Automated Ion Analyzer with IC Software	1	9/99
Spectronic 20 Genesys	Spectrophotometer	1	3/99
Carlo Erba EA-1108	CHNS-O Elemental Analyzer with data station	1	3/91
Buck Scientific, Model HC404	Total Hydrocarbon Analyzer	1	12/93
Beckman 45	pH Meter	1	11/91
Fisher Accumet	pH Meter model 620 for fluoride analysis	1	12/93
LECO AC-300	Automatic calorimeter	1	6/84
Tecator	Soxtec System 1043 Extraction Unit	1	2/92
Oceanography International Model 700	Total Organic Carbon (TOC) analyzer	1	12/78
Dohrman	Total Organic Halogen (TOX) analyzers	1	2/91
Labconco Rapid Still II	Distillation units	3	11/92 4/93 5/99
Tecator	Digestion system 20; 1015 digester	1	9/91
YSI Model 58	Dissolved Oxygen Meters with 5905 BOD Probes	2	3/95
Shimadzu	TOC-5000A analyzer	1	12/97
Hach	2100A Turbidimeter	1	97
VWR	NST Digital Conductivity Meter	1	05/97
Baxter/precision	Ovens Tempcon, Model 17	2	Various
Precision	low temp incubator	1	-
Mettler	Analytical Balances-PM4800, AE200	5	Various
Viking/Beverage Air	Wet Lab Refrigerator/Freezer	2	Various

Sample Management			
Make and Model	Description	Quantity	Date Acquired
Hobart	Three door refrigerator units with temperature probe connected to VAX System for automatic temperature measurement. Max/Min Thermometer back-up	15	Various
Hobart	Two door refrigerator unit with temperature probe connected to VAX System for automatic temperature measurement. Max/Min Thermometer back-up	6	Various
Hobart	One door refrigerator units with temperature probe connected to VAX System for automatic temperature measurement. Max/Min Thermometer back-up	2	Various
Hobart	One door freezer units with temperature probe connected to VAX System for automatic temperature measurement. Max/Min Thermometer back-up	3	Various
Hobart	Two door freezer units with temperature probe connected to VAX System for automatic temperature measurement. Max/Min Thermometer back-up	4	Various
Hobart	Three door freezer units with temperature probe connected to VAX System for automatic temperature measurement. Max/Min Thermometer back-up	1	Various
Omega OS910	IR Temperature Gun	2	1994

Information Systems

- All terminals, PCs and printers are connected on an integrated Local Area Network (LAN) via network switches, routers and wide area network (WAN). Nine HP GC/MS's with HP computers and 4 X-terminals; and HP-UX computers for GC Envisions with 8 X-terminals.
- Extensive variety of software to aid in data analysis and presentation: System 1032 Database, Lotus 1-2-3, Visual FoxPro, AutoCAD, Microsoft Office Products (Excel, Word, etc), WordPerfect, in addition to Visual Basic, C, Visual C++, and Visual Java ++programming environments.
- The GC division utilizes Maxima and Multichrom systems. Inorganic CLP or CLP-like data for the Metals division is generated using the Ward software package. The Envision System is used by the GC/MS Hewlett Packard lab and GC Lab. All our other systems have been custom designed by our Information Systems Department. For example, our metals laboratory utilizes software created to interface with VAX based management systems. The data is autoloading to a central VAX where it undergoes a rigorous QC review. Additional equipment follows:

- Management personnel have access to the World Wide Web for additional resources.

Additional equipment follows:

Information Services	
Description	Quantity
Vax 4505	1
Vax 3100	2
VT Terminals	12
Printers	34
Personal computers	90
Personal Computers with Terminal Emulation Software	5
HP GC/MS's with HP chemstations	12
HP-UX chemserver computer for GC/MS Envisions (800)	1
HP-UX chemserver computer for GC/MS Envisions (735)	1
X-Terminals in support of Reporting	14
DMS Bitlab Laboratory Management System (LMS)	1
V. G. Laboratories	8
Chromservers (4 channels/server)	8
In-House Developed EDD Generator	1
NT-Server	3
In-House Wet Chemistry Data QC Summary Software	1
In-House Forecasting Module linked to BitLab	1
In-House Quote Module linked to BitLab	1
MSMail Server - Corporate and INTERNET	1
INTERNET(WWW) access	User name and password access
In-House Inorganics Processing Software Linked to BitLab	1
Ward Scientific Metals Reporting Software	1

PERSONNEL

STL Burlington's staff of over 86 professionals includes analytical chemists, microbiologists, quality assurance specialists, computer systems analysts, environmental technicians, client services staff, project managers and filed personnel. STL is proud of its highly qualified and professional staff. Their development is valued as the key to success.

STL's Corporate structure is outlined in the STL's Corporate Statement of Qualification and in the Quality Management Plan (QMP). The QMP describes Corporate management's role and responsibilities and the Laboratory Quality Management Plan (LQM) describes STL's Burlington's management's role and responsibilities. Members of the management staff set the quality standards by which STL's business operations and personnel strive to achieve. Description of management's capabilities and experience is provided below.

STL BURLINGTON

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STL Burlington is under the supervision of a Laboratory Director who is responsible for the day to day operations of the laboratory facility. In addition, a Quality Assurance Manager is responsible for overseeing the QA program of the laboratory.

Michael Wheeler is the Laboratory Director for STL. He holds a Ph.D. in Inorganic Chemistry and has over twenty two years of experience in the environmental field.

Kirsten McCracken is the Quality Assurance Manager for STL. She holds a Bachelor of Arts degree and has over seven years of experience in the environmental field.

Brian Blair is a Quality Assurance Specialist for STL. He holds a Bachelor of Science degree in Chemistry and has over eight years of experience in the environmental field.

Chris Anderson is a Customer Service Manager for STL. He holds a Bachelor of Arts degree in Natural Sciences and has over 10 years of experience in the environmental field.

James Madison is a Senior Project Manager for STL. He holds a Bachelor of Science degree in Geology/Environmental Science and has over 16 years of experience in the environmental field.

Kirk Young is a Senior Project Manager for STL. He holds a Bachelor of Science degree in Civil Engineering and has over 26 years of experience in the environmental field.

