RCRA Facility Investigation Work Plan

Volume IV

General Motors Corporation
NAO Flint Operations Site
Flint, Michigan

March 30, 2001

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BLASLAND, BOUCK & LEE, INC.
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Consultants with focus

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Project Management Plan

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Attachment

1. Introduction

This Project Management Plan (PMP) is submitted as an appendix to and forms part of the RCRA Facility Investigation (RFI) Work Plan for the General Motors Corporation (GM) NAO Flint Operations Site (Site) in Flint, Michigan. The PMP presents a discussion of the technical approach, schedules, and personnel for performing the RFI.

2. Technical Approach

The overall approach for the RFI will focus on gathering the data necessary to complete the RFI Report and to allow for the evaluation of corrective measures (if required). This approach will consider the fact that portions of the Site are an operating industrial facility. The goal of completing the RFI Report will be achieved by implementing the RFI Work Plan.

3. Schedules

The schedule for implementation of the RFI is presented in Section 8 of the RFI Work Plan. It will be the role of the Project Management Team identified in Section 4 of this appendix to ensure that the schedules are met or to identify the reasons why scheduled activities were modified.

4. Project Management Organization

Figure B-1 presents GM's overall project management organization for the RFI.

The Project Manager for the U.S. Environmental Protection Agency (USEPA) is:

Gary Cygan
USEPA, Region 5
RCRA Corrective Action
Waste, Pesticides, and Toxics Division (DE-9J)
77 W. Jackson Boulevard
Chicago, Illinois 60604
Phone: (312) 886-5902
E-Mail: cygan.gary@epa.gov

The Project Manager for GM is:

Robert S. Metcalf, P.E.
General Motors Corporation
GM Remediation Team
902 East Hamilton Avenue
Mail Code: 485-185-020
Flint, Michigan 48550-8502
Phone: 810-236-0300
Fax: 810-236-7391
E-Mail: robert.metcalf@GM.com

All communications between USEPA and GM, and all documents, plans, reports, approvals and other correspondence concerning activities performed during the RFI, will be directed through Robert S. Metcalf and Gary Cygan.

Blasland, Bouck & Lee, Inc. (BBL), 6723 Towpath Road, Syracuse, New York 13214, will be GM's environmental consultant for the RFI. BBL's Project Manager is Robert J. Anderson, P.G. BBL's Assistant Project Manager is Derek C. Kaiding. BBL's Task Managers are Lisa R. Coffey and Raymond A. Wagner (Subsurface Investigations); Donald F. Sauda (Interim Measures); and Gregory N. Ertel (Health and Safety). BBL's Quality Assurance (QA) Managers are Keith M. Stang and Laurie A. Indick. BBL's Health and Safety Officer is Jay D. Keough. BBL's GIS and Database Administrator is Mark D. Hattersley. BBL will perform or supervise all field activities of the RFI in accordance with the RFI Work Plan. BBL will compile and assess all data collected as part of the RFI and will prepare the RFI Report.

Based on the RFI data, Environ will perform a human health risk assessment, and EXponent will perform an ecological risk assessment. Stephen Song is Environ's Risk Assessment Manager, and Pieter Booth is EXponent's Risk Assessment Manager.

CT&E Environmental Services, Inc. (CT&E) will be the analytical subcontractor and will perform all chemical analyses for samples collected as part of the RFI. Randal R. Rubin is CT&E's Laboratory Project Manager, and Jason A. Asher is CT&E's Quality Assurance Manager.

The drilling subcontractor will be determined following competitive bidding protocols. The firm selected by GM for the drilling activities will be identified to USEPA before the start of field activities.

All firms will provide project management as appropriate to their responsibilities. BBL will provide subcontractor administrative oversight. A copy of the Consent Order will be provided to all firms.

5. BBL Qualifications

BBL is fully qualified to conduct all of the required professional services associated with the RFI at the Site. BBL has extensive experience in conducting hydrogeological investigations at RCRA and Superfund sites in the United States. In addition, BBL has prepared corrective action plans and implemented various phases of corrective actions at a variety of sites throughout the United States.

5.1 Key Personnel

As identified in Section 4 of this appendix and presented on Figure B-1, BBL has assembled a project management team and technical resource personnel with the necessary experience and capabilities required for this project. Brief descriptions of all personnel roles and qualifications are listed below, and resumes are included in Attachment B-1.

5.1.1 Project Management

Robert J. Anderson, P.G.: Mr. Anderson will act as BBL's overall Project Manager. He will provide final review of significant submittals to USEPA and may participate in technical meetings with USEPA. Mr. Anderson has extensive experience in projects of this nature and will ensure that overall technical quality is maintained.

Derek C. Kaiding: Mr. Kaiding will act as BBL's Assistant Project Manager. He will oversee all aspects of the project, participate in technical meetings with USEPA, and will be actively involved in the direction of the project. Mr. Kaiding has extensive experience in projects of this nature and will ensure that technical quality and scheduling are maintained throughout all activities. He will be briefed regularly regarding all activities by the BBL Task Managers.

5.1.2 Technical Resource Personnel

The following is a list of technical resource personnel who will assist with specialized aspects of the program:

Lisa R. Coffey and Raymond A. Wagner: Ms. Coffey and Mr. Wagner will act as BBL's Subsurface Investigations Task Managers. They will ensure that all day-to-day tasks are conducted in a professional and timely manner.

Each Task Manager has experience in projects of this nature, and they will keep the Project Manager fully informed on the status of ongoing tasks. They may also attend technical meetings, as required, and will prepare and coordinate the issuance of the Phase I and Phase II Reports.

Senior Engineer: Don F. Sauda, an experienced engineer with BBL, will act as BBL's Design Engineer for evaluating and/or designing Interim Measures (if any) in response to RFI data.

QA Managers: Keith M. Stang and Laurie A. Indick will act as BBL's QA Officers for the project and will be responsible for overviewing laboratory activities, analytical data assessment and validation, and deciding laboratory data corrective actions, if required.

Health and Safety Manager: Greg N. Ertel will ensure that the Site Health & Safety Plan (Appendix E to the RFI Work Plan) will be followed by all BBL Site personnel.

Health and Safety Officer: Jay D. Keough will be BBL's Site Health and Safety Officer. He will supervise the BBL Health & Safety Manager, will provide managerial guidance with respect to BBL Health and Safety, and will participate in or review field decisions regarding health and safety.

6. Environ/E^Xponent Qualifications

Environ and E^Xponent are fully qualified to perform human health and ecological risk assessments in accordance with USEPA's guidelines.

Environ and/or E^Xponent will provide qualifications package(s), as requested.

7. CT&E Qualifications

CT&E is fully qualified to conduct analyses in accordance with USEPA analytical methods specified in the FSP/QAPP, which is presented as Appendix C of the RFI Work Plan.

CT&E will provide a qualifications package, as requested.

8. Drilling Subcontractor Qualifications

The drilling subcontractor will be required to meet the following qualifications:

- Registered within the State of Michigan;
- Satisfy applicable OSHA health and safety training requirements;
- Provide suitable equipment and manpower to perform drilling activities within specified timeframes; and
- Previous experience relating to similar soil boring installation programs.

The drilling subcontractor will provide a qualifications package, as requested.

9. Other Contractors/Subcontractors

The qualifications of all contractors, subcontractors, and their personnel used in carrying out the terms of the Consent Order will be documented and provided to USEPA, as requested.

Figures

Figure B-1

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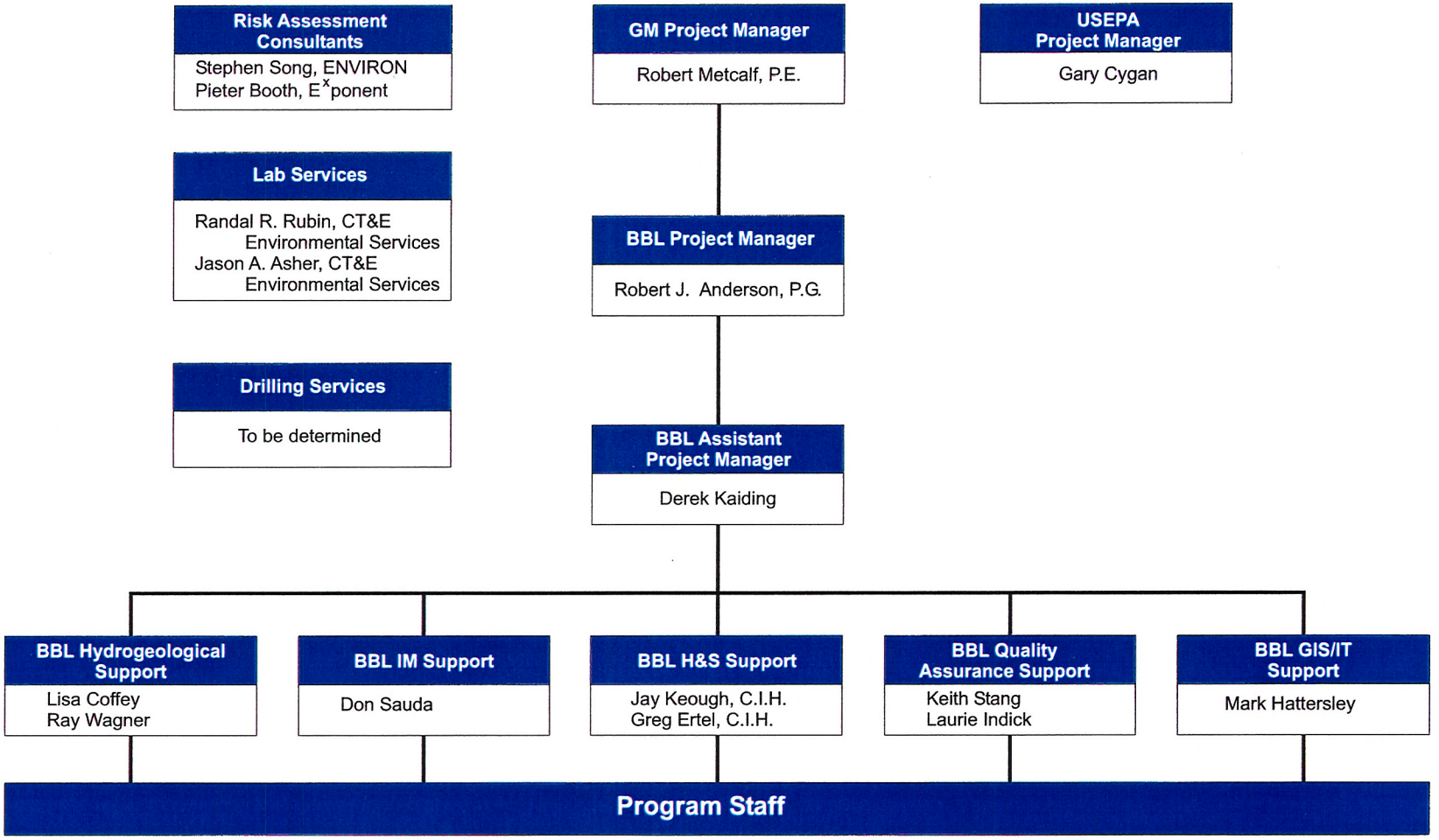
Project Management Organization

Figure B-1

Organization Chart - GM NAO Flint Operations Site Activities



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Attachment B-1

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Project Team Resumes

taking into consideration likely future property uses for this facility in an industrial setting adjacent to a creek.