Ronald Pentkowski is a Project Manager for STL. He holds an Associates degree in Applied Science and has over 15 years of experience in the industrial and environmental field.

Don Dawicki is a Project Manager for STL. He received his training with the U.S. Navy. He has over eleven years of experience in the environmental field.

Peter Bowser is a Project Manager for STL and Manager of Sample Management. He holds a Masters Resource Management Administration and has over 10 years of experience in the environmental field.

Jeannine McCrumb is a Project Manager for STL. She holds a Bachelor of Science degree in Biology and has over five years of experience in the environmental field.

Bryce Stearns is the GCMS Supervisor/Organics Technical Director for STL. He holds a Bachelor of Science degree in Environmental Science and has over 17 years of experience in the environmental field.

Jon Zygmuntowicz is the Organic Prep Manager for STL. He holds a Bachelor of Science degree in Ecology and has over 10 years of experience in the environmental field.



Kristine Dusablon is the Inorganics Technical Director for STL. She holds a Bachelor of Science degree in Biochemistry/Biophysics and has over 13 years of experience in the environmental field.

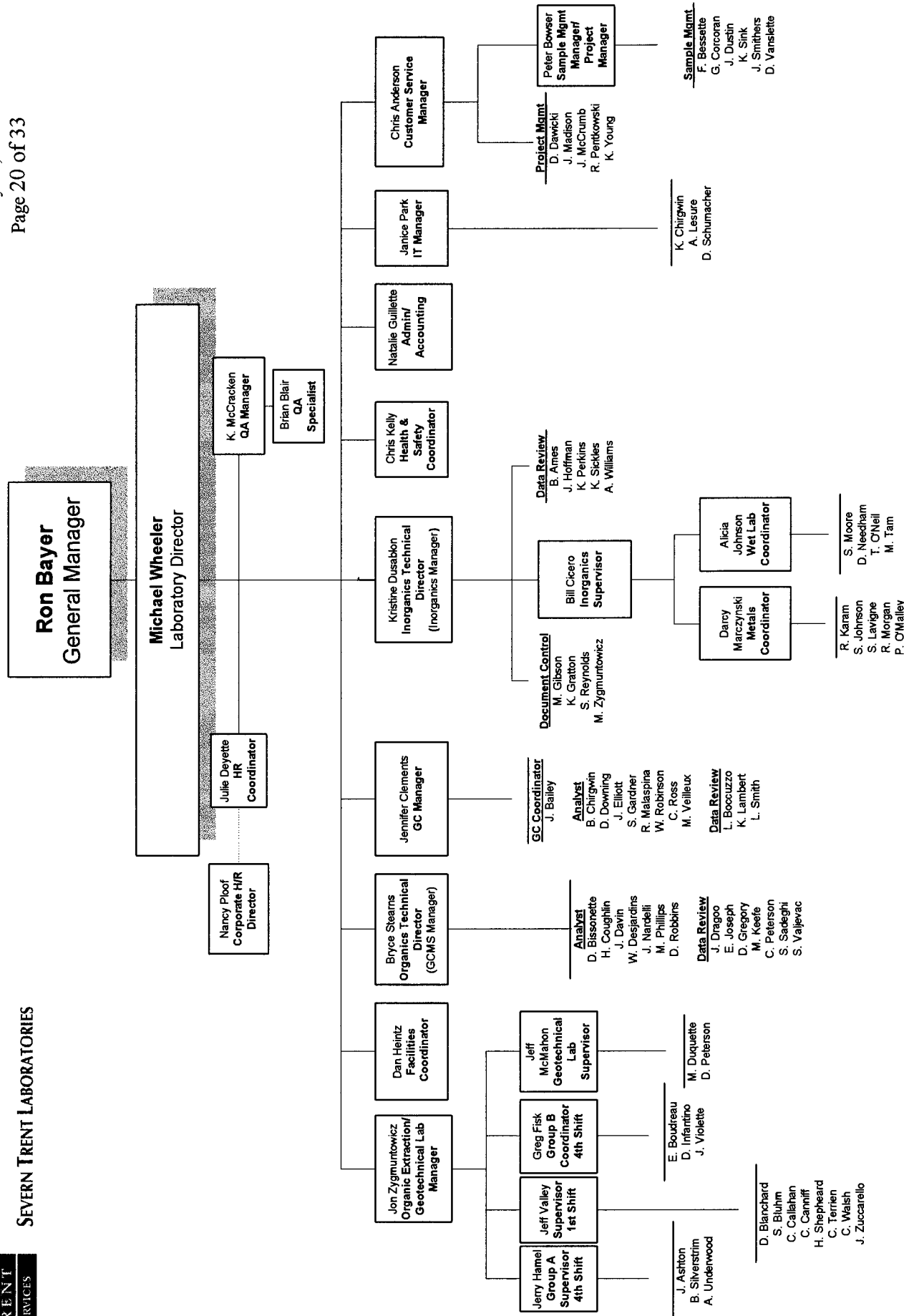
Jeff Valley is one of the Organic Prep Supervisors for STL. He holds a Bachelor of Science degree in Water Resources. He has over four years of experience in the environmental field.

Anthony Underwood is one of Organic Prep Supervisors for STL. He holds a Bachelor of Science degree in Biological Sciences. He has over three years of experience in the environmental field.

Jennifer Clements is the GC Supervisor for STL. She holds a Bachelor of Science degree in Biology and has over 10 years of experience in the environmental field is for STL.

Bill Cicero is the Inorganics Lab Supervisor for STL. He holds a Bachelor of Arts degree in Biology and has over eight years of experience in the environmental field.

Jeff McMahon is the Geotechnical Lab Supervisor for STL. He holds a Bachelor of Science degree in Natural Resources and has over eleven years of experience in the environmental field.

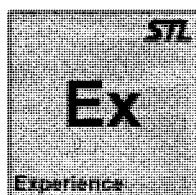




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SECTION 4



PROJECT EXPERIENCE

***Massachusetts Military Reserve (MMR)***

STL Burlington continues to support AMEC Earth & Environmental (formerly Ogden Environmental) during a Groundwater Quality Study for the Camp Edwards Impact Area on the Massachusetts Military Reservation (MMR). This project was initiated for the National Guard Bureau under an EPA Administrative Order. Over fifteen thousand soil and water samples have been analyzed for a wide range of parameters including a modified SW-846 method 8330 procedure, for which results are provided on a rush basis. STL Burlington is currently providing support for Phase III of this project. To support a request for lower reporting limits at the MMR site STL Burlington developed a method to quantitate trace levels of explosive residue in soil and sediment samples utilizing a modified EPA Method 8330.

Reference: Ms. Elizabeth Wessling
350 S. Wadsworth Blvd., Suite 500
Lakewood, CO 80226
(303) 935-6505

Loring Air Force Base

STL Burlington is currently under contract to provide analytical services through for Montgomery Watson Harza's on-going groundwater, surface water, tissue, air and sediment sampling activities at the Loring Air Force Base located in Limestone, Maine. To meet a site-specific action limit STL developed a SIM method for low level quantitation of vinyl chloride. These services include the analyses of over 1200 samples, to date. These samples have been analyzed for volatile organic compounds, semivolatile organic compounds, pesticides, PCBs, PCB congeners, PAHs, dissolved gases and a variety of wet chemistry methods following the Installation - Wide Quality Program Plan. The USEPA and the Maine DEP provide the regulatory oversight on this CERCLA - NPL Site. The CLP-like deliverables and an Enhanced ERPIMS 4.0 diskette are provided within 15 business days of sample receipt.

Reference: Jim Tezak
335 Phoenixville Pike
Malvern, PA 19355
(610) 993-0800

City & County of Honolulu, Hawaii

STL Burlington supports the municipality's 301(h) permit monitoring effort involving several discharge locations. The services include the analysis of marine sediments and biota for volatile organics, semivolatile organics, organochlorine and organophosphorus pesticides, PCBs, trace metals, and cyanide using the methods prepared by Tetra Tech, Inc. for the USEPA. These methods include vacuum distillation for the preparation of samples for volatile organics analysis, and adaptations of Methods 1624 and 1625 for the analysis of volatile organics and semivolatile organics by isotope dilution. In addition, the analytical services include the analysis of the marine sediments for total organic carbon.

Reference: Mr. Lyle Shizumura
1350 Sand Island Parkway
Honolulu, HI 96819
(808) 847-8357

Pease Air Force Base

STL Burlington is currently under contract to provide analytical services for Montgomery Watson Harza's on-going groundwater, surface water, soil, tissue, air and sediment sampling activities at the former Pease Air Force Base located in Portsmouth, New Hampshire. In support of MWH's work at this site STL Burlington has analyzed for volatile organic compounds, semivolatile organic compounds, pesticides, PCBs, DRO, GRO, dissolved gases, geotechnical parameters and a variety of wet chemistry methods in addition to tissue samples for organophosphorus pesticides, organochlorine pesticides and metals. These analyses were performed following the Installation - Wide Quality Program Plan (IWQPP). The USEPA and Air Force Center for Environmental Excellence (AFCEE) provide the oversight on this CERCLA - NPL Site. The CLP-like deliverables and an Enhanced ERPIMS 4.0 diskette are provided within 15 business days of sample receipt.

Reference: Jim Tezak
335 Phoenixville Pike
Malvern, PA 19355
(610) 993-0800

Basic Ordering Agreement with USACE Laboratory

STL Burlington has been recognized by the USACE as a Quality Assurance Laboratory since 1993. USACE QA Laboratories are chosen by a technical committee based on their ability to meet a rigorous validation process that exceeds the requirements set for standard USACE validation. These QA laboratories provide a check on the quality of the data received from the USACE's primary contract laboratory.

Reference: Mr. David Lubianez
696 Virginia Road
Concord, MA 01742-2751
(978) 928-4238

Housatonic River PCB Remedial Investigation

STL is currently providing analytical services for Roy F. Weston in support of the remedial investigation for the Housatonic River. The services include the analysis of over one thousand river waters, sediments and tissue for PCBs as Aroclor utilizing a modified EPA SW-846 Method 8082. Additionally, STL has performed Appendix IX, Geotechnical and full suite analyses in support of site related sampling efforts. The method was modified to include 1,2,4-trichlorobenzene in addition to PCBs as Aroclor. All Aroclors and 1,2,4-trichlorobenzene were reported for river waters with a quantitation limit of 0.013 ug/L. The regulatory oversight for this project is provided by the USEPA under both RCRA and CERCLA guidelines and by the United States Army Corps of Engineers.

Reference: Mrs. Kelly Spittler
1 Weston Way, Building 5-2 (Geosciences)
West Chester, PA 19380-1499
(610) 701-3953

Tetra Tech EM, Inc.

STL Burlington supports Tetra Tech's involvement in the Navy Clean Program. The services include the analysis of terrestrial soils and marine sediments as well as biological tissues for a broad range of analytical parameters by various analytical methodologies. These methods include GC/PID analyses for organotins, NOAA Status and Trends analyses for pesticides and PCB congeners by GC/ECD and polynuclear aromatic hydrocarbons by GC/MS-SIM, in addition to trace metals analyses. The analytical services extend to adaptations of SW846 methods to provide lower reporting of volatiles and semivolatiles in soil/sediment and water matrices and to the analysis of sediment samples for total sulfides, and acid volatile sulfides and simultaneously extracted metals (AVS/SEM).

Reference: Mr. Michael Kelly
135 Main Street, Suite 1800
San Francisco, CA 94105
(415) 543-4880

RI/FS Kalamazoo River Study

STL Burlington is currently providing analytical services in support of this site. The main component of this investigation has been the analysis of over twelve thousand samples for PCBs by Aroclor in water, sediment and biota. In relation to this work, a paper outlining the fresh approach used for PCB quantification was presented in the fall of 1995 at the HMCRI Superfund Conference in Washington, DC. In support of an on-going study to determine the fate and transport of PCBs in the Kalamazoo River STL Burlington has analyzed over 1500 surface water samples for low level PCBs, TSS, total, dissolved and particulate organic carbon. STL Burlington developed a project specific extraction, which concentrates 4 liters to 0.5 mL, to meet the project specified reporting limits.