Convinced the USEPA to look at corrective action on a site-wide basis, rather than an SWMU-by-SWMU basis. As a result, the CAMU concept was proposed for the site and tentatively accepted by the agency. In-place capping with only limited handling (no off-site disposal or incineration) of PAH-saturated soils combined with hydraulic containment were recommended by the CMS. Conducted pilot studies to collect DNAPL from areas of greatest apparent thickness, and mitigated further off-site migration of DNAPL.

As Program Manager, coordinated environmental investigations and remediation for an international client to ensure that the client's corporate culture, QA/QC, and other requirements were achieved. Facilitated communications and project requirements between European offices and the client's United States-based project managers. Provided technical oversight and peer review for project deliverables. Facilities were located in Italy, England, Germany, the Netherlands, Spain, and Brazil.

Managed an operating facility with compliance, RFI, and hazardous waste management unit closure. Implemented and managed a RCRA ground-water monitoring program for hazardous waste storage impoundments, negotiated with local, state, and federal regulators; prepared a RCRA Part B permit application for a hazardous waste container storage facility; and assisted facility with compliance. Represented the company at the RFA, and negotiated with the agency regarding the final listing of SWMUs. Prepared plan for closure of the hazardous waste storage impoundments, and implemented closure. Negotiated with the local POTW to receive a wastewater discharge permit to replace the surface impoundment. Coordinated the demolition of processes that were no longer in use at the facility. Constituents at this site included coal tar chemicals.

Performed a facility review and compliance audit at an operating coke-making facility that included a former coke-over-gas byproducts facility. Performed an audit of the facility for compliance with environmental regulations, including NESHAPs and the Clean Air Act. As a client representative, accompanied the USEPA through the site during the RFA. Provided depositions on behalf of the client for an environmental insurance recovery case.

Designed, implemented, and prepared the report for a RCRA ground-water quality assessment at an inactive facility. The site consisted of former waste impoundments regulated under RCRA and other former waste management areas. Constituents of interest included metals, coal tar chemicals, pentachlorophenol (PCP), fuel oil, and DNAPL.

As a representative of the owner, accompanied the USEPA during the RFA at an inactive facility. Provided oversight of the USEPA's sampling and records review activities and provided a summary report to the owner. Constituents included coal tar chemicals.

Project Director for an RFI and Interim Measures (IM) at a chemical manufacturing facility located along the Ohio River. Used field screening to focus and expedite the field portion of the investigation. Investigatory techniques included ground-penetrating radar, direct push sampling, cable tool and rotary drilling, soil gas, and surface-water and sediment sampling. Aquifer test data were used to develop interim measures hydraulic containment to prevent off-site migration of contaminants. Human health and ecological assessments were performed to assess risks from the site to receptors.

Project Manager for an RFI at an active wood preserving facility. Prepared an RFI Work Plan, negotiated the scope of RFI activities with the regulatory agencies, and managed implementation of the final Work Plan. Constituents of interest included coal tar chemicals, PCP and chromated copper arsenate (CCA).

Project Director for development of an RFI Work Plan for a coke byproducts plant. SWMUs identified by the USEPA included tar decanter vessels, coke oven gas condensate units, the byproducts area including the ammonia still, the wastewater treatment plant, quench towers, various coal and coke storage areas, and cooling water impoundments.

Project Manager for development of an RFI Work Plan at an operating coal tar refining and chemicals facility. Enforcement actions were conducted concurrently, pursuant to CERCLA. Assisted client's attorneys with drafting, negotiating, and finalizing the consent order for the site.

Project Manager for a CERCLA Remedial Investigation/Feasibility Study (RI/FS) at a former wood preserving plant located in USEPA Region VIII. Constituents of interest included PCP, coal tar chemicals, diesel fuel, and metals. Activities included preparing the RI and FS Work Plans, negotiating with the regulatory agencies, and implementing the work. Coordinated treatability studies to evaluate remedial technologies. Performed treatability studies to evaluate biodegradation, thermal destruction, super critical fluid extraction, fungal degradation, and water treatment. Also participated in cost recovery activities on behalf of the client.

Project Director for a CERCLA RI/FS at a former wood preserving plant that used coal tar chemicals and PCP. This facility is located in the coastal area of the USEPA Region III. Supervised the preparation and implementation of Work Plans. Involved in agency negotiations on behalf of the client. Provided peer review for all project deliverables.

Project Manager for development of a CERCLA Remedial Design Work Plan at a former single-source landfill located in the USEPA Region III. Remedial activities involved excavation and solidification/stabilization of wastes, and deposition of the wastes in an on-site landfill. In addition, performed seepage collection and treatment actions. Provided oversight of treatability studies for solidification/stabilization of organic wastes.

Project manager for a brownfields site in Pennsylvania. Performed evaluation of data and demonstrated suitability for release from liability.

Expert witness for litigation regarding cost recovery case. Provided expert report, deposition and testimony on behalf of plaintiff.

Managed 10 operating wood preserving plants that used coal tar chemicals. Managed ongoing corrective action activities at two facilities pursuant to CERCLA and RCRA (concurrently), and one plant with activities pursuant to RCRA 3004(u). Responsible for managing Work Plan development, agency negotiations, and implementing the work.

Project Manager for remediation of a former aluminum manufacturing plant in Pennsylvania, where the customer wished to remediate fuel oil, and TCE- and PCB-containing soils before selling the property to a developer for use as a shopping mall. Performed a site investigation and developed risk-based cleanup goals, which were approved by the state agency. Performed remediation to remove materials and structures continuing constituents above the cleanup goals in accordance with a state-approved plan. During remediation, used screening techniques to assure that the remediation goals were achieved. The state agency approved the final remediation and granted site closure.

Manager responsible for general compliance with environmental regulations, including the Clean Air Act, Clean Water Act, and RCRA at eight operating wood preserving facilities. Represented the client at compliance inspections, RCRA Facility Assessments, and Visual Site Inspections. Prepared permits pursuant to the Clean Air Act, RCRA, and the Clean Water Act. Successfully negotiated and permitted a wood-fired boiler to burn nonhazardous waste as a fuel supplement.

Manager responsible for closure of hazardous waste storage impoundments at three operating coal tar facilities. Provided oversight of closure plan preparation, agency negotiations, and contractor selection. Provided project management and oversight of design and construction of wastewater plants designed and built to replace surface impoundments. Negotiated with local, state, and federal agencies regarding effluent limitations and permitting.

Provided technical support for a client that challenged the USEPA's assertion that effluent spray irrigation fields for coal tar chemicals are hazardous waste management units. Based on a review of regulations, preambles to RCRA, definitions of hazardous wastes, and other considerations, the USEPA withdrew its case.

Project team member responsible for developing and implementing an internal environmental auditing program for a coal tar chemicals company. Developed protocol, questionnaires, and follow-up programs. The program was established to determine the environmental compliance of all operating facilities and to identify potential environmental liabilities resulting from historical operations.

Prepared for and attended pubic meetings to present customers' cases regarding hazardous waste management issues. At a Superfund site in USEPA Region VIII, attended and presented plans for environmental studies and remediation over a

one-year period to a hostile public. Efforts achieved community acceptance of the proposed investigations and remedies.

Provided support for effluent discharge from a wastewater treatment plant at a public meeting for a joint Superfund/RCRA site in USEPA Region IV.

Assisted client with public relations activities for an RFI/CMS in USEPA Region V. Activities included preparing fact sheets, updating the public repository, and notifying interested parties of pending activities.

Served with a team to develop a project management course for corporate training at a 700-person environmental consulting firm. Presented the course to senior project managers.

Education

BS/Geology, Allegheny College, 1980

Registrations

No registrations at this time.

Professional Affiliations/Awards

National Ground Water Association

Technical Training/ Seminars

40-Hour OSHA Training
- 8-Hour OSHA Refresher Training
- OSHA Supervisory Training
- CPR/First Aid

Selected Publications/ Presentations

"RCRA Corrective Action Reforms Workshop". Presented to multinational industrial company. Washington, D.C., April 26 and 27, 2000.

"The Basics of Hydrogeology." Presented at the law firm of Babst, Calland, Clemments & Zomnir. September 21, 1995.

"Application of the CAMU and TU Rules in Corrective Action." Presented at Executive Enterprises RCRA Corrective Action Conference. Chicago - April 6, 7, 1995. Atlanta - April 24, 25, 1995.

"Proactive Corrective Measures Studies and Implementation." Presented at Executive Enterprises RCRA Corrective Action Conference. Chicago - April 6, 7, 1995. Atlanta - April 24, 25, 1995.

"Principles of Project Management." R. Anderson. Two-day short course. Presented in Sacramento, CA - April 1994. Presented in Detroit - October 1994.

"Pennsylvania Brownfields." R. Anderson. Presented to the Allegheny County Bar Association. April 1993.

"Reclaiming Industrial Properties." R. Anderson. Presented at conference on Brownfields. September 1993.

Resume

Derek C. Kaiding

Manager/Senior Engineer I

Mr. Kaiding has over ten years experience providing engineering technical support to large industrial clients and PRPs involved in RCRA, CERCLA, and/or other state-governed regulatory compliance activities related to site investigation and remediation.

For the past year to the present, has served as Project Manager and provided assistance to General Motors Corporation (GM) in remedial investigations at the GM NAO Flint Operations Site (GM Flint facility) in Flint, Michigan, per a consent order, signed by GM and the United States Environmental Protection Agency (USEPA) in March 2000. The consent order was issued pursuant to the Resource Conservation and Recovery Act of 1976 (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), and involved the following activities:

- Managed the design and implementation of programs to identify Areas of Interest (AOIs) related to the 452-acre GM Flint Facility in turn to be subject to further investigations per the Consent Order.
- Managed the preparation and submission to the USEPA two Description of Conditions (DOCCs) reports for the GM Flint Facility (north and south portions of facility, repectively).
- Managed the preliminary design of a RCRA facility investigation based on the AOIs and other information presented in the DOCCs.
- Managed related preparation activities and participated in quarterly coordination meetings for the GM and USEPA, at which project strategy was presented and further developed.

For more than seven years, served as Project Manager/Assistant Project Manager, assisting a confidential client with a 250-acre industrial facility located in the northeastern United States. This facility is co-regulated by the United States Environmental Protection Agency (USEPA) and the home state's Department of Environmental Protection (DEP) pursuant to the RCRA Corrective Action Program (RCRA/HSWA) and the home state's Contingency Plan (CP), respectively. Current investigations include 12 separate but related sites.

As Project Manager/Assistant Project Manager, assisted this confidential client with RCRA/HSWA and CP activities as follows:

- Provided technical support to two years of settlement negotiations between confidential client and several government agencies regarding the overall confidential client facility and related sites. Support primarily involved feasibility evaluations of various remedial and source control alternatives being considered primarily for soil and off-site migration of non-aqueous phase liquids (NAPLs).
- Managed remediation efforts involving removal and off-site disposal for over 40,000 cy of fill containing primarily polychlorinated biphenyls (PCBs) at a local elementary school property. Activities included the preparation and

implementation of pre-design characterization efforts, remedial design work plan preparation, negotiation with the USEPA and DEP, and technical support to remedial action activities.

- Managed the preparation of design work plans for control of migration of light and dense non-aqueous phase liquid (LNAPL and DNAPL) for two separate areas of the facility. Activities primarily involved the management of groundwater modeling and the design of approximately 800 linear feet of sheetpile containment wall.

- Authored and co-authored various Interim Remedial Measure (IRM) and Short-Term Measure (STM) Proposals.

- Authored and co-authored numerous CP Scopes of Work (SOW)/RCRA Facility Investigation (RFI) Proposals.