Reference: Ms. Laurie Indick
6723 Towpath Road
Syracuse, NY 13214
(315) 446-9120

Phase One and Two Site Investigations with Quick Turnaround

STL Burlington has provided analytical services to Parsons Engineering Science for site investigations at the Seneca Army Depot in Romulus, New York. This work involved quick turnaround screening for a large number of field samples. From these results, samples were designated for conventional and low level inorganics, organics and explosives. The laboratory is currently providing additional analytical support for ongoing monitoring at the Seneca Army Depot.

Reference: Mr. Clifford Lippitt
30 Dan Road
Canton, MA 02021-2809
(781)-401-2492

***Analytical Support for Investigation at Army Materials Testing Laboratory***

STL Burlington provided rapid turnaround analytical support to Roy F. Weston for a site investigation at the Army Materials Testing Laboratory in Watertown, MA. Services under this project include analyses for metals, PCBs and semivolatile organics on wipe samples, primarily on three-day turnaround.

Reference: Mr. Bruce Campbell
One Wall Street
Manchester, NH 03101-1501
(603) 656-5446

Quarterly Groundwater Analytical Services at Fort Devens

STL Burlington analyzed groundwater samples on a quarterly basis for the Fort Devens Site in Massachusetts. Analytical services for this site included volatile organics, total petroleum hydrocarbons (MA VPH/EPH), metals, dissolved gases, ferrous iron and various wet chemistry parameters.

Reference: Ms. Linda Gardner
245 Summer Street
Boston, MA 02210
(617)-589-1695

Total Environmental Restoration Contract (TERC)

STL Burlington is currently providing environmental analyses in New England in support of the Total Environmental Restoration Contract (TERC) Program. Analytical services are being performed on sites in Stratford, CT, Norwood, MA, New Bedford Harbor, MA and Silresim Superfund Site. These services include the analyses of pesticides/PCBs, semivolatile organic compounds, volatile organic compounds and other wet chemistry methods. Approximately 750 PCB Congeners, by method 8082, were performed on samples taken from the New Bedford Harbor. The regulatory oversight for this project is provided by the USEPA under CERCLA guidelines.

Reference: Mr. Keir Craige
33 Federal Street, 6th Floor
Boston, MA 02110
(617) 457-8408

Tetra Tech EM

STL Burlington analyzed a total of 120 soil vapor samples from two landfill sites in Pennsylvania for Tetra Tech EM. The sites were monitored on a quarterly basis. The air samples were analyzed for volatile organics by Method TO14A, and fixed gases using ASTM D1946.

Reference: Mr. Kevin Scott
1800 JFK Blvd.
Philadelphia, PA 19103
(215) 656-8703



CTO 206 - Pearl Harbor

STL Burlington supported Ogden Environmental and the US Navy on a large-scale study at Pearl Harbor. As part of this project approximately 110 sediment, 30 waters and 45 tissues were analyzed for Alkyl Tin, Chlorinated Herbicides, Metals, Low-level SVOA, SIM PAH, P/PCB, Triazines/OP Pesticides, Explosives, AVS/SEM, TOC and Carbamates.

Reference: Mr. John Clayton
5510 Morehouse Drive
San Diego, CA 92121
(619)458-9044

Lincoln Applied Geology Residential Study

STL Burlington recently analyzed indoor air samples in support of a quarterly air monitoring study of residential homes adjacent to a Leaking Underground Storage Tank (LUST) site. Approximately 35 samples were analyzed for this project. All samples were analyzed using Method TO14. This project is ongoing.

Reference: Mr. Bill Norwood
163 Revel Drive
Bristol, VT 05443
(802) 453-4384

Soil Vapor Investigation (confidential site)

STL Burlington is currently providing analytical services in support of a Corrective Measure Study at a site located in Arecibo, Puerto Rico. Soil vapor and ambient air samples are being analyzed for acetone, carbon tetrachloride, chloroform and methylene chloride following Compendium Method TO-15, from the USEPA's Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. STL Burlington has analyzed over 800 vapor and ambient air samples in support of this project. Additionally, water from the soil vapor extraction system is being analyzed by USEPA CLP SOW Method OLM03.2 for volatile organic compounds. Samples from this site arrive five days a week and must be analyzed within three days from collection. Preliminary results are faxed within 48 hours of sample receipt.

Reference: Ms. Wanda I. Morales
Reperto Landrau
Rio Piedras, PR 00921
787-792-8902



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APPENDIX A

Laboratory Accreditation/Certifications

STL Burlington Certification Listing

Agency	Matrix / Category	Cert.	ID No.	Exp. Date
Connecticut	Drinking Water	Recognition (VT, NELAC)	PH-0751	9/30/2005
	Wastewater	Recognition (VT, NELAC)	PH-0751	9/30/2005
	Solid Waste/Soil	Recognition (VT, NELAC)	PH-0751	9/30/2005
Florida 	Drinking Water			
	Wastewater			
	Solid and Chemical Materials			
	Air and Emissions	Secondary AA	E87467	6/30/2006
Maine	Drinking Water	Recognition (VT, NELAC)	VT008	04/01/07
Massachusetts	Drinking Water	Recognition (VT)	M-VT008	6/30/2006
	Wastewater	Recognition (VT)	M-VT008	6/30/2006
NFESC	Laboratory	Direct	NA	7/30/2005
New Hampshire 	Drinking Water	Secondary AA	200603-A	12/18/2005
	Wastewater	Secondary AA	200603-A	12/18/2005
New Jersey 	Drinking Water	Primary AA	VT972	6/30/2006
	Wastewater	Primary AA	VT972	6/30/2006
	Solid Waste	Primary AA	VT972	6/30/2006
	Air	Primary AA	VT972	6/30/2006
	CLP	Primary AA	VT972	6/30/2006
New York 	Drinking Water	Secondary AA	10391	4/1/2006
	Wastewater	Secondary AA	10391	4/1/2006
	Solid and Hazardous Waste	Secondary AA	10391	4/1/2006
	Air and Emissions	Secondary AA	10391	4/1/2006
	CLP	Secondary AA	10391	4/1/2006
Pennsylvania	Drinking Water	Secondary AA	68-489	4/30/2006
Rhode Island	Drinking Water	Recognition (VT, NELAC)	00081	12/30/2005
	Wastewater	Recognition (VT, NELAC)	00081	12/30/2005
	Air	Recognition (VT, NELAC)	00081	12/30/2005
USACE	Haz/Toxic/Radioactive Waste	Direct	NA	9/9/2006
Washington	Solid and Hazardous Waste	Recognition (VT, NELAC)	C2006	3/29/2006
Vermont	Drinking Water	Direct	VT-4000	12/31/2005



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APPENDIX B

Analytical Methodologies



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Appendix B Analytical Capabilities (May 2001)

Reference	Method	Description
40CFR136	601/602	Aromatic and Chlorinated Volatile Organics
40CFR136	608	Organochlorine Pesticide & PCBs
40CFR136	615	Chlorinated Herbicides
40CFR136	624	GC/MS Volatile Organics
40CFR136	625	GC/MS Semivolatile Organics
40CFR136	1624	GC/MS Volatile Organics, Isotope Dilution
40CFR136	1624	1624 Vacuum Distillation, Isotope Dilution
40CFR136	1625	GC/MS Semivolatile Organics, Isotope Dilution
40CFR141	502.2	GC Volatile Organics, Drinking Water
40CFR141	504	EDB and DBCP
40CFR141	524.2	GC/MS Volatile Organics, Drinking Water
ASTM	D4318-93	Liquid Limit, Plastic Limit, Plasticity
ASTM	D854	Specific Gravity
ASTM	D2216	Water (Moisture) Content of Soil and Rock
ASTM	D2217	Wet Prep for Particle Size
ASTM	D421	Dry Prep for Particle Size
ASTM	D422	Particle Size Analysis
ASTM	D1946-90	Fixed Gases in Air
CAA	TO14A (MOD)	Volatile Organic Compounds in Ambient Air by GCMS
CAA	TO15 (MOD)	Volatile Organic Compounds in Ambient Air by GCMS
CAA	375.4 (MOD)	Sulfate on Filters
CAA	353.2 (MOD)	Nitrate/Nitrite-N on Filters
EPA CLP	ILM04.0	Cyanide, Total
EPA CLP	ILM04.0	ICP Metals Analysis
EPA CLP	ILM04.0	Mercury by Cold Vapor
EPA CLP	OLC02.1	GC/MS Volatile Organics, Low Concentration
EPA CLP	OLC02.1	GC/MS Semivolatile Organics, Low Concentration
EPA CLP	OLC02.1	Organochlorine Pesticide & PCBs, Low Concentration
EPA CLP	OLM03.2	GC/MS Volatile Organics
EPA CLP	OLM03.2	GC/MS Semivolatile Organics
EPA CLP	OLM03.2	Organochlorine Pesticide & PCBs
EPA CLP	OLM04.2	GC/MS Volatile Organics
EPA CLP	OLM04.2	GC/MS Semivolatile Organics
EPA CLP	OLM04.2	Organochlorine Pesticide & PCBs
EPA SW-846	1010	Ignitability (F)
EPA SW-846	1311	Toxicity Characteristic Leaching Procedure
EPA SW-846	1312	Synthetic Precipitation Leaching Procedure
EPA SW-846	1320	Multiple Extraction Procedure
EPA SW-846	6010B	ICP Metals
EPA SW-846	6010B	Sulfur by ICP (Waters)
EPA SW-846	6010B_TCLP	ICP Metals, TCLP Leachate
EPA SW-846	7196A	Hexavalent Chromium
EPA SW-846	7470A	Mercury by Cold Vapor

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Reference	Method	Description
EPA SW-846	7471A	Mercury by Cold Vapor
EPA SW-846	8015_GAS	TPH- Gasoline
EPA SW-846	8015_DIESEL	TPH- Diesel & Motor Oil
EPA SW-846	8021	GC Aromatic and Halogenated Volatile Organics
EPA SW-846	8081A	Organochlorine Pesticide & PCBs
EPA SW-846	8081A_TCLP	TCLP Organochlorine Pesticides
EPA SW-846	8082	GC PCB
EPA SW-846	8082	GC PCB Congeners
EPA SW-846	8141A	Organophosphorus Pesticides
EPA SW-846	8151A	Herbicides
EPA SW-846	8151A_TCLP	TCLP Herbicides
EPA SW-846	8260B	GC/MS Volatile Organics
EPA SW-846	8260B	GC/MS Low Level Volatile Organics
EPA SW-846	8270C	GC/MS Semivolatile Organics
EPA SW-846	8330	HPLC Explosives
EPA SW-846	9038	Total Sulfate
EPA SW-846	9056	Inorganic Anions by Ion Chromatography
EPA SW-846	9060	Total Organic Carbon
EPA SW-846	9065	Total Phenols
EPA SW-846	9081	Cation-Exchange Capacity
EPA SW-846	9012A	Total Cyanide
EPA SW-846	9030B/9034	Sulfide
EPA SW-846	9040B	pH (std. units)
EPA SW-846	9045C	Soil pH (std. Units)
EPA SW-846	9250	Chloride, Total
EPA SW-846	9095A	Paint Filter Liquids Test
EPA SW-846	Sec. 7.3.3.	Reactive Cyanide
EPA SW-846	Sec. 7.3.4.	Reactive Sulfide
In house	IN623	Percent Solids
In house	In house	Explosive Aqueous Sample Screen
In house	In house	Explosive Soil Screen: TNT and RDX
In house	OLM_SAT	Low Level Organochlorine Pesticide & PCBs
In house	OR560	Alkyl Tin Analysis
In house	NOAA	GC/MS SIM PAHs
In-house	RSK-175	Dissolved Gases in Groundwater
Lloyd Khan	Lloyd Khan	Total Organic Carbon in Soil
MCAWW	110.1	Color
MCAWW	120.1	Conductivity/Salinity
MCAWW	130.2	Total Hardness as CaCO3
MCAWW	150.1	pH (std units)
MCAWW	160.1	Total Dissolved Solids
MCAWW	160.2	Total Suspended Solids
MCAWW	160.3	Total Solids
MCAWW	160.4	Volatile Total Solids
MCAWW	160.5	Settleable Solids (ml/l)
MCAWW	180.1	Turbidity (NTU)