- Authored and co-authored numerous CP Phase II/RCRA Current Assessment Summary Reports.

- Managed the performance of various CP/RFI activities, including numerous investigations related to various constituents in groundwater, surface water, sediment, floodplain soil, air, and biota, as well as characterization of LNAPL and DNAPL extent;

- Co-developed and implemented plans to address the presence of PCBs in floodplain soils along the river system, near the facility, as an STM under the CP. Tasks included topographic and land use mapping, revised HEC-2 hydraulic modeling (to assess the extent of potentially affected floodplain), sampling and analysis, and data interpretation/reporting.

- Co-developed and implemented an CP/RFI work plan for the river system near the facility, involving water-column monitoring, sediment and floodplain sampling and analysis; review of naturally occurring rechannelization, and study of increased, enhanced river rechannelization and sedimentation.

- Provided technical support for identifying coal tar constituents at the facility that involved the determination of the location of former gas manufacturing facilities, a literature review to identify coal tar contaminants, and a subsequent comparison of these constituents to site contaminants.

- Co-developed and implemented a plan for sampling the surface water of the river system near the facility, to assess the impact of contaminant transport during the replacement of a local dam and provided on-site monitoring support during dam construction.

- Prepared semiannual status reports for a velocity and sedimentation control pilot study for the river system near the facility.

- Co-developed a Feasibility Study (FS) to present the potential impacts associated with the implementation of in-place containment, excavation, and disposal of 22,500 cy of fill containing PCBs at a local elementary school property. The FS also presented potential impacts associated with excavation and incineration of the fill materials. Subsequently, provided follow up assistance to the design of a cap to implement the agency-selected remedial option.

- Coordinated and assisted the examination and diagnosis of corrosion-related deterioration of pumps and transmission lines of a wastewater treatment system located at the facility.

- Managed the semiannual LNAPL monitoring program for portions of the facility. These activities included spring and fall groundwater level and oil thickness monitoring and evaluation involving over 200 wells.

- Assisted in the development of technical and other related plans associated with a Superfund (CERCLA) site located north of the facility. Technical plans included a Ground-Water Treatment Plan, Site Dewatering Plan, and Excavation Plan. Other plans included a Health and Safety Plan, Site Screening Plan, and Sampling and Analysis Plan. For the past few years has managed the semiannual groundwater monitoring program designed to monitor the performance of ongoing groundwater treatment process.

Other experience involving other confidential clients involves the following:

- Assisted in the development of a Description of Current Situation document related to a Remedial Investigation/Feasibility Study (RI/FS) being conducted for a Superfund site in southwestern Michigan. Documentation included a summarization of a 35,000 page administrative record in addition to relevant technical and risk assessment PCB literature. Also assisted in the development of the RI/FS Work Plan and the Field Sampling Plan.

- Supported the performance of an engineering evaluation of the thermal incineration of impacted materials at numerous Superfund and industrial sites. Fluidized bed, rotary kiln, and infrared processes in both mobile and fixed based designs were included. Support included the compilation of vendor-solicited information such as operating efficiencies, field rates and variability, costs, permitting, etc.

- Provided technical support for identifying additional PRPs related to a former metals reclamation facility in New York State which is currently a Superfund site. The site received waste metals containing hazardous materials from various nearby businesses. Activities included the comparison of witness testimony regarding transported material to site contaminants to establish a basis for litigation.

Education

- BS/Chemical Engineering, 1989, Clarkson University

Registrations	• Engineer in Training - New York, 1993, #043213
Professional Affiliations/Awards	• American Institute of Chemical Engineers
Technical Training/ Seminars	Advanced RCRA Training Certificate (40 CFR 265.16) • 40-Hour OSHA Training • OSHA Supervisory Course • CPR/First Aid
Selected Publications/ Presentations	Hale, D.W., D.C. Kaiding, and M.J. DeMaria. "Brownfields vs. Greenfields -- Considerations for Facility Siting." HMC/Superfund, Washington, DC, November 1995. Nuss, J.M., A.T. Silfer, and D.C. Kaiding. "Remedial Measures to Contain and Recover a Subsurface Oil Plume: Case Study." HMC/Superfund, Washington, DC, December 1992.

Resume

Jay D. Keough, C.I.H.

Vice President
Industrial Hygiene/Environmental Safety

Mr. Keough is a Certified Industrial Hygienist with 20 years of experience in industrial hygiene, process safety, regulatory compliance, construction safety, and hazardous waste site safety. He has designed and implemented industrial hygiene programs and conducted compliance audits at industrial and municipal locations in the United States, Brazil, Switzerland, and the Netherlands. His technical experience includes chemical process safety, exposure monitoring, ventilation design, ergonomics, indoor air quality, construction safety, radiation protection, and training presentation. He has managed a number of industrial hygiene projects, developed and implemented comprehensive safety and health programs for clients, and managed safety and health issues for numerous major projects.

Specialized Expertise: Mr. Keough directs all industrial hygiene and safety consulting services provided by BBL, and is responsible for all health and safety programs developed and implemented by BBL. In this capacity, Mr. Keough is responsible for the following:

- Supervises a professional staff of industrial hygienists and safety specialists;
- Conducts job hazard analyses, indoor air quality assessments, employee exposure assessments, noise surveys, radiation surveys, ventilation assessments, and ergonomic evaluations;
- Conducts facility audits;
- Conducts monitoring surveys;
- Prepares and executes industrial hygiene surveys;
- Develops and conducts health and safety training programs; and,
- Prepares and approves Health and Safety Work Plans and corporate policies and procedures.

Regulatory Compliance Experience

Conducted a comprehensive compliance review of a large chemical manufacturing facility. The review team included client H&S representatives who were receiving "on-the-job" training in health and safety auditing techniques. The review addressed issues in the areas of confined space entry, lockout/tagout, chemical exposure, physical hazards, personal protective equipment, employee training, accident investigation, radiation protection, hazard communication, electrical safety, and process safety management.

Conducted a health and safety compliance audit for an electronics manufacturer. Developed corporate programs for exposure monitoring, confined space entry, respiratory protection, hazardous materials handling, fork lift safety, and lockout/tagout. Prepared a Chemical Hygiene Plan for laboratory operations. Developed and presented training programs in respiratory protection, hazardous waste handling, and fork lift safety.

Conducted site safety and environmental compliance audits at two newspaper printing operations in California. Reviewed all operations for potential chemical exposure, ergonomic issues, confined space issues, personal protective equipment usage, medical monitoring, hearing conservation, lockout/tagout, laser safety, machine guarding, forklift safety, and hazard communication. Provided recommended corrective action to control hazards and reduce exposures.

Conducted an industrial hygiene and safety audit of a college's research and teaching laboratory facilities. Evaluated the facility's chemical hygiene plan, observed research and teaching laboratory activities, reviewed chemical storage and handling procedures, laboratory safety policies, observed emergency equipment inspection and maintenance records, reviewed fire, chemical spill, and

personal injury and exposure procedures, and provided recommendations to improve safety for students, faculty, and staff.

Conducted environmental and HS compliance audits at Union Carbide Corporation facility in Aratu, Brazil. Examined vinyl chloride and ethylene oxide handling and storage, rail car unloading, air/water emissions, personal protective equipment, and personnel exposures. Recommended revisions to procedures, equipment upgrades, and training programs.

Led a compliance audit of a laboratory facility in Geneva, Switzerland. Reviewed laboratory practices, environmental issues, health and safety issues, emissions, spill control, and ventilation. Provided recommendations to parent company management.

Participated in a preacquisition audit of Amerchol, Inc. prior to purchase by Union Carbide Corporation. Examined environmental and H&S practices, facilities, equipment, safety records, emissions records, and procedures. Recommended revisions to procedures and equipment upgrades.

Led a compliance audit of a laboratory facility in Liederdorp, the Netherlands. Reviewed laboratory practices, environmental issues, health and safety issues, emissions, spill control, and ventilation. Provided recommendations to facility management and parent company representatives.

Conducted annual audits of catalyst manufacturer in Delfzijl, the Netherlands. Examined facilities, equipment, procedures, emissions, spill control plans, personnel exposure, and training programs. Recommended changes to equipment, emissions control systems, and training programs. Participated in a meeting with local residents and plant management regarding noise issues. Conducted a noise survey and recommended noise reduction measures.

Conducted preacquisition audit of foam manufacturing facilities in Chicago, Illinois and Mountaintop, Pennsylvania. Examined environmental practices, facilities, equipment, health and safety practices, and raw material storage. Provided recommendations to prospective buyer.

Industrial Hygiene Experience

Developed and directed implementation of numerous Job Hazard Analyses (JHAs) at client facilities. Defined major tasks and identified the chemical, physical, biological, and ergonomic hazards related to each task. Defined the engineering controls, work practice controls, personal protective equipment, and training needed for each task. Presented recommendations for procedural modifications to mitigate hazards.

Designed and implemented an air sampling program to evaluate potential exposure in a former lead manufacturing building. Air samples were collected in various areas to determine the possibility for lead exposure to future occupants. A report was provided to the potential buyer of the property.

Prepared Material Safety Data Sheets (MSDSs) for an industrial client. Reviewed the physical and chemical properties of the products, available toxicological information, and typical handling procedures. Created MSDSs that were in compliance with OSHA regulations for content and format.

Conducted an exposure monitoring survey to evaluate worker exposure to solvents in a manufacturing plant. Real-time instrumentation and personal samplers were used to identify areas and equipment which produced significant airborne concentrations of process chemicals. Reviewed engineering drawings of ventilation systems and provided recommendations for improvements to the engineering controls present at the facility.

Inspected a manufacturing facility and provided an evaluation of engineering controls and personal protective equipment for a large manufacturing facility in New York. Completed job hazard assessments, provided hazard analyses, and produced recommendations for safe handling of new process materials.

Designed and executed a polychlorinated biphenyl (PCB) sampling program at a chemical manufacturing facility in northern New Jersey. Air sampling was conducted as part of an Environmental Cleanup and Responsibility Act (ECRA) site investigation at the facility.

Conducted a ventilation survey to evaluate performance of laboratory hoods in a new facility. All hoods were evaluated and recommendations for corrective action were documented in a report.

Indoor Air Quality Experience

Conducted a comprehensive IAQ survey of an office building in New York City. Interviewed employees, conducted air sampling, inspected building systems, and identified problem areas. Provided recommendations to the client which resulted in resolution of all issues.

Designed and implemented an IAQ survey of an office building in New Jersey. Interviewed employees, collected air samples for chemical and biological agents, inspected building systems, and determined cause of problems noted by building residents. Provided recommendations for addressing problems.

Responded to an emergency air quality incident in Norfolk, Virginia. Employees were evacuated after an incident causing hospitalization of 15 people. Conducted a comprehensive survey of the building, interviewed employees, collected air samples, inspected building systems, and provided counseling to affected employees. Issued a report on the probable cause of the incident, and provided follow-up inspections.

Ergonomics Experience

Performed numerous ergonomic hazard analyses to determine injury potential and corrective action. Counseled employees, and prepared procedures to provide guidance in the selection of office equipment, process equipment, and hand tools.

Conducted numerous Job Hazard Analyses to identify ergonomic hazards and evaluate control methods. Provided recommendations for program implementation, equipment modification, and personal protective equipment.

Construction Safety Experience
Project Manager for health and safety services during construction at a major municipal facility in New York, New York. Conduct weekly inspections of construction and demolition work, develop procedures for hazardous material handling during construction/demolition, develop and present training programs, and provide ongoing consulting services regarding safety and health compliance at the site.

Developed and implemented a lead compliance program for demolition workers at a major municipal facility. Presented Lead Hazard Awareness Training, developed safety and health protocol for contractors, reviewed exposure monitoring and medical monitoring data, and audited contractor activities.

Superfund Site Experience
Project Manager for site services pursuant to a Unilateral Administrative Order for a former mercury vapor lamp manufacturing facility located in New Jersey. Project activities include air monitoring, scanning of materials, site inspections, a material sampling and analysis program, and coordination of former resident entry.

Health and Safety Officer for the Higgins Farm Disposal Superfund site during the investigation and removal of buried waste material. Prepared a comprehensive Health and Safety Plan, developed site procedures, conducted monitoring, and conducted frequent site audits. The project logged 30,000 manhours without experiencing an OSHA Recordable injury or illness.

Managed safety and health program at a Superfund Site which is under the jurisdiction of the U.S. Army Corps of Engineers. Developed a site Health and Safety Plan, developed and presented employee training, conducted quarterly exposure monitoring, and conducted monthly safety and health inspections of the site.

Health and Safety Officer for the Chemical Insecticide Corporation Superfund Site during the implementation of an interim remedial measure for the U.S. Army Corps of Engineers. Wrote Health and Safety Plan, developed site procedures, conducted monitoring, and conducted site audits.

As Health and Safety Manager for a major chromium site remediation project in Jersey City, New Jersey, wrote the Health and Safety Plan, conducted project training, and conducted compliance audits and air monitoring. Evaluated exposure pathways and health risks associated with chromium exposure.

Training Experience
Developed and presented confined space entry supervisor training for staff of a pharmaceutical research center. Presented regulatory and technical information,

required procedures, equipment, and administration. Conducted a "hands on" exercise in which trainees entered confined spaces and practiced non-entry rescue.

Conducted Confined Space Entry Training for staff of a major newspaper printing plant. Developed and presented hands-on training in the entry and rescue from confined spaces, and presented hands-on training in the use and calibration of air monitoring instrumentation.

Presented respiratory protection training at several manufacturing facilities. Training included respiratory system function, proper use, maintenance, and storage of air-purifying and air-supplying respirators, identification of inhalation hazards, fit testing of respirators, limitation of respiratory protection.

Conducted training programs on asbestos hazards, control procedures, protective equipment, air monitoring, labeling, and operations with potential exposure.

Developed and presented numerous training programs on the following topics:

- Hazardous Waste Operations and Emergency Response
- Lockout/Tagout
- Respiratory Protection
- Hearing Conservation
- Confined Space Entry
- Radiation Safety
- Ergonomics
- General Construction Safety
- Lead Hazard Awareness Training
- Right to Know Training

Asbestos Experience

Prepared asbestos handling procedure for a newspaper printing plant. The procedure provides regulatory information, contractor qualification criteria, notification requirements, posting and labeling requirements, and safe handling information.

Managed numerous asbestos removal projects at Union Carbide facilities. Developed safety procedures, conducted area and personal exposure monitoring, and conducted site inspections to verify contractor performance.

Designed and conducted an asbestos sampling and air monitoring programs at a numerous chemical and pharmaceutical manufacturing facilities.

Conducted post-removal asbestos inspections at a municipal wastewater treatment plant.

Incident Investigation Experience

Conducted an investigation into employee complaints at an electronics manufacturer. Investigated the complaints, researched the material handled, and

provided recommendations for substituting a material which would not cause irritation.

Conducted an investigation following the deaths of two workers in a tank truck. Led a sample team to the site hours after the incident, inspected the site, collected samples, interviewed witnesses, and submitted a report.

Conducted an investigation into an exposure incident at a major automobile transport yard. Collected samples of an air contaminant and reported the material's identity and toxicity. Recommended an action plan to address the situation during site cleanup. Conducted an exposure survey to identify and quantify possible airborne contaminants present at the site.

Landfill Experience
As Health and Safety Officer for the Fresh Kills Landfill Leachate Mitigation Project in New York, prepared Health and Safety Plans and conducted compliance audits/inspections and air monitoring during an investigation that involved the drilling of more than 300 wells.

Prepared a Health and Safety Plan for all Remedial Investigation (RI) site activities conducted at the Mattiace Petrochemical Superfund site in New York. Activities included air, soil, ground-water, sediment, and test pit sampling, and site characterization.

Wrote a Health and Safety Plan for Edgemere Landfill Investigation work in New York. The program included procedures for well drilling, soil borings, and sediment and leachate sampling. Interacted with New York State Department of Environmental Conservation (NYSDEC) personnel and developed programs in compliance with NYSDEC regulations.

Department of Defense Experience
Prepared a Health and Safety Plan and performed health and safety audits for a remedial investigation at the Naval Air Warfare Center in Trenton, New Jersey. Conducted air sampling during deep well installation in an area of contaminated soils, and determined the proper level of protection for site activities.

Prepared a Health and Safety Plan for an RI/FS project at the Anacostia Naval Station in Washington, D.C. Developed site-specific procedures and air monitoring program for field sampling activities.

Health and Safety Officer for unexploded ordinance surveys and removal projects at the former Raritan Arsenal in New Jersey and at Ft. Meade, Maryland. Wrote Health and Safety Plan, developed site procedures, conducted monitoring, and conducted periodic audits.

Radiation Experience
Wrote a Health and Safety Plan for an RI/FS at a BP Chemicals waste site with mixed chemical and radioactive waste materials. Developed safety procedures,

personal protective equipment protocol, air monitoring program, and decontamination procedures.

Prepared and negotiated a U.S. Nuclear Regulatory Commission license covering the use of various isotopes in a research laboratory.

Expert Testimony Experience
Provided expert testimony regarding regulatory requirements and safe practices for tank testing and demolition. Testimony provided during depositions for a case involving the deaths of two workers in a tank explosion.

Provided expert testimony at a USEPA hearing in Washington, D.C. regarding premanufacture notice under the Toxic Substances Control Act (TSCA) regarding the safety procedures and personal protective equipment required during use of a material to be manufactured.

Quality Management Experience
Developed a comprehensive Quality Assurance Program including procedures for personnel qualification and training, procurement of items and services, documentation and records, computer hardware and software, planning, implementation of work processes, quality improvement, planning and scoping, design of data collection operations, quality assessment and response, assessment and verification of data, design construction, and operation of systems.

Managed the implementation of a Corporate Total Quality Management program. Conducted project and facility Quality Assurance audits, and prepared and approved Quality Assurance Plans. Wrote and implemented corporate standard quality practices. Supported quality assurance officers in regional locations.

Chemical Manufacturing Experience
While with Union Carbide Corporation, managed Environmental Protection and Industrial Hygiene programs at the Union Carbide Technical Center in New Jersey. Also responsible for program development and support at five other locations. Designed and conducted a trial burn for permitting of a chemical waste incinerator; designed and implemented programs in hearing conservation, exposure monitoring, ventilation design and evaluation, radiation protection, and chemical hazards; participated in numerous environmental and safety audits of plants in the United States and abroad; managed a chemical waste incineration facility; and designed systems for waste treatment.

Education

- BS/Environmental Science, 1979, Rutgers University

Registrations

- Certified Industrial Hygienist, American Board of Industrial Hygiene #4685

Professional Affiliations/Awards

- American Industrial Hygiene Association (AIHA), National and Local Section
- American Academy of Industrial Hygiene (AAIH)
- Sigma Xi, Scientific Research Society
- American Society for Quality (ASQ)

Technical Training/ Seminars

- OSHA 500 Certified Instructor in Construction Safety
- Occupational and Environmental Radiation Protection Training
- DuPont Safety Management Training
- Radiation Protection Officer Training
- Emergency Response Training
- Engineering Project Management Training
- Confined Space Entry Instructor
- Drill Rig Safety Training
- Hazardous Chemical Handling Training
- Hazardous Waste Operations Training (40-hour) 29 CFR 1910.120
- Hazardous Waste Operations Supervisor Training (8-hour) 29 CFR 1910.120

Selected Publications/ Presentations

Lead Exposure Control During Demolition: An Alternative to the Negative-Pressure Enclosure. Keough, Jay D., DerAris, E. Richard, and Silano, Edward D. Presented at the New York Water Environment Association Conference, February 2000.

A Combined Approach for Health and Safety, Quality Assurance, and Total Quality Management. Keough, Jay D., C.I.H. Published in Proceedings of the IT Technical Symposium, August 1995.

A Computerized Standard Health and Safety Plan and Hazard Modules. Keough, Jay D., C.I.H. Presented at the American Industrial Hygiene Conference, IT Technical Symposium, May 1994.

Evaluation and Control of Hazardous Gases During Intrusive Subsurface Investigation at a Municipal Landfill. Keough, Jay D., C.I.H. Presented at the American Industrial Hygiene Conference, IT Technical Symposium, May 1992.

Resume

Lisa R. Coffey, P.G.

Manager/Sr. Geologist I

Ms. Coffey has 13 years of experience designing, implementing, and managing hydrogeologic investigations incorporating soil and ground-water sampling, geophysical techniques, and soil gas applications.

Ms. Coffey has contributed technical and project management expertise to numerous environmental investigative efforts. Ms. Coffey's background includes comprehensive experience in collecting and evaluating hydrogeologic and analytical data. Data acquisition methods commonly employed include soil, surface-water, and ground-water sampling; in-situ hydraulic conductivity and pump testing; geotechnical sample collection and analyses; and soil gas sampling.

Hydrogeologic Investigations

Task Manager for a site-wide RCRA Facility Investigation for a TSDF containing more than 40 individual solid waste management units (SWMUs) for CECOS International, Inc. Coordinated subsequent Corrective Measures Study (CMS) development. An evaluation of contaminant trends and hydraulic data, in coordination with the completion of a risk assessment, resulted in the installation of a multiple well point ground-water recovery system, and implementation of a perimeter ground-water monitoring program.

Project Manager for an investigation and remedial program at an agricultural chemical handling facility located in Central Pennsylvania. Atrazine, alachlor, cyanazine, metolachlor, and nitrates were observed at an on-site well at concentrations exceeding federal MCLs and Pennsylvania drinking-water criteria. Due to the presence of karstic carbonate bedrock at shallow depths and a sinkhole adjacent to the facility, downgradient springs were identified and sampled to demonstrate the localized nature of the observed pesticide and nitrate compounds. Additional monitoring wells were installed on site and sampled, and a series of soil samples were collected to identify potential source areas. An on-site ground-water recovery and treatment system was installed and an ongoing monitoring program was negotiated with the PADEP.

Hydrogeology Task Manager for a remedial investigation/feasibility (RI/FS) study at a Superfund site located in Tonawanda, New York. Activities included literature review and research, generating geologic structure maps, supervising drilling operations, and analyzing contaminant migration trends.

RI Task Manager responsible for negotiating, developing, and implementing an RI/FS Work Plan prepared pursuant to a Consent Judgment for a General Motors Corporation facility located in Saginaw, Michigan. The RI/FS is being completed for the 250-plus acre site to comply with Part 201 of NREPA with MDEQ oversight. The agreed upon program includes the completion of geophysical surveys; sampling of soil, surface water, ground water, and sediment; ecological and human health risk assessment; and various engineering design elements.

Characterized the extent of specific compounds in the ground water at a regulated hazardous waste treatment, storage, and disposal facility (TSDF) in Niagara Falls, New York for CECOS International, Inc. Used an extensive historical database

of ground-water quality data to effectively present data for the 300-plus acre facility.