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Reference	Method	Description
MCAWW	200.7	Metals
MCAWW	300.0	Inorganic Anions by Ion Chromatography
MCAWW	310.1	Alkalinity (as CaCO ₃)
MCAWW	325.2	Chloride
MCAWW	340.2	Fluoride
MCAWW	350.2	Ammonia Nitrogen
MCAWW	351.3	Total Kjeldahl Nitrogen
MCAWW	353.2	Nitrate/Nitrite Nitrogen
MCAWW	354.1	Nitrite Nitrogen
MCAWW	360.2	Dissolved Oxygen
MCAWW	365.2:ORTH	Orthophosphate as P
MCAWW	365.2:TOTL	Total Phosphate as P
MCAWW	375.4	Sulfate
MCAWW	376.2	Sulfide
MCAWW	377.1	Sulfite
MCAWW	405.1	BOD ₅
MCAWW	410.1	COD
MCAWW	413.1	Oil and Grease
MCAWW	413.2	Oil and Grease
MCAWW	415.1	Total Organic Carbon
MCAWW	418.1	Petroleum Hydrocarbons
MCAWW	420.1	Total Phenols
MCAWW	425.1	MBAS (mg LAS/L)
MCAWW	245.1	Mercury by Cold Vapor
MCAWW/SW-846	335.1, 335.2	Cyanide, Total and Amenable
MCAWW/SW-846	450.1	Total Organic Halides
Standard Methods	4500G	Dissolved Sulfide in Soil
Standard Methods	3500FE	Ferrous Iron (Phenanthroline Method)
Standard Methods	4500FC	Fluoride by Ion Selective Electrode
Standard Methods	4500PE	Ortho Phosphate as P
Standard Methods	4500CNG/CNE	Cyanide, Total and Amenable
Standard Methods	4500NO ₂ B	Nitrite Nitrogen
Standard Methods	2540C	Total Dissolved Solids
Standard Methods	2510B	Conductivity
Standard Methods	2320B	Alkalinity (as CaCO ₃)
Standard Methods	5210 (MOD)	Carbonaceous BOD
State of MA	EPH	EPH for MA
State of MA	VPH	VPH for MA
Status and Trends	SATPPCB	Status and Trends Pest/Congener



Engineering and Environmental Investigations

Corporations today are faced with a myriad of complex issues that can pose significant liability. Corporate standards and procedures, customer specifications, general legal compliance, and perhaps most burdensome – safety, health and environmental compliance – require constant corporate attention. Product liability and related issues, such as toxic tort and other claims, can be difficult to defend and financially significant. Costs arising from historic environmental issues – site cleanups, contribution claims and related transactional issues – can be staggering.

Our ***Engineering Investigations Group*** offers a wide variety of services to assist in the investigation of incidents and prevention of recurrence. These services include:

- ***Historic Liability Investigation***, to assist in dealing with long term or inherited liabilities.
- ***Internal Compliance Investigation***, to assist with compliance-related enforcement actions.
- ***Forensic Engineering Investigation***, for investigating the cause of accidents and errors creating liabilities or risk.
- ***Monitoring Services*** to develop business intelligence or ensure compliance and integrity.

Historic Liability Investigation

Our Engineering Investigations Group comprises one of the most experienced teams in the country for developing factual evidence regarding historic liability claims. We are routinely called upon for services including ***Investigation and vetting of toxic tort claims, PRP identification and investigation, Historic archive searching, and Successorship, asset and coverage investigation***. Our professionals have successfully assisted corporations with issues posing significant liability to their organization and saved clients millions of dollars in litigating such matters.

- **Investigation and vetting of toxic tort claims**

The Intelligence Group has contributed to the successful defense of clients in numerous asbestos, chemical and other toxic tort claims. Clients typically ask us to vet claims made relative to historic exposure to asbestos-containing materials or other workplace hazards. We evaluate the claimant's scenarios with counsel, and then locate historic, factual evidence in the form of witnesses and key documents to help assess the factual underpinnings of the claim. Often, we develop evidence indicating that client products were not involved in a claimant's exposure scenario; other times we identify and provide evidence regarding other probable sources of exposure. This aggressive stance taken by our clients – law firms, manufacturers and insurance carriers – has proven to be extremely effective in minimizing liability exposure and risk due to historic claims.

Case Studies: *We are routinely engaged to investigate and vet asbestos claims, and develop factual evidence regarding both the claimed exposure as well as other potential exposure pathways.*

In one such matter, we were able to refute the plaintiff's claimed exposure scenarios through the development of witnesses from the 1940's timeframe, as well as develop evidence of asbestos in the plaintiff's former workplace and home. A jury verdict for the defense was awarded.

In other matters, we have been able to document that our client's products were not present or utilized by the plaintiff at the claimed location of exposure. We have successfully completed such assignments for products including boilers, air conditioning systems, clutch parts, brake parts, plumbing supplies, insulation, and various building materials. Clients have successfully settled or been granted dismissal in these matters.

- **PRP Identification and Investigation**

Clients turn to The Intelligence Group to help identify who will pay cleanup costs and deal with other contingent liabilities at contaminated sites. We provide one of the most experienced teams in the country that deals strictly with developing historic, factual evidence - necessary to identify PRPs and establish a basis for cost allocation. We identify and locate witnesses, find critical documentation, and reconstruct operating histories from decades and centuries, past. We obtain affidavits, prepare expert's reports, present evidence to regulatory agencies, and testify in court. We assist counsel in putting together successful cases by working as an integrated member of the team – providing the resources and skills that compliment theirs. We routinely work with our client's retained engineering consultants as well, to integrate sampling data and other evidence generated.

The Intelligence Group has worked on an extensive array of federal, state-lead, and privately-investigated sites throughout the United States, including; contaminated sediments in rivers, harbors and other waterways; regional and localized groundwater contamination cases; landfills, recycling and disposal/TSD facilities; and multiple tenancy issues at industrial facilities. We have applied these skills in matters ranging from due diligence to cost recovery, from PRP identification to final cost allocation.