Project Manager for the investigation of a pesticide handling facility located in karst terrain in South-Central Pennsylvania. Project activities included collecting soil, surface-water, and ground-water samples; installing a ground-water recovery well; pump testing and dye tracer testing to predict recovery well performance; and negotiation with the PADEP to allow seasonal land application of treated effluent containing residual nitrate concentrations exceeding the MCL of 10 mg/L.

Completed investigations of 12 orphan sites in Western New York State. Prepared Phase I Reports for the NYSDEC, generated hazard ranking scores, and formulated recommendations for future remedial work.

Supervised the implementation of a field program to investigate chromium contamination in soils and ground water at a metal plating facility in Rochester, New York.

Completed a site assessment of a commercial property, located in Syracuse, New York, using a portable gas chromatograph (GC) to sample soil gas as an initial screening tool. The data suggested the presence of petroleum products which was later verified by ground-water sampling in the identified area.

Designed and implemented a field study investigating the relationship between sampling methods used to collect ground-water samples, sample turbidity, and the observed concentration of PCBs at a site in Saginaw, Michigan. The study resulted in a revised ground-water sampling methodology.

Hydrogeology Task Manager for a study completed to characterize the distribution of chloride contamination in a rural aquifer in Central New York. Evaluated the relative impacts of road salt application and point source contribution from a DPW storage area. Presented the data and possible abatement measures to the affected public.

Task Manager for a hydraulic connection study of three hazardous waste landfills. A hydraulic evaluation was completed utilizing leachate level and volume measurements, ground-water data, landfill construction records, and precipitation data. As a result of the evaluation, one landfill was recapped to limit excessive infiltration.

Developed fuel oil recovery plans for six spill locations for Meenan Oil Corporation. Completed step drawdown pump testing at each of the spill locations that resulted from the failure of a home heating oil distribution system in Toms River, New Jersey. At a seventh spill location, devised a pumping schedule and plan to maximize the effect of a group of existing product recovery wells that had exhibited a dramatic decrease in efficiency.

Operated a portable photoionization GC at several coal tar facilities to analyze soil gas samples for Central Hudson Gas & Electric. Analytical results were used to effectively place monitoring wells and eliminate unnecessary installations.

Used boring and electromagnetic survey data to delineate the subsurface limits of landfilled sewage sludge at a Browning Ferris Industries facility located in Niagara Falls, New York. The electromagnetic data were used to prepare volume estimates, and the sewage sludge was excavated and placed within an engineered landfill unit.

Completed a magnetometer survey at a former service station in Saluda, North Carolina, to locate buried gasoline storage tanks, guide tank removal, and target investigation efforts for Chevron Products Company.

Used a soil gas survey at a solvent disposal site in Victor, New York, to monitor for the presence of TCE. The survey was used as a cost-effective indicator of the subsurface distribution of TCE, and allowed for a reduction in the number of monitoring wells installed.

Litigation Support

As Project Manager, provided technical support for a Michigan client faced with litigation by the MAG and MDNR under Act 307. Assisted with the successful negotiation of a significantly lowered assessment of past response activity costs. Evaluation and presentation of existing environmental data collected by the MDNR ultimately led to dismissal of the case.

Designed and supervised the implementation of a soil and ground-water sampling program in support of a petroleum products company facing litigation from the current owner of a property, previously owned by the petroleum products company, in Hackensack, New Jersey. By evaluating the collected analytical data, ground-water evaluation data, and underground utility location information, a potential upgradient source of the observed contamination was identified. Negotiations are ongoing regarding the need for an additional site investigation.

Education

- B.S./Geology, 1984, Southampton College of Long Island University

Registrations

- Professional Geologist (PG), Pennsylvania, Certificate #PG-003176-G

Professional Affiliations/Awards

- Association of Ground Water Scientists and Engineers, National Ground Water Association
- Central New York Association of Professional Geologists

Technical Training/ Seminars

- Theory and Application of Vadose Zone Monitoring and Sampling; National Water Well Association; Columbus, Ohio; August 1989.
- Environmental Site Assessments and Regulatory Compliance Audits; National Ground Water Association; Atlanta, Georgia; April 1993.

- Environmental Chemistry for Investigating and Remediating Soil and Groundwater Contamination; College of Engineering, University of Wisconsin-Madison; Boston, Massachusetts; August 1994.
- Negotiation Training, Blasland, Bouck & Lee, Inc.; Syracuse, New York; August 1995.
- In-Situ Remedial Technologies; Dr. Robert Hinchee, P.E., sponsored by the CNYAPG; Syracuse, New York; April 1996.
- GIS/Key Basic Training; GIS Solutions; Syracuse, New York; June 1996.

Selected Publications/ Presentations

None at this time

Resume

Laurie A. Indick

Senior Scientist I/Manager, Quality Assurance

Ms. Indick has more than 15 years of experience in the operation, management, and quality assurance/quality control (QA/QC) of environmental analytical laboratories and related services. Ms. Indick is responsible for the management, quality assurance, and validation of analytical data being collected at BBL client hazardous waste sites and has served as on-site field processing laboratory manager. She is also responsible for managing the firm's subcontracts with analytical laboratories.

Special Expertise

Serves as Quality Assurance Officer (QAO) for investigations of multiple hazardous waste sites. Sites include impacted aquatic systems, industrial facilities, landfills, and wastewater effluent discharges. As QAO, Ms. Indick serves as the primary communication link between analytical subcontractors and BBL and is responsible for the management of site sample analyses and coordination between field managers and analytical subcontractors. She also has acted as field oversight manager for an on-site field processing laboratory.

Current responsibilities include the development of Quality Assurance Project Plans (QAPPs) that are consistent with project data quality objectives (DQOs) and federal and state guidelines. On a project-specific basis, also is involved with: selection of sampling and analytical approaches to solve specific project requirements and regulatory needs; development and review of contracts and bid documents for analytical services; and evaluation and audit of laboratory performance.

Field Services

Has been responsible for the set-up and oversight of an on-site processing laboratory for biota collection activities associated with natural resources damages assessment. Specific responsibilities included: laboratory layout and design, development and implementation of field processing system, and procurement of materials and supplies. Also included were the supervision of processing staff, tracking of multiple field crews, and coordination with regulatory agencies. Sample and document control was established through the use of custom designed processing and tracking logs.

Data Validation/Data Quality Services

Oversees the validation of mixed media (soil, sediment, water, biota, wipes, building material and air) data from investigations of multiple hazardous waste sites, including data validation pursuant to USEPA Functional Guidelines, and provides guidance on data usability. Manages and performs data validation efforts pursuant to USEPA Regional and individual State guidelines. As such, is proficient in USEPA-CLP, EPA SW-846, 40 CFR Part 136, NJDEP and NYSDEC ASP procedures.

Representative data quality projects throughout the country include the following:

- Critical review of analytical methods for determining PCB levels in industrial waste streams for the pulp and paper industry.

- Data validation in support of the RI at Monsanto Chemical Company's Indian Orchard Plant in Springfield, Massachusetts, pursuant to USEPA Region 1 guidelines.

- Data quality services as part of ECRA compliance activities for GEI International Corporation in Lansing, New Jersey, pursuant to NJDEP guidelines.

- Data validation in support of the RI/FS at the Rosen Brothers Scrapyard Superfund Site for a PRP Group in Cortland, New York, pursuant to USEPA Region 2 guidelines.

- Data validation in support of the RI/FS at the Kalamazoo River Superfund Site for a Paper Manufacturing PRP Group in Kalamazoo and Allegan Counties, Michigan, pursuant to USEPA Region 5 guidelines.

- Data quality services as part of remedial oversight for Chemical Control Corporation in Fairfield, New Jersey, pursuant to USEPA Region 2 guidelines.

- Data validation in support of the sediment sampling and engineering evaluation at Manistique River and Harbor Superfund Site for Manistique Harbor PRP Group, in Upper Peninsula, Michigan, pursuant to USEPA Region 5 guidelines.

- For American Cyanamid's Bound Brook, New Jersey facility, responsible for data validation pursuant to NJDEP guidance. Data validation efforts supported the implementation of a RCRA Corrective Action Program being implemented by BBL at the site.

- For Cytec Industries Inc.'s Warners Plant responsible for data validation pursuant to NJDEP guidance.

Laboratory Audits

Laboratory audits have been performed in support of:

- Remedial design/remedial action at a Superfund site in Massena, New York;
- River and sediment investigation at the Grasse River in Massena, New York;
- RI/FS for the Kalamazoo River Superfund Site in Kalamazoo, Michigan;
- Site investigation at an industrial facility in Michigan;
- Discharge permit negotiations for an industrial facility in Bay City, Michigan;
- Corrective measures in-situ stabilization program for an industrial facility in New York;
- River and sediment investigation in Russellville, Kentucky; and
- BBL corporate analytical contract program.

Other Related Experience

Was instrumental in the development of the framework for the BBL corporate analytical contract program and in the review and selection of potential subcontractors.

Prior to joining BBL, held the positions of GC/MS Department Manager and Analytical Quality Assurance/Quality Control Coordinator at laboratories in the northeast. Prior responsibilities included client contact for industrial and consulting firms regarding analytical services for a major CLP laboratory. Was responsible for the daily operation of the GC/MS department for an analytical laboratory. Participated in the development of software to manage, track, and report analytical data.

Education

- BA/Environmental Science, 1984, State University of New York at Plattsburgh
- Graduate Studies/Environmental Science, 1984, University of Massachusetts at Boston

Registrations

- Inorganic Data Validation - State University of New York, Westchester Community College, March 1994
- Organic Data Validation - State University of New York, Westchester Community College, October 1994

Professional Affiliations/Awards

Technical Training/ Seminars

- 40-Hour OSHA Training
- 8-Hour OSHA Supervisory Training
- CPR/First Aid
- Leadership
- Negotiation Skills

Selected Publications/ Presentations

- 40-Hour OSHA Training
- 8-Hour OSHA Supervisory Training
- CPR/First Aid
- Leadership
- Negotiation Skills

Resume

Keith M. Stang

Senior Project Scientist II

Mr. Stang has over 12 years of professional experience in data evaluation and risk assessment capacities for RI/FS and RFI/CMS type work.

Professional Profile

Project manager and senior risk assessment and data management/data validation specialist. Primary responsibilities have been to prepare and coordinate risk assessment reports and site characterization reports and to assist in managing projects. Project management tasks include budgetary controls, resource scheduling, and report production. All BBL environmental work is for Fortune 500 private industrial companies.

Preparation of human health risk assessments, risk-based remedial goal development, data management, data validation, and data collection and analysis coordination of a number of CERCLA and RCRA-driven investigations. Prepared several baseline risk assessments, site characterization and investigation findings summaries, and data quality / usability assessments for RCRA RFI/CMS and CERCLA RI/FS work plans and reports. Baseline risk assessments have been prepared under federal USEPA Superfund-based guidelines and under various state (Pennsylvania, Ohio, Indiana, Colorado, Kentucky, Michigan, New York, Delaware, South Carolina, Texas, West Virginia) and other (Risk Based Corrective Action) guidances and/or regulatory reviews.

Other additional responsibilities have included preparation of responses to requests for proposals and personnel and budgetary management of risk assessment, data validation, and statistical data analysis standalone projects. Versatility in capabilities not only as a technical resource but also as a task manager lead to expansion of duties to include project scoping, project coordination, and project administrative responsibilities.

Duties as data validation coordinator involved receipt, tracking, and distribution of analytical data for validation within a large validation group. As coordinator was also instrumental in coordinating data entry and review of analytical databases for statistical data review. Duties also included obtaining laboratory assignments, evaluating workload schedules, responding to validation requests for proposals, quality assurance reviews of risk evaluations.

Project Experience

Multiple Operable Unit Baseline Risk Analysis, Former MGP, Utility, Troy, New York: Prepared baseline risk assessments for multiple operable units utilizing a streamlined evaluation of site-specific receptors and exposure pathways presented for pre-approval as part of the investigation work plans reducing risk assessment costs but accomplishing realistic risk-based objectives.

Work Plan Development, Risk Analysis, and Residual Risk Cleanup Goal Development for Feasibility Study, CERCLA Facility, Utility, Charleston, South Carolina: Prepared work plans including associated documents such as Quality Assurance Project Plan (QAPP), data management plan, and RFI Work Plans. Implemented work plans including coordination of data collection effort, validation of fifty percent of approximate 25,000 data points, and prepared a baseline risk assessment (BRA) parallel to EPA's BRA utilizing a probabilistic approach (Monte Carlo simulation) to exposure assessments rather than traditional deterministic approach to provide the client with a range of prospective outcomes of assessment of risk. The preparation of the parallel risk assessment also focused on determining realistic remedial objectives based on evaluations of risk considering concrete knowledge of the future use of the property rather than the stringent and unrealistic exposure scenario evaluations proposed by the state. As follow-up to the BRA, a residual risk-based assessment of soil volumes to achieve site-specific cleanup goals prepared as part of the BRA in the FS reduced potential soil volumes requiring remediation by 50 to 70 percent.

Risk Analysis, Former MGP, Utility, Clearfield, Pennsylvania: Prepared a qualitative and quantitative risk assessment using limited Phase I data with numerous "positive hits" to show no real human health threat existed based on realistic exposures on site. Achieved a "No Further Action" agreement with the state even though a multi-site negotiated (Consent Order with the State of Pennsylvania) long-term plan indicated an agreed need for additional investigations.

Risk Analysis, RFI Wood Preserver, Denver, Colorado: Prepared an updated baseline risk assessment following a Phase IV RFI at a wood preserver in Denver, Colorado. Risk analysis prepared using Monte Carlo probabilistic approach to exposure assessment in order to obtain more favorable cleanup objectives for our client.

Litigation Support, Specialty Chemical Manufacturer, New York, New York: Reviewed historical data and discovered problems, questions, and concerns with claimant's analytical data that reflected uncertainty and a general lack of dependability in the data for a state drinking water cleanup liability suit. The claimant's data are the sole basis for cost recovery suit against our client. Financial responsibility to our client will likely be greatly reduced, particularly for past expenses incurred by the claimant for groundwater remediation when it was apparently not necessary.

Risk Analysis, Wood Treating, Guthrie, Kentucky: Prepared a baseline risk assessment which included determining site-specific receptor exposure areas, developing receptor and area-specific screening levels, and finally calculating site baseline risks of chemicals retained for analysis following initial screening while considering site-specific conditions for various receptors' potential exposures based on site specific constraints such as ground coverage and off-site points of exposure.

Risk Analysis, Label Manufacturer, Dennison, Tennessee: Prepared a baseline risk assessment of various solvents in groundwater on and off-site for potential exposures to on-site workers and off-site residents and to protection of a local surface water body using a combination USEPA and ASTM RBCA guidances.

RBCA Risk Analyses, Retail Petroleum, West Virginia, Pennsylvania, Ohio, Indiana, Michigan: Have prepared numerous site-specific baseline risk assessments for various retail petroleum manufacturers utilizing state guidances or the ASTM RBCA Tiered approach for focused streamlined assessments.

Interim Measure, Private Landfill, OH: Served as Health and Safety Officer for identifying, classifying, and removing drummed potentially hazardous materials as part of an Interim Measure. Responsibilities included organizing and leading daily tailgate safety meetings, continuous ambient air monitoring, and drum identification documentation.

Data Validation, Navy LANTDIV: Coordinated validation effort and performed data validation following National Functional Guidelines as an independent subcontractor for a Navy CLEAN LANTDIV Regional prime contractor. The validation team received and validated approximately 3,600 CLP organic and inorganic analyses in four months. Validation effort required performing research and determining the cause of an unexpected contaminant detected in the environmental samples. The problem was discovered and resolved by examination of possible influences and isolating the problem. Also developed a data extraction program for CLP and ASCII-delimited disk deliverables from the analytical laboratory that extracts relevant data into an operable database. Performed data management activities such as combining and sorting the data into client-specified sets and performing statistical evaluations including frequencies of detection and upper confidence interval calculations. These activities relieved this burdensome task from the contractor, thus allowing them to prepare their investigation documents.

Data Management and Validation, CERCLA RI/FS, MT: Data Manager/Data Validation Coordinator for two major Superfund-driven Remedial Investigations/Feasibility Studies. Both of these projects consisted of more than 2,500 sample analyses. Responsibilities included preparing a data management/data validation plan, tracking and assembling the data into a working database, and coordinating and performing analytical data validation to determine the data's usability quality. In addition, supplemental responsibilities for this project included the constructing a format structure for the electronic transfer and storage of all organic data obtained through these investigations and the assembly of project-wide data usability summary reports for each phase of each investigation.

Data Validation, Government and Industrial Projects: Coordinated all data validation activities for a previous environmental consulting firm over a three-year period for two US EPA contracts (ARCS III and REM III) and their subcontractors in Regions I, II, III, and IV, for US Air Force contracts, and for

major industrial clients. Responsibilities included distributing analytical data to validation team and performing quality assurance reviews of the validation reports for format and guideline specifications. Served as a Field Sampling Coordinator, which required interpreting field operations plans to obtain laboratory assignments in the Contract Laboratory Program (CLP).

Quality Assurance Project Plans, RCRA and CERCLA Investigations: Prepared numerous Quality Assurance Project Plans (QAPPs) for hazardous waste investigations in order to state data quality objectives for field sampling and laboratory analysis activities. QAPPS also dictate the data quality objectives (DQOs) intended for the data collection efforts and are key in identifying the level of intensity in investigation activities.

Education

- B.S., Industrial Engineering, University of Pittsburgh, 1986

Registrations

Not available

Professional Affiliations/Awards

Not available

Technical Training/ Seminars

- OSHA 29 CFR 1910.120 40-Hour Safety Training (1989)
- OSHA 29 CFR 1910.120 8-Hour Supervisor Training (1999)
- Pennsylvania Certified Safe Driver Training (1997)
- Course Work toward M.S. in Telecommunications, University of Pittsburgh
- USEPA Region I, Validation Functional Guidelines Modification for 1989 Course
- Professional Liability Home Study Course 1999

Selected Publications/ Presentations

Stang, K.M. and R.J. Jupin, "How Accurate and Precise Are Our Analytical Data?", poster presentation at the Superfund XIV Conference and Exhibition, Washington D.C., December 1993

Resume

Gregory N. Ertel, C.I.H., C.S.P.

Sr. Scientist I/Manager

Mr. Ertel has more than 11 years experience in evaluating health, safety and environmental risks in varied settings and developing practical cost effective solutions to reduce risks and ensure compliance with applicable regulations.

Environmental Health & Safety Experience

Mr. Ertel has broad and varied experience in all aspects of EHS compliance including the following specialities:

- Job hazard analyses, indoor air quality assessments, employee exposure assessments, noise surveys, radiation surveys, ventilation assessments, and ergonomic evaluations;
- Comprehensive facility health and safety audits;
- Preparation and submittal of required environmental permitting information;
- Prepares and executes qualitative and quantitative industrial hygiene surveys;
- Develops and conducts health and safety training programs; and,
- Prepares and approves Health and Safety Work Plans and corporate policies and procedures.

Regulatory Compliance Experience

Conducted comprehensive health and safety compliance audits at various Textron Facilities including, Bell Helicopter, Cessna Aircraft and Textron Automotive. Projects involved evaluation of plant operations against federal and state health and safety regulations. Workplace hazards were evaluated, as were engineering controls, work practice controls, procedures, and personal protective equipment. A comprehensive report presenting findings and recommendations was prepared.

Managed Divisional Environmental, Health & Safety program for Fortune 500 Manufacturing Company including North American and International facilities.

Developed and implemented comprehensive Divisional EHS Program to meet wide array of regulatory requirements including: OSHA, EPA, DOT and applicable international standards.

Managed safety, health and environmental compliance functions for a large manufacturing facility with more than 1,000 employees that was a large quantity hazardous waste generator and had numerous water and air permits.

Corporate environmental, health and safety facility audit meet or exceeded expectations in all categories.

Maintained and reported all state and federal environmental, health and safety documentation including: OSHA 200 log, Hazardous Waste Manifests/NYS Generator Report, Air Permits and SARA/TRI reports.

Wrote and implemented facility Environmental Health and Safety Manual which incorporated ISO 9001 format and required regulatory protocols.

Initiated labor/management health and safety committees, resulting in improved safety performance.

Developed and implemented hazardous waste reduction plan with significant (>10%) reduction in 1995.

Industrial Hygiene Experience

Writes, implements, and audits health and safety plans for environmental remediation and industrial hygiene projects on large Superfund sites throughout the Country.

Developed/implemented numerous industrial hygiene sampling plans in various industries, presented results in written and presentation format.

Conducted comprehensive qualitative assessment of over 150 job functions for a large manufacturing facility which included, metal finishing and plating, research and development and various industrial operation.

Training

Taught Supervisor Safety Course for more than 100 supervisors with an average comment rating of 8.5 out of 10.

Managed internal training program for over 200 employees involved in hazardous waste site operations as per 29CFR1910.120.

Education

- MS/Environmental Studies, 1996, University of Rochester
- BS/Biology, 1989, State University of New York at Geneseo

Registrations

- Certified Safety Professional (CSP), Board of Certified Safety Professionals, 1998
- Certified Industrial Hygienist (CIH), American Board of Industrial Hygiene, 1996

Professional Affiliations/Awards

- National and Local Member, American Industrial Hygiene Association (AIHA)
- National and Local Member, American Society of Safety Engineers (ASSE)

Technical Training/ Seminars

- Hazardous waste site operations (HAZWOPER) 40-hour training as specified by 26 CFR 1910.120
- First Air/LPR trained

Selected Publications/ Presentations

No publications listed at this time

Resume

Raymond A. Wagner, P.G.

Senior Project Geologist II/Geophysicist

Mr. Wagner has 17 years of experience developing and implementing remedial investigations at hazardous waste sites, and completing integrated geophysical investigations to delineate disposal areas and characterize buried metallic objects.

Special Expertise

Mr. Wagner has 17 years of experience as a Project Manager and Geophysicist, performing numerous geophysical surveys to characterize subsurface conditions for development of site investigations and ground-water monitoring programs. He has developed programs using electrical resistivity surveying, electromagnetic induction (EM), and magnetic surveying at inactive hazardous waste sites to identify potential source areas and delineate conductive zones for potential soil or ground-water contamination. Mr. Wagner is an experienced ground penetrating radar (GPR) operator, performing numerous surveys in several states to delineate disposal areas and identify underground storage tanks (USTs), drums, unexploded ordnance (UXO), and buried metallic objects. He has also performed investigations with downhole geophysical logging equipment and provided lithologic interpretation of the borehole data.

Project Experience

Implemented geophysical surveys using both EM-31 and EM-34 terrain conductivity instruments to address the areas of concern identified by historical aerial photographs. This included the successful delineation of a former disposal area and a buried stream channel that was acting as a preferential pathway for the movement of high alkalinity leachate to a nearby river.