Case Studies: *We have extensive experience in contaminated sediments, groundwater and other regional contamination issues, as well as individual industrial sites and disposal facilities including landfills.*

In numerous contaminated sediment cases, we have successfully re-constructed operating histories of plant sites, neighborhoods and entire cities in order to accurately baseline potential sources of sediment contamination. We have documented historical discharge mechanisms to the waterway, and built liability cases against numerous entities. This resulted in the naming of PRPs by enforcement agencies, and successful verdicts in civil litigation.

In regional groundwater contamination cases, we have similarly inventoried historic potential sources within capture zones and built successful liability cases against numerous entities.

We have extensive experience with individual industrial sites, reconstructing operating histories of various historic tenants down to raw materials, waste streams and disposition. In a number of cases, we have been able to identify raw material usage by location, resulting in successful allocation and liability negotiations or judgments for our clients.

In numerous landfill cases, we have been able to identify waste sources via hauler networks, witnesses and documents. In addition to these more traditional techniques, we have worked extensively with engineering consultants and remedial contractors to characterize waste types and fingerprint sources, assisting allocation negotiations and remedy selection.

▪ **Historic Archive Searching**

An integral component of historic liability investigation is the ability to locate key documentary evidence from unique sources. Our Engineering Investigations Group has significant expertise in locating critical evidentiary documents from diverse sources such as state and local agencies, historical document repositories and groups, National Archives and other federal records, manufacturing and industry resources, and countless local repositories. We are often called on to provide supplemental information regarding historical operations not producible

under routine civil discovery. Examples include operating details such as products and raw materials, company and organizational information, names of potentially informative persons and witnesses, enforcement records, evidence of historic insurance coverage and policies, and government contracts / Department of Defense relationships.

Case Studies: *Historic archive searching is a skill utilized in virtually every investigation we undertake. Historical documentation is a powerful form of evidence and, when used to supplement and corroborate witness testimony, makes for a very strong case.*

In an environmental liability case regarding pesticide manufacture, we were able to locate historic documents showing our target had registered the manufacture of a particular pesticide with state and local agencies. When this evidence was countered as being inconclusive of actual manufacture by this entity, we were able to obtain a retailed relic of the manufactured product – complete with packaging – from the late 1940s.

In another environmental liability case, we were able to obtain extensive documentation from federal records showing that our client's inherited operating entity had significant Department of Defense operations during World War II. Coupled with corroborating testimony from former employees, we proved War Production Board operation of the facility, allowing our client to proceed favorably in resolving their liability case.

▪ **Successorship, Asset and Coverage Investigation**

Often needed in PRP and other historic liability actions is the ability to identify and investigate entities and their assets. The Intelligence Group is experienced in the sophisticated research and investigation necessary to follow such trails and produce key evidence. Clients call on us to:

- o Trace and evaluate complex corporate transactions to identify ultimate successors
- o Investigate and locate assets held by corporate and personal entities
- o Locate evidence of general liability insurance coverage from internal and external sources

We maintain a full-service investigative research team expert in the intricacies of on-line research, document retrieval and historic archive searching. This function is often fully integrated into PRP and toxic tort investigations to ensure that viable entities are identified and located – consistent with the overall goal of the investigation.

Case Studies: *As important as identifying liable entities in environmental matters is identifying whether they can pay. Due to the historic nature of many of these cases, identifying ultimate corporate successors is an important step.*

In an environmental liability case with multiple tenancies over more than a 100-year period, our client was defending a claim for virtually all of the allocable liability at the site due to the claimed “unidentifiable” status of various historic operating entities. Through an extensive investigation of the transactions involving each of these entities, we determined that the ultimate successor to one of the more significant tenants was indeed the plaintiff itself.

In numerous other cases we have successfully identified and developed evidence of historic general liability insurance coverage, necessary for successful insurance recovery efforts on behalf of entities with significant historic liabilities. We have identified and located former brokers and business records, traced the sale of brokerages, located historic documentation and developed unique sources of these records from publicly-available and private resources.

Internal Compliance Investigation

Clients turn to The Intelligence Group for help with sensitive internal issues that pose liability to the organization. Such issues may involve potential criminal or civil enforcement actions at operating facilities, or process errors and related non-compliance in production, manufacturing and laboratory settings. We provide organizations with an outside perspective in conducting ***Internal investigations*** as well as providing solutions such as ***Compliance programs and training***. We have worked in a variety of settings in numerous industries, including:

- o Aerospace
- o Electronics
- o Chemical manufacturing
- o Electric and Gas Utilities
- o Pharmaceuticals
- o Telecommunications
- o Steel and Metalworking
- o Mining and Production
- o Oil and Gas
- o Recycling
- o Waste Transportation/Disposal
- o Heavy manufacturing
- o Paints and Pigments
- o Textiles
- o Pesticide manufacture

▪ Internal Investigations

Internal investigations to determine the causes of non-compliance can be sensitive and involved issues. We develop evidence discreetly, working with management and counsel to develop the specific information desired in a confidential manner. We are focused in our inquiry and sensitive to the need to develop factually sound intelligence while maintaining employee and management relations that will survive the incident at hand.

Case Studies: *Our client's industrial operation had been the focus of intense regulatory scrutiny due to fugitive emission and wastewater discharge issues. In the midst of addressing these problems, allegations were made by lab staff that the facility environmental manager had fraudulently changed lab results prior to submission to the local regulatory agency. Our investigation revealed integrity lapses at the plant management level that led not only to falsified environmental reporting, but also the defrauding of customers by selling out-of-spec product. These results allowed our client to make the necessary managerial and procedural changes to get back into compliance, make restitution to customers and reach a satisfactory plea arrangement with regulatory authorities.*

- **Compliance Programs and Training**

Often, we are asked to supplement our investigative findings with the design and implementation of business controls and other solutions to ensure that future risk is mitigated. The Intelligence Group designs a variety of solutions ranging from quick fixes to complete compliance programs and training. We provide an outside perspective culled from a variety of industries and operations, and a knowledge of industry *best practices* to help benchmark and guide your organization.

Forensic Engineering Investigation

Product tampering and related security concerns can pose a myriad of potential liability to corporations not adequately prepared to prevent and respond to such situations. **Industrial accidents** such as leaks, spills, fires and explosions can literally put companies out of business. The Intelligence Group assists companies dealing with such issues by applying our unique combination of engineering and investigative expertise to determine the root cause of an incident, or help ensure that such loss does not occur. Other clients call on us to provide them with a competitive edge in their marketplace utilizing our **Business intelligence** capabilities.

- **Product Tampering**

Concerns with product tampering begin with raw materials and carry through the distribution chain. In between, product manufacture and assembly operations provide insiders and others the opportunity to carry out a variety of acts that can result in product tampering. The Intelligence Group designs and implements security programs to minimize this potential, and we respond to incidents of product tampering to conduct investigations and determine how the incident took place. Our knowledge

and experience in manufacturing environments provides clients with an effective level of risk mitigation and response in dealing with these issues.

Case Studies: *When one of the country's largest oil recycling refineries was inadvertently contaminated with PCBs, we were asked to determine the source of the contamination. Due to contentious labor negotiations occurring during this timeframe, management suspected the contamination – which caused several million dollars in damages - was willful rather than unintentional. Numerous points in the supply and operational chains were investigated and evaluated, and the source was successfully traced. A compilation of errors in both the field screening and laboratory testing programs – designed to specifically keep PCBs from being accepted as recycling stock – were identified as the culprit. As a result of these findings, we worked with our client to revise procedures and protocols to ensure that such unintentional errors would not be repeated.*

- **Accident Causation**

Industrial accidents such as leaks, spills, releases, fires, and explosions can create significant liability for corporations. Regulatory enforcement guidelines require companies to investigate and understand the causes of such incidents, and take steps to prevent their recurrence. Potential litigation claims from affected parties make internal investigations an important step in mounting a successful defense. Clients call on The Intelligence Group to investigate such incidents and assist in managing these liabilities. We provide an experienced, outside perspective important not only for gathering the relevant facts, but also establishing credibility with outside bodies such as enforcement agencies.

Case Studies: *We are asked to play a variety of roles supporting counsel and corporations in the wake of industrial accidents. In one such case involving an industrial explosion causing personal injury and extensive property damage, we responded immediately and assisted counsel in documenting site conditions, monitoring response agency activities and interviewing witnesses. We then worked as a member of the investigation team determining the actual causes for the accident, evaluated entities with potential liability and vetting experts and witnesses.*

- **Business Intelligence**

In today's competitive business environment, organizations need to address concerns about competitors and marketplace trends every day. The Intelligence Group assists corporations in assessing and monitoring their competitors, evaluating sales opportunities and entry into new markets, and assessing business transactions and other relationships

upon which organizations depend. Our clients utilize such proactive intelligence to gain market share, identify new and profitable opportunities, and help maintain their edge. By applying our unique combination of engineering and investigative expertise, we assist clients in a variety of technical markets and product areas.

Case Studies: *We are often asked to compile a profile of manufacturing capability of competitors, or determine whether manufacture of a certain product is occurring that may infringe on existing patents or other legal protection. We assimilate information from a variety of public and proprietary sources, and are often able to provide clients with intelligence such as product type, raw materials used, volumes produced and growth trends or plans. Analysis of this intelligence can be highly specific, thus we work with a variety of our own technical experts as well as client resources in performing this work.*

Monitoring Services

Applications for Monitoring Services can include court-ordered compliance monitoring, Independent Private Sector Inspector General requirements for government and industry applications, or less formal internal compliance controls and checks. These services typically combine unique investigative and evaluation capabilities, such as forensic accounting and knowledge of specific industries, with traditional skills such as physical surveillance and remote monitoring. Most importantly, these multi-disciplined skills must be effectively blended to develop the intelligence that is sought. Some examples of our Monitoring Services include:

- **Compliance/Integrity Programs**

Clients utilize The Intelligence Group to help ensure that vendors, contractors or other outside parties are operating in compliance with contractual or legal criteria. These monitoring programs can consist of overt tasks, such as audits, inspections and review of financial and other business records, as well as covert tasks, including electronic and physical surveillance, forensic evaluation of computer systems or other forms of background investigation.

Case Studies: *We have performed monitoring of employee, contractor and vendor performance in various applications including waste management, environmental remediation and abatement, waste hauling, construction, demolition and related industries. In addition, we are also called upon to provide vetting, background investigation, pre-qualification and performance assessment of vendors, contractors and suppliers in these industries and others.*



Dennis P. Farley **President**

Mr. Farley has more than twenty years experience in the environmental field in a variety of capacities. His areas of expertise include conducting and directing environmental investigations, providing litigation support, and providing consulting services to corporate clients on a domestic and international basis. He has extensive experience in providing strategic guidance to industrial sector clients on CERCLA, RCRA, TSCA and general compliance matters. Mr. Farley has worked on more than 60 Superfund cases, including designing, conducting and directing PRP investigations, managing Remedial Investigation/Feasibility Studies ("RI/FS") and providing strategic guidance to PRPs. He has conducted investigations at industrial sites, landfills, river/harbor settings, and contaminated well fields both domestically and internationally for corporate clients, law firms, and government agencies.

Mr. Farley has conducted technical investigations for purposes such as allocation assessment, litigation support in toxic tort and cost recovery actions, PRP identification, and other internal corporate matters including compliance and fraud analysis. He has been utilized as an expert witness in several litigation cases. Additionally, Mr. Farley has significant experience in conducting environmental due diligence for real estate transactions, as well as investigating, monitoring and assessing waste disposal vendors for corporate clients.

Previously, Mr. Farley was Managing Director of Kroll Environmental Enterprises, a wholly owned subsidiary of Kroll Associates. Mr. Farley has held previous positions with Hart Environmental Management Corporation as Director of Environmental Field Services, and NUS Corporation under contract to the United States Environmental Protection Agency.

Mr. Farley received a B.S. in Geology/Physics from Moravian College, and an M.S. in Environmental Engineering from the New Jersey Institute of Technology. He is a licensed Private Investigator in several states.