Performed an EM-61 survey, for a national company, to investigate the presence of a reported buried transformer and clearly demonstrated the absence of the transformer at the site to the regulatory agency. This saved the client the significant cost of excavating the suspected transformer area in a very limited access area.

Performed numerous geophysical surveys to determine the presence or absence of a possible underground storage tanks (USTs) at sites throughout the Northeastern United States. These geophysical surveys included using ground-penetrating radar (GPR) at a former Service Station Site in Schenectady, New York, for a major petroleum company to determine the presence or absence of a possible UST on the southeast side of the site. The possible presence of the UST was in question due to a statement of a former employee describing an abandoned UST located on the southeast side of the former service station building. The survey successfully determined that the UST had been removed form the site. At other sites in New York, New Jersey, and Massachusetts, USTs were positively identified and located using GPR and EM-61 instruments and successfully removed from the sites, eliminating potential source areas and additional remedial activities.

Performed geophysical work at a former MGP site for a large power company in New York. GPR was used to determine the depth to bedrock and identify

subsurface features (e.g., erosional channels in the bedrock) that could act as preferential pathways for DNAPL migration. The geophysical results were used to locate DNAPL monitoring and collection wells along bedrock channels that were DNAPL migration pathways.

As Project Manager for geophysical investigations, performed geophysical surveys of two sites at Seneca Army Depot, Romulus, New York, in support of a remedial investigation/feasibility study (RI/FS) under the direction of the U.S. Army Corps of Engineers, Huntsville District. The sites were a 215-acre former ash landfill and a 150-acre ordnance burning/disposal (OB/OD) ground. The OB/OD ground consists of nine independent burning pads where ordnance was formerly detonated, burned, and buried. The work involved integrated geophysical methods, including GPR and EM surveys, across numerous burning pads to characterize the location of potential UXOs and ordnance disposal pits or trenches. At the ash landfill, the work involved conducting an EM conductivity survey across the site, followed by a GPR survey of anomalous areas defined by the EM conductivity survey to delineate disposal areas.

At several current and former manufacturing facilities, used EM induction, GPR, and magnetic surveys to locate a complex system of underground utilities and process piping to assist in identifying potential migration pathways through more permeable backfill materials. At former service stations, used GPR and magnetic surveys to delineate the UST areas and process piping.

Project Manager for numerous petroleum-related hydrogeologic investigations and recovery programs, including managing the field investigations and remedial activities. Work involved installing soil borings and monitoring wells to determine the extent of the hydrocarbon plume, and completion of in-situ hydraulic conductivity testing of monitoring wells. At several sites, coordinated the installation of remedial systems to address both phase-separated hydrocarbons (PSH) and dissolved-phase recovery from ground water, and vapor-phase recovery from soils.

Familiar with all types of environmental and geotechnical drilling, sampling, and testing procedures and equipment. As Project Manager for a variety of environmental and geotechnical projects, supervised field programs that included pump tests, packer tests, in-situ pressure testing in soil and rock, geotechnical, and permeability tests.

Extensive drilling experience using hollow-stem augers, water, and air rotary methods. As Field Project Manager, over the course of several months at remote locations supervised four drilling rigs and coordinated drilling of more than 400 tower sites with NYPA personnel and the consulting geotechnical engineers. Performed coordination and instrumentation of field testing and laboratory testing associated with the analysis of tower foundations.

Managed several multiphased environmental assessments of industrial sites as part of real estate acquisitions/due diligence procedures for Fortune 500 companies.

Education	• BS/Geology, 1982, State University of New York at Cortland
Registrations	• Professional Geologist, State of Minnesota, License No. 30532
Professional Affiliations/Awards	• Member, Environmental and Engineering Geophysical Society • Member, National Groundwater Association
Technical Training/ Seminars	• OSHA 40 Hour HAZWOPER Training • OSHA Supervisory Health and Safety Training • OSHA Confined Space Entry Training
Selected Publications/ Presentations	None at this time

Resume

Donald F. Sauda

Senior Engineer I/Associate

Mr. Sauda has more than 18 years of experience in engineering design and process operations. Previously, Mr. Sauda was employed for more than eight years in both production and engineering areas in the chemical industry.

Special Expertise

Mr. Sauda specializes in facility planning, permitting, process selection, detailed design, and construction administration for wastewater, ground-water, and storm water collection and treatment facilities.

Wastewater Design/Permitting

Managed and was key team member of process evaluation for a 200 gpm metals wastewater treatment system that was required as a special condition to a large manufacturing facility's SPDES permit. Evaluation included review of existing process information, interviews with treatment system operating personnel, and field observations. Prepared evaluation report describing the treatment system in detail and recommending 65 process improvements to be phased in over a 3-year period.

Managed the design of a sludge-dewatering facility at a RCRA-permitted TSDF. The facility included a plate-and-frame filter press, sludge dryer, and associated sludge-conditioning process. The filter press was located over the sludge dryer to minimize material handling.

Designed and performed a field treatability study for pond water containing PCBs and algae particles. Successful removal of the algae particles was required to ensure a PCB limit of 65 parts per trillion could be achieved in effluent. The treatability study was the basis of a 400 gpm pond dewatering treatment system that included clarification, sand filtration, and carbon filtration.

Member of design team for an on-going CERCLA remedial action program at an active chemical manufacturing facility that required design and construction of a ground-water pre-treatment system for removal of VOCs (primarily 1,2-DCA). The project involved demolition of existing ground-water pretreatment equipment and construction of new ground-water extraction trench and wells, more than 3,000 feet of aboveground pipe rack, a 50 gpm treatment system consisting of a low-profile tray-type air stripper followed by catalytic oxidation (CatOx system with a caustic scrubber) of the vapor stream prior to discharge to atmosphere. This $2 million project was performed on a turnkey, design/build basis.

Member of design team for a design/build turnkey soil remediation project at an active industrial facility in California that manufactures a variety of fasteners for the aerospace industry. Portions of the site soil and ground water were impacted by VOCs, primarily TCE and PCE. The project included design and construction of an SVE system to remediate the site shallow soil zone (0 to 70 feet in depth). The SVE system includes 10 extraction wells, 13 passive vent wells, more than 700 linear feet of piping, a 350 scfm positive displacement blower and five 2,000-pound carbon adsorption units operated under vacuum.

Served as project manager for a process wastewater treatment system upgrade at an active industrial specialty wire manufacturing plant in North Carolina where pretreated process wastewater was dumped from batch dipforming, annealing, and electroplating operations. Wastewater pretreatment consisted of pH adjustment and clarification for metals removal prior to discharge to the sanitary sewer. Periodic permit violations lead to the initiation of a wastewater treatment study to identify potential treatment system modifications to ensure full discharge permit compliance. Based on the study results, it was determined that acid and caustic bath dumps should be removed from the waste stream and disposed off site and /or metered slowly into the 25,000 gpd treatment system to avoid system upset. A treatment system upgrade design was completed that included an addition to the existing wastewater treatment plant to house a 5,000-gallon caustic storage tank and a 5,000-gallon acid storage tank for storage of bath dumps, pumps, controls, and other related equipment. In addition, a pre-engineered multi-media filter was installed after the existing clarifier to provide final polishing.

Managed design of ground-water collection trenches and an SVE system at a New York State listed inactive hazardous waste site to remediate VOC- and PCB-impacted site soils and ground water at a former industrial manufacturing facility. This project included the design of multiple remedial tasks including the following: excavation of more than 2,500 cy of impacted soil and sediment and placement in an on-site containment cell, construction of two ground-water collection trenches totaling 800 in length, a leachate collection and storage system, and an SVE system. The SVE system consisted of a 30 hsp, 250 scfm blower used to induce a vacuum through the vapor extraction piping located within the treatment cell. Extracted soil vapors were routed through a 1,00-pound carbon canister prior to release to the atmosphere or discharge back into the treatment cell.

Project manager for a design/build turnkey project at a former die-cast facility in Kentucky that had PCB-impacted area ground water and surface waters resulting from past operations at the site. The project involved design and construction of a new ground-water treatment system. Ground water was collected in three caissons adjacent to the receiving stream and pumped to the new treatment system through 3,200 feet of 6-inch force main. The 70 gpm (250 gpm peak) treatment system was designed to upgrade an existing ground-water treatment system by removing PCBs via sand filtration followed by granular activated carbon adsorption. The treatment system included a 36-foot by 40-foot building addition, four 5,500-gallon polyethylene equalization tanks, two 2,500-gallon steel backwash recovery tanks, a pump station skid with four pumps, one sand filter skip unit with two 5,600-pound vessels, and two carbon adsorption skid units each with two 5,000-pound vessels.

Contributed to the design of a ground-water treatment facility with a capacity of one million gallons per day (mgd). Conducted a metals treatability study to select the most effective chemical treatment and to provide a basis of chemical addition systems. Treatment processes included oil separation, equalization, pH adjustment, chemical addition, clarification, sand filtration, and carbon

adsorption. Design activities involved the incorporation of existing ground-water extraction systems and a sludge-dewatering system in an adjacent treatment facility.

Managed design and provided construction administration for a temporary 30 gpm leachate treatment system at an inactive hazardous waste site, where the constituents of concern included VOCs and PCBs. Design included an air stripper and associated pumps, piping, and controls for an on-site treatment facility and a loading area for transfer of leachate to tank trucks for off-site disposal at a nearby facility. Contingencies for oil/water separation, ion exchange, and activated carbon treatment systems were also incorporated into the design. Project included preparation of detailed plans for construction, start-up, and operation of the treatment system. Prepared several related plans, including a construction quality assurance (CQA) plan, sampling and analysis plan (SAMP), transportation plan, demobilization plan, and preparedness, prevention, and contingency (PPC) plans.

Managed design of 100 gpm ground-water treatment system at an inactive hazardous waste site where ground water had been impacted by VOCs and metals. Treatment process included pH adjustment, chemical addition, clarification, air stripping, carbon absorption, and sludge dewatering. Ground water is withdrawn using horizontal collection wells and is reinjected at the site through vertical reinjection wells.

Managed preparation of a remedial engineering evaluation at a large industrial complex where constituents of concern included organic and inorganic compounds. Prepared a report evaluating the technical and economical feasibility of various ground-water treatment systems, including air stripping, activated carbon, biological, and steam stripping, and soil treatment systems, including excavation and in situ vapor extraction.

Successfully completed five air permits to construct and water-discharge permits for expansion at a wire manufacturing facility. Additionally, researched and prepared report to successfully allow facility to be assigned effluent limits from the local POTW instead of the more stringent USEPA pretreatment limits.

Designed remediation systems for BTEX contamination at more than 10 gasoline stations for a major oil company. System designs included free-product recovery, soil vapor extraction, and ground-water pump and treat systems.

Managed design and provided construction administration for a 250-gallon air stripper treatment system for VOCs at an industrial complex. Design features included 100 percent on-line backup equipment for automatic switchover with minimal operator attention. Total construction cost of project was $300,000.

Managed the design and provided construction observation for a two-phase project to address mercury-contaminated wastewater in an industrial and sanitary sewer system at an active industrial facility. The first phase involved installation of 1,500 feet of pipe, repiping of the main locker room, and the consolidation of

the industrial and sanitary sewer systems. The second phase involved installation of 1,000 feet of pipe and abandonment or rerouting of 25 discharge points at the facility. Each phase was completed during three week shutdown periods in successive years and resulting in full compliance with the facility's discharge permit.

Provided on-site wastewater management at an active industrial facility for a three-month period. First developed an action plan of more than 100 items that included wastewater characterization, elimination of selected discharges, comprehensive review of the basis of categorical discharge limits, and calculation of more appropriate discharge limits. Among the accomplishments were relocation of a compliance sample point to obtain a more representative sample, segregation of a rinse step from a production process to eliminate contamination of the entire wastewater discharge, and modification of a metal cleaning process to eliminate fluoride contamination of the rinse water discharge.

Managed a ground-water investigation at a large industrial complex under the supervision of the NYSDEC. Project included installation of borings and monitoring wells to determine vertical and horizontal extent of contamination (primarily VOCs) and development and implementation of a storm sewer sampling program. Interim remedial measures (IRMs) for soil and/or ground water were also evaluated based on the results of the field investigations. Each work element required a work plan submittal to NYSDEC for approval. The project also included negotiations with the NYSDEC for a new SPDES permit. As part of these negotiations, prepared three sets of comments to draft permits issued by the NYSDEC.

Provided on-site air and wastewater environmental compliance services at a large manufacturing facility. Responsible for identifying and verifying permit compliance status for all air emissions and wastewater discharges. Completed six air permit applications for air emissions that were discovered to be unpermitted. Provided day-to-day coordination with plant management, operations, engineering, and maintenance personnel.

Provided on-site air and wastewater environmental compliance services at a large manufacturing facility. Responsible for administering both air and wastewater programs, including analytical testing, DMR submittals, and all other recordkeeping and reporting requirements. Also participated in negotiation of SPDES permit renewal with NYSDEC.

Managed design and construction of improvements to leachate treatment systems at three inactive hazardous sites. Improvements at the first site included replacement of the level-control system, addition of two flow meters, and addition of process piping to facilitate operations. At the second site, a 550-foot-long gravel access road was installed. Improvements at the third site included relocation and replacement of entire treatment system. Project included granular activated carbon (GAC) units, an ion exchange unit, a 10-foot by 12-foot building, and associated process pumps, piping, and controls. Design drawings

for all improvements were submitted to and approved by the NYSDEC. Assisted in preparation of comment packages for draft SPDES permits at all three sites.

Developed lead sampling program for wastewater sources at manufacturing facility. Following receipt of analytical results, completed evaluation of applicable treatment options. Two alternatives were selected for bench-scale treatability studies; an ultrafiltration treatment system was recommended as most appropriate. Completed design for installation of ultrafiltration treatment system.

Designed a treatment system to remove lead from wastewater. Using a spare tank at the facility, a clarifier was designed to consistently meet the discharge limit for lead.

Managed the design and served as lead process engineer for improvements to a landfill leachate treatment system to remove PCBs, VOCs, and iron. The project included construction of an 1,800-square-foot building, with associated utilities. The process equipment included a flocculation tank with paddle-mixer, clarifier sludge pump and settling tanks, solid and carbon filtration systems, and a recycle system to return treated water to the landfill. Prepared operating manuals for landfill maintenance and leachate system.

Storm Water Management

Managed an investigation into TCE and phenols contamination of a storm sewer system for a 175-acre industrial complex. Investigation included sewer reconnaissance and sampling program. Based on this investigation, developed technical language in consent order with the NYSDEC to bring the facility into compliance with SPDES permit. Evaluated the TCE limit in the facility's SPDES permit, conducted a hydrogeologic evaluation to determine the direction and velocity of ground-water flow, and consolidated all outfalls to two discharge points through the installation of 3,000 feet of storm sewers. Storm sewer system was designed for total flow of 225 mgd. Developed rainfall, flow, and TCE-sampling data collection programs, and used USEPA's storm water management model to determine size of a TCE storm water treatment facility. An 11,000-square-foot building was designed to house the 0.75 mgd TCE treatment plant. Total construction cost was approximately $2.5 million.

Managed a storm sewer investigation at an active service center that was the site of a former manufactured gas plant (MGP). The purpose of the investigation was to identify the presence of MGP residual compounds in the storm sewer system and to determine the most appropriate corrective action. Dye testing was used to develop accurate mapping of the storm sewer system, and a sampling and analysis program was conducted to identify potential source areas. Based on these data, evaluated alternatives and recommended installation of a settling basin at the discharge of the storm sewer to collect MGP-residual-impacted sediments prior to discharge to an adjacent creek. Received NYSDEC approval of this recommendation, and managed preparation of the settling basin design.

Managed the design and construction of an in-situ air stripper at an inactive industrial facility. Following replacement of selected sections of storm sewer at the facility, low levels of VOCs remained in the discharge from the storm sewer. The source was traced to sections of the storm sewer beneath the plant building that could not be easily replaced or sealed. The in-situ air stripper was installed in the last catch basin prior to the storm sewer discharge in order to remove VOCs via aeration.

Managed the design and construction of a surface water interim action at an inactive industrial facility. The major components included removal of 900 feet of abandoned agricultural drainage pipe, abandonment of selected storm sewer catch basin and pipes, installation of collection manifolds to reroute storm sewer roof drains from selected sections of the building, sliplining a 400 foot concrete storm drain main with HDPE pipe, and installation of 9 catch basins and 1,500 feet of HDPE pipe to create a water-tight sewer system.

Managed the design and construction of a $4 million dollar ground-water containment and treatment system for a Non-Time-Critical Removal Action (NTCRA) at a Superfund site. Ground-water containment system included 15 vertical recovery wells and a hydraulic barrier consisting of a steel sheetpile wall. The steel sheetpile wall extended approximately 35 feet into bedrock and utilized water-tight interlocking joints. Treatment system included a 100 gpm metals pretreatment system, enhanced oxidation treatment system, liquid-phase GAC treatment system, and an air treatment system. The treatment system and all associated equipment are housed in a 7,000-square-foot building.

Member of design team for a design/build turnkey of a storm water treatment system at an industrial site in Upstate New York. Manufacturing operations on this site had historically used PCBs in the manufacture of speciality metal products for the aerospace industry. The treatment system was designed to address periodic exceedances of the site storm water discharge permit resulting from these historic PCB uses. The treatment system was designed and constructed to treat site-wide storm water runoff up to the 25-year, 24-hour storm event for removal of PCBs to non-detect levels. The treatment system included a wet well pumping station, a 292,000-gallon water storage tank, and a 100 gpm treatment system consisting of sand filtration followed by carbon adsorption.

Managed the design and construction of a storm water interim corrective measure at an active manufacturing facility near Rochester, New York. Following identification of the highest sources of VOCs, a section of the on-site storm sewer system was replaced with a water-tight HDPE sewer system. Following replacement of the sampling manhole, the storm water discharge from the facility complied with the anticipated discharge limitations.

Developed a Storm water Pollution Prevention Plan (SWPPP) for a large manufacturing facility in Central New York. Development included the preparation of a Best Management Practices (BMP) Plan to satisfy the requirements of a special condition in the facility's SPDES permit. Project also involved satisfying federal regulations that require that the SWPPP designate a pollution

prevention team within the facility to develop and implement the SWPPP. SWPPP preparation included assessment of sources of potential pollutants to storm water discharges, and use of the findings to prepare an inventory of BMPs for each identified source. As an outgrowth of the SWPPP, providing ongoing consulting services during negotiation of a modified SPDES permit with the NYSDEC.

Managed the design and construction for an IRM to address VOCs in the surface water from an industrial facility in New York State. Design included the evaluation of four streams that discharged into a SPDES-permitted outfall during wet and dry weather. Treatment system consisted of a low-profile air stripper to treat influent pumped from two separate sources.

Soil/Sediment Excavation

Managed design and implementation of VOC contaminated sediment excavation from a storm water drainage ditch at an inactive manufacturing facility. This excavation was conducted in conjunction with the installation of a water tight storm sewer system in the ditch to eliminate the infiltration of ground water. In total, approximately 140 cubic yards of sediment was excavated from varying depths to 12 inches and shipped off-site as hazardous waste. This project also included the removal and off-site disposal of an additional 120 cubic yards of hazardous debris generated from excavation of existing sewer manholes/pipes, tank foundations, and oil storage facilities.

Managed design and implementation of soil excavation at an inactive manufacturing facility. Based on previous investigations, a 215 cubic yard area in the vicinity of a former oil vault was identified as being impacted by low levels of VOCs. To facilitate sale of this property by the owner, approximately 275 tons of soil were excavated and transported to a Subtitle D landfill for use as soil cover material.

Water Supply

Provided preliminary design services for water supply system to town. Services included evaluation of numerous source, transmission, distribution, and storage scenarios. For each scenario, necessary equipment (e.g., pipelines, valves, etc.) were sized, laid out, and priced. A number of financing and population growth assumptions were factored into the evaluation.

Provided construction administration for installation of potable water transmission and distribution system to 120 homes and trailers. Project included installation of metering facility, more than four miles of pipeline, and connections to homes. Total value of construction was $1.5 million.

Managed design and provided construction administration for improvements to a municipal potable water supply system. Installed and provided start-up services for a 500 gpm well water supply system. Additional improvements included design and installation of a 600,000-gallon concrete reservoir, 20 springwater

collection manholes, and automation of well water-supply and treatment system. Project included design and implementation of a pilot study for various treatment options for hydrogen sulfide found in well water. Total construction cost of project was $1.5 million.

Plant Engineering

Managed installation of a $2 million capital program negotiated through a consent order to improve environmental reliability at a chemical facility. Program included a plant audit to improve equipment reliability followed by development of a BMP program for the plant. The BMP Program focused on conditions that could result in the discharge of a significant amount of pollutants. Proposed preventative programs included installation of a chlorinated condensate treatment system, community and plant perimeter warning system, two emergency absorption systems for stack discharges, and an emergency power generator.

Plant engineer responsible for management and disposal of mercury-containing solid waste. Duties included daily inspection of a less-than-90-day storage area, labeling, in-house training of personnel, manifesting, selection of waste transportation and disposal contractors, and recordkeeping. Facility generated approximately 150 tons of mercury-containing solid waste per year.

Plant Engineer responsible for design, construction, and start-up of mercury wastewater treatment system. Treatment system included equalization, pH adjustment, chemical addition, clarification, filtration, and associated sludge/solids handling systems.

Plant Engineer responsible for management and disposal of remediation operations involving mercury-contaminated waste. Wastes included a wide range of materials, including brine sludges, dirt, stone, and concrete.

Plant Engineer responsible for designing and maintaining membrane ultrafiltration mercury wastewater treatment pilot study. Pilot study was initiated to recover mercury in metallic form to minimize the volume of hazardous waste generated.

Education

- MBA/1989, Syracuse University
- BS/Chemical Engineering, 1981, Clarkson University

Registrations

Professional Affiliations/Awards

Technical Training/ Seminars

- 40-Hour OSHA Training
- OSHA Supervisory Training
- OSHA Confined Space Training

Selected Publications/ Presentations

Davis, D.P., E.R. Lynch, P.E., P.E. Moffa, P.E., and D.F. Sauda. *Determining the Required Capacity of a Storm Water Treatment Facility at a Large Industrial Complex.* Presented at New York Water Pollution Control Association Annual Meeting, New York, New York, January 1992

Holt, J.R., P.E., C.P.G., W.T. McCune, and D.F. Sauda. "Summary of Site Remediation Technologies and the Technology Selection Process." Mohawk Valley Environmental Information Exchange, Monthly Meeting, June 1993.

DeCarr, W.K., P.W. Hare, and D.F. Sauda. "In-Line Sparging - Cost-Effective System Reduces VOCs in Storm water to Permissible Levels." Industrial Wastewater, July/August 1998.